Duratek

Bristol-Myers Squibb Former Radiopharmaceutical Production Facility Final Status Survey Report Instrument Calibration and Source Check Data

APPENDIX B
BOOK 3 of 4
September 2003

BOOK 2 of 4

APPENDIX B
BRISTOL-MYERS SQUIBB
FORMER RADIOPHARMACEUTICAL PRODUCTION FACILITY
FINAL STATUS SURVEY
Instrument Calibration and Source Check Data

for the

Bristol-Myers Squibb
Former Radiopharmaceutical Production Facility
Characterization Report

REVISION 0
SEPTEMBER 2003

Prepared By:
Duratek, Inc.
Commercial Services
1009 Commerce Park Drive
Oak Ridge, TN 37830

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Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: GTS Duratek - Instrument Services Facility		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 2350-1	Serial Number: 120633
Contact Name: Thomas Scott		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range (CPM)	Calibration Standard Value (CPM)	Instrument Response		Comments
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-245 Rev 0
400K	400,000	400,374	400,374	Pulser: 120935 Cal Due: 03/18/03
40K	40,000	40,055	40,055	D-814: 2525 Cal Due: 02/18/03
4K	4,000	4,004	4,004	Psychron: 7480 Cal Due: 05/17/03
400	400	400	400	EPPROM Version: 37122N28
HV Cal Values (M2350 HV Entry)	Desired HV (Voltmeter) (VDC)	As Found (VDC)	As Left (VDC)	
600	600	603	603	Temp: 22.8°C
1,200	1,200	1,196	1,196	Pressure: 749 mmHg
1,800	1,800	1,786	1,786	Humidity: 29 %
Parameter	Tolerance (±10%)	As Found	As Left	
Low End Threshold	4 ± (3.6 to 4.4) mVDC	4.28	4.28	Geotropism: SAT ACK/Scroll: SAT
Midpoint Threshold	20 ± (18 to 22) mVDC	19.9	19.9	BAT>4.5: SAT Volume: SAT
High End Threshold	40 ± (36 to 44) mVDC	39	39	Count: SAT Audio Divide: SAT
Window Width	4 ± (3.6 to 4.6) mVDC	4	4	Alarms: SAT Lamp: SAT
Display-to-mV ratio:	100 to 4 mV			Overload Test: SAT

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By:	Date: 12-31-02
Calibration Date: 12/27/02	Calibration Due: 06/27/03	

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DETECTOR CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-68B
Contact Name: Thomas Scott		Serial Number: 092522
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: C^{14}	Serial Number: 019708	Activity (dpm) : 26,640	Certification Date: 11/20/96

Parameter	As Found	As Left	Precision Test	CPM (Source #1)	
Count 1	N/A	4,250	Count 1(Heel)	4,178	
Count 2	N/A	4,104	Count 2(Center)	4,144	
Count 3	N/A	4,038	Count 3(Toe)	3,842	
Average	N/A	4,130.7	Average	4,054.7	
Background (cpm)	N/A	262.3	Pass/Fail	PASS	
Net Counts	N/A	3,868.4		Tolerance ±10%	
Efficiency	N/A	14.5%		Min: 3,649.2	Max: 4,460.1

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $22.1E^{-6}$	Calibration Constant (CC): 1.0

SCALER INFORMATION		DETECTOR INFORMATION			
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	120633	06/27/03	262.3	1850	4 mV

Detector Setup Report YES ✓ NO	Barcode Report YES ✓ NO	Voltage Plateau YES ✓ NO

COMMENTS

No As Founds Taken due to broken anode wire
Calibrated with 25Ft. Cable

Detector has one layer mylar at .4mg/cm^2
Caled in accordance with RP-INS-I-245.

10 minute background performed Efficiency determined w/43-68 source jig Dead Time set to manufacturer's suggested setting

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/27/02		Certification Due: 06/27/03

BACKGROUND PLATEAU 43-68 #092522 25FT CABLE 12/27/02

900	0
950	0
1000	0
1050	0
1100	0
1150	1
1200	0
1250	0
1300	1
1350	0
1400	2
1450	5
1500	5
1550	2
1600	14
1650	27
1700	55
1750	106
1800	183
1850	291
1900	384
1950	469

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	0
1100	0
1150	67
1200	1307
1250	2803
1300	3657
1350	3908
1400	4297
1450	4352
1500	4194

BETA PLATEAU C14 #019708 26,640DPM

1400	1
1450	1
1500	3
1550	8
1600	245
1650	1040
1700	2046
1750	3070
1800	3813
1850	4113
1900	4444
1950	5118

Thomas F. Hart
12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D2 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:39:57.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: _____

Comments:

Model 2350 Serial # =	120633.
User I.D. =	
High Voltage =	1850 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	2.210000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-68B.
Detector Serial # =	092522.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.0 volts.

DET2

Generated: 12/31/2002 13:58:05.

Model 2350 Serial #120633

H1850$R
Set High Voltage: 1850

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL2.210000E-05$D
Set Dead Time: 2.210000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-68B$0
Set Detector Model: 43-68B

N092522$$
Set Detector Serial #: 092522

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP2$8
SAVE PARAMETERS AS D2

Duratek™

DETECTOR CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-68A
Contact Name: Thomas Scott		Serial Number: 092522
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: Th^{230}	Serial Number: 119738	Activity (dpm) : 18,600	Certification Date: 10/20/97

Parameter	As Found	As Left	Precision Test	CPM (Source #1)	
Count 1	N/A	4,180	Count 1(Heel)	3,721	
Count 2	N/A	4,127	Count 2(Center)	4,219	
Count 3	N/A	4,300	Count 3(Toe)	3,790	
Average	N/A	4,202.3	Average	3,910	
Background (cpm)	N/A	.40	Pass/Fail	PASS	
Net Counts	N/A	4,201.9		Tolerance ±10%	
Efficiency	N/A	22.6%		Min: 3,519	Max: 4,301

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $19.4E^{-6}$	Calibration Constant (CC): 1.0

SCALER INFORMATION		DETECTOR INFORMATION			
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	120633	06/27/03	.40	1400	4 mV
Detector Setup Report YES √ NO		Barcode Report YES √ NO		Voltage Plateau YES √ NO	

COMMENTS

No As Founds due to broken anode wire in detector Detector has one layer mylar window

Calibrated with 25Ft. Cable Calibrated in accordance with RP-INS-I-245.

10 minute background Efficiency determined w/43-68 source jig Dead Time set to manufacturer's suggested setting

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/27/02		Certification Due: 06/27/03

BACKGROUND PLATEAU 43-68 #092522 25FT CABLE 12/27/02

900	0
950	0
1000	0
1050	0
1100	0
1150	1
1200	0
1250	0
1300	1
1350	0
1400	2
1450	5
1500	5
1550	2
1600	14
1650	27
1700	55
1750	106
1800	183
1850	291
1900	384
1950	469

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	0
1100	0
1150	67
1200	1307
1250	2803
1300	3657
1350	3908
1400	4297
1450	4352
1500	4194

BETA PLATEAU C14 #019708 26,640DPM

1400	1
1450	1
1500	3
1550	8
1600	245
1650	1040
1700	2046
1750	3070
1800	3813
1850	4113
1900	4444
1950	5118

Thomas G. Dart

12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D1 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:39:38.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: _____

Comments:

Model 2350 Serial # =	120633.
User I.D. =	
High Voltage =	1400 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.940000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-68A.
Detector Serial # =	092522.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.0 volts.

DET1 Generated: 12/31/2002 13:57:33.

Model 2350 Serial #120633

H1400$I
Set High Voltage: 1400

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL1.940000E-05$M
Set Dead Time: 1.940000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-68A$%
Set Detector Model: 43-68A

N092522$$
Set Detector Serial #: 092522

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP1$7
SAVE PARAMETERS AS D1

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 44-2
Contact Name: Thomas Scott		Serial Number: 121806
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: Cs^{137}	Serial Number: 019463	Activity: 5μCi	Certification Date: N/A (Used for Plateau Only)
2) Source Nuclide: Cs^{137}	Serial Number: 049711	Activity: Variable	Certification Date: 03/27/02

Parameter		Precision Test	mR/Hr (Source #2)	
Count 1	N/A	Count 1	2.01	
Count 2	N/A	Count 2	2.00	
Count 3	N/A	Count 3	1.99	
Average	N/A	Average	2.00	
Background	N/A	Pass/Fail	Pass	
Net Counts	N/A		Tolerance ±10%	
Efficiency	N/A		Min: 1.800	Max: 2.200

Low Sample Activity: Source #2: 21,247	High Sample Activity: Source #2: 80,256	Dead Time (DT): $4.570549E^{-5}$	Calibration Constant (CC): $1.733837E^{+10}$

ATTACHMENTS			DETECTOR DATA: DOSE RATE PROBES (mR/Hr)			
Detector Setup Report	YES ✓	NO	Desired Exposure	Tolerance ±10%	As Found	As Left
Barcode Report	YES ✓	NO	0.400	0.360-0.440	.404	0.402
Voltage Plateau:	YES ✓	NO	1	0.90-1.10	.940	0.950
High Voltage: 700V			2	1.8-2.2	2.01	2.01

COMMENTS

Calibrated with 5ft. Cable

Caled in accordance with RP-INS-I-245.

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/27/02		Certification Due: 06/27/03

BACKGROUND PLATEAU 44-2 S/N121806

500	360
550	718
600	690
650	654
700	747
750	703
800	748
850	999
900	1697
950	4913
1000	43098

SOURCE PLATEAU Cs137 S/N:019461 5uCi

500	3254
550	3778
600	4208
650	4378
700	4285
750	4305
800	4502
850	5626
900	11620
950	32143

James F. Scott

12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D3 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:40:15.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: TM

Comments:

Model 2350 Serial # =	120633.
User I.D. =	
High Voltage =	700 volts.
Threshold =	250.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	12 seconds.
Readout Units =	R.
Readout Time Base =	hr.
Readout Range Multiplier =	auto.
Detector Dead Time =	4.570549E-05.
Detector Calibration Constant =	1.733837E+10.
Detector Model =	44-2.
Detector Serial # =	121806.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.0 volts.

DET3 Generated: 12/31/2002 13:58:37.

Model 2350 Serial #120633

H700$K
Set High Voltage: 700

T250$W
Set Threshold: 250

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F12$E
Set Scaler Count Time: 12

SU4$F
Set Readout Units = R

SB2$.
Set Readout Time Base = hr

SM0$3
Set Readout Range Multiplier = auto

SL4.570549E-05$%
Set Dead Time: 4.570549E-05

SC1.733837E+10$W
Set Calibration Constant: 1.733837E+10

M44-2$L
Set Detector Model: 44-2

N121806$.
Set Detector Serial #: 121806

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP3$9
SAVE PARAMETERS AS D3

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-37B
Contact Name: Thomas F. Scott		Serial Number: 092790
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: C^{14}	Serial Number: 019708	Activity: 26,640dpm	Certification Date: 11/20/96

Parameter	As Found	As Left	Precision Test	CPM	
Count 1	4201	4185	Count 1 (Heel)	4362	
Count 2	4294	4333	Count 2 (Center)	4350	
Count 3	4307	4373	Count 3 (Toe)	4275	
Count 4	4359	4235	Average	4329	
Count 5	4219	4342	Pass/Fail	PASS	
Count 6	4215	4221	High Voltage	1850V	
Average	4265.8	4281.5			
Background (CPM)	1327.1	1233.9			
Net Counts	2938.7	3047.6		Tolerance ±10%	
Efficiency	11.0%	11.4%		Min: 3896.1	Max: 4761.9

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $22.4E-^{06}$	Calibration Constant (CC): 1.0

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	120633	06/30/03	1233.9	1850	4 mV

Detector Setup Report YES √ NO	Barcode Report YES √ NO	Voltage Plateau YES √ NO

COMMENTS

Special Remarks: 1 layer Mylar (0.4mg/cm^2)
10 minute backround performed

Caled in accordance with RP-INS-I-245
Efficiency performed on contact with 5Ft. cable

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/31/02		Certification Due: 06/30/03

BACKGROUND PLATEAU 43-37 #092790 5FT CABLE 12/31/02

900	0
950	0
1000	0
1050	0
1100	3
1150	2
1200	3
1250	5
1300	3
1350	3
1400	8
1450	3
1500	23
1550	53
1600	177
1650	277
1700	506
1750	754
1800	1058
1850	1238
1900	1307
1950	1351

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	98
1100	2087
1150	3797
1200	4120
1250	4247
1300	4218
1350	4430
1400	4409
1450	4146
1500	4358

BETA PLATEAU C14 #019708 26,640DPM

1400	5
1450	6
1500	196
1550	949
1600	2121
1650	2998
1700	3803
1750	4566
1800	5063
1850	5176
1900	5237
1950	5444

James F. Hall

12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D4 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:40:38.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: TM

Comments:

Model 2350 Serial # =	120633.
User I.D. =	
High Voltage =	1850 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	2.240000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-37C14.
Detector Serial # =	092790.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.0 volts.

DET4

Generated: 12/31/2002 13:59:13.

Model 2350 Serial #120633

H1850$R
Set High Voltage: 1850

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL2.240000E-05$G
Set Dead Time: 2.240000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-37C14$2
Set Detector Model: 43-37C14

N092790$3
Set Detector Serial #: 092790

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP4$A
SAVE PARAMETERS AS D4

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-37A
Contact Name: Thomas F. Scott		Serial Number: 092790
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Th^{230}	Serial Number: 119738		Activity: 18,600 dpm	Certification Date: 10/20/97	
Parameter	As Found	As Left	Precision Test	CPM	
Count 1	3493	3520	Count 1 (Heel)	3610	
Count 2	3561	3518	Count 2 (Center)	3567	
Count 3	3582	3535	Count 3 (Toe)	3519	
Count 4	3617	3606	Average	3565.3	
Count 5	3569	3525	Pass/Fail	PASS	
Count 6	3521	3644	High Voltage	1300V	
Average	3557.2	3558			
Background (CPM)	4.9	4.4			
Net Counts	3552.3	3553.6		Tolerance ±10%	
Efficiency	19.1%	19.1%		Min: 3208.8	Max: 3921.8
Low Sample Activity: Source #: N/A		High Sample Activity: Source #: N/A	Dead Time (DT): $19.3E^{-06}$	Calibration Constant (CC): 1.0	

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	120633	06/30/03	4.4	1300	4 mV
Detector Setup Report YES √ NO			Barcode Report YES √ NO		Voltage Plateau YES √ NO

COMMENTS

Special Remarks: 1 layer Mylar (0.4mg/cm$^{2)}$
10 minute backround performed

Caled in accordance with RP-INS-I-245
Efficiency performed on contact with 5Ft. cable

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute f Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/31/02		Certification Due: 06/30/03

BACKGROUND PLATEAU 43-37 #092790 5FT CABLE 12/31/02

900	0
950	0
1000	0
1050	0
1100	3
1150	2
1200	3
1250	5
1300	3
1350	3
1400	8
1450	3
1500	23
1550	53
1600	177
1650	277
1700	506
1750	754
1800	1058
1850	1238
1900	1307
1950	1351

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	98
1100	2087
1150	3797
1200	4120
1250	4247
1300	4218
1350	4430
1400	4409
1450	4146
1500	4358

BETA PLATEAU C14 #019708 26,640DPM

1400	5
1450	6
1500	196
1550	949
1600	2121
1650	2998
1700	3803
1750	4566
1800	5063
1850	5176
1900	5237
1950	5444

Thomas F. Hart
12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D5 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:40:57.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: _____

Comments:

Model 2350 Serial # =	120633.
User I.D. =	
High Voltage =	1300 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.930000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-37A.
Detector Serial # =	092790.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.0 volt

DET5

Generated: 12/31/2002 13:59:43.

Model 2350 Serial #120633

H1300$H
Set High Voltage: 1300

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL1.930000E-05$L
Set Dead Time: 1.930000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

*M43-37A$ *
Set Detector Model: 43-37A

N092790$3
Set Detector Serial #: 092790

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP5$B
SAVE PARAMETERS AS D5

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: VCMiles Date: 11-05-02

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	F0184 119655
Instrument Serial No.	120633	01-22-03	766.8	937.2	.203	Certification Date	08-09-96
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ☒ Normal ☐ Abnormal ☐ Altitude N/A ft.			Nuclide	TC-99
Detector Serial No.	PR092522	02-13-03	☒ Cable Length 25' ft. ☐ Temperature ____ °F			Activity in dpm	4194

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	1951	195	1026	831	1113	918	1002	807	852	✓		.203	VCMiles/VCM	11-5-02 0735

REMARKS: Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 766.8-937.2 (4194) TC-99

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	120633	01-22-03	43-68B	PR092522	119655

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2122	212	1	1046	834	1121	909	1076	864	869	.207	✓		VCMiles	11-11-02 1000
SAT	✓		10	2015	202	1	1070	868	1160	958	1026	824	883	.211	✓		VCMiles	11-12-02 0720
SAT	✓		10	1364	136	1	947	811	1053	917	912	776	835	.199	✓		VCMiles	12-03-02 0725

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: VCMiles Date: 11-05-02

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	010002
Instrument Serial No.	120633	01-22-03	28741.5	35128.5	.123	Certification Date	12-14-99
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ☑ Normal ☐ Abnormal ☐ Altitude N/A ft.			Nuclide	C-14
Detector Serial No.	PA092522	02-13-03	☑ Cable Length 25' ft. ☐ Temperature ____ °F			Activity in dpm	259,740

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data: Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Tolerance		Efficiency	Performed by See Note 1	
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	1951	195	30402	30207	35306	35111	30681	30486	31935	✓		.123	VCMiles/ec	11-5-02 0850

N/A

REMARKS: Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 28741.5-35128.5 (259,740) C-14

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	120633	01-22-03	43-68B	092522	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		11-11-02 ~~8~~ 10	2122	212	1	31511	31299	36764	36552	34343	34131	33994	.131	✓		VCMiles VCM	11-11-02 1010
SAT	✓		10	2015	202	1	30987	30785	36163	35961	32764	32562	33103	.127	✓		VCMiles VCM	11-12-02 0730
SAT	✓		10	1364	136	1	28576	28440	34622	34486	30526	30390	31105	.120	✓		VCMiles VCM	12-03-02 0735

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: [illegible] Date: 01-0703

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	010002
Instrument Serial No.	120633	06-27-03	29578.5	36151.5	.127	Certification Date	12-14-99
Detector Model No.	43-68 B	Cal Due Date	Operating Conditions: ☑ Normal ☐ Abnormal ☐ Altitude ____ ft.			Nuclide	C-14
Detector Serial No.	PR092522	06-27-03	☑ Cable Length 25 ft. ☐ Temperature ____ °F			Activity in dpm	259,740

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data: Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Tolerance		Efficiency	Performed by See Note 1	
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	1765	177	30034	29857	37339	37162	31754	31577	32865	✓		.127	[illegible]	01-06-03 1610

REMARKS: Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 29,578.5 - 36,151.5 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	120633	6-27-03	43-68/B	PR092522	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2058	206	1	34078	33872	38493	38287	35733	35527	35895	.138	✓		NRKpos / NRK	2-28-03 1325
SAT	✓		10	1948	195	1	33468	33273	38527	38332	36244	36049	35885	.138	✓		NRKpos / NRK	3-5-03 1110
SAT	✓		10	1845	185	1	33588	33403	38274	38089	36252	36067	35853	.138	✓		NRKpos / NRK	3-6-03 0820
SAT		✓	10	1951	195	1	34535	34340	38221	38026	35146	34951	35772	.138	✓		NRKpos / NRK	3-6-03 1505
SAT	✓		10	1816	182	1	32899	32717	37847	37665	35051	34869	35084	.135	✓		NRKpos / NRK	3-10-03 0755
SAT		✓	10	1740	174	1	32157	31983	37930	37756	36327	36153	35297	.136	✓		NRKpos / NRK	3-10-03 1120
SAT	✓		10	1848	185	1	32963	32778	37474	37289	35619	35434	35167	.135	✓		NRKpos / NRK	3-11-03 0755
SAT	✓		10	2194	219	1	34477	34258	39032	38813	34840	34621	35897	.138	✓		NRKpos / NRK	3-24-03 0800
SAT		✓	10	2152	215	1	33502	33287	39335	39120	32320	32105	34837	.134	✓		NRKpos / NRK	3-24-03 1625
SAT	✓		10	2268	227	1	33507	33280	38289	38062	33847	33620	34987	.135	✓		NRKpos / NRK	3-25-03 1020
SAT		✓	10	2101	210	1	31285	31075	38652	38442	34132	33922	34480	.133	✓		NRKpos / NRK	3-25-03 1140

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) (29,578.5 - 36,151.5) 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	120633	06-27-03	43-68 B	PR092522	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
							Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)							
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Count Time (min)	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Mean Net Source Count Rate MNSCR	Eff	Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	1871	187	1	33556	33369	36379	36192	32104	31917	33826	.130	✓		VCMiles/VCM	01-07-03 0745
SAT	✓		10	2122	212	1	34086	33874	37087	36875	33781	33569	34773	.134	✓		VCMiles/VCM	01-08-03 1015
SAT	✓		10	2381	238	1	33841	33603	38744	38506	34987	34749	35619	.137	✓		VCMiles/VCM	01-09-03 0815
SAT	✓		10	1701	170	1	31036	30866	33530	33360	26013	25843	30023	.116	✓		VCMiles/VCM	01-13-03 1000
SAT	✓		10	1627	163	1	33854	33691	35491	35328	29837	29674	32898	.127	✓		VCMiles/VCM	01-14-03 0725
SAT	✓		10	1998	200	1	34248	34048	35716	35516	33662	33462	34342	.132	✓		VCMiles/VCM	01-17-03 0725
SAT	✓		10	1954	195	1	34497	34302	37206	37011	34299	34104	35139	.135	✓		VCMiles/VCM	01-22-03 0900
SAT	✓		10	1597	160	1	35438	35278	37000	36840	35486	35326	35815	.138	✓		VCMiles/VCM	01-23-03 0725
SAT	✓		10	1934	193	1	32924	32731	36297	36104	33868	33675	34170	.132	✓		VCMiles/VCM	01-28-03 1115
SAT	✓		10	1733 ~~1949~~	173 ~~195~~ NR	1	29594	29421	35137	34964	30956	30783	31723	.122	✓		NRKyos/ NRK	2-25-03 1440
SAT	✓		10	2072	207	1	33053	32846	38638	38431	35125	34918	35398	.136	✓		NRKyos/ NRK	2-26-03 0730
SAT	✓		10	1956	196	1	32899	32703	38179	37983	35663	35467	35384	.136	✓		NRKyos / NRK	2-27-03 1025
SAT	✓		10	2058	206	1	33939	33733	38643	38437	36594	36393	36188			✓	NRKyos / NRK	2-28-03 1320

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: VMiles Date: 01-06-03

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	FD184
Instrument Serial No.	120633	06-27-03	828.9	1013.1	.220	Certification Date	08-09-96
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ☑ Normal ☐ Abnormal ☐ Altitude ____ ft. ☑ Cable Length 25 ft. ☐ Temperature ____ °F			Nuclide	TC-99
Detector Serial No.	PR092522	06-27-03				Activity in dpm	4194

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data: Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Tolerance		Efficiency	Performed by See Note 1	
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	1765	177	1124	947	1203	1026	968	791	921	✓		.220	VMiles/VCM	1-6-03 1600

REMARKS: Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 828.9 - 1013.1 4194 dpm

Instrument Model 2350-1	Instrument Serial # 120633	Cal Due Date 6-27-03	Detector Model # 43-68B	Detector Serial # AR092522	Source Serial # FD184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2058	206	1	1092	886	1204	998	1136	930	938	.224	✓		NRKjos / NRK	2-28-03 1315
SAT	✓		10	1948	195	1	1118	923	1252	1057	1169	974	985	.235	✓		NRKjos / NRK	3-5-03 1100
SAT	✓		10	1845	185	1	1160	975	1290	1105	1168	983	1021			✓	NRKjos / NRK	3-6-03 0825
SAT	✓		10	1845	185	1	1054	869	1214	1029	1195	1010	969	.231	✓		NRKjos / NRK	3-6-03 0830
SAT	NRK ✓	✓	10	1951	195	1	1104	909	1189	994	1219	1024	976	.233	✓		NRKjos / NRK	3-6-03 1510
SAT	✓		10	1816	182	1	1098	916	1202	1020	1184	1002	979	.234	✓		NRKjos / NRK	3-10-03 0750
SAT		✓	10	1740	174	1	1102	928	1135	961	1164	990	960	.228	✓		NRKjos / NRK	3-10-03 1115
SAT	✓		10	1848	185	1	1097	912	1186	1001	1176	991	968	.231	✓		NRKjos / NRK	3-11-03 0750
SAT	✓		10	2194	219	1	1115	896	1232	1013	1184	965	958	.228	✓		NRKjos / NRK	3-24-03 0750
SAT		✓	10	2152	215	1	1170	955	1250	1035	1250	1035	1008	.240	✓		NRKjos / NRK	3-24-03 1620
SAT	✓		10	2268	227	1	1171	944	1244	1017	1115	888	950	.226	✓		NRKjos / NRK	3-25-03 1015
SAT		✓	10	2101	210	1	1184	974	1308	1098	1156	946	1006	.240	✓		NRKjos / NRK	3-25-03 1135

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) (828.9-1013.1) 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	120633	06-27-03	43-68B	PR092522	F0184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	1871	187	1	1149	962	1155	968	1098	911	947	.226	✓		VCMiles/VCM	01-07-03 0735
SAT	✓		10	2122	212	1	1095	883	1200	988	1135	923	931	.222	✓		VCMiles/VCM	01-08-03 1020
SAT	✓		10	2381	238	1	1195	957	1275	1037	1135	897	964	.230	✓		VCMiles/VCM	01-09-03 0810
SAT	✓		10	1701	170	1	1010	840	1046	876	951	781	832	.198	✓		VCMiles/VCM	01-13-03 0950
SAT	✓		10	1627	163	1	957	794	981	818	890	727	780			✓	VCMiles/VCM	01-14-03 0730
~~SAT~~	~~✓~~		~~10~~	~~1627~~	~~163~~	~~1~~	~~01-15-03~~		~~VCM~~									
SAT	✓		10	1998	~~199.8~~ 20001-1703	1	1023	823	1191	991	1099	899	904	.216	✓		VCMiles/VCM	01-17-03 0710
SAT	✓		10	1954	195	1	1077	882	1165	970	1160	965	939	.224	✓		VCMiles/VCM	01-22-03 0900
SAT	✓		10	1597	160	1	1037	877	1189	1029	1120	960	955	.228	✓		VCMiles/VCM	01-23-03 0715
SAT	✓		10	1934	193	1	1153	960	1186	993	1093	900	951	.227	✓		VCMiles/VCM	01-24-03 1100
SAT	✓		10	1733 ~~1947~~	173 ~~175~~	1	1012	839	1088	915	1019	846	867	.206	✓		NRKJOS / NRK	2-25-03 1410
SAT	✓		10	2072	207	1	1122	915	1262	1055	1201	994	988	.236	✓		NRKJOS / NRK	2-26-03 0720
SAT	✓		10	1956	196	1	1158	962	1231	1035	1199	1003	1000	.238	✓		NRKJOS / NRK	2-27-03 1020

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

GAMMA DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: VCMiles Date: 01-15-03

INSTRUMENT & DETECTOR INFORMATION			ACCEPTABLE INSTRUMENT RESPONSE RANGES			SOURCE INFORMATION	
			Geometry	Minus 20 %Net Counts	Plus 20 %Net Counts	SEG I/D No.	019453
Instrument Model Number	2350-1	Cal Due Date	Position 1 @ Contact	436,206.4	654,309.6	Certificate Date	01-01-92
Instrument Serial Number	120633	06-27-03	Position 2 @ 6 Inches	7,794.4	11,691.6	Nuclide	Cs-137
Detector Model Number	44-2	Cal Due Date	Position 3 @ 18 Inches	1,162.4	1,743.6	Activity in μCi	
Detector Serial Number	121806	06-27-03	Operating Conditions: ☑ Normal ☐ Abnormal: ☐ Altitude____ft. ☐ Cable Length ft. ☐ Temperature °F				

SECTION 1 Reviewed By:_____ Date:_____

SECTION 2 (To be completed by RP Technician). Prior to beginning, verify the Instrument SNs listed above.

IF the above information is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Count Time	Gross BKG Counts	BKG CPM	ACTUAL INSTRUMENT RESPONSE						Pass	Fail	Performed by See Note 1	
						Position 1 @ Contact		Position 2 @ 6 Inches		Position 3 @ 18 Inches					
Sat/ Unsat	Pre	Post	(min)			Gross Counts	Net CPM	Gross Counts	Net CPM	Gross Counts	Net CPM			Technician Name Printed & Initialed	Date/ Time
SAT	✓		5	7179	1436	546694	545258	11179	9743	2889	1453	✓		VCMiles/rcm	01-15-03 1325

Remarks:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

GAMMA DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician).

Instrument Model 2350-1	Instrument Serial # 120633	Cal Due Date 6-27-03	Detector Model # 44-2	Detector Serial # PR121806	Source Serial # 019453

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Performed by See Note 1	
						Count Time (min)	Position 1 @ contact		Position 2 @ 6 inches		Position 3 @ 18 inches					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT		✓	5	6990	1398	1	467908	466510	10631	9233	2682	1284	✓		NRKyos / NRK	2-4-03 1600
SAT	✓		5	7145	1429	1	466843	465414	10161	8732	2669	1240	✓		NRKyos / NRK	2-5-03 0710
SAT		✓	5	6961	1392	1	474910	473518	10381	8989	2832	1440	✓		NRKyos / NRK	2-5-03 1505
SAT	✓		5	6806	1361	1	484814	483453	10401	9040	2803	1442	✓		NRKyos / NRK	2-6-03 0715
SAT		✓	5	6734	1347	1	472140	470793	10399	9052	2801	1454	✓		NRKyos / NRK	2-6-03 1022
SAT	✓		5	6783	1357	1	479030	477673	10508	9151	2823	1466	✓		NRKyos / NRK	2-10-03 0720
SAT		✓	5	6948	1390	1	484870	483480	10269	8879	2751	1361	✓		Betty S. Kyos / BSK	2-10-03 1100
SAT	✓		5	6986	1397	1	444904	443507	10569	9172	2826	1429	✓		NRKyos / NRK	2-13-03 1424
SAT		✓	5	6865	1373	1	478817	477444	10721	9348	2863	1490	✓		NRKyos / NRK	2-13-03 1625
SAT	✓		5	7066	1413	1	469983	468570	9878	8465	2733	1320			NRKyos / NRK	3-26-03 0745
SAT		✓	5	7030	1406	1	484782	483376	9949	8543	2766	1366			NRKyos / NRK	3-26-03 1115
SAT	✓		5	6860	1372	1	490485	489113	9849	8477	2842	1470			NRKyos / NRK	4-3-03 1025

REMARKS:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date: _____

GAMMA DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician).

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	120633	06-27-03	44-2	121806	019453

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Performed by (See Note 1)	
						Count Time (min)	Position 1 @ contact		Position 2 @ 6 inches		Position 3 @ 18 inches					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT		✓	5	7324	1465	1	473798	472333	11267	9802	2918	1453	✓		VCMiles/rcm	01-15-03 1600
SAT	✓		5	7053	1411	1	509064	507653	10772	9361	2996	1585	✓		VCMiles/rcm	01-23-03 0740
SAT		✓	5	7104	1421	1	528708	527287	11236	9815	2923	1502	✓		VCMiles/rcm	01-23-03 1450
SAT	✓		5	7144	1429	1	499134	497705	10121	8692	2879	1450	✓		VCMiles/rcm	01-24-03 0715
SAT	✓		5	7074	1415	1	495016	487942	10450	9035	2897	1482	✓		VCMiles/rcm	01-27-03 0720
SAT		✓	5	6924	1385	1	483979	482594	11119	9734	2852	1467	✓		VCMiles/rcm	01-27-03 1605
SAT	✓		5	7136	1427	1	484057	482630	11067	9640	2949	1522	✓		VCMiles/rcm	01-28-03 1310
SAT		✓	5	7101	1420	1	481986	480566	11308	9888	2934	1514	✓		VCMiles/rcm	01-28-03 1440
SAT	✓		5	6731	1346	1	487410	486064	10455	9109	2827	1481	✓		VCMiles/rcm	01-29-03 1145
SAT		✓	5	6733	1347	1	479034	477687	11245	9898	2681	1334	✓		VCMiles/rcm	01-29-03 1345
SAT	✓		5	6766	1353	1	479269	477916	10999	9646	2797	1444	✓		VCMiles/rcm	01-30-03 1620
SAT		✓	5	6603	1321	1	449328	448007	11005	9684	2809	1488	✓		VCMiles/rcm	01-30-03 1100
SAT	✓		5	6806	1361	1	477369	476008	10568	9207	2716	1355	✓		DRKiss/DRK	2-4-03 0705

REMARKS:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date: _____

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek - Instrument Services Facility		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 2350-1	Serial Number: 95359
Contact Name: Thomas Scott		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2002-01394	Calibration Method: Electronic	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range (CPM)	Calibration Standard Value (CPM)	Instrument Response		Comments
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-245
400K	400,000	401,581	401,581	Pulser: 101500 Cal Due: 09/11/03
40K	40,000	40,104	40,104	D-814: 2525 Cal Due: 02/18/03
4K	4,000	4,016	4,016	Psychron: 7480 Cal Due: 05/17/03
400	400	402	402	
HV Cal Values (M2350 HV Entry)	Desired HV (Voltmeter) (VDC)	As Found (VDC)	As Left (VDC)	
600	600	603	603	Temp: 23.4°C
1,200	1,200	1,195	1,195	Pressure: 746 mmHg
1,800	1,800	1,782	1,782	Humidity: 42%
Parameter	Tolerance (±10%)	As Found	As Left	
Low End Threshold	4 ± (3.6 to 4.4) mVDC	4.2	4.2	Geotropism: SAT ACK/Scroll: SAT
Midpoint Threshold	20 ± (18 to 22) mVDC	20	20	BAT>4.5: SAT Volume: SAT
High End Threshold	40 ± (36 to 44) mVDC	38.7	38.7	Count: SAT Audio Divide: SAT
Window Width	4 ± (3.6 to 4.6) mVDC	4	4	Alarms: SAT Lamp: SAT
Display-to-mV ratio:		100 to 4 mV	100 to 4 mV	Overload Test: SAT

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: Mike Paul	Reviewed By: Thomas G. Scott	Date: 12-12-02
Calibration Date: 12/12/02	Calibration Due: 06/12/03	

Duratek™

DETECTOR CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-68B
Contact Name: Thomas Scott		Serial Number: 088917
Customer Purchase Order Number: N/A	Work Order Number: 2003-00418	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: C-14	Serial Number: 020201		Activity (dpm) : 26,820	Certification Date: 2/5/02	
Parameter	As Found	As Left	Precision Test	CPM (Source #1)	
Count 1	4,261	4,261	Count 1(Heel)	4,029	
Count 2	4,464	4,464	Count 2(Center)	4,468	
Count 3	4,342	4,342	Count 3(Toe)	4,036	
Average	4,356	4,356	Average	4,178	
Background (cpm)	328.3	328.3	Pass/Fail	PASS	
Net Counts	4,027.7	4,027.7		Tolerance ±10%	
Efficiency	15.0%	15.0%		Min: 3,760	Max: 4,596
Low Sample Activity: Source #: N/A		High Sample Activity: Source #: N/A	Dead Time (DT): $22.1E^{-6}$	Calibration Constant (CC): 1.0	

SCALER INFORMATION		DETECTOR INFORMATION			
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	95360	07/09/03	328.3	1800V	4 mV
Detector Setup Report YES √ NO		Barcode Report YES √ NO		Voltage Plateau YES √ NO	

COMMENTS

Calibrated with 25Ft. Cable

Caled in accordance with RP-INS-I-245.

10 minute background Efficiency determined w/43-68 source jig Dead Time set to manufacturer's suggested setting

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: Mike Paul	Reviewed By: Thomas G. Scott	Date: 4-15-03
Certification Date: 04/15/03		Certification Due: 10/15/03

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D3 in the Model 2350.
Today's date is 04/15/2003.
The current time of day is: 13:11:40.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: MP

Comments:

Model 2350 Serial # =	95360.
User I.D. =	95360.
High Voltage =	1800 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	2.210000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-68C-14.
Detector Serial # =	088917.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.2 volts.

Generated: 04/15/2003 13:46:18.

Model 2350 Serial #95360

H1800$M
Set High Voltage: 1800

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL2.210000E-05$D
Set Dead Time: 2.210000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-68C-14$%
Set Detector Model: 43-68C-14

N088917$9
Set Detector Serial #: 088917

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP3$9
SAVE PARAMETERS AS D3

background plateau 43-68#088917 25ft cable 4/15/03

900	0
950	0
1000	0
1050	0
1100	0
1150	1
1200	0
1250	1
1300	1
1350	1
1400	3
1450	0
1500	2
1550	20
1600	38
1650	79
1700	133
1750	263
1800	315
1850	378
1900	409
1950	439

beta plateau C-14#020201

1400	1
1450	5
1500	66
1550	636
1600	1742
1650	2816
1700	3767
1750	4573
1800	4472
1850	4762
1900	5026
1950	427056

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: Date: 4-17-03

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	FD184
Instrument Serial No.	95359	6-12-03	866.7	1059.3	.230	Certification Date	8-9-96
Detector Model No.	43-68-B	Cal Due Date	Operating Conditions: ☐ Normal ☐ Abnormal ☐ Altitude ____ ft. ☐ Cable Length ____ ft. ☐ Temperature ____ °F			Nuclide	Tc-99
Detector Serial No.	PR088917	10-15-03				Activity in dpm	4194

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2328	233	1190	957	1257	1024	1141	908	963	✓		.230	DRKjr / DRK	4-17-03 0815
									N								
									A								

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 866.7 - 1059.3 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350	95359	6-12-03	43-68-B	PR088917	FA184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT		✓	10	2391	239	1	1189	950	1207	968	1186	947	955	.228	✓		NRKjs / NRK	4-17-03 1535
SAT	✓		10	2972	297	1	1243	946	1355	1058	1283	986	997	.238	✓		NRKjs / NRK	4-23-03 1325
SAT	✓		10	2784	278	1	1230	952	1240	962	1202	924	946	.226	✓		NRKjs / NRK	4-24-03 0740
SAT	✓		10	3256	326	1	1377	1051	1351	1025	1295	969	1015	.242	✓		NRKjs / NRK	4-25-03 0830
SAT		✓	10	2788	279	1	1293	1014	1274	995	1231	952	987	.235	✓		NRKp / NRK	4-25-03 1430
SAT	✓		10	2925	293	1	1279	986	1313	1020	1318	1025	1010	.241	✓		NRKp / NRK	4-26-03 0750
SAT		✓	10	3585	359	1	1374	1015	1293	934	1340	981	977	.233	✓		NRKp / NRK	4-26-03 1030

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: GTS Duratek - Instrument Services Facility		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 2350-1	Serial Number: 126197
Contact Name: Thomas Scott		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range (CPM)	Calibration Standard Value (CPM)	Instrument Response		Comments
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-245 Rev 0
400K	400,000	402,218	402,218	Pulser: 120935 Cal Due: 03/18/03
40K	40,000	40,196	40,196	D-814: 2525 Cal Due: 02/18/03
4K	4,000	4,020	4,020	Psychron: 7480 Cal Due: 05/17/03
400	400	402	402	EPPROM Version: 37122N21
HV Cal Values (M2350 HV Entry)	Desired HV (Voltmeter) (VDC)	As Found (VDC)	As Left (VDC)	
600	600	611	611	Temp: 22.2° C
1,200	1,200	1,209	1,209	Pressure: 744 mmHg
1,800	1,800	1,804	1,804	Humidity: 34 %
Parameter	Tolerance (±10%)	As Found	As Left	
Low End Threshold	4 ± (3.6 to 4.4) mVDC	4.22	4.22	Geotropism: SAT ACK/Scroll: SAT
Midpoint Threshold	20 ± (18 to 22) mVDC	19.0	19.0	BAT>4.5: SAT Volume: SAT
High End Threshold	40 ± (36 to 44) mVDC	37.5	37.5	Count: SAT Audio Divide: SAT
Window Width	4 ± (3.6 to 4.6) mVDC	4	4	Alarms: SAT Lamp: SAT
Display-to-mV ratio:	100 to 4 mV			Overload Test: SAT

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By:	Date: 12-31-02
Calibration Date: 12/30/02	Calibration Due: 06/30/03	

Duratek

DETECTOR CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-68B
Contact Name: Thomas Scott		Serial Number: 092524
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: C^{14}	Serial Number: 019708	Activity (dpm) : 26,640	Certification Date: 11/20/96

Parameter	As Found	As Left	Precision Test	CPM (Source #1)	
Count 1	4,520	4,550	Count 1(Heel)	4,512	
Count 2	4,474	4,506	Count 2(Center)	4,584	
Count 3	4,459	4,610	Count 3(Toe)	4,526	
Average	4,484.3	4,555.3	Average	4,540.6	
Background (cpm)	335.3	327.1	Pass/Fail	PASS	
Net Counts	4,149	4,228.2		Tolerance ±10%	
Efficiency	15.6%	15.9%		Min: 4,086.6	Max: 4,994.6

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $22.1E^{-6}$	Calibration Constant (CC): 1.0

SCALER INFORMATION		DETECTOR INFORMATION			
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	126197	06/30/03	327.1	1850	4 mV

Detector Setup Report YES ✓ NO	Barcode Report YES ✓ NO	Voltage Plateau YES ✓ NO

COMMENTS

Detector has one layer mylar at .4mg/cm^2 **Calibrated with 25Ft. Cable** Caled in accordance with RP-INS-I-245.

10 minute background performed Efficiency determined w/43-68 source jig Dead Time set to manufacturer's suggested setting

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: [signature]	Reviewed By: Thomas F. Scott	Date: 12-31-02
Certification Date: 12/30/02		Certification Due: 06/30/03

BACKGROUND PLATEAU 43-68 #092524 25FT CABLE 12/27/02

900	0
950	0
1000	0
1050	0
1100	0
1150	0
1200	0
1250	2
1300	0
1350	1
1400	1
1450	1
1500	1
1550	6
1600	15
1650	38
1700	79
1750	173
1800	242
1850	329
1900	367
1950	375

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	0
1100	0
1150	2
1200	1626
1250	3047
1300	3657
1350	4066
1400	4178
1450	4259
1500	4203

BETA PLATEAU C14 #019708 26,640DPM

1400	4
1450	3
1500	2
1550	55
1600	578
1650	1642
1700	2769
1750	3734
1800	4460
1850	4563
1900	4707
1950	5044

Thomas G. Scott
12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D1 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:45:34.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: TL

Comments:

Model 2350 Serial # =	126197.
User I.D. =	BSK0490.
High Voltage =	1850 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	2.210000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-68B.
Detector Serial # =	092524.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.1 volts.

DET1 Generated: 12/31/2002 13:49:19.

Model 2350 Serial #126197

H1850$R
Set High Voltage: 1850

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL2.210000E-05$D
Set Dead Time: 2.210000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-68B$0
Set Detector Model: 43-68B

N092524$+
Set Detector Serial #: 092524

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP1$7
SAVE PARAMETERS AS D1

Duratek™

DETECTOR CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-68A
Contact Name: Thomas Scott		Serial Number: 092524
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: Th^{230}	Serial Number: 119738		Activity (dpm) : 18,600	Certification Date: 10/20/97	
Parameter	As Found	As Left	Precision Test	CPM (Source #1)	
Count 1	4,071	4,198	Count 1(Heel)	4,130	
Count 2	4,102	4,064	Count 2(Center)	4,172	
Count 3	4,123	4,170	Count 3(Toe)	3,982	
Average	4,098.7	4,144	Average	4,094.7	
Background (cpm)	2.3	2.0	Pass/Fail	PASS	
Net Counts	4,096.4	4,142		Tolerance ±10%	
Efficiency	22.2%	22.2%		Min: 3,685.3	Max: 4,504.1
Low Sample Activity: Source #: N/A		High Sample Activity: Source #: N/A	Dead Time (DT): $19.4E^{-6}$	Calibration Constant (CC): 1.0	

SCALER INFORMATION		DETECTOR INFORMATION			
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	126197	06/30/03	2.0	1400	4 mV
Detector Setup Report YES √ NO		Barcode Report YES √ NO		Voltage Plateau YES √ NO	

COMMENTS

Detector has one layer mylar window **Calibrated with 25Ft. Cable** Calibrated in accordance with RP-INS-I-245.

10 minute background Efficiency determined w/43-68 source jig Dead Time set to manufacturer's suggested setting

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By: Thomas F. Scott	Date: 12-31-02
Certification Date: 12/30/02		Certification Due: 06/30/03

BACKGROUND PLATEAU 43-68 #092524 25FT CABLE 12/27/02

900	0
950	0
1000	0
1050	0
1100	0
1150	0
1200	0
1250	2
1300	0
1350	1
1400	1
1450	1
1500	1
1550	6
1600	15
1650	38
1700	79
1750	173
1800	242
1850	329
1900	367
1950	375

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	0
1100	0
1150	2
1200	1626
1250	3047
1300	3657
1350	4066
1400	4178
1450	4259
1500	4203

BETA PLATEAU C14 #019708 26,640DPM

1400	4
1450	3
1500	2
1550	55
1600	578
1650	1642
1700	2769
1750	3734
1800	4460
1850	4563
1900	4707
1950	5044

Glenn F. Heath
12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D2 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:45:52.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: TR

Comments:

Model 2350 Serial # =	126197.
User I.D. =	BSK0490.
High Voltage =	1400 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.940000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-68A.
Detector Serial # =	092524.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.1 volts.

DET2

Generated: 12/31/2002 13:49:51.

Model 2350 Serial #126197

H1400$I
Set High Voltage: 1400

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL1.940000E-05$M
Set Dead Time: 1.940000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-68A$%
Set Detector Model: 43-68A

N092524$+
Set Detector Serial #: 092524

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP2$8
SAVE PARAMETERS AS D2

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 44-2
Contact Name: Thomas Scott		Serial Number: 095085
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: Cs^{137}	Serial Number: 019463	Activity: 5μCi	Certification Date: N/A (Used for Plateau Only)
2) Source Nuclide: Cs^{137}	Serial Number: 049711	Activity: Variable	Certification Date: 03/27/02

Parameter		Precision Test	mR/Hr (Source #2)	
Count 1	N/A	Count 1	2.03	
Count 2	N/A	Count 2	2.00	
Count 3	N/A	Count 3	2.11	
Average	N/A	Average	2.05	
Background	N/A	Pass/Fail	Pass	
Net Counts	N/A		Tolerance ±10%	
Efficiency	N/A		Min: 1.845	Max: 2.255

Low Sample Activity:	High Sample Activity:	Dead Time (DT):	Calibration Constant (CC):
Source #2: 21,093	Source #2: 77,886	$5.036192E^{-5}$	$1.735619E^{+10}$

ATTACHMENTS			DETECTOR DATA: DOSE RATE PROBES (mR/Hr)			
Detector Setup Report	YES ✓	NO	Desired Exposure	Tolerance ±10%	As Found	As Left
Barcode Report	YES ✓	NO	0.400	0.360-0.440	.397	.395
Voltage Plateau:	YES ✓	NO	1	0.90-1.10	.98	.95
High Voltage: 800V			2	1.8-2.2	2.18	2.05

COMMENTS

Calibrated with 5ft. Cable

Caled in accordance with RP-INS-I-245.

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By: [signature] Reviewed By: Thomas G. Scott Date: 1-29-03

Certification Date: 12/30/02 Certification Due: 06/30/03

BACKGROUND PLATEAU 44-2 #095085 12/30/02 5FT CABLE

500	219
550	177
600	468
650	723
700	718
750	705
800	713
850	692
900	744
950	801
1000	812

SOURCE PLATEAU Cs137 #019461 5uCi

500	1541
550	3160
600	4197
650	4597
700	4941
750	5059
800	5096
850	5084
900	5139
950	5331
1000	6733

Thomas G. Scott

12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D3 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:46:10.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: _____

Comments:

Model 2350 Serial # =	126197.
User I.D. =	BSK0490.
High Voltage =	800 volts.
Threshold =	250.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	12 seconds.
Readout Units =	R.
Readout Time Base =	hr.
Readout Range Multiplier =	auto.
Detector Dead Time =	5.036192E-05.
Detector Calibration Constant =	1.735619E+10.
Detector Model =	44-2.
Detector Serial # =	095085.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.1 volts.

DET3 Generated: 12/31/2002 13:50:30.

Model 2350 Serial #126197

H800$L
Set High Voltage: 800

T250$W
Set Threshold: 250

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F12$E
Set Scaler Count Time: 12

SU4$F
Set Readout Units = R

SB2$.
Set Readout Time Base = hr

SM0$3
Set Readout Range Multiplier = auto

SL5.036192E-05$Y
Set Dead Time: 5.036192E-05

SC1.735619E+10$W
Set Calibration Constant: 1.735619E+10

M44-2$L
Set Detector Model: 44-2

N095085$3
Set Detector Serial #: 095085

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP3$9
SAVE PARAMETERS AS D3

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-37B
Contact Name: Thomas F. Scott		Serial Number: 093963
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: C^{14}	Serial Number: 019708	Activity: 26,640dpm	Certification Date: 11/20/96

Parameter	As Found	As Left	Precision Test	CPM	
Count 1	4264	4346	Count 1 (Heel)	4361	
Count 2	4315	4288	Count 2 (Center)	4376	
Count 3	4365	4237	Count 3 (Toe)	4290	
Count 4	4298	4161	Average	4342.3	
Count 5	4257	4368	Pass/Fail	PASS	
Count 6	4301	4288	High Voltage	1850V	
Average	4300	4218			
Background (CPM)	1139.7	1163.3			
Net Counts	3160.3	3054.7		Tolerance ±10%	
Efficiency	11.9%	11.5%		Min: 3908.1	Max: 4776.5

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $22.4E^{-06}$	Calibration Constant (CC): 1.0

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	126197	06/30/03	1163.3	1850	4 mV
Detector Setup Report YES √ NO			Barcode Report YES √ NO		Voltage Plateau YES √ NO

COMMENTS

Special Remarks: 1 layer Mylar ($0.4mg/cm^2$)
10 minute backround performed

Caled in accordance with RP-INS-I-245
Efficiency performed on contact with 5Ft. cable

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/31/02		Certification Due: 06/30/03

BACKGROUND PLATEAU 43-37 #093963 5FT CABLE 12/30/02

900	1
950	0
1000	0
1050	0
1100	0
1150	3
1200	3
1250	2
1300	2
1350	4
1400	5
1450	3
1500	11
1550	40
1600	133
1650	213
1700	365
1750	612
1800	1007
1850	1196
1900	1231
1950	1292

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	1
1100	523
1150	2960
1200	4129
1250	4252
1300	4549
1350	4468
1400	4471
1450	4492
1500	4719

BETA PLATEAU C14 #019708 26,640DPM

1400	7
1450	15
1500	28
1550	392
1600	1428
1650	2599
1700	3589
1750	4495
1800	4834
1850	5215
1900	5264
1950	5528
2000	5812

Thomas G. Scott
12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D4 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:46:32.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: _____

Comments:

Model 2350 Serial # =	126197.
User I.D. =	BSK0490.
High Voltage =	1850 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	2.240000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-37C14.
Detector Serial # =	093963.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.1 volts.

DET4 Generated: 12/31/2002 13:51:06.

Model 2350 Serial #126197

H1850$R
Set High Voltage: 1850

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL2.240000E-05$G
Set Dead Time: 2.240000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-37C14$2
Set Detector Model: 43-37C14

N093963$6
Set Detector Serial #: 093963

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP4$A
SAVE PARAMETERS AS D4

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-37A
Contact Name: Thomas F. Scott		Serial Number: 093963
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Th^{230}	Serial Number: 119738	Activity: 18,600 dpm	Certification Date: 10/20/97

Parameter	As Found	As Left	Precision Test	CPM	
Count 1	3578	3549	Count 1 (Heel)	3597	
Count 2	3498	3637	Count 2 (Center)	3612	
Count 3	3576	3540	Count 3 (Toe)	3535	
Count 4	3542	3495	Average	3581.3	
Count 5	3601	3570	Pass/Fail	PASS	
Count 6	3487	3602	High Voltage	1350V	
Average	3547	3565.5			
Background (CPM)	6.2	5.5			
Net Counts	3540.8	3560		Tolerance ±10%	
Efficiency	19.0%	19.1%		Min: 3223.2	Max: 3939.4

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $19.3E-^{06}$	Calibration Constant (CC): 1.0

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	126197	06/30/03	5.5	1350	4 mV

Detector Setup Report YES √ NO	Barcode Report YES √ NO	Voltage Plateau YES √ NO

COMMENTS

Special Remarks: 1 layer Mylar (0.4mg/cm$^{2)}$
10 minute backround performed

Caled in accordance with RP-INS-I-245
Efficiency performed on contact with 5Ft. cable

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute f Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/31/02		Certification Due: 06/30/03

BACKGROUND PLATEAU 43-37 #093963 5FT CABLE 12/30/02

900	1
950	0
1000	0
1050	0
1100	0
1150	3
1200	3
1250	2
1300	2
1350	4
1400	5
1450	3
1500	11
1550	40
1600	133
1650	213
1700	365
1750	612
1800	1007
1850	1196
1900	1231
1950	1292

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	1
1100	523
1150	2960
1200	4129
1250	4252
1300	4549
1350	4468
1400	4471
1450	4492
1500	4719

BETA PLATEAU C14 #019708 26,640DPM

1400	7
1450	15
1500	28
1550	392
1600	1428
1650	2599
1700	3589
1750	4495
1800	4834
1850	5215
1900	5264
1950	5528
2000	5812

Thomas F. Hatt
12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D5 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 13:46:51.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: TM

Comments:

Model 2350 Serial # =	126197.
User I.D. =	BSK0490.
High Voltage =	1350 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.930000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-37A.
Detector Serial # =	093963.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.1 volts.

DET5 Generated: 12/31/2002 13:51:40.

Model 2350 Serial #126197

H1350$M
Set High Voltage: 1350

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL1.930000E-05$L
Set Dead Time: 1.930000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

*M43-37A$ *
Set Detector Model: 43-37A

N093963$6
Set Detector Serial #: 093963

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP5$B
SAVE PARAMETERS AS D5

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: Date: 1-7-03

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	119655
Instrument Serial No.	126197	6-30-03	856.8	1047.2	.227	Certification Date	8-9-96
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ☑ Normal ☐ Abnormal ☐ Altitude ____ ft. ☐ Cable Length ____ ft. ☐ Temperature ____ °F			Nuclide	TC-99
Detector Serial No.	092524	6-30-03				Activity in dpm	4194

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
* SAT	✓		10	2405	241	1215	974	1189	948	1172	934	952	✓		.227	BS Kjos BSK	1-7-03 0900

REMARKS: * Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 856.8-1047.2 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	6-30-03	43-68b	092524	119655

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
							Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)							
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Count Time (min)	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Mean Net Source Count Rate MNSCR	Eff	Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT		✓	10	2749	274	1	1222	948	1225	951	1195	921	940	.224	✓		B.S.K. BSK	4-24-03 1635
SAT	✓		10	2811	281	1	1210	929	1257	976	1190	909	938	.224	✓		BSK BSK	4-25-03 0810
SAT		✓	10	2780	278	1	1211	933	1248	970	1238	960	954	.228	✓		BSK BSK	4-25-03 1453
SAT	✓		10	2543	254	1	1207	953	1214	960	1224	970	961	.229	✓		BSK BSK	4-26-03 1150
SAT		✓	10	2867	287	1	1293	1006	1255	968	1266	979	984	.235	✓		BSK BSK	4-26-03 1700
SAT	✓		10	2612	261	1	1292	1031	1340	1079	1319	1058	1056	.251		✓	D Schumacher	4-28-03 0900
SAT	✓		10	2612	261	1	1297	1036	1304	1043	1299	1038	1039	.247	✓		D. Schumacher	1000 4-28-03
SAT	✓		10	3086	309	1	1331	1022	1315	1006	1327	1018	1015	.242	✓		D. Schumacher	4-29-03 0615

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 8568 - 10472 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	6-30-03	43-68B	092534	119655

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	3167	317	1	1407	1090	1326	1009	1343	1026	1042	.248	✓		BS Kjos BSK	4-11-03 0820
SAT	✓		10	2422	243	1	1255	1012	1261	1018	1256	1013	1014	.242	✓		BS Kjos BSK	4-14-03 0810
SAT	✓		10	2721	272	1	1288	1013	1383	1108	1272	997	1039	.247	✓		BS Kjos BSK	4-15-03 0825
SAT		✓	10	2810	281	1	1260	979	1338	1057	1280	999	1012	.241	✓		BS Kjos BSK	4-15-03 1620
SAT	✓		10	2658	266	1	1321	1055	1355	1089	1269	1003	1049	.250		✓	BS Kjos BSK	4-16-03 0855
SAT	✓		10	2658	266	1	1283	1017	1139	873	1232	966	947	.225	✓		BS Kjos BSK	4-16-03 0900
SAT		✓	10	2751	275	1	1187	912	1296	1021	1264	989	974	.232	✓		BS Kjos BSK	4-16-03 1605
SAT	✓		10	2566	257	1	1283	1026	1272	1015	1273	1016	1019	.243	✓		BS Kjos BSK	4-17-03 0822
SAT		✓	10	2548	255	1	1304 ~~1052~~ BSK	1049	1201	946	1158	903	966	.230	✓		BS Kjos BSK	4-17-03 1613
SAT	✓		10	2527	253	1	1237	984	1254	1001	1242	989	991	.236	✓		BS Kjos BSK	4-18-03 0750
SAT		✓	10	2293	230	1	1148	918	1210	980	1165	935	944	.225	✓		BS Kjos BSK	4-18-03 1415
SAT	✓		10	2839	284	1	1239	955	1358	1074	1204	920	983	.234	✓		BS Kjos BSK	4-23-03 1357
SAT	✓		10	2998	300	1	1251	951	1296	996	1254	954	967	.231	✓		BS Kjos BSK	4-24-03 0747

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 856.8 – 1047.2 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	6-30-03	43-68B	097524	119655

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2059	206	1	1203	997	1174	968	1169	963	976	.233	✓		Betty S. Kjos	3-5-03 1115
SAT	✓		10	2220	222	1	1254	1032	1267	1045	1217	995	1024	.244	✓		Betty S. Kjos	3-6-03 0835
SAT		✓	10	2396	240	1	1259	1019	1300	1060	1220	980	1020	.243	✓		Betty S. Kjos	3-6-03 1500
SAT	✓		10	2012	201	1	1172	971	1263	1062	1169	968	1000	.239	✓		Betty S. Kjos	3-7-03 0825
SAT	✓		10	2686	269	1	1314	1045	1290	1021	1302	1033	1033	.246	✓		Betty S. Kjos	3-18-03 1250
SAT	✓		10	2480	248	1	1230	982	~~1340~~ 1137	~~1012~~ 889	1245	997	956	.228	✓		Betty S. Kjos	3-19-03 0756
SAT	✓		10	2624	262	1	1224	962	1257	995	1242	980	979	.233	✓		Betty S. Kjos	3-20-03 0735
SAT	✓		10	2568	257	1	1255	998	1178	921	1225	968	962	.229	✓		Betty S Kjos	3-21-03 0830
SAT	✓		10	2326	233	1	1231	998	1242	1009	1311	1078	1028	.245	✓		NRKjos / NRK	4-3-03 1145
SAT		✓	10	2398	240	1	1218	978	1291	1051	1239	999	1009	.241	✓		NRKjos / NRK	4-3-03 1400
SAT	✓		10	2689	269	1	1158	889	1352	1083	1300	1031	1001	.239	✓		NRKjos / NRK	4-9-03 0822
SAT		✓	10	2880	288	1	1201	913	1356	1068	1283	995	992	.237	✓		NRKjos / NRK	4-9-03 1300
SAT	✓		10	2721	272	1	1268	996	1303	1031	1285	1013	1013	.242	✓		BSKjos / BSK	4-10-03 1110

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: B S Kjos Date: 1-7-03

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	010002
Instrument Serial No.	126197	6-30-03	33971.4	41520.6	.145	Certification Date	12-14-99
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ☑ Normal ☐ Abnormal ☐ Altitude ____ ft. ☐ Cable Length ____ ft. ☐ Temperature ____ °F			Nuclide	C-14
Detector Serial No.	092524	6-30-03				Activity in dpm	259,740

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
* SAT	✓		10	2748	275	35959	35664	40901	40626	37224	36949	37746	✓		.145	B.S. Kjos BSK	1-7-03 1000

REMARKS: * Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 35971.4-41530.6 259740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	6-30-03	43-68B	092524	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2811	281	1	36864	36583	38458	38177	33802	33521	36094	.151	✓		BS. BJ BS BSK	4-25-03 0818
SAT		✓	10	2780	278	1	36268	35990	39695	38817	34387	34109	36305	.140	✓		BS BJ BS BSK	4-25-03 1500
SAT	✓		10	2543	254	1	36815	36561	39391	39137	36085	35831	37176	.143	✓		BS BJ BS BSK	4-26-03 1157
SAT		✓	10	2867	287	1	36191	35904	39959	39672	37123	36836	38471	.148	✓		BS BJ BS BSK	4-26-03
SAT	✓		10	2612	261	1	36718	36457	39067	38806	36926	36665	37312	.143	✓		D. Schumacher	4-28-03 1000
SAT	✓		10	3086	309	1	37043	36734	39176	38867	36138	35829	37143	.143	✓		D. Schumacher	4-28-03 0615

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 33971.4 - 4520.6 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	6-30-03	43-68B	092524	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	3167	317	1	34787	34470	39288	38971	37010	36693	36711	141	✓		BSKjos BSK	4-11-03 0830
SAT	✓		10	2425	243	1	33499	33256	38502	38259	37151	36908	36141	139	✓		BSKjos BSK	4-14-03 0800
SAT	✓		10	2751	275	1	34502	34227	39172	38897	35160	34885	36003	139	✓		BSKjos BSK	4-15-03 0815
SAT		✓	10	2810	281	1	35741	35460	40074	39793	35215	34934	36729	141	✓		BSKjos BSK	4-15-03 1630
SAT	✓		10	2658	266	1	37431	37165	39209	38943	36966	36700	37663	144	✓		BSKjos BSK	4-16-03 0905
SAT		✓	10	2751	275	1	36901	36626	40189	39914	35870	35595	37378	143	✓		BSKjos BSK	4-16-03 1600
SAT	✓		10	2566	257	1	33922	33665	39141	38884	37036	36779	36443	140	✓		BSKjos BSK	4-17-03 0815
SAT		✓	10	2548	255	1	36051	35796	38825	38570	33184	32929	35765	138	✓		BSKjos BSK	4-17-03 1630
SAT	✓		10	2527	253	1	34266	34013	37531	37278	35523	35270	35520	137	✓		BSKjos BSK	4-18-03 0755
SAT		✓	10	2293	229	1	34897	34668	37801	37572	32841	32612	34951	135	✓		BSKjos BSK	4-18-03 1445
SAT	✓		10	2839	284	1	36058	35774	38868	38584	33607	33323	35893	138	✓		BSKjos BSK	4-23-03 1403
SAT	✓		10	2998	300	1	34583	34283	38208	37908	35352	35052	35748	138	✓		BSKjos BSK	4-24-03 0740
SAT		✓	10	2744	274	1	35169	34895	38102	37828	35911	35637	36120	139	✓		BSKjos BSK	4-24-03 1645

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 33971.4 - 41520.6 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	6-30-03	43-68B	092524	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2059	206	1	34426	34220	38706	38500	36170	35964	36228	.137	✓		Betty S. Kjos BSK	3-5-03 1100
SAT	✓		10	2220	222	1	32786	32564	38760	38538	35255	35030	35277	.136	✓		Betty S. Kjos BSK	3-6-03 0825
SAT	~~BSK~~	✓	10	2396	240	1	31987	31747	~~37098~~ 37146 ~~37108~~	38858	34012	33772	34792	.134	✓		Betty S. Kjos BSK	3-6-03 1500
SAT	✓		10	2012	201	1	34496	34295	39124	38923	34050	33849	35689	.137	✓		Betty S. Kjos BSK	3-7-03 0835
SAT	✓		10	2686	269	1	36957	36688	39195	39226	~~37357~~ 37324	33963	36759	.142	✓		Betty S. Kjos BSK	3-18-03 1300
SAT	✓		10	2480	248	1	34791	34543	39420	39172	34418	34170	35962	.138	✓		Betty S. Kjos BSK	3-19-03 0815
SAT	✓		10	2624	262	1	34110 ~~33854~~	33848	38682	38420	34899	34637	35968	.138	✓		Betty S. Kjos BSK	3-20-03 0743
SAT	✓		10	2568	257	1	34898	34641	38205	37948	34765	34508	35699	.137	✓		Betty S. Kjos BSK	3-21-03 0845
SAT	✓		10	2326	233	1	34879	34646	38929	38696	35878	35645	36329	.140	✓		NKKjos / NKK	4-3-03 1140
SAT		✓	10	2398	240	1	35225	34985	38778	38538	36860	36620	36714	.141	✓		NKKjos / NKK	4-3-03 1315
SAT	✓		10	2689	269	1	34706	34437	37908	37639	35012	34743	35606	.137	✓		NKKjos / NKK	4-9-03 0830
SAT		✓	10	2880	288	1	33260	32972	38773	38485	36189	35901	35786	.138	✓		NKKjos / NKK	4-10-03 1310
SAT	✓		10	2721	272		34713	34441	39118	~~38846~~ 38884	35472	35200	36162	.139	✓		BSKjos / BSK	4-10-03 1125

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

GAMMA DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: [illegible] RK Date: 1-27-03

INSTRUMENT & DETECTOR INFORMATION			ACCEPTABLE INSTRUMENT RESPONSE RANGES			SOURCE INFORMATION	
			Geometry	Minus 20 %Net Counts	Plus 20 %Net Counts	SEG I/D No.	019453
Instrument Model Number	2350-1	Cal Due Date	Position 1 @ Contact	400985.6	601478.4	Certificate Date	1-1-92
Instrument Serial Number	126197	6-30-03	Position 2 @ 6 Inches	RK 1-27-03 ~~6385.6~~ 7206.4	RK 1-27-03 ~~12578.4~~ 10809.6	Nuclide	Cs-137
Detector Model Number	44-2	Cal Due Date	Position 3 @ 18 Inches	1020.8	1531.2	Activity in μCi	
Detector Serial Number	PR095085	6-30-03	Operating Conditions: ■ Normal ☐ Abnormal: ☐ Altitude_____ft. ☐ Cable Length ____ ft. ☐ Temperature ____ °F				

SECTION 1 Reviewed By:_____ Date:_____

SECTION 2 (To be completed by RP Technician). Prior to beginning, verify the Instrument SNs listed above.

IF the above information is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Count Time	Gross BKG Counts	BKG CPM	ACTUAL INSTRUMENT RESPONSE: Position 1 @ Contact		Position 2 @ 6 Inches		Position 3 @ 18 Inches		Pass	Fail	Performed by (See Note 1)	
Sat/ Unsat	Pre	Post	(min)			Gross Counts	Net CPM	Gross Counts	Net CPM	Gross Counts	Net CPM			Technician Name Printed & Initialed	Date/ Time
SAT	✓		5	7369	1474	502706	501232	10482	RK 1-27-03 79008	2750	1276	✓		Douglas R Kyos / RK	1-27-03 0745

Remarks:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

GAMMA DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician).

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	176197	6-30-03	44-2	PR095085	019453

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Performed by See Note 1	
						Count Time (min)	Position 1 @ contact		Position 2 @ 6 inches		Position 3 @ 18 inches					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		5	7659	1531	1	511893	510361	10933	9401	2747	1215	✓		Betty S. Kjos BSK	1-28-03 1330
SAT		✓	5	7371	1474	1	499312	497838	10416	8942	2827	1353	✓		Betty S. Kjos BSK	1-28-03 1630
SAT	✓		5	7628	1526	1	523389	521863	10287	8761	2873	1347	✓		Betty S. Kjos BSK	3-4-03 0750
SAT		✓	5	6677	1335	1	485889	484554	10226	8891	2697	1362	✓		Betty S. Kjos BSK	3-4-03 1630
SAT	✓		5	6817	1573	1	509548	508175	9884	8511	2664	1291	✓		Betty S. Kjos BSK	3-5-03 0730
SAT		✓	5	7052	1410	1	489282	487872	9903	8493	2727	1317	✓		Betty S. Kjos BSK	3-5-03 1140
SAT	✓		5	6383 ~~6501~~	1277 ~~1300~~	1	513420	512143	9920	8643	2766	1489	✓		Betty S. Kjos BSK	3-6-03 0743
SAT		✓	5	6697	1339	1	491446	490107	10047	8708	2735	1396	✓		Betty S. Kjos BSK	3-6-03 1045
SAT		✓	5	6943	1389	1	483325	481936	10294	8905	2703	1314	✓		Betty S. Kjos BSK	3-6-03 1515
SAT	✓		5	6925	1385	1	489631	488246	10241	8856	2805	1420	✓		Betty S. Kjos BSK	2-7-03
SAT		✓	5	6541	1308	1	488554	487246	10176	8868	2610	1302	✓		DRKjos / DRK	2-7-03 1445
SAT	✓		5	7446	1489		511564	510075	10514	9025	2905	1416	✓		BSKjos / BSK	3-26-03 0725
SAT	✓		5	7764	1553		493762	492209	10638	9085	3003	1450	✓		BSKjos / BSK	0750

REMARKS:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date: _____

GAMMA DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician).

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	6-30-03	44-2	PR095085	01445 3

Alarm Test	Test Type		Background Data			Source Count Data								Tolerance		Performed by (See Note 1)	
						Count Time (min)	Position 1 @ contact		Position 2 @ 6 inches		Position 3 @ 18 inches						
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		5	7049	1410	1	487918	486508	10670	9260	2783	1373	✓		BSKjos BSK	3-3-03 0730
SAT		✓	5	7485	1497	1	500179	498682	10219	8722	2753	1256	✓		BSKjos BSK	3-3-03 1550
SAT	✓		5	7219	1444	1	454844	453400	10170	8726	2635	1191	✓		BSKjos BSK	3-4-03 0713
SAT		✓	5	7345	1469	1	500353	498884	10166	8697	2669	1200	✓		BSKjos BSK	3-4-03 1626
SAT	✓		5	7331	1466	1	483925	482459	10305	8839	2821	1355	✓		BSKjos BSK	3-5-03 0745
SAT	✓		5	7748	1549	1	539464	537915	10453	8904	2668	1119	✓		D. Schumacher DS	4-29-03 1600
SAT		✓	5	7092	1418	1	533185	531767	10162	8744	2721	1303	✓		D. Schumacher DS	4-29-03 2030

REMARKS:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date: _____

GAMMA DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: [illegible] Date: 9-5-02

INSTRUMENT & DETECTOR INFORMATION			ACCEPTABLE INSTRUMENT RESPONSE RANGES			SOURCE INFORMATION	
			Geometry	Minus 20 %Net Counts	Plus 20 %Net Counts	SEG I/D No.	19453
Instrument Model Number	2250-1	Cal Due Date	Position 1 @ Contact	377512	566268	Certificate Date	1-1-92
Instrument Serial Number	126197	2-15-03	Position 2 @ 6 Inches	7811.2	11716.8	Nuclide	Cs-137
Detector Model Number	44-2	Cal Due Date	Position 3 @ 18 Inches	1288.8	1933.2	Activity in μCi	5 uCi
Detector Serial Number	095085	2-12-03	Operating Conditions: ☑ Normal ☐ Abnormal: ☐ Altitude____ft. ☐ Cable Length ____ft. ☐ Temperature ____°F				

SECTION 1 Reviewed By:_____ Date:_____

SECTION 2 (To be completed by RP Technician). Prior to beginning, verify the Instrument SNs listed above.

IF the above information is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Count Time	Gross BKG Counts	BKG CPM	ACTUAL INSTRUMENT RESPONSE: Position 1 @ Contact		Position 2 @ 6 Inches		Position 3 @ 18 Inches		Pass	Fail	Performed by (See Note 1)	
Sat/ Unsat	Pre	Post	(min)			Gross Counts	Net CPM	Gross Counts	Net CPM	Gross Counts	Net CPM			Technician Name Printed & Initialed	Date/ Time
SAT	✓		5	8569	1714	473604	471890	11478	9764	3325	1611	✓		B.S. Kyes	9-5-02 0745
									U						
									A						

Remarks:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

Initial Response Test

GAMMA DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician).

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	2-15-03	44-2	095085	19453

Alarm Test	Test Type		Background Data			Source Count Data								Tolerance		Performed by (See Note 1)	
						Count Time (min)	Position 1 @ contact		Position 2 @ 6 inches		Position 3 @ 18 inches						
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		5	8969	1794	1	487263	486469	11390	9596	3302	1508	✓		B.S. Kjos BSK	9-24-02 1730
Sat	✓		5	4261	1852	1	476873	475021	10809	8957	3321	1469	✓		Douglas R Kjos / DRK	10-7-02 DRK
SAT		✓	5	8761	1752	1	489973	488221	10995	9243	3376	1624	✓		VCMiles / VCM	10-17-02 1350
SAT	✓		5	9142	1828	1	485184	483356	11209	9381	3323	1495	✓		VCMiles / VCM	10-09-02 0930
SAT	✓		5	8780	1756	1	490051	488295	11148	9392	3388	1632	✓		DRKjos / DRK	10-21-02 0725
SAT	✓		5	8815	1763	1	480831	479068	10998	9235	3318	1555	✓		DRKjos / DRK	10-22-02 0705
SAT		✓	5	8863	1773	1	483460	481687	11422	9649	3383	1610	✓		DRKjos / DRK	10-22-02 1550
SAT	✓		5	10689	2138	1	492308	490170	10904	8766	~~3323~~ 3512 11-26-02	~~1485~~ 1374 11-26-02	✓		VCMiles / VCM	11-26-02 1330
SAT	✓		5	9408	1882	1	502726	500844	11008	9126	3211	1329	✓		BS Kjos / BSK	4-17-03 1315

REMARKS:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: BSK Date: 8-27-03

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	(FD184) 119655
Instrument Serial No.	126197	2-15-03	960.3	1173.7	.254	Certification Date	8-9-96
Detector Model No.	43-68 6	Cal Due Date	Operating Conditions: ☑ Normal ☐ Abnormal ☑ Cable Length 25 ft.	☐ Altitude N/A ft. ☐ Temperature ____ °F		Nuclide	TC-99
Detector Serial No.	092524	2-13-03				Activity in dpm	4,194

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2549	255	1356	1101	1355	1100	1356	1001	1067	✓		.254	B.S. Kjos BSK	8/27/03 0710

REMARKS: Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 9601.3 – 1173.7 (4,194) TC-99

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	2-15-03	43-68B	092524	119655

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2356	236	1	1309	1073	1396	1160	1210	974	1069	.255	✓		B.S.Kjos BSK	8-28-02 0722
SAT	✓		10	2226	223	1	1201	978	1210	987	1242	1019	995	.237	✓		B.S.Kjos BSK	8-29-02 0725
SAT	✓		10	3931	393	1	1442	1049	1410	1017	1332	939	1002	.239	✓		Douglas R Kjos / NRK	8-30-02 0745
SAT	✓		10	3111	311	1	1358	1047	1257	946	1168	857	950	.226		✓	B.S.Kjos BSK	9-3-02 0737
SAT	✓		10	3111	311	1	1322	1011	1384	1073	1130	819	968	.231	✓		B.S.Kjos BSK	9-3-02 0748
SAT	✓		10	2979	298	1	1385	1087	1392	1094	1296	998	1060	.253	✓		B.S.Kjos BSK	9-4-02 0725
SAT	✓		10	2674	267	1	1344	1077	1342	1075	1259	992	1048	.250	✓		B.S.Kjos BSK	9-5-02 0730
** SAT	✓		10	1935 ~~2330~~	194 ~~233~~	1	1097	903	1233	1039	1025	831	924	.220		✓	B.S.Kjos BSK	9-9-02 0735
* SAT	✓		10	2300	230	1											Douglas R Kjos / NRK	9-9-02
SAT	✓		10	2957	296	1	1375	1079	1361	1065	1199	903	1016	.247	✓		Douglas R Kjos / NRK	9-10-02 0725
*** SAT	✓		10	3006	301	1											Douglas R Kjos / NRK	9-11-02
SAT	✓		10	3148	315	1												
SAT	✓		10	3456	346	1	1394	1048	1431	1085	1393	1047	1060	.253	✓		B S Kjos BSK	9-12-02 0712

REMARKS: *- did not use, ** did not let meter purge long enough ***- changed mylar

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 960.3 - 1173.7 (4194) Tc-99

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350 1	126197	2-15-03	43-68B	092524	119655

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2440	244	1	1332	1088	1372	1128	1310	1066	1094	.244	✓		B.S. Kjos BSK	9-13-02 0730
SAT	✓		10	3269	327	1	1295	968	1439	1112	1404	1077	1052	.251	✓		B.S. Kjos BSK	9-16-02 0750
SAT	✓		10	2593	259	1	1370	1111	1474	1215	1315	1056	1127	.269	✓		B.S. Kjos BSK	9-17-02 0850
SAT	✓		10	2568	257	1	1396	1139	1490	1233	1435	1178	1183	.282		✓	B.S. Kjos BSK	9-18-02 1255
SAT	✓		10	3023	302	1	1347	1045	1481	1179	1378	1076	1100	.262	✓		B.S. Kjos BSK	9-19-02 0735
SAT	✓		10	2407	241	1	1230	989	1337	1096	1330	1089	1058	.252	✓		B.S. Kjos BSK	9-26-02 0710
SAT	✓		10	2636	263	1	1380	1117	1342	1079	1419	1156	1117	.266	✓		B.S. Kjos BSK	9-27-02 0830
SAT	✓		10	2478	248	1	1285	1037	1200	1052	1251	1003	1031	.246	✓		B.S. Kjos BSK	9-30-02 1010
SAT	✓		10	2540	254	1	1278	1024	1293	1039	1343	1089	1051	.251	✓		B.S. Kjos BSK	10-1-02 0720
SAT	✓		10	2932	~~1940~~ 293	1	1254	961	1301	1008	1381	1088	1019	.243	✓		B.S. Kjos BSK	10-2-02 0800
SAT	✓		10	2712	271	1	1244	973	1276	1005	1175	904	960.7	.229	✓		Douglas R Kjos DRK	10-03-02 0715
SAT	✓		10	3066	307	1	1306	999	1320	1013	1298	991	1001	.239	✓		JCMiles JCM	10-04-02 0815
SAT	✓		10	1873	187	1	1318	1131	1386	1199	1328	1141	1157	.276	✓		B.S. Kjos BSK	10-8-02 0905

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 960.3 - 1173.7 (4194) TC-99

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	02-15-03	43-68B	092524	119655

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2531	253	1	1472	1219	1474	1221	1267	1014	1151	.274	✓		VCMiles/ca	10-09-02 0850
SAT	✓		10	2593	259	1	1330	1071	1372	1113	1319	1060	1081	.258	✓		BSKjos BSK	10-10-02 0732
SAT	✓		10	2763	276	1	1230	954	1370	1094	1246	970	1006	.240	✓		B.S.Kjos BSK	10-11-02 0712
SAT	✓		10	2395	240	1	1534	1294	1549	1309	1332	1092	1232	.293		✓	B.S.Kjos BSK	10-16-02 0720
SAT	✓		10	3049	305	1	1306	1001	1338	1033	1253	948	994	.237	✓		B.S.Kjos BSK	10-16-02 0848
SAT	✓		10	2681	268	1	1259	991	1296	1028	1270	1002	1007	.240	✓		B.S.Kjos BSK	10-17-02 0720
SAT	✓		10	2397	240	1	1262	1022	1269	969	1250	910	967	.231	✓		B.S.Kjos BSK	10-30-02 0845
SAT	✓		10	2618	262	1	1209	947	1231	969	1190	928	948	.226		✓	VCMiles ca	10-31-02 0825
SAT	✓		10	2427	243	1	1251	1008	1296	1053	1125	882	981	.234	✓		VCMiles ca	10-31-02 0755
SAT	✓		10	2784	278	1	1292	1014	1304	1026	1225	947	996		✓		VCMiles ca	11-01-02 0820
~~SAT~~	✓		~~10~~	~~2447~~	~~245~~	1	~~1159~~	~~914~~		BSK	11-5-02						~~B.S.Kjos BSK~~	~~11-5-02~~
SAT	✓		10	2530	253	1	1231	978	1259	1006	1101	848	944	.225		✓	VCMiles/ca	11-11-02 0825
SAT	✓		10	1907	191	1	1165	974	1265	1074	1182	991	1013	.242	✓		VCMiles/ca	11-11-02 0850

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 960.3 - 1173.7 (4194) TC99

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	2-15-03	43-68B	092574	119655

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	3205	321	1	1362	1041	1532	1211	1536	1215	1156	.226	✓		BSKjos BSK	11-12-02 0730
SAT	✓		10	2853	285	1	1424	1139	1442	1157	1415	1130	1142	.227	✓		BSKjos BSK	11-15-02 1010
SAT	✓		10	2828	283	1	1231	948	1296	1013	1278	995	985	.235	✓		VCMiles VCM	12-03-02 0850

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: [signature] Date: 8-27-02

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	010002
Instrument Serial No.	126197	2-15-03	34780.5	42509.5	.149	Certification Date	12-14-99
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ☑ Normal ☐ Abnormal ☐ Cable Length 3.5 ft. ☐ Altitude N/A ft. ☐ Temperature ____ °F			Nuclide	C-14
Detector Serial No.	092524	2-13-03				Activity in dpm	259,740

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2549	255	42104	41847	41726	41471	32870	32615	38645	✓		.149	B. S. Fjus BSK	8-27-02 0700
										N/A							

REMARKS: Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 34780.5 — 43509.5 (259,740) C-14

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	2-15-03	43-68B	092524	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2356	236	1	38456	38220	41070	40834	34763	34527	37860	.146	✓		B.S. Kjos BSK	8-28-02 0725
SAT	✓		10	2226	223	1	35926	35703	40484	40261	35316	35093	37019	.143	✓		B.S. Kjos BSK	8-29-02 0717
SAT	✓		10	3931	393	1	39001	38608	40663	40270	37049	36656	38511	.148	✓		Douglas R Kjos / NOK	8-30-02 0740
SAT	✓		10	3111	311	1	37877	37566	39043	38732	34929	34618 ~~34487~~	36639	.141	✓		B.S. Kjos BSK	9-3-02 0730
SAT	✓		10	2979	298	1	39710	39412	39917	39619	34261	33963	37665	.145	✓		B.S. Kjos BSK	9-4-02 0712
SAT	✓		10	2674	267	1	39376	39109	40388	40121	33918	33651	37627	.145	✓		B.S. Kjos BSK	9-5-02 0720
NOK * 9-9-02 ~~SAT~~	✓		~~10~~	~~1935~~ ~~2330~~	~~194~~ ~~233~~	~~1~~											~~Douglas R Kjos / NOK~~	9-9-02
** SAT	✓		10	2300	230	1											Douglas R Kjos / NOK	9-9-02
SAT	✓		10	2957	296	1	39391	39095	39748	39452	35457	35161	37903	.146	✓		Douglas R Kjos / NOK	9-10-02 0720
*** SAT	✓		10	3006	301	1	37496	37195	43258	42957	38597	38296	39483	.152	✓		Douglas R Kjos / NOK	9-11-02 0815
~~SAT~~	✓		~~10~~	~~3148~~	~~315~~	~~1~~	~~BSK 9-12-02~~											
SAT	✓		10	3456	346	1	37596	37250	40722	40376	36301	35955	37794	.146	✓		BS Kjos BSK	9-12-02 0717
SAT	✓		10	3440	344	1	35998	35654	40458	40114	36179	35835	37301	.144	✓		B.S. Kjos BSK	9-13-02 0745

REMARKS: * - did not let meter purge long enough ** - did not use *** - changed Mylar

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 34780.5 - 42509.5 (359,740) C-14

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	2-15-03	43-68B	092524	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	3269	327	1	36551	36224	40630	40303	37914	37587	38038	.146	✓		B.S.Kjos BSK	9-16-02 0800
SAT	✓		10	2593	259	1	36981	36722	40760	40501	37731	37472	38232	.147	✓		B.S.Kjos BSK	9-17-02 1010
SAT	✓		10	2568	257	1	35989	35732	41368	41111	38292	38035	38792	.147	✓		B.S.Kjos BSK	9-18-02 1305
SAT	✓		10	3023	302	1	34374	34072	41067	40765	38579	38277	37705	.145	✓		B.S.Kjos BSK	9-19-02 0900
SAT	✓		10	2407	241	1	36191	35950	40707	40466	39005	38764	38393	.148	✓		B.S.Kjos BSK	9-26-02 0720
SAT	✓		10	2626	263	1	35625	35362	40639	40376	37730	37467	37735	.145	✓		B.S.Kjos BSK	9-27-02 0845
SAT	✓		10	2478	248	1	36259	36011	34650	34402	36596	36348	35587	.137	✓		B.S.Kjos BSK	9-30-02 1015
SAT	✓		10	2540	254	1	36851	36597	40319	40065	36656	36402	34355	.132	✓		B.S.Kjos BSK	10-1-02 0725
SAT	✓		10	2932	293	1	34429	34136	39912	39619 ~~35657~~	35657 ~~353~~ BSK	35364	36373	.140	✓		B.S.Kjos BSK	10-2-02 0810
SAT	✓		10	2712	271	1	36193	35922	40227	39956	36703	36432	37437	.144	✓		Douglas R Kjos DRK	10-3-02 0725
SAT	✓		10	3066	307	1	35646	35339	38124	37817	34858	34551	35902	.138	✓		VCMiles VCM	10-04-02 0825
SAT	✓		10	1873	187	1	35112	34925	39115	38928	34461	34274	36042	.139	✓		B.S.Kjos BSK	10-8-02 0915
SAT	✓		10	2531	253	1	33245	32992	38288	38035	34824	34571	35199	.136	✓		VCMiles VCM	10-09-02 0835

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 34740.5 - 42509.5 (259,740) C-14

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	2-15-03	43-68B	092524	010003

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2593	259	1	33399 ~~1339~~	35140	38358	38099	33784	33525	35588	.137	✓		B.S.Kjos BSK	10-10-02 0740
SAT	✓		10	2763	276	1	33452	33176	38377	38101	34726	34450	35242	.136	✓		B.S.Kjos BSK	10-11-02 0735
SAT	✓		10	3079 ~~1395~~	305 ~~140~~	1	35705	35400	39679	39369	33658	33353	36041	.139	✓		B.S.Kjos BSK	10-16-02 1010
SAT	✓		10	2681	268	1	34960	34697	38344	37976	32388 ~~31365~~	32120 ~~32384~~	34929	.134	✓		B.S.Kjos BSK	10-17-02 0800
SAT	✓		10	2597	240	1	35613	35373	36814	36574	34920	34680	35522	.137			B.S.Kjos BSK	10-30-02 0955
10-31-02 VCM	✓		10	2618	262	1											~~VCMiles VCM~~	10-31-02
SAT	✓		10	2427	243	1	10 ~~1251~~ 33962	33719	37421	37178	33552	33309	34735	.134		✓	VCMiles VCM	10-31-02 0805
SAT	✓		10	2427	243	1	35477	35234	37129	36886	33871	33628	35249	.136	✓		VCMiles VCM	10-31-02 0810
SAT	✓		10	2784	278	1	34759	34481	36808	36530	37036	36758	35923	.138	✓		VCMiles VCM	11-01-02 0830
	✓		10	~~2447~~	~~244~~ 245	1			BSK	11-5-02							~~BSKjos BSK~~	~~11-5-02~~
~~SAT~~	✓		10	~~2530~~	~~253~~	1			VCM 11-11-02									
SAT	✓		10	1907	191	1	35344	35153	37717	37526	35181	34990	35890	.138	✓		VCMiles VCM	11-11-02 0900
SAT	✓		10	3205	321	1	36680	36359	41044	40723	38092	37771	38284	.147	✓		BSKjos BSK	11-12-02 0738

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 347805 - 42509.5 (259,740) C-14

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	2-15-03	43-68B	092524	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2853	285	1	36597	36312	40862	40577	36608	36323	37737	.145	✓		BSSjos BSK	11-15-02 1005
SAT	✓		10	2828	283	1	34248	33965	39381	39098	36639	36356	36473	.140	✓		KMiles KM	12-03-02 0900

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: [signature] Date: 10-07-02

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	119737
Instrument Serial No.	126197	02-15-03	3,201.2	3,913.6	.190	Certification Date	10-20-97
Detector Model No.	43-68A	Cal Due Date	Operating Conditions: ☑ Normal ☐ Abnormal ☐ Altitude N/A ft.			Nuclide	TH230
Detector Serial No.	092524	02-13-03	☑ Cable Length 25 ft. ☐ Temperature ____ °F			Activity in dpm	18720

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	11	1.1	3473	3471.9	3657	3655.9	3544	3542.9	3556.9	✓		.190	[illegible]	10-07-02 0820

REMARKS: Initial Response Test

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 3,201.2-3,913.6 (18,720) TH-230

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	126197	02-15-03	43-68A	092524	119737

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT		✓	10	9	.9	1	3589	3588	3740	3739	3616	3615	3647	.195	✓		VcMiles/RCM	10-07-02 1415

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: GTS Duratek - Instrument Services Facility		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 2350-1	Serial Number: 129401
Contact Name: Thomas Scott		Probe: N/A	Serial Number: N/A
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range (CPM)	Calibration Standard Value (CPM)	Instrument Response		Comments
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-245 Rev 0
400K	400,000	403,048	403,048	Pulser: 120935 Cal Due: 03/18/03
40K	40,000	40,322	40,322	D-814: 2525 Cal Due: 02/18/03
4K	4,000	4,044	4,044	Psychron: 7480 Cal Due: 05/17/03
400	400	407	407	EPPROM Version: 37122N21
HV Cal Values (M2350 HV Entry)	Desired HV (Voltmeter) (VDC)	As Found (VDC)	As Left (VDC)	
600	600	609	609	Temp: 22.2°C
1,200	1,200	1,204	1,204	Pressure: 744 mmHg
1,800	1,800	1,798	1,798	Humidity: 34 %
Parameter	Tolerance (±10%)	As Found	As Left	
Low End Threshold	4 ± (3.6 to 4.4) mVDC	4.10	4.10	Geotropism: SAT ACK/Scroll: SAT
Midpoint Threshold	20 ± (18 to 22) mVDC	19.5	19.5	BAT>4.5: SAT Volume: SAT
High End Threshold	40 ± (36 to 44) mVDC	38.0	38.0	Count: SAT Audio Divide: SAT
Window Width	4 ± (3.6 to 4.6) mVDC	4	4	Alarms: SAT Lamp: SAT
Display-to-mV ratio:	100 to 4 mV			Overload Test: SAT

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By:	Date: 12-31-02
Calibration Date: 12/30/02	Calibration Due: 06/30/03	

Duratek™

DETECTOR CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-68B
Contact Name: Thomas Scott		Serial Number: 119337
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: C^{14}	Serial Number: 019708	Activity (dpm) : 26,640	Certification Date: 11/20/96

Parameter	As Found	As Left	Precision Test	CPM (Source #1)	
Count 1	4,209	4,287	Count 1(Heel)	4,184	
Count 2	4,297	4,187	Count 2(Center)	4,234	
Count 3	4,086	4,171	Count 3(Toe)	3,915	
Average	4,197.3	4,215	Average	4,111	
Background (cpm)	352.1	344.1	Pass/Fail	PASS	
Net Counts	3,845.2	3,870.9		Tolerance ±10%	
Efficiency	14.4%	14.5%		Min: 3,700	Max: 4,522

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $22.1E^{-6}$	Calibration Constant (CC): 1.0

SCALER INFORMATION		DETECTOR INFORMATION			
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	129401	06/30/03	344.1	1800	4 mV

Detector Setup Report YES ✓ NO	Barcode Report YES ✓ NO	Voltage Plateau YES ✓ NO

COMMENTS

Detector has one layer mylar at .4mg/cm^2 **Calibrated with 25Ft. Cable** Caled in accordance with RP-INS-I-245.

10 minute background performed Efficiency determined w/43-68 source jig Dead Time set to manufacturer's suggested setting

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/30/02	Certification Due: 06/30/03	

BACKGROUND PLATEAU 43-68 #119337 25FT CABLE 12/30/02

900	1
950	0
1000	0
1050	0
1100	0
1150	0
1200	1
1250	5
1300	3
1350	4
1400	1
1450	3
1500	4
1550	7
1600	34
1650	82
1700	136
1750	266
1800	306
1850	319
1900	402

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	0
1100	8
1150	879
1200	2354
1250	3327
1300	3828
1350	3894
1400	3931
1450	4163
1500	4125

BETA PLATEAU C14 #019708 26,640DPM

1400	39
1450	395
1500	1178
1550	2132
1600	2891
1650	3452
1700	3770
1750	3791
1800	3892
1850	4292
1900	4911
1950	5958

Thomas F. Hart

12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D1 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 14:08:08.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: TK

Comments:

Model 2350 Serial # =	129401.
User I.D. =	DRK2986.
High Voltage =	1800 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	2.210000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-68B.
Detector Serial # =	119337.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.4 volts.

DET1 Generated: 12/31/2002 14:00:46.

Model 2350 Serial #129401

H1800$M
Set High Voltage: 1800

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL2.210000E-05$D
Set Dead Time: 2.210000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-68B$0
Set Detector Model: 43-68B

N119337$0
Set Detector Serial #: 119337

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP1$7
SAVE PARAMETERS AS D1

Duratek™

DETECTOR CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-68A
Contact Name: Thomas Scott		Serial Number: 119337
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

1) Source Nuclide: Th^{230}	Serial Number: 119738	Activity (dpm) : 18,600	Certification Date: 10/20/97

Parameter	As Found	As Left	Precision Test	CPM (Source #1)	
Count 1	4,085	4,096	Count 1(Heel)	3,800	
Count 2	4,135	4,123	Count 2(Center)	4,109	
Count 3	4,199	4,172	Count 3(Toe)	3,866	
Average	4,139.7	4,130.3	Average	3,925	
Background (cpm)	1.7	1.2	Pass/Fail	PASS	
Net Counts	4,138	4,129.1		Tolerance ±10%	
Efficiency	22.2%	22.2%		Min: 3,532.5	Max: 4,317.5

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $19.4E^{-6}$	Calibration Constant (CC): 1.0

SCALER INFORMATION		DETECTOR INFORMATION			
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	129401	06/30/03	1.2	1400	4 mV
Detector Setup Report	YES √ NO	Barcode Report	YES √ NO	Voltage Plateau	YES √ NO

COMMENTS

Detector has one layer mylar window **Calibrated with 25Ft. Cable** Calibrated in accordance with RP-INS-I-245.

10 minute background Efficiency determined w/43-68 source jig Dead Time set to manufacturer's suggested setting

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/30/02		Certification Due: 06/30/03

BACKGROUND PLATEAU 43-68 #119337 25FT CABLE 12/30/02

900	1
950	0
1000	0
1050	0
1100	0
1150	0
1200	1
1250	5
1300	3
1350	4
1400	1
1450	3
1500	4
1550	7
1600	34
1650	82
1700	136
1750	266
1800	306
1850	319
1900	402

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	0
1100	8
1150	879
1200	2354
1250	3327
1300	3828
1350	3894
1400	3931
1450	4163
1500	4125

BETA PLATEAU C14 #019708 26,640DPM

1400	39
1450	395
1500	1178
1550	2132
1600	2891
1650	3452
1700	3770
1750	3791
1800	3892
1850	4292
1900	4911
1950	5958

Thomas F. Hart

12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D2 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 14:08:27.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: th

Comments:

Model 2350 Serial # =	129401.
User I.D. =	DRK2986.
High Voltage =	1400 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.940000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-68A.
Detector Serial # =	119337.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.4 volts.

DET2

Generated: 12/31/2002 14:05:30.

Model 2350 Serial #129401

H1400$I
Set High Voltage: 1400

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL1.940000E-05$M
Set Dead Time: 1.940000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-68A$%
Set Detector Model: 43-68A

N119337$0
Set Detector Serial #: 119337

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP2$8
SAVE PARAMETERS AS D2

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 44-2
Contact Name: Thomas Scott		Serial Number: 088920
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION			
1) Source Nuclide: Cs^{137}	Serial Number: 019463	Activity: 5μCi	Certification Date: N/A (Used for Plateau Only)
2) Source Nuclide: Cs^{137}	Serial Number: 049711	Activity: Variable	Certification Date: 03/27/02

Parameter		Precision Test	mR/Hr (Source #2)	
Count 1	N/A	Count 1	2.01	
Count 2	N/A	Count 2	1.98	
Count 3	N/A	Count 3	1.96	
Average	N/A	Average	1.98	
Background	N/A	Pass/Fail	Pass	
Net Counts	N/A		Tolerance ±10%	
Efficiency	N/A		Min: 1.782	Max: 2.188

Low Sample Activity: Source #2: 20,687	High Sample Activity: Source #2: 78,734	Dead Time (DT): $4.922908E^{-5}$	Calibration Constant (CC): $1.695410E^{+10}$

ATTACHMENTS			DETECTOR DATA: DOSE RATE PROBES (mR/Hr)			
Detector Setup Report	YES ✓	NO	Desired Exposure	Tolerance ±10%	As Found	As Left
Barcode Report	YES ✓	NO	0.400	0.360-0.440	.405	.420
Voltage Plateau:	YES ✓	NO	1	0.90-1.10	.97	.95
High Voltage: 850V			2	1.8-2.2	2.14	1.98

COMMENTS

Calibrated with 5ft. Cable

Caled in accordance with RP-INS-I-245.

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By: Thomas R. Scott	Date: 1-22-03
Certification Date: 12/30/02		Certification Due: 06/30/03

BACKGROUND PLATEAU 44-2 #088920 12/30/02 5FT CABLE

500	7
550	29
600	158
650	412
700	681
750	692
800	706
850	685
900	720
950	688
1000	647

SOURCE PLATEAU Cs137 #019461 5uCi

500	21
550	1851
600	3773
650	5378
700	5836
750	6619
800	6618
850	6521
900	6587
950	6474
1000	6627

Thomas F. Scott

12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D3 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 14:08:45.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: JR

Comments:

Model 2350 Serial # =	129401.
User I.D. =	DRK2986.
High Voltage =	850 volts.
Threshold =	250.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	12 seconds.
Readout Units =	R.
Readout Time Base =	hr.
Readout Range Multiplier =	auto.
Detector Dead Time =	4.922908E-05.
Detector Calibration Constant =	1.695410E+10.
Detector Model =	44-2.
Detector Serial # =	088920.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.4 volts.

DET3 Generated: 12/31/2002 14:06:02.

Model 2350 Serial #129401

H850$Q
Set High Voltage: 850

T250$W
Set Threshold: 250

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F12$E
Set Scaler Count Time: 12

SU4$F
Set Readout Units = R

SB2$.
Set Readout Time Base = hr

SM0$3
Set Readout Range Multiplier = auto

SL4.922908E-05$%
Set Dead Time: 4.922908E-05

SC1.695410E+10$Q
Set Calibration Constant: 1.695410E+10

M44-2$L
Set Detector Model: 44-2

N088920$3
Set Detector Serial #: 088920

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP3$9
SAVE PARAMETERS AS D3

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-37B
Contact Name: Thomas F. Scott		Serial Number: 093717
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: C^{14}	Serial Number: 019708	Activity: 26,640dpm	Certification Date: 11/20/96

Parameter	As Found	As Left	Precision Test	CPM	
Count 1	4290	4407	Count 1 (Heel)	4471	
Count 2	4301	4455	Count 2 (Center)	4248	
Count 3	4368	4266	Count 3 (Toe)	4321	
Count 4	4326	4183	Average	4346.7	
Count 5	4403	4323	Pass/Fail	PASS	
Count 6	4372	4343	High Voltage	1850V	
Average	4343.3	4329			
Background (CPM)	1302	1209.7			
Net Counts	3041.3	3119.3		Tolerance ±10%	
Efficiency	11.4%	11.7%		Min: 3912.1	Max: 4781.3

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $22.4E^{-06}$	Calibration Constant (CC): 1.0

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	129401	06/30/03	1209.7	1850	4 mV
Detector Setup Report YES √ NO			Barcode Report YES √ NO		Voltage Plateau YES √ NO

COMMENTS

Special Remarks: 1 layer Mylar (0.4mg/cm$^{2)}$
10 minute backround performed

Caled in accordance with RP-INS-I-245
Efficiency performed on contact with 5Ft. cable

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/31/02		Certification Due: 06/30/03

[redacted]

BACKGROUND PLATEAU 43-37 #093717 5FT CABLE 12/30/02

900	0
950	0
1000	0
1050	0
1100	2
1150	1
1200	4
1250	2
1300	3
1350	4
1400	3
1450	5
1500	11
1550	22
1600	94
1650	206
1700	347
1750	552
1800	945
1850	1203
1900	1457
1950	27406

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	0
1100	1
1150	892
1200	2793
1250	3377
1300	3648
1350	3760
1400	3724
1450	3855
1500	3975

BETA PLATEAU C14 #019708 26,640DPM

1400	3832
1450	3860
1500	3850
1550	3863
1600	4152
1650	4670
1700	4990
1750	5319
1800	5798
1850	6087
1900	6412
1950	8648

James A. Scott
12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D4 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 14:09:08.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: TR

Comments:

Model 2350 Serial # =	129401.
User I.D. =	DRK2986.
High Voltage =	1850 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	2.240000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-37C14.
Detector Serial # =	093717.
Ratemeter Alarm Setting =	.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.4 volts.

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D4 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 14:09:08.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: TR

Comments:

Model 2350 Serial # =	129401.
User I.D. =	DRK2986.
High Voltage =	1850 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	40.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	2.240000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-37C14.
Detector Serial # =	093717.
Ratemeter Alarm Setting =	.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.4 volts.

DET4

Generated: 12/31/2002 14:06:52.

Model 2350 Serial #129401

H1850$R
Set High Voltage: 1850

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL2.240000E-05$G
Set Dead Time: 2.240000E-05

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

M43-37C14$2
Set Detector Model: 43-37C14

N093717$3
Set Detector Serial #: 093717

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP4$A
SAVE PARAMETERS AS D4

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		DETECTOR INFORMATION
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum
Address: 628 Gallaher Rd Kingston, TN 37763		Detector Model: 43-37A
Contact Name: Thomas F. Scott		Serial Number: 093717
Customer Purchase Order Number: N/A	Work Order Number: 2002-01434	Evaluation Method: Source

DETECTOR EFFICIENCY/RESPONSE/PRECISION INFORMATION

Source Nuclide: Th^{230}	Serial Number: 119738	Activity: 18,600 dpm	Certification Date: 10/20/97

Parameter	As Found	As Left	Precision Test	CPM	
Count 1	3657	3,951	Count 1 (Heel)	3672	
Count 2	3721	3,986	Count 2 (Center)	3753	
Count 3	3766	3,869	Count 3 (Toe)	3876	
Count 4	3812	3,947	Average	3767	
Count 5	3705	3,953	Pass/Fail	PASS	
Count 6	3783	3,938	High Voltage	1350V	
Average	3740.7	3940.7			
Background (CPM)	7.3	5.5			
Net Counts	3733.4	3935.2		Tolerance ±10%	
Efficiency	20.1%	21.2%		Min: 3,390.3	Max: 4,143.7

Low Sample Activity: Source #: N/A	High Sample Activity: Source #: N/A	Dead Time (DT): $19.3E-^{06}$	Calibration Constant (CC): 1.0

SCALER INFORMATION			DETECTOR INFORMATION		
Model	Serial Number	Due Date	Background (cpm)	Operating Voltage	Threshold
2350-1	129401	06/30/03	5.5	1350	4 mV

Detector Setup Report YES √ NO	Barcode Report YES √ NO	Voltage Plateau YES √ NO

COMMENTS

Special Remarks: 1 layer Mylar (0.4mg/cm$^{2)}$
10 minute backround performed

Caled in accordance with RP-INS-I-245
Efficiency performed on contact with 5Ft. cable

STATEMENT OF CERTIFICATION

We Certify that the detector listed above was evaluated for proper operation prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute f Standards and Technology. (We are not responsible for damage incurred during shipment or use of this detector).

Detector Certified By:	Reviewed By:	Date: 12-31-02
Certification Date: 12/31/02		Certification Due: 06/30/03

[redacted]

BACKGROUND PLATEAU 43-37 #093717 5FT CABLE 12/30/02

900	0
950	0
1000	0
1050	0
1100	2
1150	1
1200	4
1250	2
1300	3
1350	4
1400	3
1450	5
1500	11
1550	22
1600	94
1650	206
1700	347
1750	552
1800	945
1850	1203
1900	1457
1950	27406

ALPHA PLATEAU TH-230 #119738 18,600DPM

900	0
950	0
1000	0
1050	0
1100	1
1150	892
1200	2793
1250	3377
1300	3648
1350	3760
1400	3724
1450	3855
1500	3975

BETA PLATEAU C14 #019708 26,640DPM

1400	3832
1450	3860
1500	3850
1550	3863
1600	4152
1650	4670
1700	4990
1750	5319
1800	5798
1850	6087
1900	6412
1950	8648

Thomas F. Seal
12-31-02

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D5 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 14:09:31.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: _____

Comments:

Model 2350 Serial # =	129401.
User I.D. =	DRK2986.
High Voltage =	1350 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	0.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.930000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-37A.
Detector Serial # =	093717.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.4 volt

DET5 Generated: 12/31/2002 14:07:23.

Model 2350 Serial #129401

H1350$M
Set High Voltage: 1350

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL1.95$B
Set Dead Time: 1.95

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

*M43-37A$ *
Set Detector Model: 43-37A

N093717$3
Set Detector Serial #: 093717

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP5$B
SAVE PARAMETERS AS D5

DETECTOR SETUP CHECK LIST REPORT

The following list is stored as detector setup D5 in the Model 2350.
Today's date is 12/31/2002.
The current time of day is: 14:09:31.

I have verified the list below
has NO discrepancies with the DETECTOR SETTINGS TABLE: K

Comments:

Model 2350 Serial # =	129401.
User I.D. =	DRK2986.
High Voltage =	1350 volts.
Threshold =	100.
Window =	1000,Off.
Overload Current =	0.0 micro amperes.
Scaler Count Time =	60 seconds.
Readout Units =	counts.
Readout Time Base =	min.
Readout Range Multiplier =	auto.
Detector Dead Time =	1.930000E-05.
Detector Calibration Constant =	1.000000E+00.
Detector Model =	43-37A.
Detector Serial # =	093717.
Ratemeter Alarm Setting =	1.000000E+09.
Scaler Alarm Setting =	1000000.
Integrated Dose Alarm Setting =	1.000000E+09.
Low Count Alarm Setting =	X.
Operating Battery Voltage =	5.4 volt

DET5

Generated: 12/31/2002 14:07:23.

Model 2350 Serial #129401

H1350$M
Set High Voltage: 1350

T100$Q
Set Threshold: 100

W1000$WOFF$P
Set Window: 1000,OFF

O400$OOFF$C
Set Overload: 400,OFF

F60$H
Set Scaler Count Time: 60

SU7$I
Set Readout Units = counts

SB1$-
Set Readout Time Base = min

SM0$3
Set Readout Range Multiplier = auto

SL1.95$B
Set Dead Time: 1.95

SC1.000000E+00$0
Set Calibration Constant: 1.000000E+00

*M43-37A$ *
Set Detector Model: 43-37A

N093717$3
Set Detector Serial #: 093717

J1.000000E+09$V
Set Ratemeter Alarm: 1.000000E+09

K1000000$H
Set Scaler Alarm: 1000000

P1.000000E+09$.
Set Dose Alarm: 1.000000E+09

SP5$B
SAVE PARAMETERS AS D5

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: Date:

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	119655/FA184
Instrument Serial No.	124401	2-13-03	942.6	1152	.250	Certification Date	8-9-96
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ☐ Normal ☐ Abnormal ☐ Altitude_____ft. ☐ Cable Length _____ft. ☐ Temperature _____°F			Nuclide	Tc-99
Detector Serial No.	PR119337	2-13-03				Activity in dpm	4194

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2986	299	1361	1062	1298	999	1380	1081	1047	✓		.250	Douglas R Ryus / NRK	9-12-02 1300

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 942.6 - 1152 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	2-13-03	43-68B	PR 119337	#119655/FD184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2782	278	1	1302	1024	1320	1042	1201	923	996	.238	✓		Douglas R Kios / NEK	9-13-02 0715
SAT	✓		10	2920	292	1	1258	966	1294	1002	1284	992	987	.235	✓		Douglas R Kios / NEK	9-16-02 0730
SAT	✓		10	2848	285	1	1229	944	1310	1025	1259	974	981	.234	✓		Douglas R Kios / NEK	9-17-02 0720
SAT	✓		10	2919	292	1	1277	985	1299	1007	1298	1006	999	.238	✓		Douglas R Kios / NEK	9-18-02 0700
SAT	✓		10	3013	301	1	1283	982	1361	1060	1296	995	1012	.241	✓		Douglas R Kios / NEK	9-19-02 0705
SAT	✓		10	2852	285	1	1257	972	1283	998	1227	942	971	.231	✓		Douglas R Kios / NEK	9-20-02 0815
SAT	✓		10	2797	280	1	1338	1058	1392	1112	1347	1067	1079	.257	✓		Douglas R Kios / NEK	9-23-02 1105
SAT	✓		10	3246	325	1	1355	1030	1286	961	1302	977	989	.236	✓		Douglas R Kios / NEK	9-24-02 0700
SAT	✓		10	2860	286	1	1274	988	1367	1081	1161	875	981	.234	✓		Douglas R Kios / NEK	9-25-02 0755
SAT	✓		10	2891	289	1	1260	971	1323	1034	1249	960	988	.236	✓		Douglas R Kios / NEK	9-26-02 0745
SAT	✓		10	2765	277	1	1322	1045	1302	1025	1235	958	1009	.240	✓		Douglas R Kios / NEK	9-27-02 0710
SAT	✓		10	2617	262	1	1221	959	1279	1017	1198	936	971	.231	✓		Douglas R Kios / NEK	9-30-02 1025
SAT	✓		10	2736	274	1	1382	1108	1407	1133	1445	1171	1137	.271	✓		Douglas R Kios / NEK	10-1-02 0740

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 942.6-1152 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	2-13-03	43-68B	PR119337	119655/FD184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		~~10 3283~~ 10-02-02	3283	328	1	1240	912	1361	1033	1359	1031	992	.237	✓		VCMiles/VCM	10-02-02 0715
SAT	✓		10	3508	351	1	1429	1078	1413	1062	1402	1051	1064	.254	✓		Douglas R Kjos / DRK	10-3-02 0710
SAT	✓		10	2962	296	1	1224	928	~~943~~ 1239	943	1308	1012	961	.229	✓		Douglas R Kjos / DRK	10-7-02 1045
SAT	DRK ✗	✓	10	2981	298	1	1285	987	1323	1025	1228	930	981	.234	✓		Douglas R Kjos / DRK	10-7-02 1350
SAT	✓		10	2330	233	1	1169	936	1260	1027	1219	986	983	.234	✓		VCMiles/VCM	10-10-02 1105
SAT	✓		10	2336	234	1	1196	962	1190	956	1281	1047	988	.236	✓		Douglas R Kjos / DRK	10-15-02 0720
SAT	✓		10	2627	263	1	1144	881	1238	965	1241	978	941	.224		✓	B.S. Kjos / BSK	10-22-02 0820
SAT	✓		10	2553	255	1	1142	887	1238	983	1228	973	947	.226	✓		B.S. Kjos / BSK	10-22-02 0840
SAT	✓		10	2567	257	1	1247	990	1313	1056	1249	992	1013	.241	✓		B.S. Kjos / BSK	10-23-02 0800
SAT	✓		10	2729	273	1	1247	974	1187	914	1194	921	936	.223		✓	Douglas R Kjos / DRK	10-29-02 ~~1045~~ 0945 10-29-02
SAT	✓		10	2334	233	1	1235	1002	1267	1034	1179	946	994	.237	✓		VCMiles/VCM	10-29-02 1005
SAT	✓		10	2501	250	1	1240	990	1241	991	1245	995	992	.237	✓		Douglas R Kjos / DRK	10-30-02 0845
SAT	✓		10	2732	273	1	1226	953	1284	1011	1233	960	975	.232 ~~.225~~ DRK	✓		Douglas R Kjos / DRK	10-31-02 0735

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 94206 - 1152 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	2-13-03	43-68B	PR119337	119655/FD184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2577	258	1	1313	1055	1325	1067	1355	1097	1073	.256	✓		Douglas R Kyes / DRK	11-1-02 0800
SAT	✓		10	2443	244	1	1203	959	1240	996	1210	966	974	.232	✓		Douglas R Kyes / DRK	11-5-02 0710
SAT	✓		10	2715	272	1	1237	965	1242	970	1268	996	977	.233	✓		Douglas R Kyes / DRK	11-11-02 0730
SAT	✓		10	2618	262	1	1185	923	1271	1009	1214	952	961	.229	✓		Douglas R Kyes / DRK	11-12-02 0740
SAT	✓		10	2850	285	1	1251	966	1311	1026	1351	1066	1019	.243	✓		VC Miles / VCM	11-15-02 1010
SAT	✓		10	2988	299	1	1242	943	1251	958	1271	972	958	.228	✓		BS Kyes / BSK	11-25-02 0830
SAT	✓		10	3152	315	1	1293	978	1299	984	1302	987	983	.234	✓		BS Kyes / BSK	11-26-02 0733
SAT	✓		10	2714	271	1	1240	969	1333	1062	1284	1013	1015	.242	✓		NR Kyes / NRK	12-2-02 1125
SAT	✓		10	2659	266	1	1234	968	1238	972	1218	952	964	.230	✓		VC Miles / VCM	12-03-02 0755
SAT	✓		10	2224	222	1	1186	964	1193	971	1176	954	963	.230	✓		Douglas R Kyes / DRK	12-13-02 0830

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: Date:

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	D10002
Instrument Serial No.	129401	2-13-03	32726.4	39998.9		Certification Date	12-14-99
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ☐ Normal ☐ Abnormal ☐ Altitude ____ ft. ☐ Cable Length ____ ft. ☐ Temperature ____ °F			Nuclide	C-14
Detector Serial No.	PR119337	2-13-03				Activity in dpm	259,740

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2986	299	36089	35790	37005	36706	36891	36592	36363	✓		.140	Douglas R Kyes / DRK	9-12-02 1310

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 32726.4-39998.9 259740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	2-13-03	43-68B	PR 119337	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2782	278	1	34768	34490	36654	36376	34909	34631	35166	.135	✓		Douglas R Kios / DRK	9-13-02 0720
SAT	✓		10	2920	292	1	34385	34093	36743	36451	35031	34739	35094	.135	✓		Douglas R Kios / DRK	9-16-02 0735
SAT	✓		10	2848	285	1	35485	35200	36196	35911	35134	34849	35320	.136	✓		Douglas R Kios / DRK	9-17-02 0730
SAT	✓		10	2919	292	1	33290	32998	36536	36244	34567	34275	34506	.133	✓		Douglas R Kios / DRK	9-18-02 0715
SAT	✓		10	3013	301	1	35749	35448	36805	36504	35407	35106	35686	.137	✓		Douglas R Kios / DRK	9-19-02 0710
SAT	✓		10	2852	285	1	35166	34881	36649	36364	35478	35193	35479	.137	✓		Douglas R Kios / DRK	9-20-02 0820
SAT	✓		10	2797	280	1	34576	34296	36616	36336	35295	35015	35216	.136	✓		Douglas R Kios / DRK	9-23-02 1110
SAT	✓		10	3246	325	1	32688	32363	36086	35761	35203	34878	34334	.132	✓		Douglas R Kios / DRK	9-24-02 0705
SAT	✓		10	2860	286	1	34214	33928	36458	36172	35308	35022	35041	.135	✓		Douglas R Kios / DRK	9-25-02 0800
SAT	✓		10	2891	289	1	35447	35158	36313	36024	35618	35329	35504	.137	✓		Douglas R Kios / DRK	9-26-02 0755
SAT	✓		10	2765	277	1	33360	33083	35905	35628	33475	33198	33970	.131	✓		Douglas R Kios / DRK	9-27-02 0720
SAT	✓		10	2617	262	1	33302	33040	36207	35945	34262	34000	34328	.132	✓		Douglas R Kios / DRK	9-30-02 1030
SAT	✓		10	2736	274	1	34652	34378	35957	35683	35439	35165	35075	.135	✓		Douglas R Kios / DRK	10-1-02 0750

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 32726.4 - 34998.9 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	2-13-03	43-68B	AR114337	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	3283	328	1	34998	34670	36471	36143	35434	35106	35306	.136	✓		VCMiles/VCM	10-02-02 0720
SAT	✓		10	3508	351	1	35175	34824	36960	36609	35760	35409	35614	.137	✓		RKyos / RKK	10-3-02 0720
SAT	✓		10	2962	296	1	32935	32639	35648	35352	34323	34027	34006	.131	✓		DouglasRKyos / RKK	10-7-02 1055
SAT		✓	10	2981	298	1	33544	33246	36351	36053	34684	34386	34562	.133	✓		DouglasRKyos / RKK	10-7-02 1355
SAT	✓		10	2330	233	1	33741	33508	35167	34934	34049	33816	34086	.131	✓		VCMiles/VCM	10-10-02 1100
SAT	✓		10	2336	234	1	34124	33890	36432	36198	34082	33848	34645	.133	✓		DouglasRKyos / RKK	10-15-02 0730
SAT	✓		10	~~2553~~ ~~2627~~	~~255~~ ~~263~~ RSK	1	32909	32654	35696	35441	33448	33193	33763	.130	✓		B.S.Kyos RSK	10-22-02 0850
SAT	✓		10	2567	257	1	33258	33001	35969	35712	32846	32589	33767	.130	✓		B.S.Kyos RSK	10-23-02 0812
0-29-02 VCM ~~SAT~~	~~✓~~		~~10~~	~~2729~~	~~273~~	~~1~~											~~DouglasRKyos / RKK~~	10-29-02
SAT	✓		10	2334	233	1	33599	33366	35229	34996	33451	33218	33860	.130			VCMiles/VCM	10-29-02 1010
SAT	✓		10	2501	250	1	33418	33168	35164	34914	33735	33485	33856	.130	✓		DouglasRKyos / RKK	10-30-02 0840
SAT	✓		10	2732	273	1	34279	34006	35822	35549	34233	33960	34505	.133	✓		DouglasRKyos / RKK	10-31-02 0725
SAT	✓		10	2577	258	1	34331	34073	36623	36365	34817	34559	34999	.135	✓		DouglasRKyos / RKK	11-1-02 0750

REMARKS: * - New Background taken

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 32726.4 - 39998.9 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	124401	2-13-03	43-68B	PR119237	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
✓	✓		10 ~~100 NR~~	2443	244	1	33663	33419	34970	34726	33625	33381	33842	.130	✓		Douglas R Kyes / DRK	11-5-02 0705
✓	✓		10	2715	272	1	35332	35060	36312	36040	34678	34406	35169	.135	✓		Douglas R Kyes / DRK	11-11-02 0825
✓	✓		10	2618	262	1	33790	33528	36441	36179	33769	33507	34405	.132	✓		Douglas R Kyes / DRK	11-12-02 0720
✓	✓		10	2850	285	1	34544	34259	35999	35714	34242	33957	34643	.133	✓		VCMiles / VCM	11-15-02 1005
✓	✓		10	2988	299	1	36010	35711	35734	35435	33871	33572	34906	.134	✓		BSKjos / BSK	11-25-02 0843
✓	✓		10	3152	315	1	34239	33924	35570	35275	33736	33421	34207	.132	✓		BSKjos / BSK	11-26-02 0727
✓	✓		10	2714	271	1	34069	33798	35976	35705	33991	33720	34408	.132	✓		Douglas R Kyes / DRK	12-2-02 1130
✓	✓		10	2659	266	1	34037	33771	35396	35130	34124	33858	34253	.132	✓		VCMiles / VCM	12-03-02 0745
✓	✓		10	2224	222	1	33768	33546	35408	35186	33584	33362	34031	.131	✓		Douglas R Kyes / DRK	12-13-02 0835

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: RK Date: 1-6-03

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	FD184
Instrument Serial No.	129401	6-30-03	881.1	1076.9	.233	Certification Date	8-9-96
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ■ Normal □ Abnormal □ Altitude ____ ft. ■ Cable Length 25 ft. □ Temperature ____ °F			Nuclide	Tc-99
Detector Serial No.	PR119337	6-30-03				Activity in dpm	4194 dpm

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2608	261	1189	937	1302	1041	1221	960	979	✓		.233	Douglas R Kjos / DRK	1-6-03 1530

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 881.1 - 1076.9 4194 cpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	6-30-03	43-68B	PR119337	PD184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2440	244	1	1182	938	1282	1038	1219	975	984	.235	✓		Douglas R Kos/BSK	1-8-03 1100
SAT	✓		10	2709	271	1	1164	893	1195	924	1209	938	918	.219	✓		Betty S. Kos/BSK	1-13-03 1010
SAT	✓		10	2229	223	1	1159	936	1196	973	1145	922	944	.225	✓		Betty S. Kos/BSK	1-14-03 0730
SAT	✓		10	2484	248	1	1129	881	1237	989	1143	895	922	.220	✓		Betty S. Kos/BSK	1-14-03 1030
SAT	✓		10	2568	257	1	1160	903	1245	988	1180	923	938	.224	✓		Betty S. Kos/BSK	1-28-03 1000
SAT	✓		10	2486	249	1	1189	940	1275	1026	1188	939	968	.231	✓		Betty S. Kos/BSK	1-29-03 1030
SAT	✓		10	2250	225	1	1135	910	1175	950	1159	934	931	.222	✓		Betty S. Kos/BSK	1-31-03 1000
SAT	✓		10	2420	242	1	1141	899	1208	966	1190	948	938	.224	✓		Betty S. Kos/BSK	2-3-03 0830
SAT	✓		10	2121	212	1	1089	877	1170	958	1129	917	917	.219	✓		Betty S. Kos/BSK	2-10-03 0725
SAT	✓		10	2653	265	1	1217	952	1224	959	1248	983	965	.230	✓		Betty S. Kos/BSK	2-12-03 0725
SAT	✓		10	2240	224	1	1135	911	1205	981	1149	925	939	.223	✓		Betty S. Kos/BSK	2-13-03 1500
SAT	✓		10	2059	206	1	1203	999	1174	968	1169	963	976	.235	✓		Betty S. Kos/BSK	3-5-03 1115 BSK 3-5-03
←							N/A											→

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 881-1 / 1076.9 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	6-30-03	43-68B	119337	FD184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2679	268	1	1170	902	1257	989	1221	953	948	.226	✓		D. Schuman	3-18-03 1015
SAT		✓	10	2625	263	1	1158	895	1213	950	1228	965	936	.223	✓		D. Schuman	3-18-03 1400
SAT	✓		10	2578	258	1	1165	907	1247	989	1225	967	954	.228	✓		NRKjos / NRK	4-9-03 1600
SAT	✓		10	2603	260	1	1168	908	1239	979	1227	967	951	.227	✓		NRKjos / NRK	4-10-03 0945
SAT	✓		10	2726	273	1	1268	995	1254	981	1224	951	976	.233	✓		NRKjos / NRK	4-11-03 0855
SAT	✓		10	2536	254	1	1222	968	1240	986	1255	1001	985	.235	✓		NRKjos / NRK	4-14-03 0840
SAT	✓		10	2453	245	1	1119	874	1222	977	1289	1044	965	.230	✓		NRKjos / NRK	4-15-03 0840
SAT		✓	10	2498	250	1	1198	948	1254	1004	1245	995	982	.234	✓		NRKjos / NRK	4-15-03 1605
SAT	✓		10	2579	258	1	1195	937	1256	998	1188	930	955	.228	✓		NRKjos / NRK	4-16-03 0845
SAT		✓	10	2476	248	1	1220	972	1233	985	1241	993	983	.234	✓		NRKjos / NRK	4-16-03 1605
SAT	✓		10	2503	250	1	1227	977	1258	1008	1255	1005	997	.238	✓		NRKjos / NRK	4-17-03 0830
SAT	✓		10	3254	325	1	1271	946	1343	1018	1281	956	973	.232	✓		D. Schuman	4-21-03 0800
SAT	✓		10	2895	290	1	1256	966	1271	981	1233	943	963	.229	✓		D. Schuman	4-22-03 0730

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 881.1 – 1076.9 4194 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	6-30-03	43-68 B	119337	FD184

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2862	286	1	1309	1023	1324	1038	1247	961	1007	.240	✓		D. Schumacher	4-23-03 0730
SAT	✓		10	2994	299	1	1274	975	1249	950	1309	1010	978	.233	✓		D. Schumacher	4-24-03 0730
SAT	✓		10	3127	313	1	1315	1002	1310	997	1281	968	989	.235	✓		D. Schumacher	4-25-03 0715
SAT	✓		10	2980	298	1	1386	1088	1331	1033	1319	1021	1047	.250	✓		NRK / NRK	4-26-03 1045
SAT		✓	10	3122	312	1	1268	956	1339	1027	1276	964	982	.234	✓		NRK / NRK	4-26-03 1830
SAT	✓		10	2962	296	1	1280	984	1281	985	1273	977	982	.234	✓		NRK / NRK	4-28-03 ~~0930~~ 0930
SAT		✓	10	3256	326	1	1252	926	1314	988	1220	894	936	.223	✓		NRK / NRK	4-28-03 1545
SAT	✓		10	3012	301	1	1213	912	1394	1093	1315	1014	1006	.240	✓		NRK / NRK	4-29-03 0650
SAT		✓	10	2651	265	1	1260	995	1284	1019	1234	969	994	.237	✓		NRK / NRK	4-29-03 2040
SAT	✓		10	2454	245	1	1252	1007	1299	1054	1248	1063	1021	.244	✓		NRK / NRK	4-30-03 1250
SAT		✓	10	2586	259	1	1182	923	1231	972	1202	943	946	.226	✓		NRK / NRK	4-30-03 1425

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: Doug R Kiss Date: 1-6-03

INSTRUMENT & DETECTOR INFORMATION			DETECTOR TOLERANCE VALUES		EFF	SOURCE INFORMATION	
Instrument Model No.	2350-1	Cal Due Date	Minus 10%	Plus 10%	Net EFF	SEG ID / Serial No.	010002
Instrument Serial No.	129401	6-30-03	30394.8	37149.2	.13	Certification Date	12-14-99
Detector Model No.	43-68B	Cal Due Date	Operating Conditions: ■ Normal □ Abnormal □ Altitude ____ ft.			Nuclide	C-14
Detector Serial No.	PR119337	6-30-03	■ Cable Length 25 ft. □ Temperature ____ °F			Activity in dpm	259,740

SECTION 1 Reviewed By: _____ Date: _____

SECTION 2 (To be completed by RP Technician) Prior to beginning, verify the Instrument SNs listed above. IF the information above is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Efficiency	Performed by See Note 1	
						Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM		Pass	Fail	EFF	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2608	261	33531	33270	35376	35115	33193	32932	33772	✓		.13	Douglas R Kiss / NRK	1-6-03 1540
	~~✓~~		~~10~~	~~2481~~	~~248~~												
SAT	✓		10	2679	268	31511	31243	34176	33908	31620	31352	32167	✓		.123	D. Schumacher	3/10/03 1020
SAT		✓	10	2625	263	30424	30161	34284	34021	32901	32638	32273	✓		.124	D. Schumacher	3/10/03 1040

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By: _____ Date: _____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 30394.8 - 37149.2 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	6-30-03	43-68-B	PR119337	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2440	244	1	32347	32103	36307	36063	32734	32490	33552	.129	✓		Douglas R Kjos / DRK	1-7-03 1055
SAT	✓		10	2709	271	1	30811	30540	35880	35609	32901	32630	32726	.127	✓		Betty S. Kjos / BSK	1-13-03 1020
SAT	✓		10	2229	223	1	31618	31395	35198	34975	31300	31077	32482	.125	✓		Betty S. Kjos / BSK	1-14-03 0740
SAT	✓		10	2484	248	1	31229	30981	34942	34694	31137	30889	32121	.124	✓		Betty S. Kjos / BSK	1-14-03 0850
SAT	✓		10	2568	257	1	30923	30666	35185	34928	32850	32593	32729	.126	✓		Betty S. Kjos / BSK	1-28-03 1030
SAT	✓		10	2486	249	1	30601	30352	35363	35114	32780	32531	32666	.126	✓		Betty S. Kjos / BSK	1-29-03 1045
SAT	✓		10	2250	225	1	30822	30597	35378	35153	33044	32819	32856	.126	✓		Betty S. Kjos / BSK	1-31-03 0820
SAT	✓		10	2420	242	1	31186	30944	35269	35027	32683	32441	32804	.126	✓		Betty S. Kjos / BSK	2-3-03 0825
SAT	✓		10	2121	212	1	30597	30385	35233	35021	32216	32004	32469	.125	✓		Betty S. Kjos / BSK	2-10-03 ~~BSK~~ 080730
SAT	✓		10	2653	265	1	31977	31712	36456	36191	33920	33655	32853	.130	✓		Betty S. Kjos / BSK	2-12-03 0730
SAT	✓		10	2540	254	1	31560	31306	35320	35066	32680	32426	32933	.127	✓		Betty S. Kjos / BSK	2-13-03 1550
SAT	✓		10	2059	206	1	34426	34220	38706	38500	36170	35964	36228	.139	✓		Betty S. Kjos / BSK	3-5-03 1100 BSK 3-5-03

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 30394.8 - 37149.2 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	6-30-03	43-68	PR119337	010002

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	2578	258	1	31579	31321	35417	35159	32410	32152	32877	.127	✓		NRKjos / NRK	4-9-03 1605
SAT	✓		10	2603	260	1	31543	31283	35392	35132	32379	32119	32845	.126	✓		NRKjos / NRK	4-10-03 0950
SAT	✓		10	2726	273	1	33849	33576	37005	36732	33745	33472	34593	.133	✓		NRKjos / NRK	4-11-03 0850
SAT	✓		10	2536	254	1	32927	32673	35451	35197	33257	33003	33624	.129	✓		NRKjos / NRK	4-14-03 0805
SAT	✓		10	2453	245	1	33342	33097	35781	35536	33167	32922	33852	.130	✓		NRKjos / NRK	4-15-03 0845
SAT		✓	10	2498	250	1	33342	33092	36454	35904	31632	31382	33459	.129	✓		NRKjos / NRK	4-15-03 1610
SAT	✓		10	2579	258	1	33119	32861	36265	36007	33523	33265	34044	.131	✓		NRKjos / NRK	4-16-03 0850
SAT		✓	10	2476	248	1	31244	30996	36200	35952	33447	33199	33382	.129	✓		NRKjos / NRK	4-16-03 1610
SAT	✓		10	2503	250	1	33174	32924	36336	36086	32700	32450	33820	.130	✓		NRKjos / NRK	4-17-03 0835
SAT	✓		10	3254	325	1	34914	34589	35859	35534	33688	33363	34495	.132	✓		D. Schumaker	4-21-03 0800
SAT	✓		10	2895	290	1	32718	32428	36825	36608	34488	34198	34411	.132	✓		D. Schumaker	4-22-03 0730
SAT	✓		10	2862	286	1	32646	32360	36551	36265	33946	33660	34095	.131	✓		D. Schumaker	4-23-03 0730
SAT	✓		10	2994	299	1	33544	33245	36683	36384	34466	34167	34598	.133	✓		D. Schumaker	4-24-03 0730

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

COUNT RATE DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician) 30394.8 - 37149.2 259,740 dpm

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	6-30-03	43-68 C	119337	010602

Alarm Test	Test Type		Background Data			Source Count Data									Tolerance		Performed by See Note 1	
						Count Time (min)	Count 1 (SCR1)		Count 2 (SCR2)		Count 3 (SCR3)		Mean Net Source Count Rate MNSCR	Eff				
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM			Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		10	3127	313	1	33343	33030	36204	35891	34784	34471	34464	.132	✓		D. Schumacher	4-25-03 0715
SAT	✓		10	2980	298	1	34049	33751	37162	36864	35181	34883	35166	.135	✓		NRK / NRK	4-26-03 1050
SAT		✓	10	3122	312	1	33499	33187	37359	37047	33817	33505	34580	.133	✓		NRK / NRK	4-26-03 1835
SAT	✓		10	2962	296	1	32762	32466	36400	36104	32907	32611	33727	.130	✓		NRK / NRK	4-28-03 0925
SAT		✓	10	3256	326	1	33035	32709	37158	36832	34539	34213	34585	.133	✓		NRK / NRK	4-28-03 1550
SAT	✓		10	3012	301	1	34115	33814	36847	36546	34722	34421	34927	.135	✓		NRK / NRK	4-29-03 0655
SAT		✓	10	2651	265	1	34059	33794	37364	37099	35231	34966	35286	.136	✓		NRK / NRK	4-29-03 2045
SAT	✓		10	2454	245	1	34775	34530	36375 935	36690	33946	33701	34974	.135	✓		NRK / NRK	4-30-03 1255
SAT		✓	10	2586	259	1	32008	31749	36813	36554	33314	33055	33786	.130	✓		NRK / NRK	4-30-03 1430

REMARKS:

NOTE: 1. By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

GAMMA DETECTOR RESPONSE TEST FORM

SECTION 1 (To be completed at Initial Receipt Response Test) Technician Signature: RB Date: 1-7-03

INSTRUMENT & DETECTOR INFORMATION			ACCEPTABLE INSTRUMENT RESPONSE RANGES			SOURCE INFORMATION	
			Geometry	Minus 20 %Net Counts	Plus 20 %Net Counts	SEG I/D No.	019453
Instrument Model Number	2350-1	Cal Due Date	Position 1 @ Contact	381552	572328	Certificate Date	1-1-92
Instrument Serial Number	129401	06-30-03	Position 2 @ 6 Inches	7528.8	11293.2	Nuclide	Cs-137
Detector Model Number	44-2	Cal Due Date	Position 3 @ 18 Inches	1190.4	1785.6	Activity in μCi	
Detector Serial Number	PR088920	06-30-03	Operating Conditions: ☑ Normal ☐ Abnormal: ☐ Altitude____ft. ☐ Cable Length____ft. ☐ Temperature____°F				

SECTION 1 Reviewed By:_____ Date:_____

SECTION 2 (To be completed by RP Technician). Prior to beginning, verify the Instrument SNs listed above.

IF the above information is incorrect, DO NOT CONTINUE.

Alarm Test	Test Type		Count Time	Gross BKG Counts	BKG CPM	ACTUAL INSTRUMENT RESPONSE: Position 1 @ Contact		Position 2 @ 6 Inches		Position 3 @ 18 Inches		Pass	Fail	Performed by (See Note 1)	
Sat/ Unsat	Pre	Post	(min)			Gross Counts	Net CPM	Gross Counts	Net CPM	Gross Counts	Net CPM			Technician Name Printed & Initialed	Date/ Time
SAT	✓		5	6763	1353	478293	476940	10764	9411	2841	1488	✓		RB/RB	1-7-03 1400

Remarks:

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date:_____

GAMMA DETECTOR RESPONSE TEST CONTINUATION FORM

SECTION 2 (To be completed by RP Technician).

Instrument Model	Instrument Serial #	Cal Due Date	Detector Model #	Detector Serial #	Source Serial #
2350-1	129401	6-30-03	44-2	PRD88720	019453

Alarm Test	Test Type		Background Data			Source Count Data							Tolerance		Performed by See Note 1	
						Count Time (min)	Position 1 @ contact		Position 2 @ 6 inches		Position 3 @ 18 inches					
Sat/ Unsat	Pre	Post	Count Time (min)	Gross BKG Counts	BKG CPM		Gross Cnts	Net CPM	Gross Cnts	Net CPM	Gross Cnts	Net CPM	Pass	Fail	Technician (Name Printed & Initialed)	Date/ Time
SAT	✓		5	6792	1358	1	473674	472316	10923	9615	2854	1496	✓		Douglas R Kjos / DRK	1-7-03 1555
SAT	✓		5	6681	1336	1	419862	418526	10080	8744	2883	1547	✓		VCMiles/VCM	1-9-03 1010
SAT		✓	5	6677	1335	1	464800	463465	10799	9464	2653	1318	✓		VCMiles/VCM	1-9-03 1655
SAT	✓		5	7010	1402	1	516604	515202	10317	8915	2922	1520	✓		VCMiles/VCM	1-10-03 0815
SAT		✓	5	6683	1337	1	494718	493381	10322	8985	2746	1409	✓		VCMiles/VCM	1-10-03 1030
* SAT	✓		5	7786	1557	1	475012	473456	9898	8341	2674	1117		✓	BSKjos/BSK	3-5-03 1250
SAT	✓		5	~~6757~~ 7097	1419	1	510592	509173	10104	8685	2649	1230	✓		D Schumaker	3/4/03 0830
SAT		✓	5	7262	1452	1	480957	479505	10062	8610	~~2617~~ 2784	~~1165~~ 1332	✓		D. Schumaker	3/4/03 1300
SAT	✓		5	6539	1307	1	479322	478015	10044	8737	2606	1299	✓		D. Schumaker	3-[illegible]-03 0950
SAT		✓	5	6763	1353	1	478361	477008	9905	8552	2653	1300	✓		BSKjos BSK	3-10-03 1625
SAT	✓		5	7177	1435	1	474512	472877	10222	8787	~~2595~~ 2852	~~1160~~ 1417	✓		BSKjos BSK	3-17-03 0750
SAT	✓		5	6919	1384	1	483833	482449	10162	8778	2605	1221	✓		NDKjs / NDK	4-30-03 1440
SAT		✓	5	7184	1437	1	491375	489938	10223	8786	2692	1255	✓		NDKjs / NDK	4-30-03 1510

REMARKS: * not used

NOTE 1: By initialing this block, the technician indicates that the instrument parameters have been checked and are verified to be correct.

SECTION 2 Reviewed By:_____ Date: _____

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

Customer Information		Instrument Information	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 2929	Serial Number: 118419
Contact Name: Thomas F. Scott		Probe: 43-10-1	Serial Number: 121393
Customer Purchase Order Number: N/A	Work Order Number:2002-00633	Calibration Method: Electronic And Source	

Instrument Calibration Information

M&TE	ID Number	Calibration Due Date	Environmental Conditions	
Thermometer	2551	09/12/02	Temperature (°C)	22.8
Barometer	2551	09/12/02	Pressure (mmHg)	743
Hygrometer	5546	06/12/02	Humidity (%)	46%
Pulse Generator	101500	08/23/02	Calibrated in accordance with RP-INS-I-241.	
DVM	TW12663	03/18/03		

Isotope	Source ID Number	Original Activity (dpm)	Source Cert. Date	Decayed Activity (dpm)
Th^{230}	099612	23,280	08/08/96	23,280
Tc^{99}	119655	4,194	08/09/96	4,194
Pu^{239}	019442	13,613	06/01/92	13,613

Frequency Calibration

Desired (cpm)	Tolerances (cpm)	Alpha As Found (cpm)	Alpha As Left (cpm)	Beta As Found (cpm)	Beta As Left (cpm)
40	40	40	40	40	40
400	(392-408)	399	399	402	402
4,000	(3,920-4,080)	4,002	4,002	4,024	4,024
40,000	(39.2K-40.8K)	40,364	40,364	40,223	40,223
400,000	(392K-408K)	402,557	402,557	401,403	401,403

Background Determination	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Counts, C_b	21	12	1,546	1,728
Time, T_b (min)	20	20	20	20
Rate, R_b (cpm)	1.05	0.6	77.3	86.4

Statement of Certification

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument	I certify that the above information is correct:	
Calibrated By: Mike Pauli	Reviewed By: Thomas F. Scott	Date: 5-30-02
Calibration Date: 05/29/02	Calibration Due: 05/29/03	

CROSS TALK SHEET
Initials/Date:

Instrument ID: 118419

As Found Alpha Threshold (mv)	As Left Alpha Threshold (mv)
172	172

Alpha Source: Cross Talk – Performed using Pu^{239} 019442

Paramter and Tolerance	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Source Count, C_s	24,088	24,473	1,874	1,454
Time, T_s (min)	5	5	5	5
Rate, R_s (cpm)	$R_{s[\alpha]} = 4{,}817.6$	$R_{s[\alpha]} = 4{,}894.6$	$R_{s[\beta]} = 374.8$	$R_{s[\beta]} = 290.8$
EFF (% c/d) (>25%)	N/A	N/A	N/A	N/A
%Crosstalk [α to β] (< 10%)	$\frac{R_{s[\beta]} - R_{b[\beta]}}{R_{s[\alpha]} - R_{b[\alpha]}} = \frac{290.8 - 86.4}{4894.6 - 0.6} = 4.18\%$			

As Found Beta Low Threshold	As Left Beta Low Threshold	As Found Beta High Threshold	As Left Beta High Threshold
4.2mv	4.2mv	48mv	48mv

Beta Source: Cross Talk-Performed using Tc^{99} 119655

Paramter and Tolerance	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Source Count, C_s	1	6	5,393	5,786
Time, T_s (min)	5	5	5	5
Rate, R_s (cpm)	$R_{s[\alpha]} = 0.2$	$R_{s[\alpha]} = 1.2$	$R_{s[\beta]} = 1{,}078.6$	$R_{s[\beta]} = 1{,}157.2$
EFF (% c/d) (>10%)	N/A	N/A	N/A	N/A
%Crosstalk [β to α] (< 1%)	$\frac{R_{s[\alpha]} - R_{b[\alpha]}}{R_{s[\beta]} - R_{b[\beta]}} = \frac{1.2 - 0.6}{1157.2 - 86.4} = 0.056\%$			

High Voltage Power

Desired Voltage	Tolerance	DVM As Found	DVM As Left	2929 Meter As Found	2929 Meter As Left
600	540 – 660	600	600	600	600
800	720 – 880	800	800	800	800
1,000	900 – 1,100	1,000	1,000	1,000	1,000
1,200	1,080 – 1,320	1,200	1,200	1,200	1,200
1,300	1,170 – 1,430	1,300	1,300	1,300	1,300

High Voltage	As Found	Vern Dial Reading	As Left	Vern Dial Reading
	830V	3.3	800V	3.20

Statement of Certification

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument

Calibrated By: Mike Paul

I certify that the above information is correct:

Reviewed By: Thomas G. Scott **Date:** 5-30-02

Calibration Date: 05/29/02

Calibration Due: 05/29/03

EFFICIENCY SHEET
Initials/Date:

Instrument ID: 118419

As Found Alpha Threshold (mv)	As Left Alpha Threshold (mv)
172	172

Alpha Source: Efficiency determined using Th^{230} #099612

Paramter and Tolerance	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Source Count, C_s	38,239	37,827	7,548	6,351
Time, T_s (min)	5	5	5	5
Rate, R_s (cpm)	$R_{s[\alpha]}$ = 7,647.8	$R_{s[\alpha]}$ = 7,565.4	$R_{s[\beta]}$ = 1,509.6	$R_{s[\beta]}$ = 1,270.2
EFF (% c/d) (>25%)	32.8%	32.5%	N/A	N/A
%Crosstalk [α to β] (< 10%)	$\frac{R_{s[\beta]} - R_{b[\beta]}}{R_{s[\alpha]} - R_{b[\alpha]}} = \frac{N/A}{N/A} = N/A$			

As Found Beta Low Threshold	As Left Beta Low Threshold	As Found Beta High Threshold	As Left Beta High Threshold
4.2mv	4.2mv	48mv	48mv

Beta Source: Efficiency determined using Tc^{99} #119655

Paramter and Tolerance	Alpha As Found	Alpha As Left	Beta As Found	Beta As Left
Source Count, C_s	1	6	5,393	5,786
Time, T_s (min)	5	5	5	5
Rate, R_s (cpm)	$R_{s[\alpha]}$ = 0.2	$R_{s[\alpha]}$ = 1.2	$R_{s[\beta]}$ = 1,078.6	$R_{s[\beta]}$ = 1,157.2
EFF (% c/d) (>10%)	N/A	N/A	23.9%	25.5%
%Crosstalk [β to α] (< 1%)	$\frac{R_{s[\alpha]} - R_{b[\alpha]}}{R_{s[\beta]} - R_{b[\beta]}} = \frac{N/A}{N/A} = N/A$			

Statement of Certification

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument	I certify that the above information is correct:
Calibrated By: Mike Paul	Reviewed By: Thomas F. Scott Date: 5-30-02
Calibration Date: 05/29/02	Calibration Due: 05/29/03

Initials/Date: **Instrument ID:** 118419

Source and Background Plateau Worksheet								
High Voltage	**Background**		**Alpha Source**		**Beta Source**		**Cross Talk**	
	Alpha	**Beta**	**Alpha**	**Beta**	**Alpha**	**Beta**	**α to β**	**β to α**
600	0	15	3,125	584	0	159	18.2%	0%
650	1	30	4,242	472	1	497	10.4%	0%
700	1	44	4,760	479	1	744	9.14%	0%
750	0	86	4,700	358	1	1,167	5.8%	0.09%
800	1	86	4,963	309	1	1,146	4.5%	0.09%
850	4	106	5,026	710	2	1,027	12.0%	-0.22%
900								
950								
1000								
1050								
1100								
1150								
1200								
1250								
1300								

Statement of Certification

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument **I certify that the above information is correct:**

Calibrated By: Mike Pauli **Reviewed By:** Nancy P. Hall **Date:** 5-30-02

Calibration Date: 05/29/02 **Calibration Due:** 05/29/03

Chi-Square Test

GTS Duratek

MODEL 2929 Serial #118419 Th-230 Source # 119737 18,720dpm

Background Counts = 0.6 CPM

Count Number (N)	Source Count (x)	x-Mean	(x-Mean)²
1	5442	-133.7	17875.69
2	5622	46.3	2143.69
3	5522	-53.7	2883.69
4	5665	89.3	7974.49
5	5426	-149.7	22410.09
6	5578	2.3	5.29
7	5620	44.3	1962.49
8	5645	69.3	4802.49
9	5576	0.3	0.09
10	5651	75.3	5670.09
11	5567	-8.7	75.69
12	5617	41.3	1705.69
13	5523	-52.7	2777.29
14	5585	9.3	86.49
15	5492	-83.7	7005.69
16	5602	26.3	691.69
17	5538	-37.7	1421.29
18	5609	33.3	1108.89
19	5547	-28.7	823.69
20	5687	111.3	12387.69
	Σ= 111514	(x-Mean)² =	93812.20

Mean = 5575.70 Chi² = 16.83

σ = 70.27 2σ= 140.5345

Reduce Chi Square= 0.885536 3σ= 210.80

Reduced Chi Pass/Fail= PASS

Performed By/Date Mike Paul / 8/13/02

Reviewed By/Date [illegible] / 8-13-02

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 118419

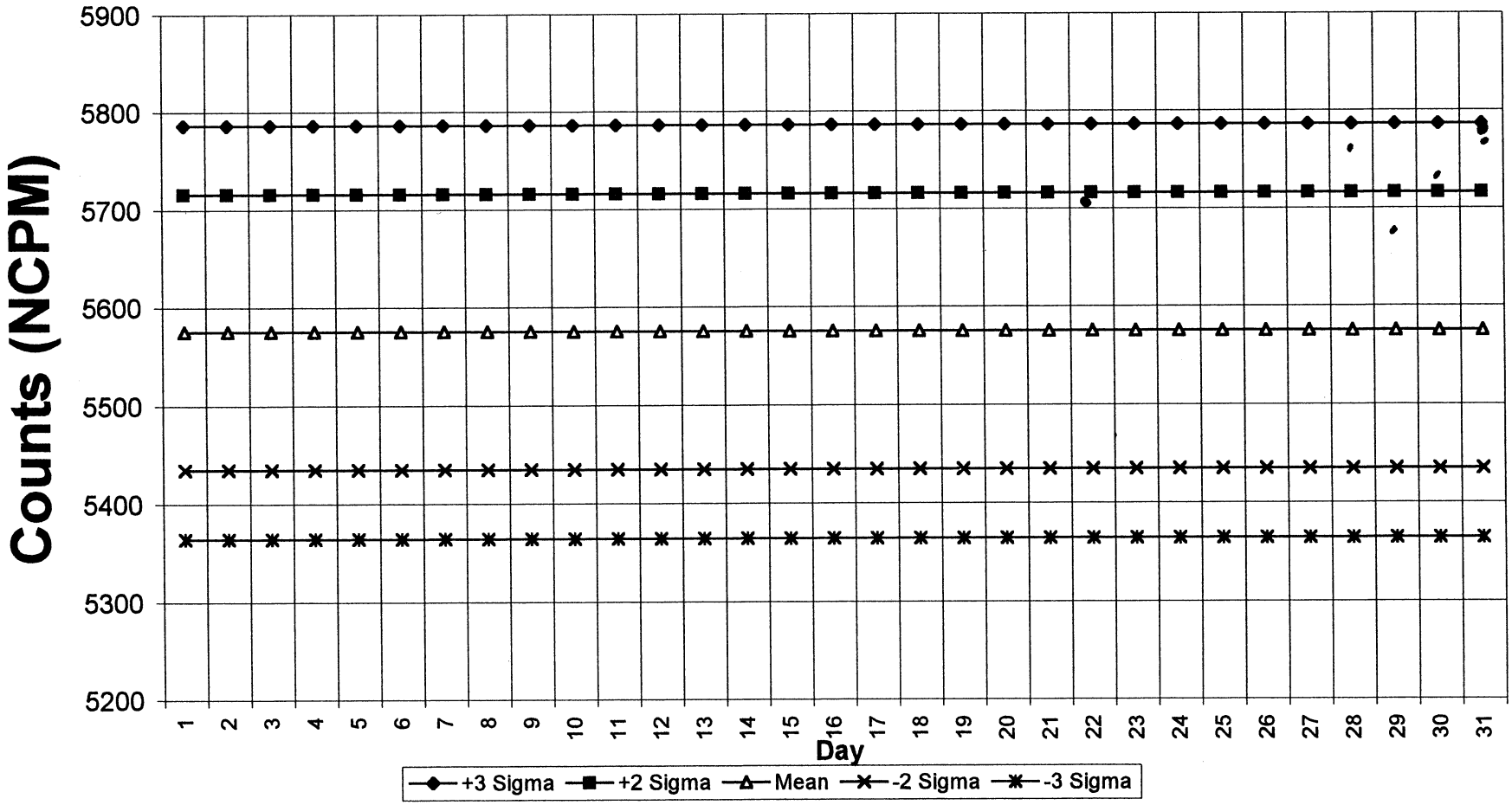
BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
1	.05	1000	50	4455	28515	5703	5702.95	2	5477	1095.4	1045.4	8-22-02	B.S.Kjos
5	.25	1018	51	4982	28608	5722	5721.75	1	5693	1138.6	1087.6	8-27-02	B.S.Kjos
6	.30	1035	52	5187	28840	5768	5767.70	1	5808	1161.6	1109.6	8-28-02	NRKjos
9	.45	1095	55	4961	28430	5686 ~~5684~~ NRK	5685.55	1	5583	1116.6	1061.6	8-29-02	NRKjos
4	.20	1038	52	4984	28711	5742.2	5742	1	5805	1161	1109	8-30-02	NRKjos
6	.30	1037	52	5118	28955	5790.6 ~~5791~~ NRK	5790.3 ~~5790.7~~	2	5769	1153.8	1101.8	8-31-02	NRKjos
~~4~~	~~.20~~	~~1049~~	~~52~~	~~5168~~	~~28759~~	~~5751.8~~	~~5699.8~~	~~2~~	~~5936~~	~~1147.2~~	~~1095.2~~	~~9-3-02~~	~~B.S.Kjos~~ NRK 9-3-02

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart **Month Of** August **20**02

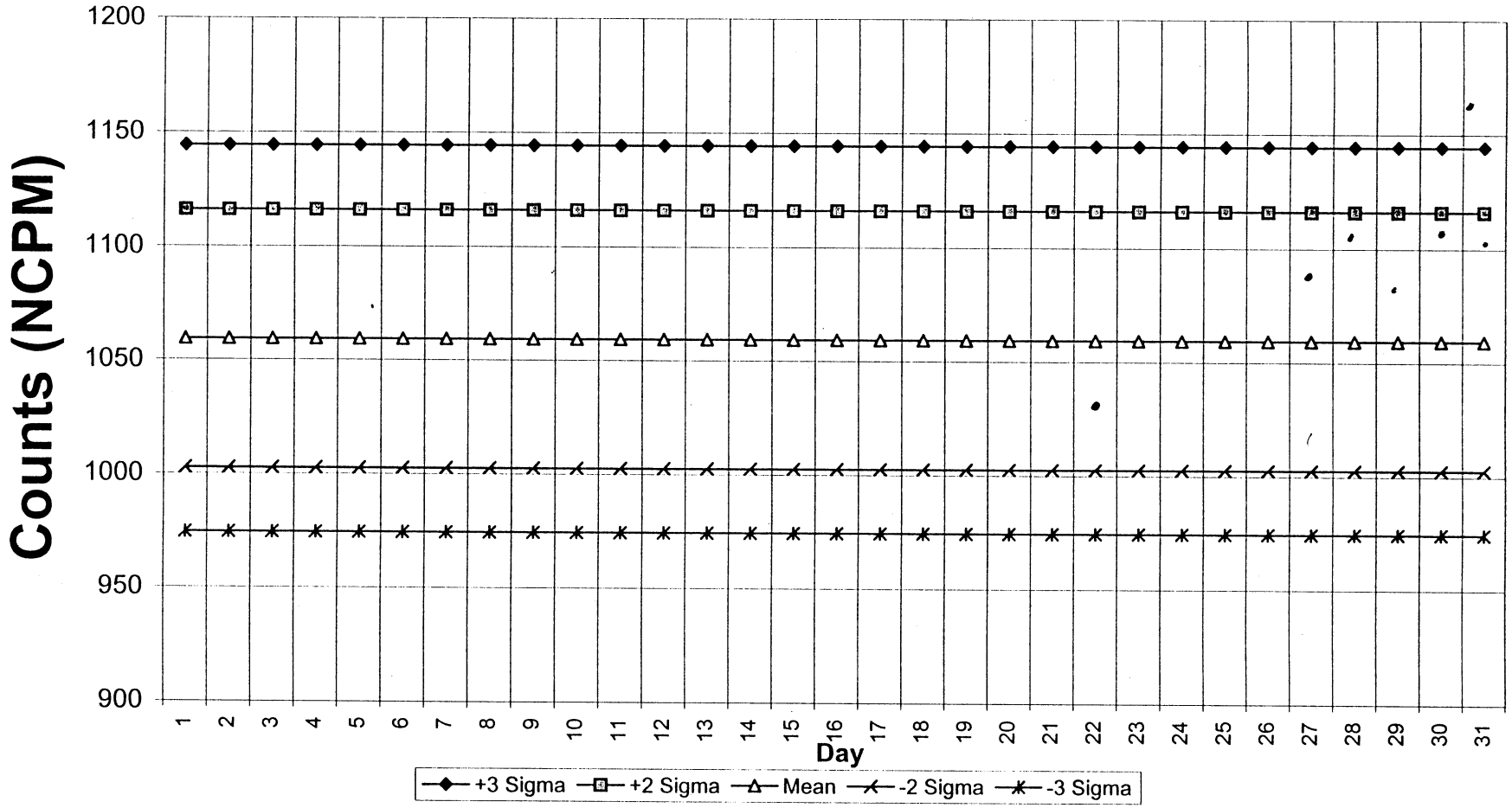
Instrument 2929, **Source#** 119737, **Isotope** Th-230



Reviewed By_____ Date_____

Control Chart **Month Of** August **2002**

Instrument 2929 **, Source#** 119655 **, Isotope** Tc-99



Reviewed By_____ Date_____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
4	.20	1049	52	5168	28759	5751.8	5751.6	2	5736	1147.2	1045.2	9-3-02	BSK/DS
4	.20	1089	54	5094	28974	5794.8	5794.6	1	5596	1119.2	1065.2	9-4-02	BS.KGS
3	.15	1039	52	5106	28359	5671.8	5671.65	~~5~~ 1	~~5753~~ 5670 NRK	1134	1082	9-5-02	NRK
5	.25	1023	51	4923	28681	5736.2	5735.95	2	5516	1103.2	1052.2	9-6-02	BSK
1	.20	1031	52	4938	28918	5783.6	5783.4	0	5576	1115.2	1063.2	9-9-02	BSK
2	.10	1074	54	5004	28816	5763.2	5763.1	1	5733	1146.6	1092.6	9-10-02	BSK
6	.30	1109	55	5105	28590	5718	5717.7	3	5548	1109.6	1054.6	9-11-02	BSK
5	.25	1012	51	5089	28631	5726.2	5725.95	3	5685	1137	1080	9-12-02	NRK
3	.15	1058	53	5128	28897	~~5779.4~~ ~~5128~~	5779.25	~~3~~ 4	5823	1164.6	1111.6	9-13-02	BSK
5	.25	1036	52	4984	28890	5778	5777.75	1	5664	1132.8	1080.8	9-16-02	BSK

REMARKS _____

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b[\alpha]}$	Count Rate, $R_{b[\alpha]}$ (cpm)	Counts $C_{b[\beta]}$	Count Rate, $R_{b[\beta]}$ (cpm)	Counts $C_{s[\beta]}$	Counts $C_{s[\alpha]}$	Count Rate, $R_{s[\alpha]}$ (cpm)	Net Count Rate, $R_{n[\alpha]}$ (cpm)	Counts $C_{s[\alpha]}$	Counts $C_{s[\beta]}$	Count Rate, $R_{s[\beta]}$ (cpm)	Net Count Rate, $R_{n[\beta]}$ (cpm)	Date	Performed By
7	.35	1051	53	5142	28877	5775.4	5775.05	2	5827	1165.4	1112.4	9-17-02	BSK
5	.25	1028	51	5106	28496	5699.1	5698.85	0	5608	1121.6	1070.6	9-18-02	NEK
4	.20	1017	51	4998	28462	5692.4	5692.2	2	5684	1136.8	1085.8	9-19-02	BSK
5	.25	1074	54	5104	28816	5763.2	5762.9	3	5829	1165.8	1111.8	9-20-02	BSK
5	.25	1087	54	4994	28514	5702.8	5702.6	1	5779	1155.8	1101.8	09-21-02	YCM
4	.20	995	50	5087	28810	5762	5761.8	3	5813	1162.6	1112.6	9-23-02	BSK
6	.30	1023	51	5045	28614	5722.8	5722.5	2	5499	1099.8	1048.8	09-24-02	YCM
6	.30	1075	54	5044	28316	5663.2	5662.9	3	5540	1108	1054 ~~1054~~ NEK	9-25-02	NEK
6	.30	1053	53	5006	28718	5743.6	5743.3	2	5568	1113.6	1060.6	9-26-02	YCM
4	.20	1011	51	4975 ~~5538~~ NEK	28784	5756.8	5756.6	2	5538	1107.6	1056.6	9-27-02	NEK

REMARKS _____

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 118419

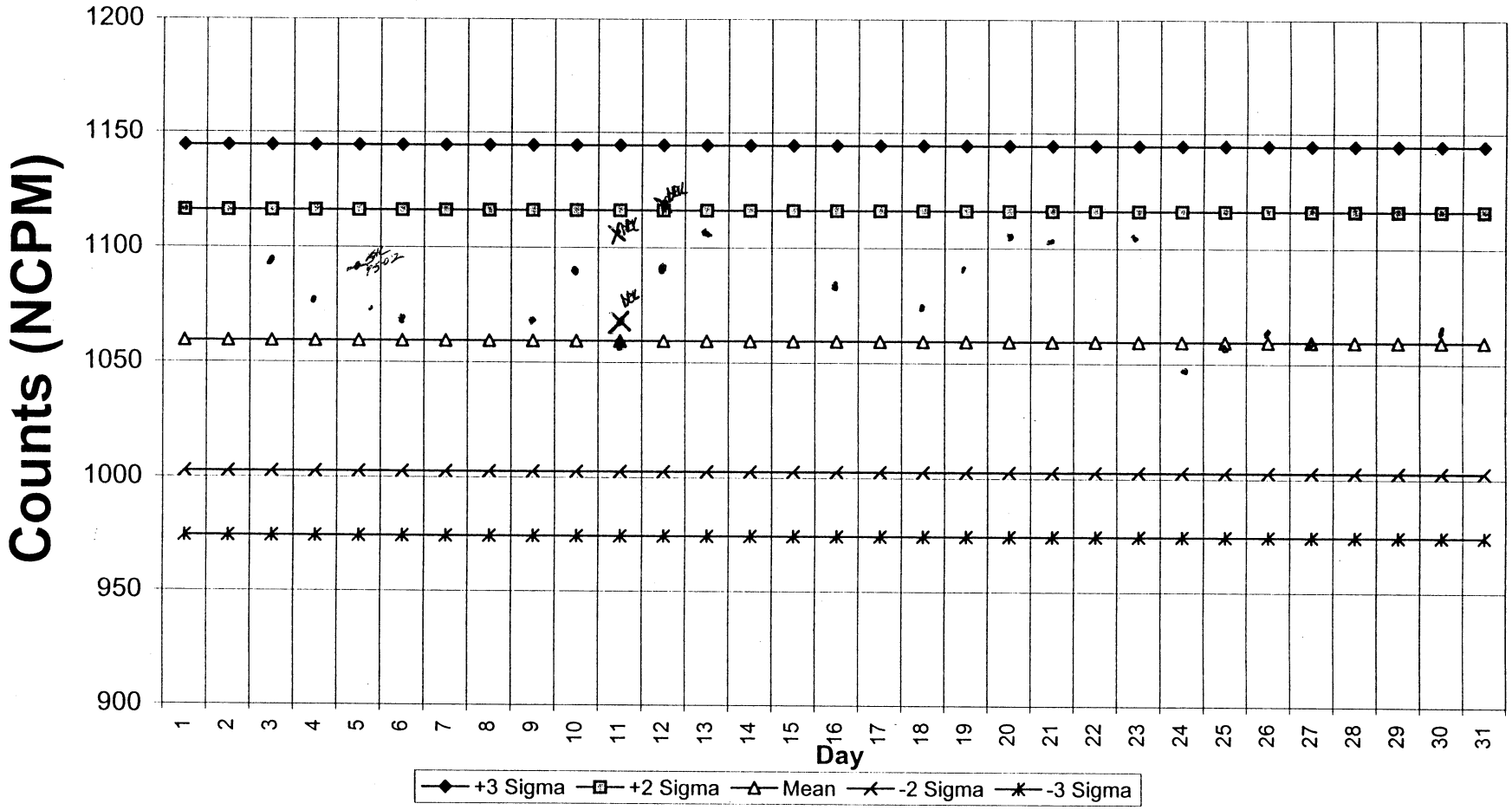
BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
7	.35	1031	52	4911	28772	5754.4	5754.05	1	5608	1121.6	1069.6	9-3-02	[illegible]

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart **Month Of** September **20** 02

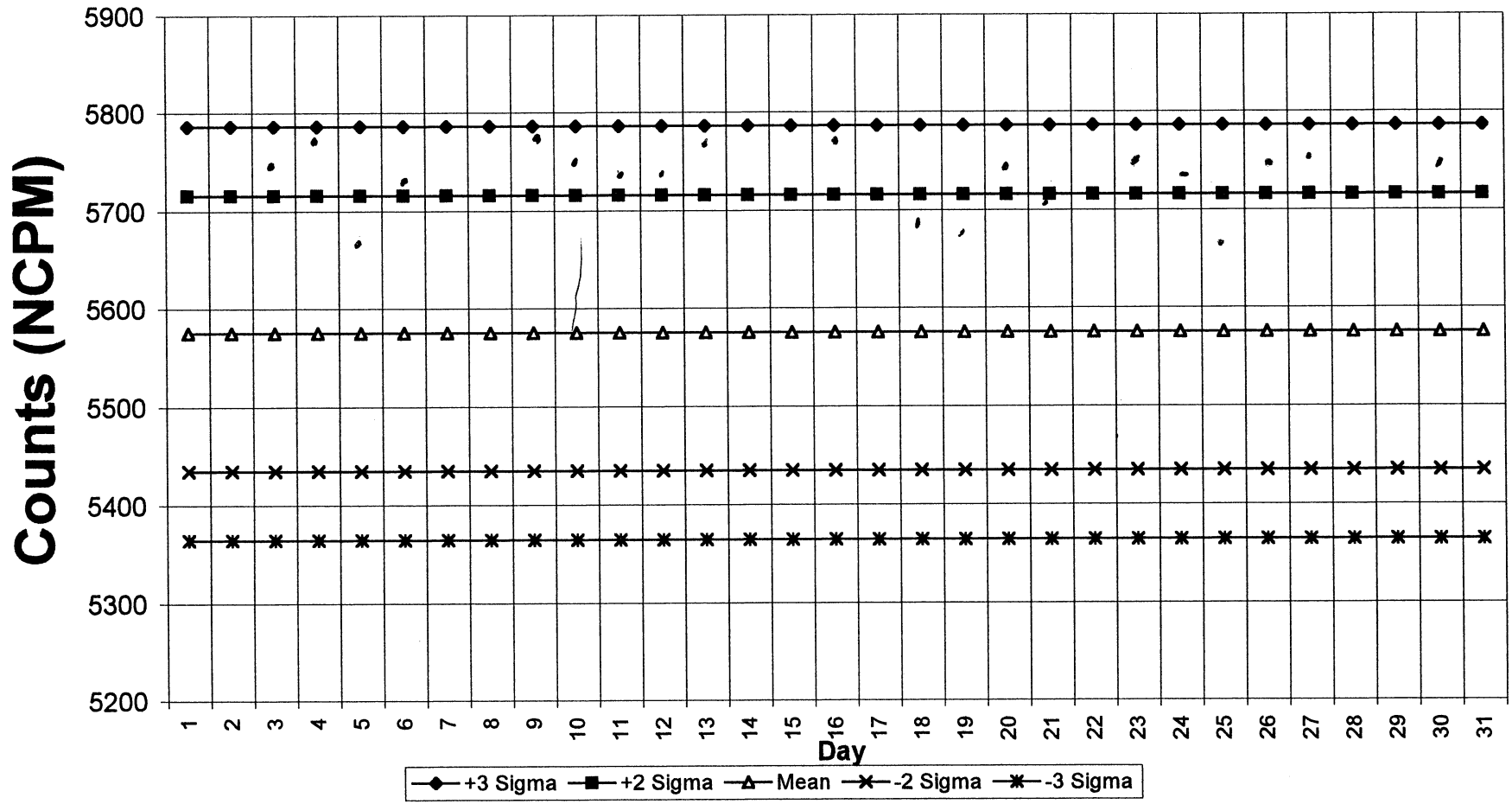
Instrument 2929, **Source#** 119655, **Isotope** Tc-99



Reviewed By_____ Date_____

Control Chart **Month Of** September **20** 02

Instrument 2929, **Source#** 119737, **Isotope** Th-230



Reviewed By_____ Date_____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929 / # 118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
4	.2	1030	52	4973	28647	5729.4	5729.2	1	5538	1107.6	1055.6	10-1-02	NRKp
5	.25	1027	51.4	5093	28819	5763.8	5763.6	1	5695	1139	1087.6	10-2-02	RS NRK
3	.15	1065	53.25	5052	28885	5777	5776.85	2	5649	1129.8	1076.55	10-3-02	NRKp
4	.2	1034	51.7	5059	28504	5700.8	5700.6	1	5638	1127.6	1075.9	10-4-02	NRKp
4	0.2	1042	52.1	5129	28559	5711.8	5711.6	0	5832	1166.4	1114.3	10-7-02	RS
5	.25	1009	50.4	5468 ~~5716~~	28599	5719.8	5719.6	2	5716	1143.2	1092.8	10-08-02	YCm
5	.25	1090	54.5	5010	28760	5752	5751.8	4	5777	1155.4	1100.9	10-9-02	RS
3	0.15	1061	53.1	4904	28845	5769	5768.9	2	5642	1128.4	1075.3	10-10-02	RS
3	0.15	1064	53.2	4976	28486	5697.2	5697.05	2	5836	1167.2	1114	10-14-02	YCm
5	0.25	1093	54.7	5077	28923	5784.6	5784.4	0	5633	1126.6	1071.9	10-16-02	YCm

REMARKS _____

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b[\alpha]}$	Count Rate, $R_{b[\alpha]}$ (cpm)	Counts $C_{b[\beta]}$	Count Rate, $R_{b[\beta]}$ (cpm)	Counts $C_{a[\beta]}$	Counts $C_{a[\alpha]}$	Count Rate, $R_{a[\alpha]}$ (cpm)	Net Count Rate, $R_{n[\alpha]}$ (cpm)	Counts $C_{a[\alpha]}$	Counts $C_{a[\beta]}$	Count Rate, $R_{a[\beta]}$ (cpm)	Net Count Rate, $R_{n[\beta]}$ (cpm)	Date	Performed By
1	.05	1112	55.6	4975	28761	5752.2	5752.15	1	5678	1135.6	1080	10-17-02	VCM
5	.25	1056	52.8	5004	28755	5751	5698.2	2	5727	1145.4	1145.2	10-18-02	VCM
6	.3	1035	51.8	4921	28473	5694.6	5642.8	1	5565	1113	1061.2	10-21-02	VCM
2	.1	1064	53.2	4955	28837	5767.4	5767.3	0	5642	1128.4	1075.2	10-22-02	VCM
5	.25	1076	53.8	5015	28346	5669.2	5668.95	1	5685	1137	1083.2	10-23-02	ABK
3	.15	1012	50.6	4990	28324	5664.8	5664.65	2	5638	1127.6	1077	10-24-02	VCM
4	.2	1036	51.8	6862	28445	5689	5637.2	1	5552	1110.4	1058.6	10-25-02	VCM
3	.15	1053	52.7	4960	28617	5723.4	5723.25	0	5672	1134.4	1081.7	10-28-02	BSK
5	.25	1084	54.2	5147	28512	5702.4	5702.15	2	5835	1167	1112.8	10-29-02	BSK
3	.15	1025	51.3	5005	28755	5751	5750.9	0	5765	1153	1101.7	10-30-02	TCM

REMARKS _____

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

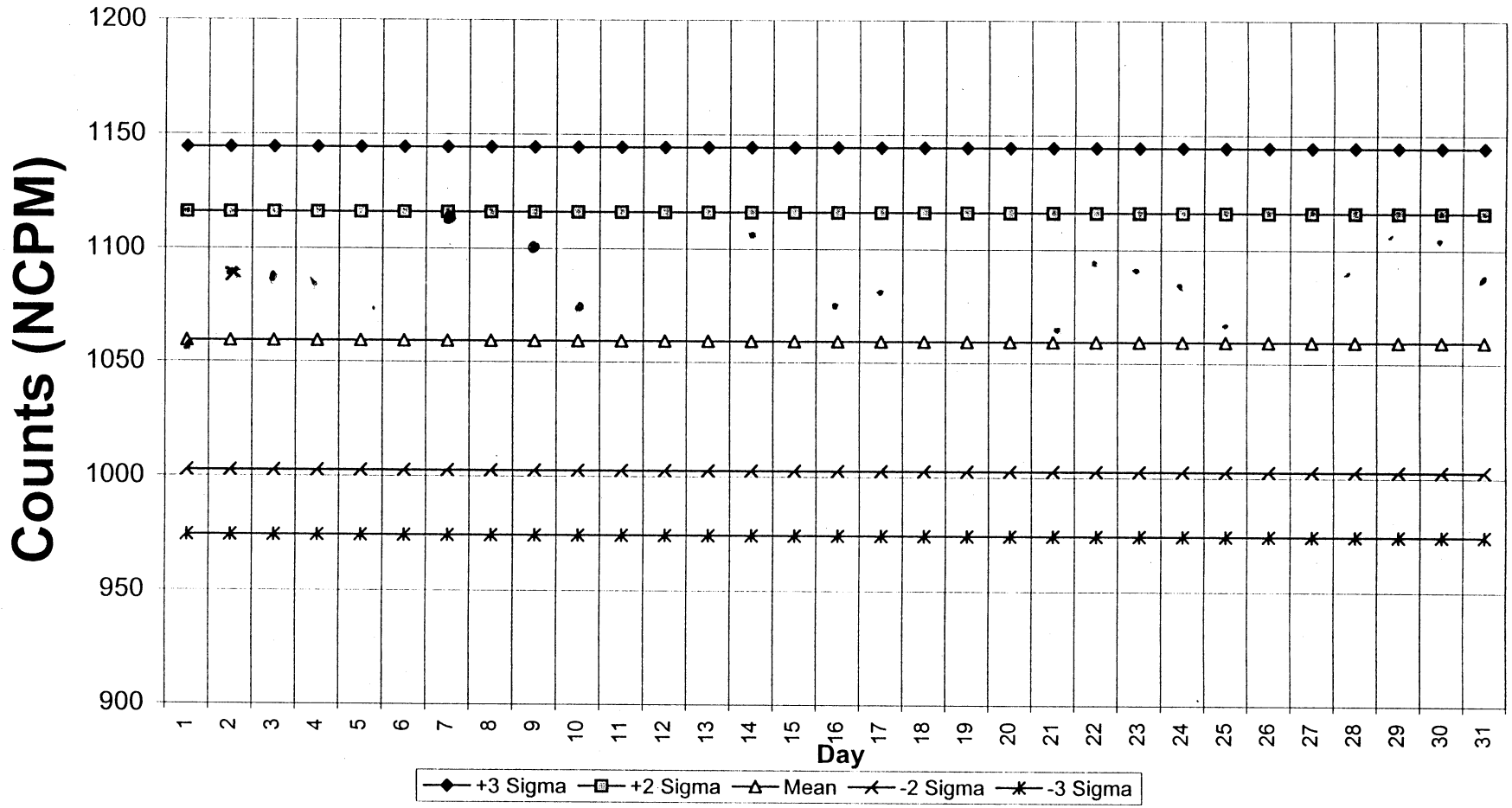
BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
5	.25	1084	54.2	5013	28484	5696.8	5696.55	1	5736	1147.2	1093	10-31-02	BK

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart **Month Of** October **20** 02

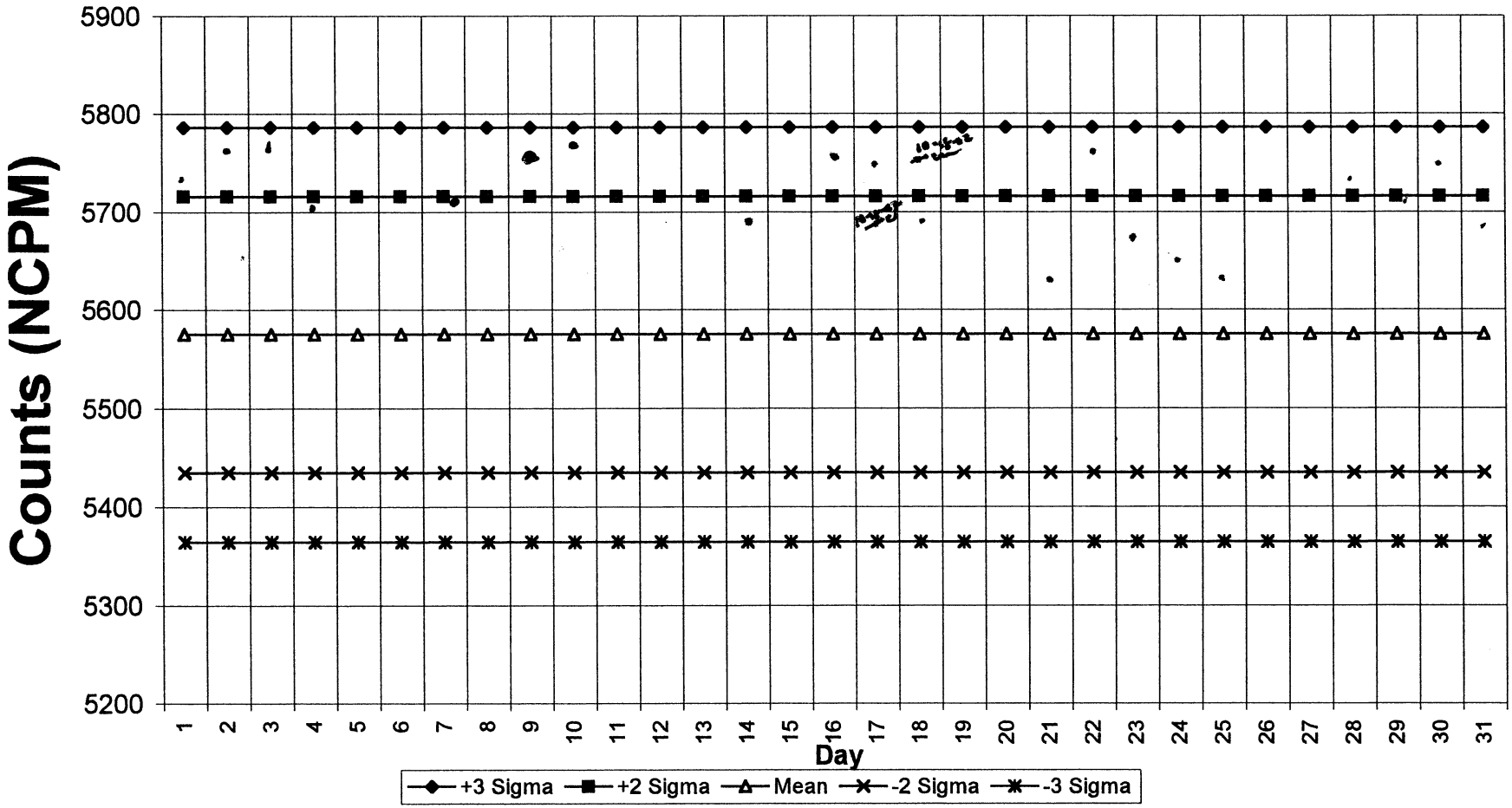
Instrument 2929, **Source#** 119655, **Isotope** Tc-99



Reviewed By_____ Date_____

Control Chart **Month Of** October **20** 02

Instrument 2929 **, Source#** 119737 **, Isotope** Th-230



Reviewed By_____Date_____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/ 118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{s(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{s(\beta)}$ (cpm)	Date	Performed By
4	.2	1052	52.6	—	—	NOT USED		—					
4	.2	1045	52.3	4883	28642	5728.4	5728.2	0	5612	1122.4	1070.1	11-5-02	VC Miles
1	.05	1054	52.7	4903	28637	5727.4	5727.35	4	5711	1142.2	1089.5	11-8-02	BSK
6	.3	1044	52.2	5021	28619	5723.8	5723.5	2	5779	1155.8	1103.6	11-11-02	NBK
7	.35	1462	73.1	5188	28637	5727.4	5727.05	2	5662	1132.4	1059.3	11-12-02	TCM
* 4	.2	992	49.6	5226	29645	5929	5928.8	0	5956	1191.2	1141.6	11-13-02	TCM
4	.2	992	49.6	5136	28895	5779	5778.8	0	5956	1191.2	1141.6	11-13-02	TCM
2	.1	1034	51.7	5187	28634	5726.8	5726.7	4	5748	1149.6	1097.9	11-15-02	TCM
3	.15	1163	58.2	4891	28595	5719	5718.8	2	5802	1160.4	1102.2 ~~1160.3~~	11-18-02	TCM
3	.15	1015	50.7	4982	28632	5726.4	5726.2	1	5641	1128.2	1077.5	11-19-02	TCM

REMARKS * Source check failed - re-ran source check

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

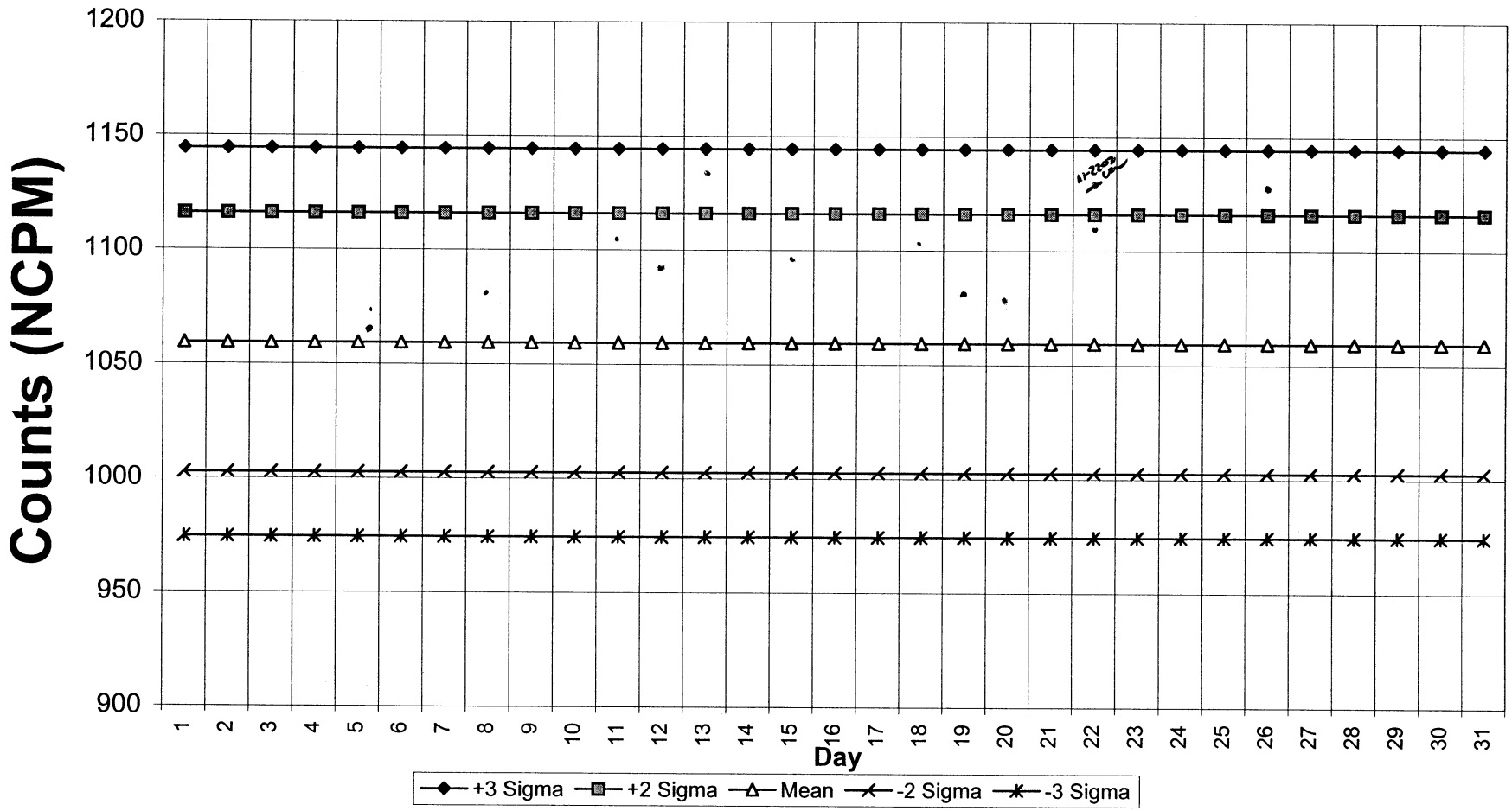
BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
2	.1	1046	52.3	5171	28509	5701.8	5701.7	0	5615	1123	1070.7	11-20-02	UMiles
5	.25	1022	~~204~~ 51.1 11-28	4903	28956	5791.2	5790.9	3	5827	1165.4	1114.3	11-22-02	UMiles
6	.3	1100	55	5183	28880	5776	5775.7	0	6009	1201.8	1146.8	11-26-02	UMiles

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart Month Of November 20 02

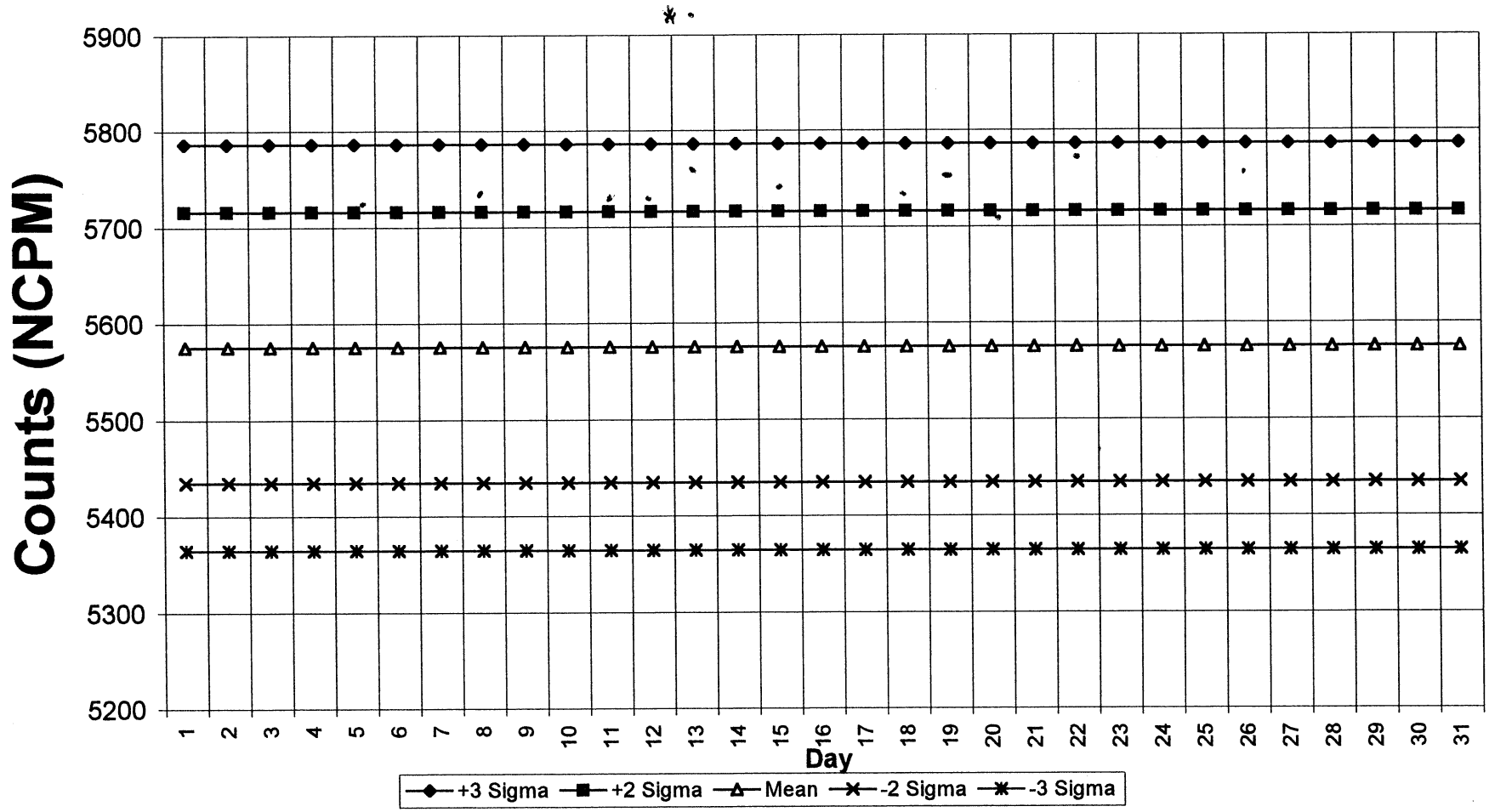
Instrument 2929, Source# 119655, Isotope Tc-99



Reviewed By_____ Date_____

Control Chart Month Of NOVEMBER 20 02

Instrument 2929, Source# 119737, Isotope Th-230



Reviewed By_____ Date_____

* Source check failed
Re-run Source check 11/13/02 ZCW
ZCW 11/13/02

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/ 118419

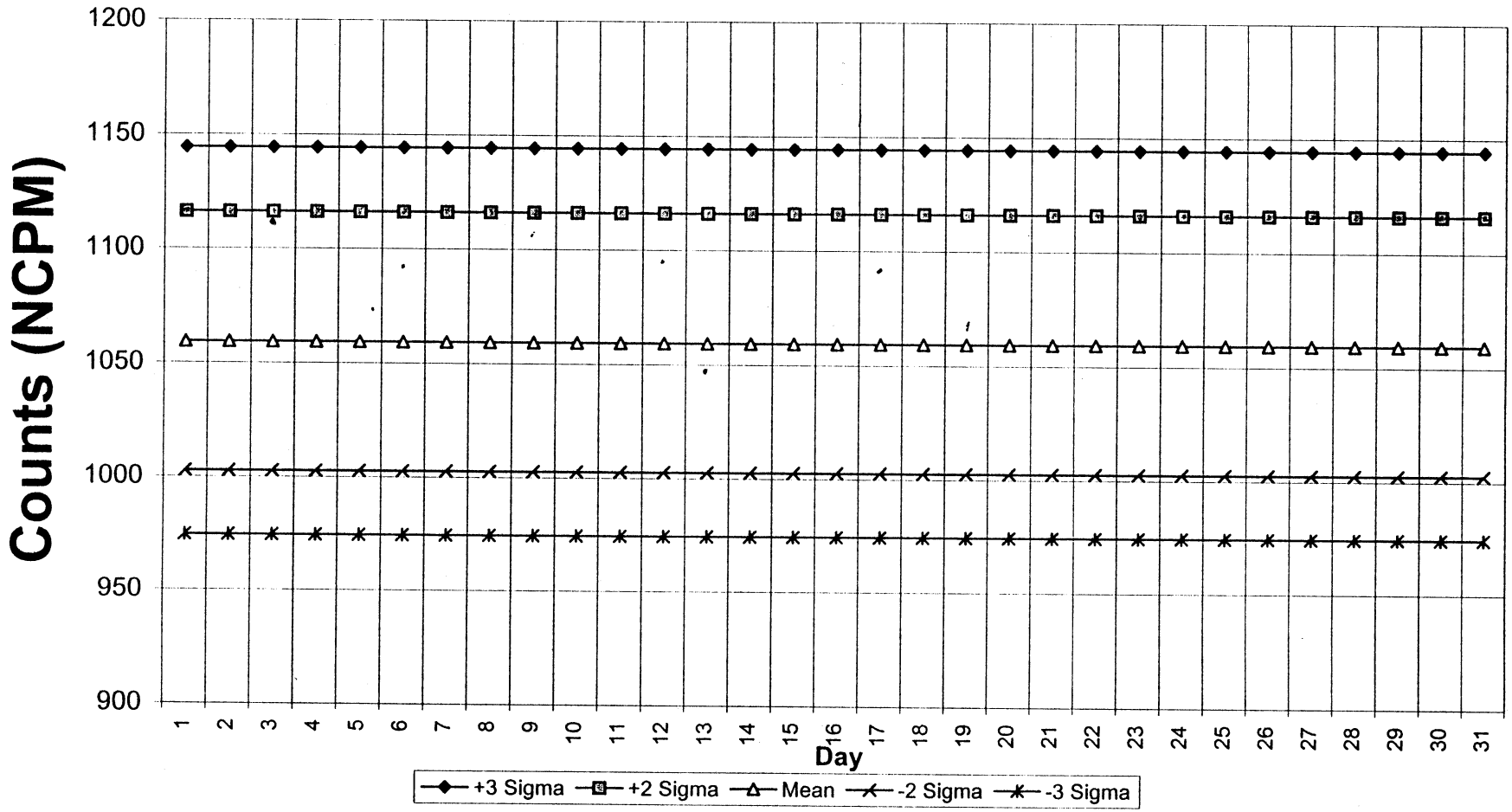
BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{s(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{s(\beta)}$ (cpm)	Date	Performed By
6	.3	1044	52.2	5105	28745	5749	5748.7	0	5930	1186	1133.8	12-3-02	[illegible]
6	.3	976	48.8	4838	28861	5772.2	5771.9	0	5695	1139	1090.2	12-6-02	B.S.Kjos
4	.2	1053	52.6	4987	28193	5638.6	5638.4	1	5821	1164	1111.6	12-9-02	B.S.Kjos
~~3~~	~~.2~~	~~1002~~	~~50.1~~	— NOT USED				~~1~~	~~6051~~	~~1210~~	~~1160.1~~		~~B.S.Kjos~~
5	.25	1024	51.2	4884	28250	5650	5649.7	4	5651	1130	1079	12-12-02	B.S.Kjos
6	.3	1030	51.5	4841	28643	5728.6	5728.3	2	5503	1100.6	1049.1	12-13-02	B.S.Kjos
5	.25	1014	50.7	4847	27933	5586.6	5586.4	2	5639	1127.8	1077.1	12-17-02	B.S.Kjos
5	.25	1060	53	4869	28244	5648.8	5648.6	1	5548	1109.6	1056.6	12-19-02	B.S.Kjos

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart Month Of DECEMBER 20 02

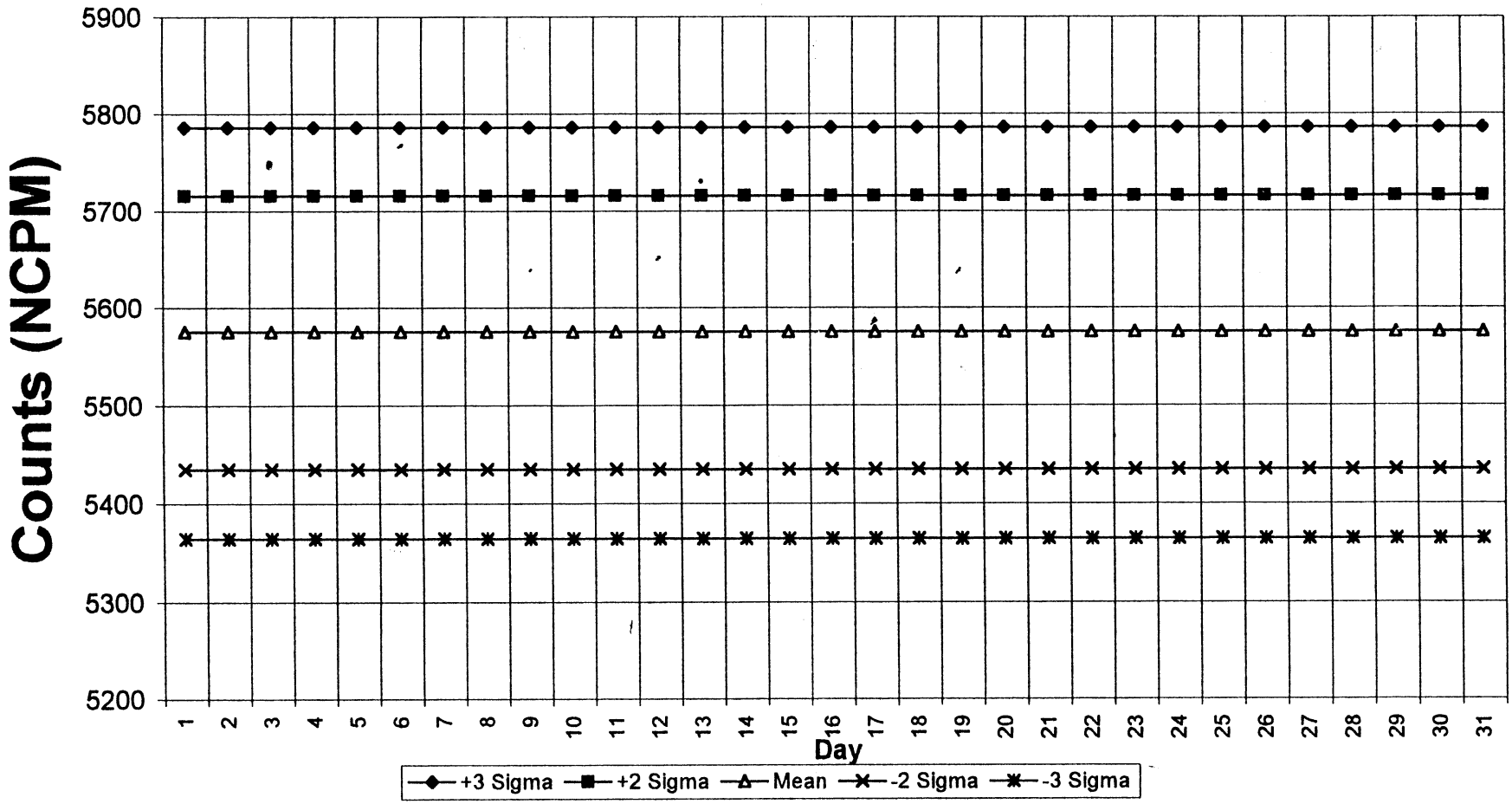
Instrument 2929, Source# ~~119655~~ 119655, Isotope Tc-99



Reviewed By_____ Date_____

Control Chart Month Of DECEMBER 20 02

Instrument 2929, Source# 119737, Isotope Th-230



Reviewed By_____ Date_____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

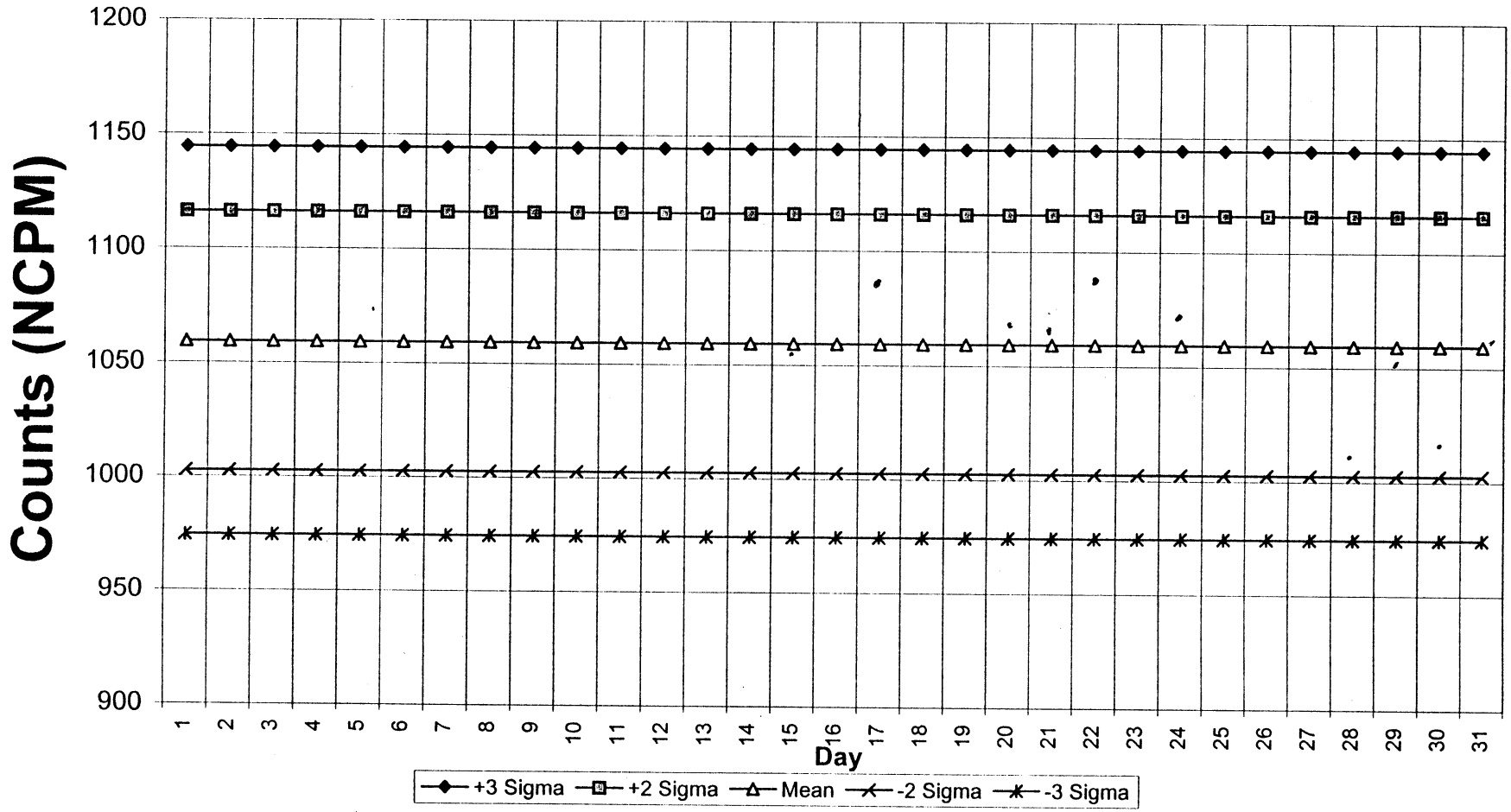
BACKGROUND (count time = 20 minutes)				ALPHA SOURCE (count time = 5 minutes)				BETA SOURCE (count time = 5 minutes)					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
5	.25	1059	53	5000	28288	5657.6	5657.35	1	5525	1105	1052	1-15-03	B.S. Kjos
7	.35	1056	53	4809	28065	5613	5612.7	2	5659	1132	1079	1-17-03	VCMiles
5	.25	1115	56	~~5582~~ 4818 1-20-03	28524	5705	5704.8	0	5582	1116	1060	1-20-03	VCMiles
2	.1	1115	56	4825	28046	5609	5608.9	3	5556	1111	1055	01-21-03	VCMiles
5	.25	1034	52	4907	28174	~~5635~~ 5634.8	5634.6	6	5677	1135	1083	01-22-03	VCMiles
7	.35	1097	55	4933	28398	~~5680~~ 5679.6	5679.3	2	5578	1116	1061	01-24-03	VCMiles
4	.20	1071	54	4741	28409	5681.8	5681.6	0	5449	~~1088~~ 1090 1-24-03	1036	1-28-03	B.S. Kjos
6	.30	1022	51	4851	28555	5711	5710.7	1	5511	1102	1051	1-29-03	B.S. Kjos
3	.15	1040	52	4906	28211	5642	5642.05	0	5393	1079	1027	1-30-03	B.S. Kjos
4	.20	1063	53	4846	28414	5682.8	5682.6	1	5545	1109	1056	1-31-03	B.S. Kjos

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart **Month Of** January **20** 03

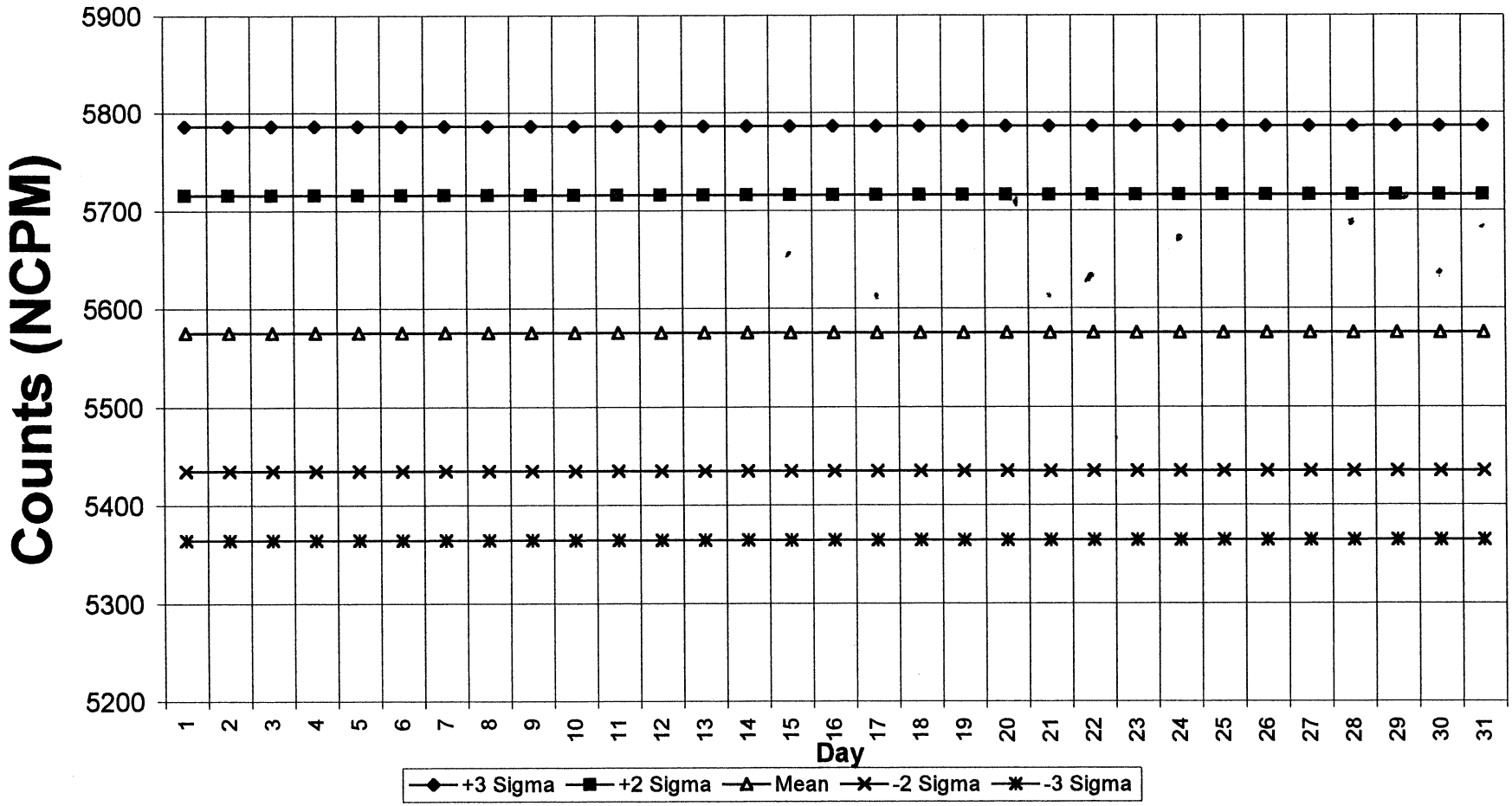
Instrument 2939, **Source#** ~~1184 Tc~~ 119655, **Isotope** Tc-99



Reviewed By_____ Date_____

Control Chart **Month Of** January **20** 23

Instrument 2929, **Source#** 119737, **Isotope** Th-230



Reviewed By_____ Date_____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{\alpha(\alpha)}$	Count Rate, $R_{\alpha(\alpha)}$ (cpm)	Counts $C_{\alpha(\beta)}$	Count Rate, $R_{\alpha(\beta)}$ (cpm)	Counts $C_{\alpha(\beta)}$	Counts $C_{\alpha(\alpha)}$	Count Rate, $R_{\alpha(\alpha)}$ (cpm)	Net Count Rate, $R_{\alpha(\alpha)}$ (cpm)	Counts $C_{\alpha(\alpha)}$	Counts $C_{\alpha(\beta)}$	Count Rate, $R_{\alpha(\beta)}$ (cpm)	Net Count Rate, $R_{\alpha(\beta)}$ (cpm)	Date	Performed By
3	.15	1020	51	4708	28058	5611.6	5611.4	0	5723	1145	1094	2-11-03	B.S. Kjos
4	0.20	1053	52	4967	28692	5738.4	5738.2	4	5554	1110.8	1059	2-12-03	NR Kjos
2	.1	1045	52	4987	28508	5701.6	5701.5	5	5578	1115.6	1064	2-14-03	BS Kjos
6	0.3	1035	52	5424	28342	5668.4	5668.1	4	5865	1173.0	1121	2/18/03	W.R. Hay
3	.15	1000	50	4927	28308	5641.6	5641.4	1	5576	1115.2	1065	2-19-03	BS Kjos
6	0.3	1086	54	5056	28276	5655.2	5654.9	6	5480	1097.4	1043	2/20/03	WRHay
4	0.2	1083	54	4921	28402	5680	5680	4	5567	1113	1059	2/21/03	WRHay
6	0.3	1062	53	4809	28456	5691	5691	0	5456	1091	1038	2/25/03	WRHay
2	0.1	1143	57	4852	28226	5645	5645	2	5411	1082	1025	2/26/03	WRHay
3	0.15	1022	51.1	5023	28496	5699.2	5699.05	1	5572	1114.4	1063.3	2/27/03	NR Kjos

REMARKS _____

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

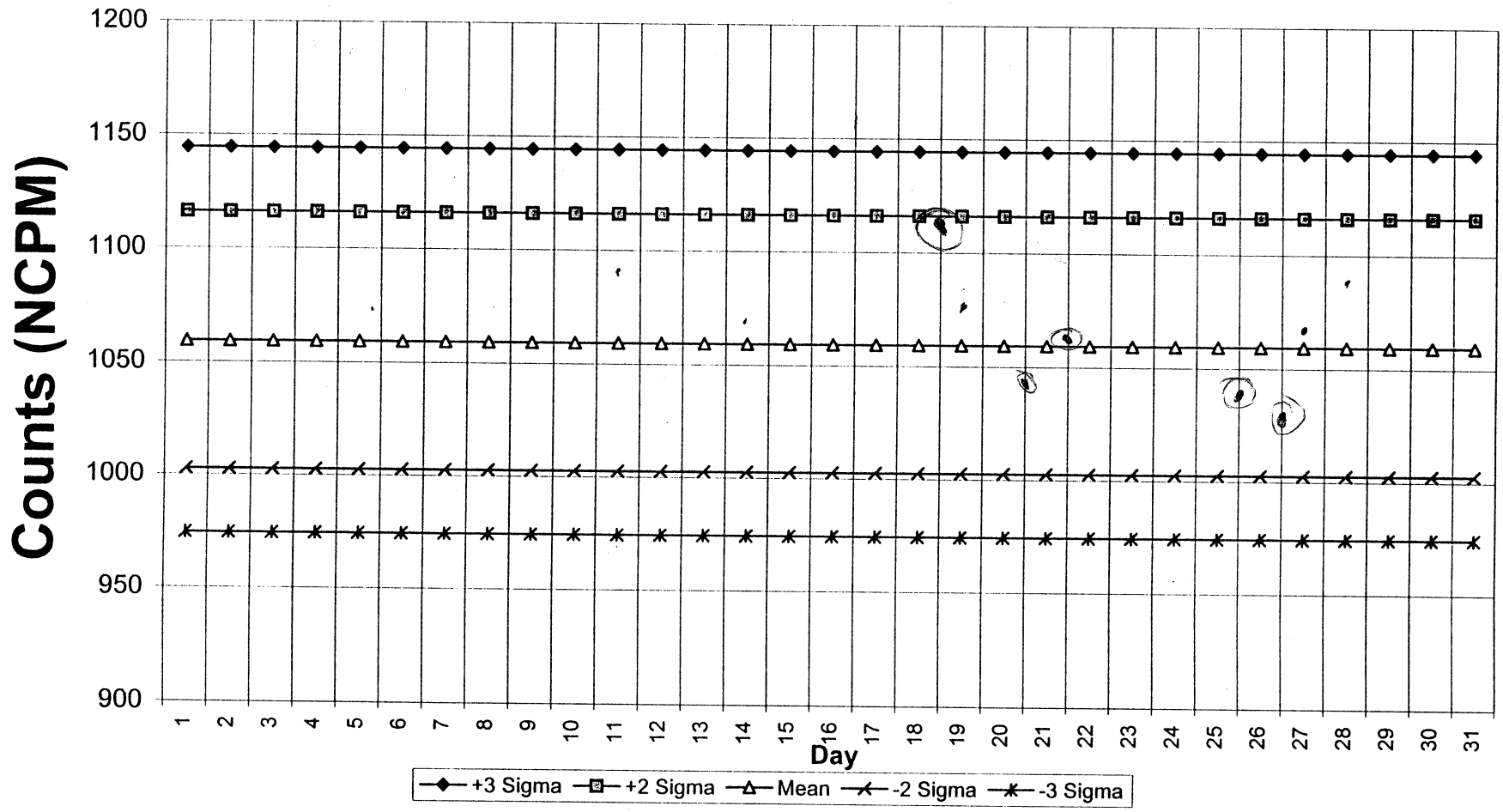
BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
5	.25	1106	55	4947	28536	5707.2	5706	1	5672	1134	1079	2-28-03	B. Kos

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart **Month Of** February **20** 03

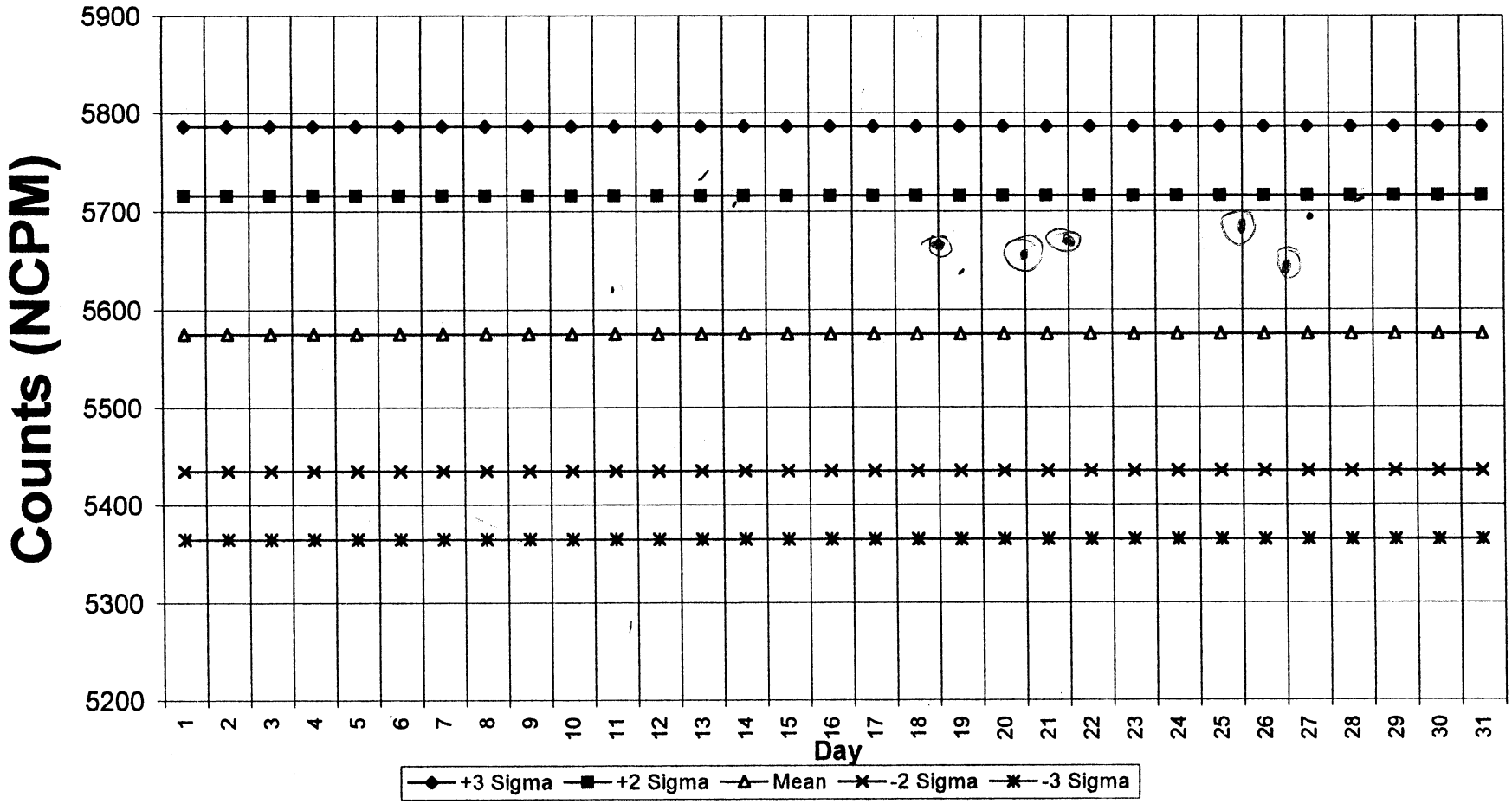
Instrument 2929, **Source#** 119655, **Isotope** Tc-99



Reviewed By_____ Date_____

Control Chart **Month Of** February **20** 03

Instrument 2929 **, Source#** 119737 **, Isotope** Th-230



Reviewed By_____Date_____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929 / 118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{n(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{n(\beta)}$ (cpm)	Date	Performed By
5	0.25	1071	54	~~28786~~ 28788	28138	5634	5634	2	5659	1132	1072	3/3/03	[illegible]
2	0.1	1085	54	4935	28292	5658	5658	2	5598	1120	1066	3/6/03	[illegible]
7	0.35	1035	52	4969	27934	5587	5587	3	5662	1132	1080	3/9/03	[illegible]
2	0.1	1022	51.1	4898	28261	5652.2	5652.1	1	5596	1119.2	1068.1	3/11/03	NRK
4	0.2	1190	59.75	4953	28059	5611.8	5611.6	0	5561	1112.2	1052.45	3-15-03	[illegible]
5	0.25	1120	51	4723	28132	5626.4	5626.15	0	5617	1123.4	1072.4	3-18-03	NRK
6	0.3	1023	~~5354~~					~~2~~	~~5554~~	~~1110.8~~	~~1057.8~~	~~3-20~~	~~NRK 3-25-03~~
5	0.25	1060	53	4733	28326	5665.2	5664.95	2	5554	1110.8	1057.8	3-25-03	NRK
5	0.25	1030	51.5	4681	28388	5677.6	5677	2	5443	1088.6	1037	3-26-03	NRK
2	0.1	1020	51	4749	28058	5611.6	5611.5	2	5455	1091	1040	3-27-03	NRK

REMARKS _____

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

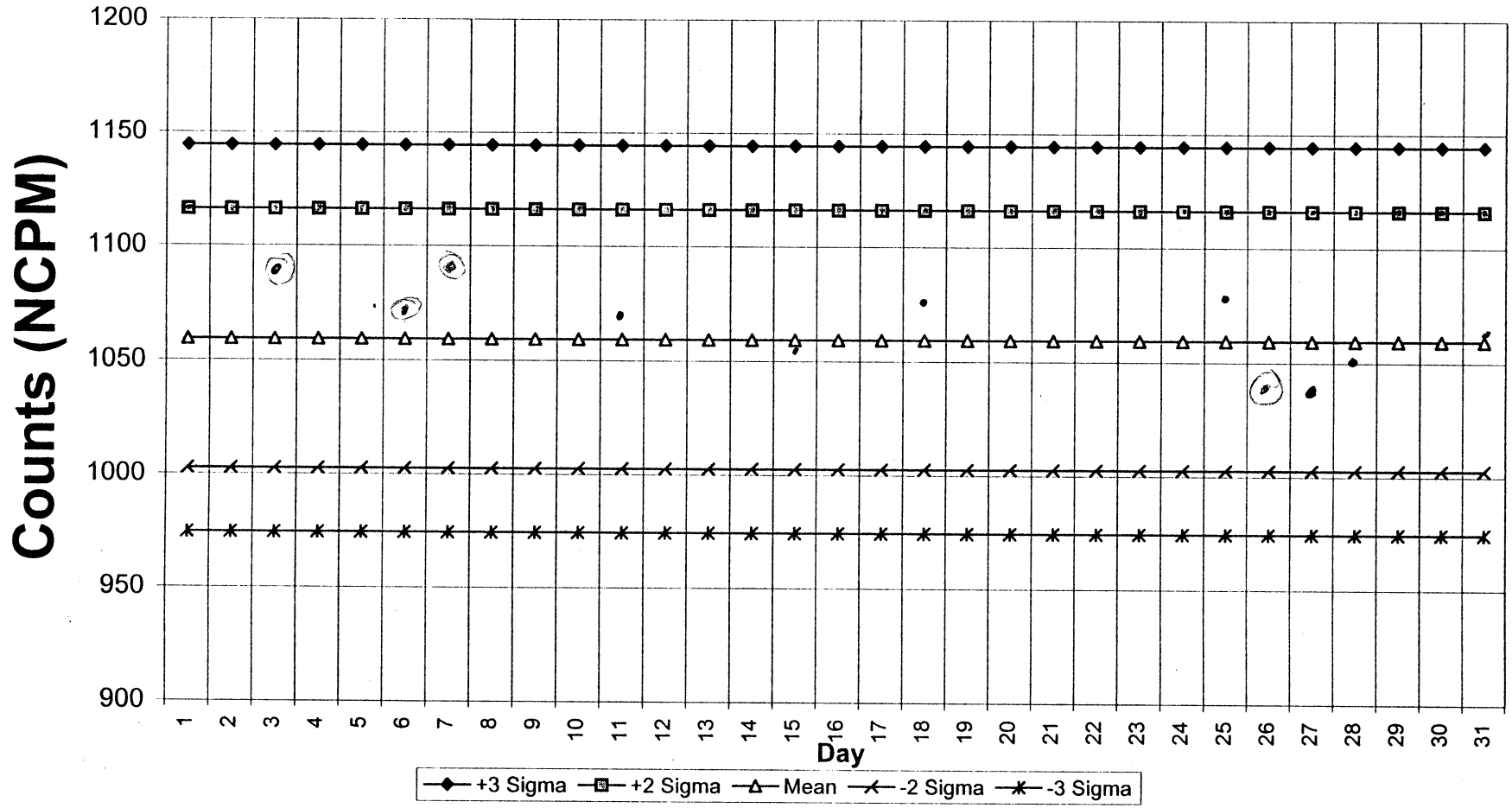
BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{\alpha(\beta)}$	Counts $C_{\alpha(\alpha)}$	Count Rate, $R_{\alpha(\alpha)}$ (cpm)	Net Count Rate, $R_{\alpha(\alpha)}$ (cpm)	Counts $C_{\alpha(\alpha)}$	Counts $C_{\alpha(\beta)}$	Count Rate, $R_{\alpha(\beta)}$ (cpm)	Net Count Rate, $R_{\alpha(\beta)}$ (cpm)	Date	Performed By
6	0.3	1089	54.45	4818	28220	5644	5643.7	1	5521	1104.2	1050	3-28-03	[illegible]
7	0.35	1015	50.75	4898	27962	5592.4	5592.05 ~~5592.05~~	1	5536	1107.2	1058.45	3-31-03	[illegible]

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart **Month Of** March **20** 03

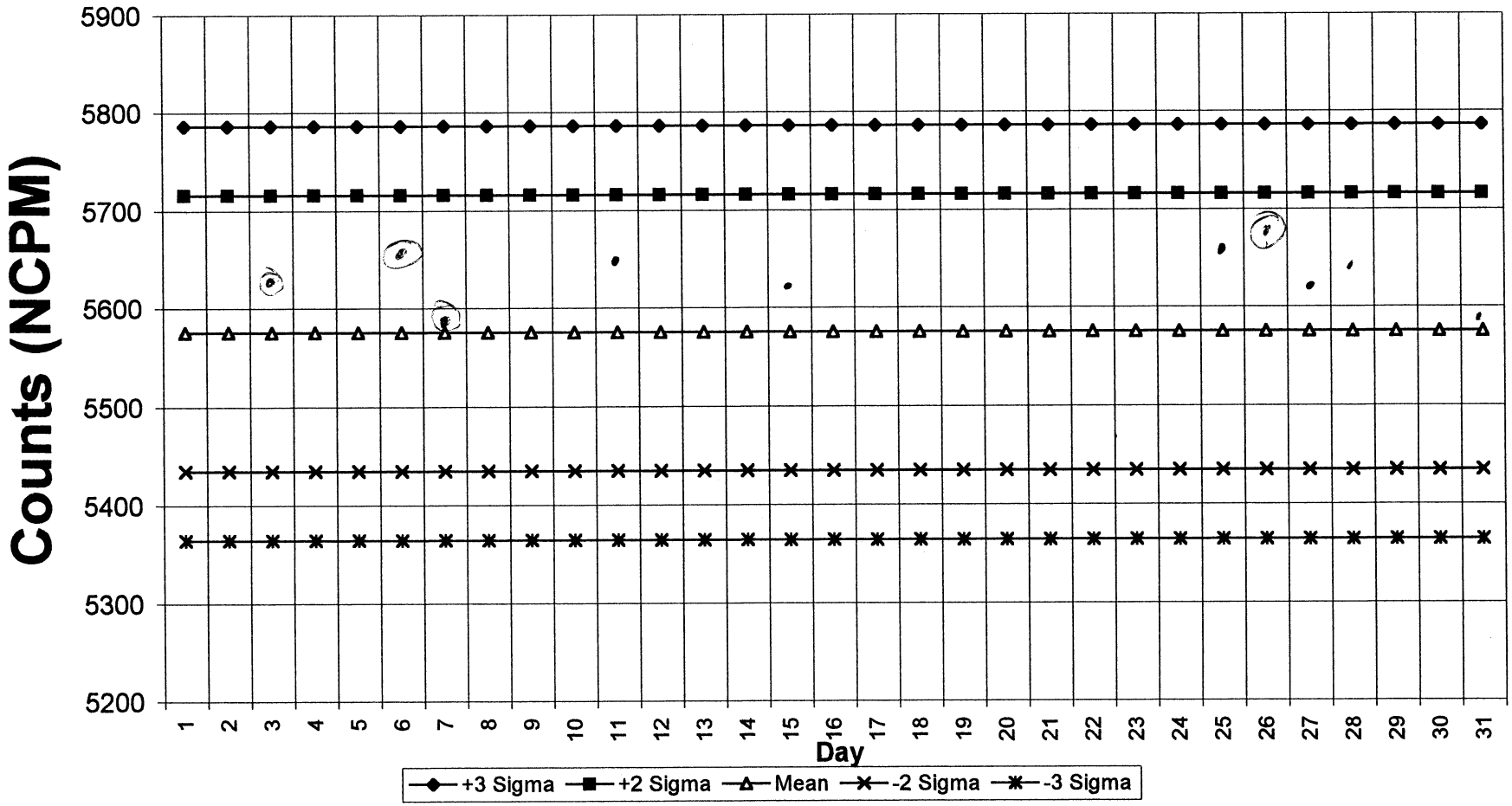
Instrument 2929, **Source#** 119655, **Isotope** Tc-99



Reviewed By_____ Date_____

Control Chart **Month Of** March **20** 03

Instrument 2929, **Source#** 119737, **Isotope** Th-230



Reviewed By_____ Date_____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{s(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{s(\beta)}$ (cpm)	Date	Performed By
5	.25	1081	54	4821	28163	5633	5633.7	1	5595	1119	1065	4-1-03	65Kjos
5	0.25	1092	54.6 ~~54~~ NRK	4693	28047	5619.4	5619.15	0	5536	1107.2	1052.6	4-2-03	NRK/JS
4	0.2	1013	51	4826	28020	5604	5603.8	1	5509	1101.8	1050.8	4-3-03	NRK/JS
5	.25	1022	51	4798	28079	5615.8	5615.5	1	5543	1108.6	1057	4-4-03	NRK/JS
7	.35	1009	50.45	4782	27769	5553.8	5553.45	2	5457	1091.4	1040.95	4-7-03	NRK/JS
5	.25	1024	51.2	4556	28054	5610.8	5610.5	2	5476	1095.2	1044	4-8-03	NRK/JS
3	0.15	1055	53	4735	27580	5516	5515.85	1	5603	1120.6	1067.6	4-9-03	NRK
5	0.25	1037	51.85	4852	28054	5610.8	5609.55	3	5638	1127.6	1075.75	4-10-03	NRK
6	0.30	1045	52.25	4800	28310	5662	5661.7	2	5630	1126	1073.75	4-11-03	NRK
6	0.30	1027	51.35	4789	27957	5591.4	5591.1	0	5666	1133.2	1081.85	4-13-03	NRK

REMARKS _____

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts $C_{b(\alpha)}$	Count Rate, $R_{b(\alpha)}$ (cpm)	Counts $C_{b(\beta)}$	Count Rate, $R_{b(\beta)}$ (cpm)	Counts $C_{s(\beta)}$	Counts $C_{s(\alpha)}$	Count Rate, $R_{s(\alpha)}$ (cpm)	Net Count Rate, $R_{s(\alpha)}$ (cpm)	Counts $C_{s(\alpha)}$	Counts $C_{s(\beta)}$	Count Rate, $R_{s(\beta)}$ (cpm)	Net Count Rate, $R_{s(\beta)}$ (cpm)	Date	Performed By
4	0.20	1022	51.1	4660	28291	5658.2	5658	2	5637	1127.4	1076.3	4-15-03	NRKjos
6	0.30	1136	56.8	4727	27763	5552.6	5552.3	1	5701	1140.2	1083.4	4-16-03	NRKjos
6	0.30	1079	53.95	4650	28091	5618.2	5617.9	2	5467	1093.4	1039.45	4-17-03	NRKjos
1	0.05	1092	54.6	4711	28440	5688	5687.95	1	5513	1102.6	1048	4-18-03	NRKjo
7	0.35	1026	51.3	4750	28659	5611.8	5611.45	2	5382	1076.4	1025.1	4-19-03	NRKjo
1	0.05	1058	52.9	4544	28149	5629.8	5629.75	0	5662	1132.4	1079.5	4-21-03	NRKjos
6	0.30	1026	51.3	4659	28194	5638.8	5638.5	3	5391	1078.2	1026.9	4-22-03	NRKjo
5	0.25	1093	54.65	4774	28167	5633.4	5633.15	2	5583	1116.6	1061.95	4-23-03	NRKjo
3	0.30 15 max	1099	54.95	4783	27949	5589.8	5589.5	2	5523	1104.6	1049.65	4-24-03	NRKjo
5	0.25	1102	55.1	4849	27971	5594.2	5593.95	5	5488	1097.6	1042.5	4-25-03	NRKjo

REMARKS _____

Reviewed By/Date _____ / _____

ENCLOSURE 9.1
PERFORMANCE DATA SHEET

Instrument ID # 2929/118419

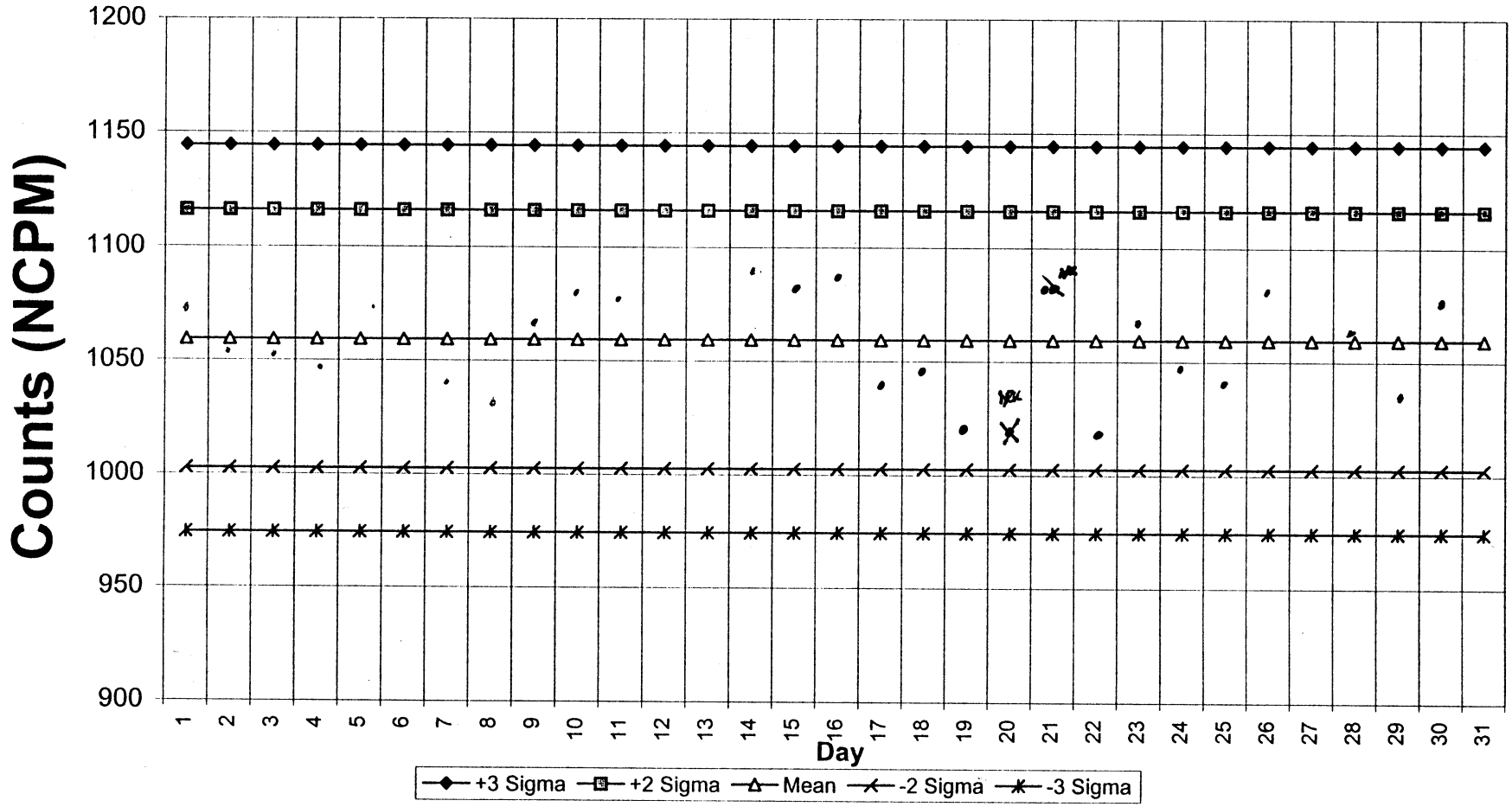
BACKGROUND				ALPHA SOURCE				BETA SOURCE					
count time = 20 minutes				count time = 5 minutes				count time = 5 minutes					
ALPHA CHANNEL		BETA CHANNEL		BETA CH	ALPHA CHANNEL			ALPHA CH	BETA CHANNEL				
Counts C_{bkgl}	Count Rate, R_{bkgl} (cpm)	Counts C_{bkgl}	Count Rate, R_{bkgl} (cpm)	Counts C_{bkgl}	Counts C_{alpl}	Count Rate, R_{alpl} (cpm)	Net Count Rate, R_{alpl} (cpm)	Count # C_{betl}	Counts C_{betl}	Count Rate, R_{betl} (cpm)	Net Count Rate, R_{betl} (cpm)	Date	Performed By
4	0.20	1049	52.45	4736	28042	5608.4	5608.2	1	5645	1129	1076.55	4-26-03	NRP
3	.15	1084	54.2	4710	28126	5625.2	5625.05	4	5573	1114.6	1060.4	4-28-03	NRP
6	0.30	1021	51.05	4762	27974	5594.8	5594.5	1	5412	1082.4	1031.35	4-29-03	NRP
4	0.20	1037	51.85	4775	27786	5557.2	5557	2	5658	1131.6	1079.75	4-30-03	NRP

REMARKS _____

Reviewed By/Date _____ / _____

Control Chart **Month Of** April **20** 03

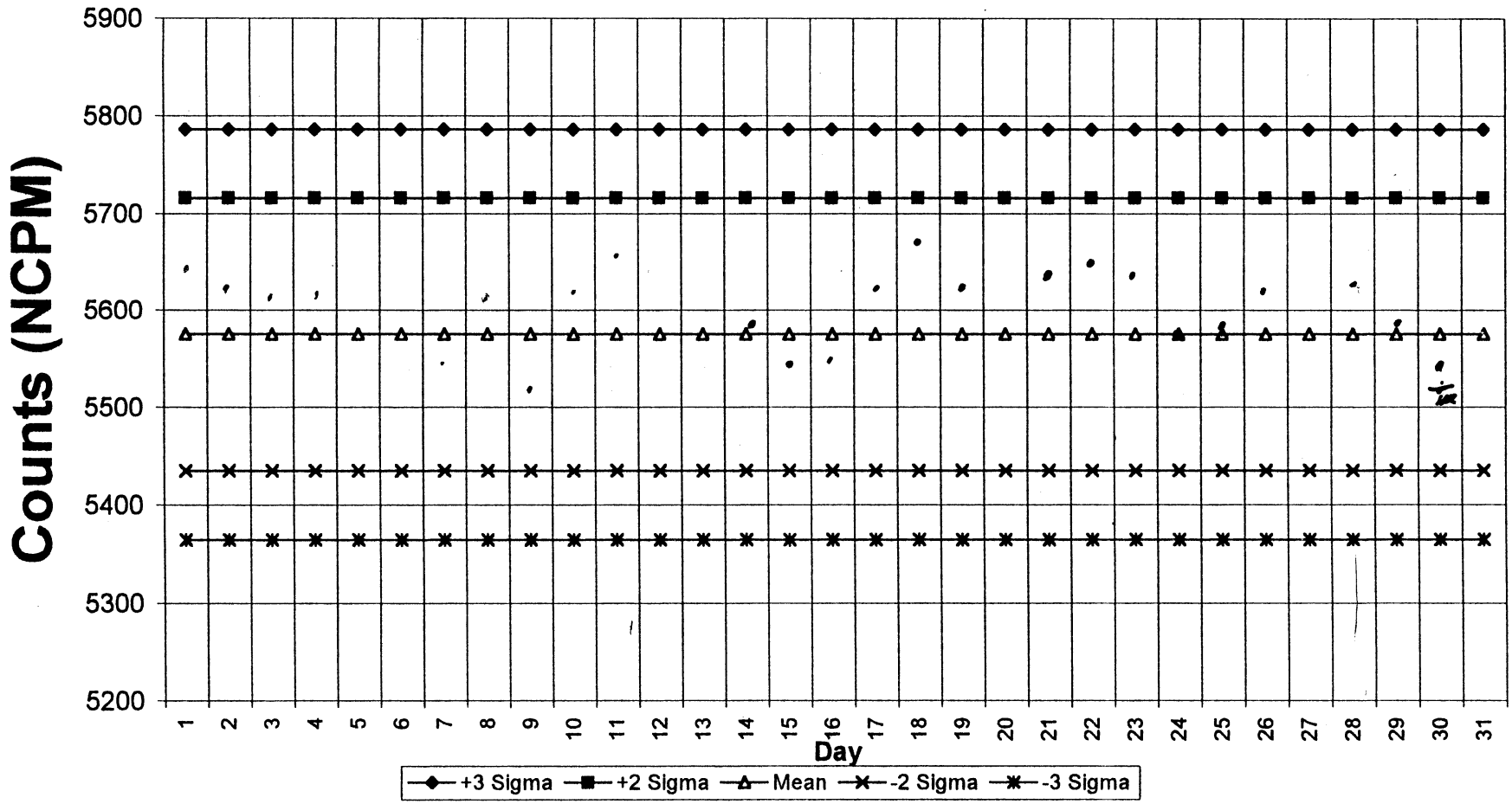
Instrument 2929, **Source#** 119655, **Isotope** Tc-99



Reviewed By_____ Date_____

Control Chart **Month Of** April **20** 03

Instrument 2929, **Source#** 119737, **Isotope** Th-230



Reviewed By_____ Date_____

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 177	Serial Number: 44687
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 163410
Customer Purchase Order Number: N/A	Work Order Number: 2002-00842	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-235	
X 1	100	100	100	Pulser: 112860	Cal Due: 12/05/02
X 1	250	260	260	D-814: 2551	Cal Due: 09/12/02
X 1	400	390	390	Psychron: 7480	Cal Due: 05/17/03
X 10	1,000	1,000	1,000		
X 10	2,500	2,600	2,600		
X 10	4,000	4,100	4,100	Temp: 24.2°C	
X 100	10,000	10,000	10,000	Pressure: 746mmHg	
X 100	25,000	26,000	26,000	Humidity: 49%	
X 100	40,000	41,000	41,000	Background: 40cpm	
X 1000	100,000	100,000	100,000	Threshold: 35mV	
X 1000	250,000	260,000	260,000	HV (As found = 906V) (As left = 906V)	
X 1000	400,000	410,000	410,000	BAT: SAT	Volume: SAT
Efficiency Information				Audio: SAT	Geotropism: SAT
X 1 EFF	Tc-99#119720	2,562dpm	12.4%	F/S Resp: SAT	Alarm: SAT
X 10 EFF	Tc-99#119718	20,520dpm	11.7%	HV Test: SAT	
X 100 EFF	Tc-99#099606	177,000dpm	10.7%	Limited Use: X1K scale for information only. Use with 44-9 probe.	
AVG EFF	N/A	N/A	11.6%		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By: Thomas G. Scott	Date: 7-18-02
Calibration Date: 07/17/02	Calibration Due: 01/17/03	

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 177	Serial Number: 44687
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 118906
Customer Purchase Order Number: N/A	Work Order Number: 2002-01440	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-235 Rev. 2	
X 1	100	100	100	Pulser: 120935	Cal Due: 03/18/03
X 1	250	250	250	DVM: 6565015	Cal Due: 09/30/03
X 1	400	400	400	D-814: 2525	Cal Due: 02/18/03
X 10	1,000	1,000	1,000	Psychron: 7480	Cal Due: 05/17/03
X 10	2,500	2,500	2,500		
X 10	4,000	4,000	4,000	Temp: 25.2°C	
X 100	10,000	10,000	10,000	Pressure: 737mmHg	
X 100	25,000	25,000	25,000	Humidity: 41%	
X 100	40,000	40,000	40,000	Background: 50cpm	
X 1000	100,000	100,000	100,000	Threshold: 34mV	
X 1000	250,000	250,000	250,000	HV (As found = 905V) (As left = 905V)	
X 1000	400,000	395,000	395,000	BAT: SAT	Volume: SAT
Efficiency Information				Audio: SAT	Geotropism: SAT
X 1 EFF	Tc-99#119720	2,562dpm	12.0%	F/S Resp: SAT	Alarm: SAT
X 10 EFF	Tc-99#119718	20,520dpm	10.7%	HV Test: SAT	
X 100 EFF	Tc-99#099606	177,000dpm	13.6%	Limited Use: X1K scale for information only. Use with 44-9 probe.	
AVG EFF	N/A	N/A	12.1%		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By:	Date: 1-2-03
Calibration Date: 01/02/03	Calibration Due: 07/02/03	

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: M-177 Instrument ID: 44687

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X1	360	288 - 432	PR089759	3rd Shelf	
X10	700	560 - 840	PR089759	contact	
X100	N/A	N/A	N/A	N/A	information only
X1K	N/A	N/A	N/A	N/A	information only

Performed by/Date _____ / _____ Reviewed by/Date _____ / _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
~~BSK~~ ~~DLE~~ ~~III~~ ~~IV~~ L-177	44687	✓		NRK	10-1-02
"	"	✓		YCM	10-02-02
"	"	✓		YCM	10-03-02
"	"	✓		YCM	10-04-02
"	"	✓		YCM	10-07-02
"	"	✓		BSK	10-8-02
"	"	✓		YCM	10-09-02
"	"	✓		BSK	10-10-02
"	"	✓		NRK	10-11-02
"	"	✓		NRK	10-12-02
"	"	✓		YCM	10-14-02
"	"	✓		YCM	10-15-02
"	"	✓		YCM	10-16-02
"	"	✓		NRK	10-17-02
"	"	✓		NRK	10-18-02
"	"	✓		NRK	10-21-02
"	"	✓		NRK	10-22-02
"	"	✓		YCM	10-23-02
"	"	✓		BSK	10-24-02
"	"	✓		YCM	10-25-02
"	"	✓		NRK	10-28-02
"	"	✓		YCM	10-29-02
"	"	✓		BSK	10-30-02

_____ / _____
Reviewed by Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	44687	✓		NRG	10-31-02

_____ / _____
Reviewed by Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	44687	✓		PSK	11-1-02
"	"	✓		YCM	11-4-02
"	"	✓		NRK	11-5-02
"	"	✓		NRK	11-6-02
"	"	✓		YCM	11-07-02
"	"	✓		NRK	11-8-02
"	"	✓		YCM	11-11-02
"	"	✓		YCM	11-12-02
"	"	✓		YCM	11-13-02
"	"	✓		YCM	11-14-02
"	"	✓		PSK	11-15-02
"	"	✓		YCM	11-18-02
"	"	✓		YCM	11-19-02
"	"	✓		YCM	11-20-02
"	"	✓		YCM	11-21-02
"	"	✓		YCM	11-22-02
"	"	✓		YCM	11-25-02
"	"	✓		NRK	11-26-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	44687	✓		NRK	12-2-02
"	"	✓		Tom	12-03-02
"	"	✓		Tom	12-04-02
"	"	✓		Tom	12-05-02
"	"	✓		Tom	12-06-02
"	"	✓		Tom	12-09-02
"	"	✓		Tom	12-10-02
"	"	✓		Tom	12-11-02
"	"	✓		Tom	12-12-02
"	"	✓		Tom	12-13-02
"	"	✓		Tom	12-16-02
"	"	✓		Tom	12-17-02
"	"	✓		NRK	12-18-02
"	"	✓		Tom	12-19-02
"	"	✓		NRK	12-20-02

Reviewed by _____ Date _____

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

BK 4-4-03

Instrument Model Number: M-177-61

Instrument ID: ~~94439~~ 44687

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X1	380	304- 456	M-180-2 # PR089759 TC-99- # 119655	3rd shelf	
X10	700	560- 840		contact	
X100	N/A	N/A	N/A	N/A	Information Only
X1K	N/A	N/A	N/A	N/A	Information Only

Performed by/Date _____ / _____ Reviewed by/Date _____ / _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	44687	✓		BSK	4-4-03
"	"	✓		NRK	4-7-03
"	"	✓		NRK	4-8-03
"	"	✓		NRK	4-9-03
"	"	✓		NRK	4-10-03
"	"	✓		NRK	4-11-03
"	"	✓		NRK	4-14-03
"	"	✓		NRK	4-15-03
"	"	✓		NRK	4-16-03
"	"	✓		NRK	4-17-03
"	"	✓		BSK	4-18-03

Reviewed by _____ Date _____

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 177	Serial Number: 94756
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 118906
Customer Purchase Order Number: N/A	Work Order Number: 2002-01440	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-235 Rev. 2	
X 1	100	100	100	Pulser: 120935	Cal Due: 03/18/03
X 1	250	250	250	DVM: 6565015	Cal Due: 09/30/03
X 1	400	400	400	D-814: 2525	Cal Due: 02/18/03
X 10	1,000	1,000	1,000	Psychron: 7480	Cal Due: 05/17/03
X 10	2,500	2,500	2,500		
X 10	4,000	4,000	4,000	Temp: 25.2°C	
X 100	10,000	10,000	10,000	Pressure: 737mmHg	
X 100	25,000	25,000	25,000	Humidity: 41%	
X 100	40,000	40,000	40,000	Background: 50cpm	
X 1000	100,000	100,000	100,000	Threshold: 35mV	
X 1000	250,000	250,000	250,000	HV (As found = 907V) (As left = 907V)	
X 1000	400,000	395,000	395,000	BAT: SAT	Volume: SAT
Efficiency Information				Audio: SAT	Geotropism: SAT
X 1 EFF	Tc-99#119720	2,562dpm	11.7%	F/S Resp: SAT	Alarm: SAT
X 10 EFF	Tc-99#119718	20,520dpm	10.5%	HV Test: SAT	
X 100 EFF	Tc-99#099606	177,000dpm	13.6%	Limited Use: X1K scale for information only. Use with 44-9 probe.	
AVG EFF	N/A	N/A	11.9%		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By:	Date:
Calibration Date: 01/02/03	Calibration Due: 07/02/03	

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 177	Serial Number: 94756
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 118906
Customer Purchase Order Number: N/A	Work Order Number: 2002-01440	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-235 Rev. 2	
X 1	100	100	100	Pulser: 120935	Cal Due: 03/18/03
X 1	250	250	250	DVM: 6565015	Cal Due: 09/30/03
X 1	400	400	400	D-814: 2525	Cal Due: 02/18/03
X 10	1,000	1,000	1,000	Psychron: 7480	Cal Due: 05/17/03
X 10	2,500	2,500	2,500		
X 10	4,000	4,000	4,000	Temp: 25.2°C	
X 100	10,000	10,000	10,000	Pressure: 737mmHg	
X 100	25,000	25,000	25,000	Humidity: 41%	
X 100	40,000	40,000	40,000	Background: 50cpm	
X 1000	100,000	100,000	100,000	Threshold: 35mV	
X 1000	250,000	250,000	250,000	HV (As found = 907V) (As left = 907V)	
X 1000	400,000	395,000	395,000	BAT: SAT	Volume: SAT
Efficiency Information				Audio: SAT	Geotropism: SAT
X 1 EFF	Tc-99#119720	2,562dpm	11.7%	F/S Resp: SAT	Alarm: SAT
X 10 EFF	Tc-99#119718	20,520dpm	10.5%	HV Test: SAT	
X 100 EFF	Tc-99#099606	177,000dpm	13.6%	Limited Use: X1K scale for information only. Use with 44-9 probe.	
AVG EFF	N/A	N/A	11.9%		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By: Thomas F. Scott	Date: 1-2-03
Calibration Date: 01/02/03	Calibration Due: 07/02/03	

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 177	Serial Number: 94756
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 103264
Customer Purchase Order Number: N/A	Work Order Number: 2002-00970	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-235	
X 1	100	100	100	Pulser: 101500	Cal Due: 08/23/02
X 1	250	250	250	DVM: TW12663	Cal Due: 03/18/03
X 1	400	400	400	D-814: 2551	Cal Due: 09/12/02
X 10	1,000	1,050	1,000	Psychron: 7480	Cal Due: 05/17/03
X 10	2,500	2,700	2,500		
X 10	4,000	4,300	4,000	Temp: 21.7°C	
X 100	10,000	10,000	10,000	Pressure: 746mmHg	
X 100	25,000	25,000	25,000	Humidity: 52%	
X 100	40,000	40,000	40,000	Background: 40cpm	
X 1000	100,000	100,000	100,000	Threshold: 35mV	
X 1000	250,000	250,000	250,000	HV (As found = 904V) (As left = 904V)	
X 1000	400,000	395,000	395,000	BAT: SAT	Volume: SAT
Efficiency Information				Audio: SAT	Geotropism: SAT
X 1 EFF	Tc-99#119720	2,562dpm	10.5%	F/S Resp: SAT	Alarm: SAT
X 10 EFF	Tc-99#119718	20,520dpm	11.0%	HV Test: SAT	
X 100 EFF	Tc-99#099606	177,000dpm	12.4%	Limited Use: X1K scale for information only. Use with 44-9 probe.	
AVG EFF	N/A	N/A	11.3%		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: Mike Paul	I certify that the above information is correct: Reviewed By: Thomas G. Scott Date: 8-12-02
Calibration Date: 08/12/02	Calibration Due: 02/12/03

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: M-177 Instrument ID: 94756

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X1	360	288 - 432	M-180-2 # PR089759 Tc-99 # 119655	3rd Shelf	
X10	700	560 - 840	↓	contact	
X100	N/A	N/A	N/A	N/A	Information only
X1K	N/A	N/A	N/A	N/A	Information only

Performed by/Date _____ / _____ Reviewed by/Date _____ / _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	94756	✓		BSK	8-23-02
L-177	94756	✓		BSK	8-27-02
L-177	94756	✓		BSK	8-28-02
"	"	✓		BSK	8-29-02
"	"	✓		BSK	~~8-29-02~~ 8-30-02 BSK
"	"	✓		BSK	9-3-02
"	"	✓		BSK	9-4-02
"	"	✓		BSK	9-5-02
"	"	✓		BSK	9-6-02
"	"	✓		BSK	9-9-02
"	"	✓		BSK	9-10-02
"	"	✓		BSK	9-11-02
"	"	✓		BSK	~~9-11-02~~ 9-12-02
"	"	✓		BSK	9-13-02
"	"	✓		BSK	9-16-02
"	"	✓		BSK	9-17-02
"	"	✓		YCm	09-18-02
"	"	✓		YCm	09-19-02
"	"	✓		YCm	09-20-02
"	"	✓		~~YCm~~ BSK	~~09-23-02~~ 09-21-02
"	"	✓		YCm	09-23-02
"	"	✓		YCm	09-24-02
"	"	✓		YCm	09-25-02

09-23-02 YCm

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	94756	✓		NRlps	9-26-02
"	"	✓		NRlp	9-27-02
"	"	✓		Ycm	09-30-02
			N		
			A		

Reviewed by _____ / Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	94756	✓		NRK	10-1-02
"	"	✓		YCM	10-02-02
"	"	✓		YCM	10-03-02
"	"	✓		YCM	10-04-02
"	"	✓		YCM	10-07-02
"	"	✓		BSK	10-8-02
"	"	✓		YCM	10-09-02
"	"	✓		BSK	10-10-02
"	"	✓		NRK	10-11-02
"	"	✓		NRK	10-12-02
"	"	✓		YCM	10-14-02
"	"	✓		YCM	10-15-02
"	"	✓		YCM	10-16-02
"	"	✓		NRK	10-17-02
"	"	✓		NRK	10-18-02
"	"	✓		NRK	10-21-02
"	"	✓		NRK	10-22-02
"	"	✓		YCM	10-23-02
"	"	✓		BSK	10-24-02
"	"	✓		YCM	10-25-02
"	"	✓		NRK	10-28-02
"	"	✓		YCM	10-29-02
"	"	✓		BSK	10-30-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	94756	✓		NRYjos	10-31-02

_____ / _____
Reviewed by Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	94756	✓		BSK	11-1-02
"	"	✓		CCM	11-04-02
"	"	✓		NCK	11-5-02
"	"	✓		NCK	11-6-02
"	"	✓		NCK	11-7-02
"	"	✓		NCK	11-8-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-177	94756	✓		Tom	01-08-03
"	"	✓		BSK	1-9-03
"	"	✓		BSK	1-10-03
"	"	✓		BSK	1-13-03
"	"	✓		BSK	1-14-03
"	"	✓		Tom	01-15-03
"	"	✓		Tom	01-16-03
"	"	✓		BSK	1-17-03
"	"	✓		Tom	01-20-03
"	"	✓		Tom	01-21-03
"	"	✓		Tom	01-22-03
"	"	✓		Tom	01-23-03
"	"	✓		BSK	1-24-03
"	"	✓		BSK	1-27-03
"	"	✓		Tom	01-28-03
"	"	✓		Tom	01-29-03
"	"	✓		Tom	01-30-03
"	"	✓		Tom	01-31-03
"	"	✓		BSK	2-3-03
"	"	✓		BSK	2-4-03
"	"	✓		BSK	2-5-03
"	"	✓		BSK	2-6-03
"	"	✓		BSK	2-7-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-177	94756	✓		BSK	2-10-03
"	"	✓		BSK	2-11-03
"	"	✓		BSK	2-12-03
"	"	✓		BSK	2-13-03
"	"	✓		BSK	2-14-03
"	"	✓		BSK	2-18-03
"	"	✓		BSK	2-19-03
"	"	✓		BSK	2-20-03
"	"	✓		BSK	2-21-03
"	"	✓		BSK	2-24-03
"	"	✓		BSK	2-25-03
"	"	✓		BSK	2-26-03
"	"	✓		BSK	2-27-03
"	"	✓		BSK	2-28-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-177	94756	✓		NRK	3-3-03
"	"	✓		NRK	3-4-03
"	"	✓		NRK	3-5-03
"	"	✓		BSK	3-6-03
"	"	✓		BSK	3-7-03
"	"	✓		NRK	3-10-03
"	"	✓		NRK	3-11-03
"	"	✓		NRK	3-12-03
"	"	✓		NRK	3-13-03
"	"	✓		NRK	3-14-03
"	"	✓		NRK	3-17-03
"	"	✓		NRK	3-18-03
"	"	✓		NRK	3-19-03
"	"	✓		NRK	3-20-03
"	"	✓		NRK	3-21-03
"	"	✓		NRK	3-24-03
"	"	✓		NRK	3-25-03
"	"	✓		NRK	3-26-03
"	"	✓		NRK	3-27-03
"	"	✓		NRK	3-28-03
"	"	✓		NRK	3-31-03

_____ / _____
Reviewed by Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-177	94756	✓		NRK	4-1-03
"	"	✓		BSK	4-2-03
"	"	✓		BSK	4-3-03
"	"	✓		BSK	4-4-03
"	"	✓		NRK	4-7-03
"	"	✓		NRK	4-8-03
"	"	✓		NRK	4-9-03
"	"	✓		NRK	4-10-03
"	"	✓		NRK	4-11-03
"	"	✓		NRK	4-14-03
"	"	✓		NRK	4-15-03
"	"	✓		NRK	4-16-03
"	"	✓		NRK	4-17-03
"	"	✓		NRK	4-18-03
"	"	✓		NRK	4-19-03
"	"	✓		BSK	4-21-03
"	"	✓		NRK	4-22-03
"	"	✓		NRK	4-23-03

Reviewed by _____ Date _____

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 177	Serial Number: 91439
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 5723
Customer Purchase Order Number: N/A	Work Order Number: 2002-00970	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-235	
X 1	100	100	100	Pulser: 101500	Cal Due: 08/23/02
X 1	250	250	250	DVM: TW12663	Cal Due: 03/18/03
X 1	400	400	400	D-814: 2551	Cal Due: 09/12/02
X 10	1,000	1,050	1,000	Psychron: 7480	Cal Due: 05/17/03
X 10	2,500	2,700	2,500		
X 10	4,000	4,300	4,000	Temp: 21.7°C	
X 100	10,000	10,000	10,000	Pressure: 746mmHg	
X 100	25,000	25,000	25,000	Humidity: 52%	
X 100	40,000	40,000	40,000	Background: 60cpm	
X 1000	100,000	100,000	100,000	Threshold: 34mV	
X 1000	250,000	250,000	250,000	HV (As found = 905V) (As left = 905V)	
X 1000	400,000	390,000	390,000	BAT: SAT	Volume: SAT
Efficiency Information				Audio: SAT	Geotropism: SAT
X 1 EFF	Tc-99#119720	2,562dpm	10.5%	F/S Resp: SAT	Alarm: SAT
X 10 EFF	Tc-99#119718	20,520dpm	10.9%	HV Test: SAT	
X 100 EFF	Tc-99#099606	177,000dpm	12.4%	Limited Use: X1K scale for information only. Use with 44-9 probe.	
AVG EFF	N/A	N/A	11.3%		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument	I certify that the above information is correct:
Calibrated By: M. Paul	Reviewed By: Thomas F. Scott Date: 8-15-02
Calibration Date: 08/12/02	Calibration Due: 02/12/03

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	91439	✓		BSK	8-23-02
L-177	91439	✓		BSK	8-27-02
L-177	91439	✓		BSK	8-28-02
"	"	✓		BSK	8-29-02
"	"	✓		BSK	8-30-02
"	"	✓		BSK	8-31-02
"	"	✓		BSK	9-3-02
L-177	91439	✓		BSK	9-4-02
"	"	✓		BSK	9-5-02
"	"	✓		BSK	9-6-02
"	"	✓		BSK	9-9-02
"	"	✓		BSK	9-10-02
"	"	✓		BSK	9-11-02
"	"	✓		BSK	9-12-02
"	"	✓		BSK	9-13-02
"	"	✓		BSK	9-16-02
"	"	✓		BSK	9-17-02
"	"	✓		YCn	09-18-02
"	"	✓		YCn	09-19-02
"	"	✓		YCn	09-20-02
"	"	✓		~~YCn~~ BSK	~~09-23-02~~ 09-21-02 09-23-02 YCn
"	"	✓		YCn	09-23-02
"	"	✓		YCn	09-24-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	91439	✓		Yan	09-25-02
L-177	91439	✓		[illegible]	9-26-02
"	"	✓		[illegible]	9-27-02
"	"	✓		Yan	09-30-02
			N/A		

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	91439	✓		NRK	10-1-02
"	"	✓		YCm	10-02-02
"	"	✓		YCm	10-03-02
"	"	✓		YCm	10-04-02
"	"	✓		YCm	10-07-02
"	"	✓		BSK	10-8-02
"	"	✓		YCm	10-09-02
"	"	✓		BSK	10-10-02
"	"	✓		NRK	10-11-02
"	"	✓		NRK	10-12-02
"	"	✓		YCm	10-14-02
"	"	✓		YCm	10-15-02
"	"	✓		YCm	10-16-02
"	"	✓		NRK	10-17-02
"	"	✓		NRK	10-18-02
"	"	✓		NRK	10-21-02
"	"	✓		NRK	10-22-02
"	"	✓		YCm	10-23-02
"	"	✓		BSK	10-24-02
"	"	✓		YCm	10-25-02
"	"	✓		NRK	10-28-02
"	"	✓		YCm	10-29-02
"	"	✓		BSK	10-30-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	91439	✓		NRP	10-31-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
L-177	91439	✓		BSK	11-1-02
"	"	✓		CM	11-04-02
"	"	✓		NRK	11-5-02
"	"	✓		NRK	11-6-02
"	"	✓		CM	11-07-02
"	"	✓		NRK	11-8-02
"	"	✓		CM	11-11-02
"	"	✓		CM	11-12-02
"	"	✓		CM	11-13-02
"	"	✓		CM	11-14-02
"	"	✓		BSK	11-15-02
"	"	✓		CM	11-18-02
"	"	✓		CM	11-19-02
"	"	✓		CM	11-20-02
"	"	✓		CM	11-21-02
"	"	✓		CM	11-22-02
"	"	✓		CM	11-25-02
"	"	✓		NRK	11-26-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-177	91439	✓		NRK	12-2-02
"	"	✓		YCn	12-3-02
"	"	✓		YCn	12-04-02
"	"	✓		YCn	12-05-02
"	"	✓		YCn	12-06-02
"	"	✓		YCn	12-09-02
"	"	✓		YCn	12-10-02
"	"	✓		YCn	12-11-02
"	"	✓		YCn	12-12-02
"	"	✓		YCn	12-13-02
"	"	✓		YCn	12-16-02
"	"	✓		YCn	12-17-02
"	"	✓		NRK	12-18-02
"	"	✓		YCn	12-19-02
"	"	✓		NRK	12-20-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-177	91439	✓		NRKes	1-6-03
"	"	✓		VCMiles	01-07-03
"	"	✓		YCm	01-08-03
"	"	✓		BSK	1-9-03
"	"	✓		BSK	1-10-03 ~~1-9-03 BSK~~
"	"	✓		BSK	1-13-03
"	"	✓		BSK	1-14-03
"	"	✓		YCm	01-15-03
"	"	✓		YCm	01-16-03
"	"	✓		BSK	1-17-03
"	"	✓		YCm	01-20-03
"	"	✓		YCm	01-21-03
"	"	✓		YCm	01-22-03
"	"	✓		YCm	01-23-03
"	"	✓		BSK	1-24-03
"	"	✓		BSK	1-27-03
"	"	✓		YCm	01-28-03
"	"	✓		YCm	01-29-03
"	"	✓		YCm	01-30-03
"	"	✓		YCm	01-31-03
"	"	✓		BSK	2-3-03
"	"	✓		BSK	2-4-03
"	"	✓		BSK	2-5-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-177	91439	✓		NRK	2-6-03
"	"	✓		NRK	2-7-03
"	"	✓		NRK	2-10-03
"	"	✓		NRK	2-11-03
"	"	✓		NRK	2-12-03

Reviewed by _____ Date _____

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 12	Serial Number: 162121
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 118906
Contract/Task Number: N/A	Work Order Number: 2002-01440	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-1-223 Rev. 1	
X 1	100	100	100	Pulser: 120935	Cal Due: 03/18/03
X 1	250	250	250	D-814: 2525	Cal Due: 02/18/03
X 1	400	400	400	Psychron: 7480	Cal Due: 06/12/03
X 10	1,000	1,000	1,000		
X 10	2,500	2,500	2,500	Temperature: 25.2°C	
X 10	4,000	4,000	4,000	Pressure: 737mmHg	
X 100	10,000	10,000	10,000	Humidity: 41%	
X 100	25,000	25,000	25,000		
X 100	40,000	40,000	40,000		
X 1000	100,000	100,000	100,000	Audio: SAT	Batt. Check: SAT
X 1000	250,000	250,000	250,000	Fast/Slow: SAT	Reset: SAT
X 1000	400,000	400,000	400,000	HV Pushbutton: SAT	Overange: SAT
EFFICIENCY DETERMINATION					
EFF X1	Tc-99#119720	2,562dpm	11.7%	Background: 50cpm	Threshold: 40mV
EFF X10	Tc-99#119718	20,520dpm	10.5%		
EFF X100	Tc-99#099606	177,000dpm	13.5%	Limited Use: X1000 Scale for information only. Use with 44-9.	
Average	N/A	N/A	11.9%		
High Voltage	900V	901V	901V		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By: Thomas G. Scott	Date: 1-2-03
Calibration Date: 01/02/03	Calibration Due: 07/02/03	

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: 12 Instrument ID: 162121

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X1	280	224 - 336	FD184 PR089759	3rd shelf	
X10	500	400 - 600	"	Contact	
X100					For information only
X1000					For information only

Performed by/Date B.S. Kjos / 9-6-02 Reviewed by/Date _____ /

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	162121	✓		BSK	9-6-02
"	"	✓		BSK	9-9-02
"	"	✓		BSK	9-10-02
"	"	✓		BSK	9-11-02
"	"	✓		BSK	9-12-02
"	"	✓		BSK	9-13-02
"	"	✓		BSK	9-16-02
"	"	✓		BSK	9-17-02
"	"	✓		YCm	09-18-02
"	"	✓		YCm	09-19-02
"	"	✓		YCm	09-20-02
"	"	✓		BK	09-21-02
"	"	✓		YCm	09-23-02
"	"	✓		YCm	09-24-02
"	"	✓		YCm	09-25-02
M-12	162121	✓		NCG	9-26-02
"	"	✓		NCG	9-27-02
"	"	✓		YCm	09-30-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	162121	✓		NRK	10-1-02
"	"	✓		YCM	10-02-02
"	"	✓		YCM	10-03-02
"	"	✓		YCM	10-04-02
"	"	✓		YCM	10-07-02
"	"	✓		BSK	10-8-02
"	"	✓		YCM	10-09-02
"	"	✓		BSK	10-10-02
"	"	✓		NRK	10-11-02
"	"	✓		NRK	10-12-02
"	"	✓		YCM	10-14-02
"	"	✓		YCM	10-15-02
"	"	✓		YCM	10-16-02
"	"	✓		NRK	10-17-02
"	"	✓		NRK	10-18-02
"	"	✓		NRK	10-21-02
"	"	✓		NRK	10-22-02
"	"	✓		YCM	10-23-02
"	"	✓		BSK	10-24-02
"	"	✓		YCM	10-25-02
"	"	✓		NRK	10-28-02
"	"	✓		YCM	10-29-02
"	"	✓		BSK	10-30-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	162121	✓		NRG	10-31-02

Reviewed by _____ / _____ Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	162121	✓		BSK	11-1-02
"	"	✓		YCM	11-4-02
"	"	✓		NRK	11-5-02
"	"	✓		NRK	11-6-02
"	"	✓		YCM	11-07-02
"	"	✓		NRK	11-8-02
"	"	✓		YCM	11-11-02
"	"	✓		YCM	11-12-02
"	"	✓		YCM	11-13-02
"	"	✓		YCM	11-14-02
"	"	✓		BSK	11-15-02
"	"	✓		YCM	11-18-02
"	"	✓		YCM	11-19-02
"	"	✓		YCM	11-20-02
"	"	✓		YCM	11-21-02
"	"	✓		YCM	11-22-02
"	"	✓		YCM	11-25-02
"	"	✓		NRK	11-26-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	162121	✓		BSK	1-8-03
"	"	✓		BSK	1-9-03
"	"	✓		BSK	1-10-03
"	"	✓		BSK	1-13-03
"	"	✓		BSK	1-14-03
"	"	✓		YC	01-15-03
"	"	✓		YC	01-16-03
"	"	✓		BSK	1-17-03
"	"	✓		YC	01-20-03
"	"	✓		YC	01-21-03
"	"	✓		YC	01-22-03
"	"	✓		YC	01-23-03
"	"	✓		BSK	1-24-03
"	"	✓		BSK	1-27-03
"	"	✓		YC	01-28-03
"	"	✓		BSK	1-29-03
"	"	✓		YC	01-30-03
"	"	✓		YC	01-31-03
"	"	✓		BSK	2-3-03
"	"	✓		BSK	2-4-03
"	"	✓		BSK	2-5-03
"	"	✓		BSK	2-6-03
"	"	✓		BSK	2-7-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	162121	✓		BSK	2-10-03
"	"	✓		BSK	2-11-03
"	"	✓		BSK	2-12-03
"	"	✓		BSK	2-13-03
"	"	✓		BSK	2-14-03
"	"	✓		BSK	2-18-03
"	"	✓		BSK	2-19-03
"	"	✓		BSK	2-20-03
"	"	✓		BSK	2-21-03
"	"	✓		BSK	2-24-03
"	"	✓		BSK	2-25-03
"	"	✓		BSK	2-26-03
"	"	✓		BSK	2-27-03
"	"	✓		BSK	2-28-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	162121	✓		NRK	3-3-03
"	"	✓		NRK	3-4-03
"	"	✓		NRK	3-5-03
"	"	✓		BSK	3-6-03
"	"	✓		BSK	3-7-03
"	"	✓		NRK	3-10-03
"	"	✓		NRK	3-11-03
"	"	✓		NRK	3-12-03
"	"	✓		NRK	3-13-03
"	"	✓		NRK	3-14-03
"	"	✓		NRK	3-17-03
"	"	✓		NRK	3-18-03
"	"	✓		NRK	3-19-03
"	"	✓		NRK	3-20-03
"	"	✓		NRK	3-21-03
"	"	✓		NRK	3-24-03
"	"	✓		NRK	3-25-03
"	"	✓		NRK	3-26-03
"	"	✓		NRK	3-27-03
"	"	✓		NRK	3-28-03
"	"	✓		NRK	3-31-03

Reviewed by _____ Date _____

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: N-12 Instrument ID: 162121

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X 1	360	288- 432		3rd shelf	
X 10	600	480 - 720 ~~320 - 480~~ 1-8-03 OK		Contact	
X 100					For information only
X 1K					For information only

Performed by/Date BS Bjos 1 1-8-03 Reviewed by/Date /

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	162121	✓		NRK	4-1-03
"	"	✓		BSK	4-2-03
"	"	✓		BSK	4-3-03
"	"	✓		BSK	4-4-03
"	"	✓		NRK	4-7-03
"	"	✓		NRK	4-8-03
"	"	✓		NRK	4-9-03
"	"	✓		NRK	4-10-03
"	"	✓		NRK	4-11-03
"	"	✓		NRK	4-12-03
"	"	✓		NRK	4-14-03
"	"	✓		NRK	4-15-03
"	"	✓		NRK	4-16-03
"	"	✓		NRK	4-17-03
"	"	✓		BSK	4-18-03
"	"	✓		NRK	4-19-03
"	"	✓		BSK	4-21-03
"	"	✓		NRK	4-22-03
"	"	✓		NRK	4-23-03

Reviewed by _____ Date _____

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 12	Serial Number: 117173
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 030461
Contract/Task Number: 106726.0010	Work Order Number: 2002-01050	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-1-223	
X 1	100	100	100	Pulser: 92851	Cal Due: 01/02/03
X 1	250	250	250	ESV: ES-17442	Cal Due: 08/13/03
X 1	400	420	420	D-812: 2551	Cal Due: 09/12/02
X 10	1,000	1,000	1,000	Psychron: 7480	Cal Due: 05/17/03
X 10	2,500	2,600	2,600		
X 10	4,000	4,100	4,100	Temperature: 22.0 °C	
X 100	10,000	10,000	10,000	Pressure: 745 mmHg	
X 100	25,000	25,000	25,000	Humidity: 44 %	
X 100	40,000	41,000	41,000		
X 1000	100,000	100,000	100,000	Audio: SAT	Batt. Check: SAT
X 1000	250,000	250,000	250,000	Fast/Slow: SAT	Reset: SAT
X 1000	400,000	410,000	410,000	HV Pushbutton: SAT	Overange: SAT
EFFICIENCY DETERMINATION					
EFF X1	Tc-99 #119720	2,562 dpm	10.9%	Background: 40 cpm	Threshold: 38 mV
EFF X10	Tc-99 #119718	20,520 dpm	12.5 %	Limited Use: X1000 Scale for information only. Use with 44-9.	
EFF X100	Tc-99 #099606	177,000 dpm	13.0%		
High Voltage	900V	900 V	900 V		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument	I certify that the above information is correct:
Calibrated By: Thomas F. Scott	Reviewed By: Date: 9-4-02
Calibration Date: 09/04/02	Calibration Due: 03/04/03

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 12	Serial Number: 117173
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 163412
Contract/Task Number: N/A	Work Order Number: 2002-01348	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-1-223	
X 1	100	N/A[1]	100	Pulser: 120935	Cal Due: 03/18/03
X 1	250	N/A[1]	250	DVM: 6565015	Cal Due: 09/30/03
X 1	400	N/A[1]	400	D-814: 2525	Cal Due: 02/18/03
X 10	1,000	N/A[1]	1,000	Psychron: 7480	Cal Due: 05/17/03
X 10	2,500	N/A[1]	2,500		
X 10	4,000	N/A[1]	4,000	Temperature: 24.3°C	
X 100	10,000	N/A[1]	10,000	Pressure: 746mmHg	
X 100	25,000	N/A[1]	25,000	Humidity: 43%	
X 100	40,000	N/A[1]	40,000		
X 1000	100,000	N/A[1]	100,000	Audio: SAT	Batt. Check: SAT
X 1000	250,000	N/A[1]	250,000	Fast/Slow: SAT	Reset: SAT
X 1000	400,000	N/A[1]	400,000	HV Pushbutton: SAT	Overange: SAT
EFFICIENCY DETERMINATION				N/A[1] No As Founds—Meter Sticking	
EFF X1	Tc-99#119720	2,562dpm	13.3%	Background: 60cpm	Threshold: 35mV
EFF X10	Tc-99#119718	20,520dpm	11.6%	Limited Use: X1000 Scale for information only. Use with 44-9.	
EFF X100	Tc-99#099606	177,000dpm	12.4%		
Average Efficiency	N/A	N/A	12.4%		
High Voltage	900V	900V	900V		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By: Thomas G. Scott	Date: 11-20-02
Calibration Date: 11/20/02	Calibration Due: 05/20/03	

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: 12 Instrument ID: 117173

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X1	300	240 – 360	FD184 PR089759	3rd shelf	
X10	800	640 – 960		Contact	
X100					For information only
X1000					For information only

Performed by/Date BSKjos / 96-02 Reviewed by/Date _____ /

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	117173	✓		BSK	9-6-02
"	"	✓		BSK	9-9-02
"	"	✓		BSK	9-10-02
"	"	✓		BSK	9-11-02
~~"~~	~~"~~	✓		~~BSK~~	~~9-1~~ BSK 9-16-02
M-12	117173	✓		BSK	9-17-02
"	"	✓		YCm	09-18-02
"	"	✓		YCm	09-19-02
"	"	✓		YCm	09-20-02
"	"	✓		BSK	09-21-02
"	"	✓		YCm	09-23-02
"	"	✓		YCm	09-24-02
"	"	✓		YCm	09-25-02
M-12	117173	✓		NRG	9-26-02
"	"	✓		NRG	9-27-02
"	"	✓		YCm	09-30-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	117173	✓		NRK	10-1-02
"	"	✓		Ycm	10-02-02
"	"	✓		Ycm	10-03-02
"	"	✓		Ycm	10-04-02
"	"	✓		Ycm	10-07-02
"	"	✓		BSK	10-8-02
"	"	✓		Ycm	10-09-02
"	"	✓		BSK	10-10-02
"	"	✓		NRK	10-11-02
"	"	✓		NRK	10-12-02
"	"	✓		Ycm	10-14-02
"	"	✓		Ycm	10-15-02
"	"	✓		Ycm	10-16-02
"	"	✓		NRK	10-17-02
"	"	✓		NRK	10-18-02
"	"	✓		NRK	10-21-02
"	"	✓		NRK	10-22-02
"	"	✓		Ycm	10-23-02
"	"	✓		BSK	10-24-02
"	"	✓		Ycm	10-25-02
"	"	✓		NRK	10-28-02
~~"~~	~~"~~	~~✓~~		~~Ycm~~	~~10-29-02~~ 10-29-02 Ycm
"	"		✓	Ycm	10-29-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M12	117173		005	BSK	10-30-02

_____ / _____
Reviewed by Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	117173	✓		NRK	12-2-02
"	"	✓		Ycn	12-03-02
"	"	✓		Ycn	12-04-02
"	"	✓		Ycn	12-05-02
"	"	✓		Ycn	12-06-02
"	"	✓		Ycn	12-09-02
"	"	✓		Ycn	12-10-02
"	"	✓		Ycn	12-11-02
"	"	✓		Ycn	12-12-02
"	"	✓		Ycn	12-13-02
"	"	✓		Ycn	12-16-02
"	"	✓		Ycn	12-17-02
"	"	✓		NRK	12-18-02
"	"	✓		Ycn	12-19-02
"	"	✓		NRK	12-20-02

Reviewed by _____ / _____ Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	117173	✓		NRK	1-6-03
"	"	✓		Ycn	01-07-03
"	"	✓		Ycn	01-08-03
"	"	✓		BSK	1-9-03
"	"	✓		BSK	1-10-03
"	"	✓		BSK	1-13-03
"	"	✓		BSK	1-14-03
"	"	✓		Ycn	01-15-03
"	"	✓		Ycn	01-16-03
"	"	✓		BSK	1-17-03
"	"	✓		Ycn	01-20-03
"	"	✓		Ycn	01-21-03
"	"	✓		Ycn	01-22-03
"	"	✓		Ycn	01-23-03
"	"	✓		BSK	1-24-03
"	"	✓		BSK	1-27-03
"	"	✓		Ycn	01-28-03
"	"	✓		Ycn	01-29-03
"	"	✓		Ycn	01-30-03
"	"	✓		Ycn	01-31-03
"	"	✓		BSK	2-3-03
"	"	✓		BSK	2-4-03
"	"	✓		BSK	2-5-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	117173	✓		BSK	2-6-03
"	"	✓		BSK	2-7-03
"	"	✓		BSK	2-10-03
"	"	✓		BSK	2-11-03
"	"	✓		BSK	2-12-03
"	"	✓		BSK	2-13-03
"	"	✓		BSK	2-14-03
"	"	✓		BSK	2-18-03
"	"	✓		BSK	2-19-03
"	"	✓		BSK	2-20-03
"	"	✓		BSK	2-21-03
"	"	✓		BSK	2-24-03
"	"	✓		BSK	2-25-03
"	"	✓		BSK	2-26-03
"	"	✓		BSK	2-27-03
"	"	✓		BSK	2-28-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	117173	✓		NRK	3-3-03
"	"	✓		NRK	3-4-03
"	"	✓		NRK	3-5-03
"	"	✓		BSK	3-6-03
"	"	✓		BSK	3-7-03
"	"	✓		NRK	3-10-03
"	"	✓		NRK	3-11-03
"	"	✓		NRK	3-12-03
"	"	✓		NRK	3-13-03
"	"	✓		NRK	3-14-03
"	"	✓		NRK	3-17-03
"	"	✓		NRK	3-18-03
"	"	✓		NRK	3-19-03
"	"	✓		NRK	3-20-03
"	"	✓		NRK	3-21-03
"	"	✓		NRK	3-24-03
"	"	✓		NRK	3-25-03
"	"	✓		NRK	3-26-03
"	"	✓		NRK	3-27-03
"	"	✓		NRK	3-28-03
"	"	✓		NRK	3-31-03

Reviewed by _____ Date _____

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: 12 Instrument ID: 117173

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X1	300	240-360	FD184 PR089759	3rd shelf	
X10	600	480-720 ~~320-480~~ BJK		Contact	
X100					For information only
X1000					For information only

Performed by/Date _____ / _____ Reviewed by/Date _____ / _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	117173	✓		NRK	4-1-03
"	"	✓		BSK	4-2-03
"	"	✓		BSK	4-3-03
"	"	✓		BSK	4-4-03
"	"	✓		NRK	4-7-03
"	"	✓		NRK	4-8-03
"	"	✓		NRK	4-9-03
"	"	✓		NRK	4-10-03
"	"	✓		NRK	4-11-03
"	"	✓		NRK	4-12-03
"	"	✓		NRK	4-14-03
"	"	✓		NRK	4-15-03
"	"	✓		NRK	4-16-03
"	"	✓		NRK	4-17-03
"	"	✓		BSK	4-18-03
"	"	✓		NRK	4-19-03
"	"	✓		BSK	4-21-03
"	"	✓		NRK	4-22-03
"	"	✓		NRK	4-23-03

Reviewed by _____ Date _____

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 12	Serial Number: 157641
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 118906
Contract/Task Number: N/A	Work Order Number: 2002-01440	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-1-223 Rev. 1	
X 1	100	100	100	Pulser: 120935	Cal Due: 03/18/03
X 1	250	250	250	D-814: 2525	Cal Due: 02/18/03
X 1	400	400	400	Psychron: 7480	Cal Due: 06/12/03
X 10	1,000	1,000	1,000		
X 10	2,500	2,500	2,500	Temperature: 25.2°C	
X 10	4,000	4,000	4,000	Pressure: 737mmHg	
X 100	10,000	10,000	10,000	Humidity: 41%	
X 100	25,000	25,000	25,000		
X 100	40,000	40,000	40,000		
X 1000	100,000	100,000	100,000	Audio: SAT	Batt. Check: SAT
X 1000	250,000	250,000	250,000	Fast/Slow: SAT	Reset: SAT
X 1000	400,000	400,000	400,000	HV Pushbutton: SAT	Overange: SAT
EFFICIENCY DETERMINATION					
EFF X1	Tc-99#119720	2,562dpm	11.7%	Background: 50cpm	Threshold: 40mV
EFF X10	Tc-99#119718	20,520dpm	11.5%		
EFF X100	Tc-99#099606	177,000dpm	12.4%	Limited Use: X1000 Scale for information only. Use with 44-9.	
Average	N/A	N/A	11.9%		
High Voltage	900V	903V	903V		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By:	Date: 1-2-03
Calibration Date: 01/02/03	Calibration Due: 07/02/03	

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: M-12 Instrument ID: 157641

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X1	300	240-360	FD184 PR089759	3rd shelf	
X10	600	480-720	"	CONTACT	
X100	N/A	N/A	N/A	N/A	For information only
X1000	N/A	N/A	N/A	N/A	For information only

Performed by/Date B.S. Kjos / 9-6-02 Reviewed by/Date _____ /

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	157641	✓		BSK	9-6-02
"	"	✓		BSK	9-9-02
"	"	✓		BSK	9-10-02
"	"	✓		BSK	9-11-02
"	"	✓		BSK	9-12-02
"	"	✓		BSK	9-13-02
"	"	✓		BSK	9-16-02
"	"	✓		BSK	9-17-02
"	"	✓		YCm	09-18-02
"	"	✓		YCm	09-19-02
"	"	✓		YCm	09-20-02
"	"	✓		BSK	09-21-02
"	"	✓		YCm	09-23-02
"	"	✓		YCm	09-24-02
"	"	✓		YCm	09-25-02
M-12	157641	✓		NRG	9-26-02
"	"	✓		NRG	9-27-02
"	"	✓		YCm	09-30-02
		N			
		A			

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	157641	✓		NRK	10-1-02
"	"	✓		tcm	10-02-02
"	"	✓		tcm	10-03-02
"	"	✓		tcm	10-04-02
"	"	✓		tcm	10-07-02
"	"	✓		BSK	10-8-02
"	"	✓		tcm	10-09-02
"	"	✓		NRK	10-10-02
"	"	✓		NRK	10-11-02
"	"	✓		NRK	10-12-02
"	"	✓		tcm	10-14-02
"	"	✓		tcm	10-15-02
"	"	✓		tcm	10-16-02
"	"	✓		NRK	10-17-02
"	"	✓		NRK	10-18-02
"	"	✓		NRK	10-21-02
"	"	✓		NRK	10-22-02
"	"	✓		tcm	10-23-02
"	"	✓		BSK	10-24-02
"	"	✓		tcm	10-25-02
"	"	✓		NRK	10-28-02
"	"	✓		tcm	10-29-02
"	"	✓		BSK	10-30-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	157641	✓		MRG	10-31-02

_____ / _____

Reviewed by Date

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	157641	✓		BJK	11-1-02
"	"	✓		Ycn	11-04-02
"	"	✓		NRK	11-5-02
"	"	✓		NRK	11-6-02
"	"	✓		Ycn	11-07-02
"	"	✓		NRK	11-8-02
"	"	✓		Ycn	11-11-02
"	"	✓		Ycn	11-12-02
"	"	✓		Ycn	11-13-02
"	"	✓		Ycn	11-14-02
"	"	✓		BJK	11-15-02
"	"	✓		Ycn	11-18-02
"	"	✓		Ycn	11-19-02
"	"	✓		Ycn	11-20-02
"	"	✓		Ycn	11-21-02
"	"	✓		Ycn	11-22-02
"	"	✓		Ycn	11-25-02
"	"	✓		NRK	11-26-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	157641	✓		BSK	2-3-03
"	"	✓		BSK	2-4-03
"	"	✓		BSK	2-5-03
"	"	✓		BSK	2-6-03
"	"	✓		BSK	2-7-03
"	"	✓		BSK	2-10-03
"	"	✓		BSK	2-11-03
"	"	✓		BSK	~~2-12-03~~ 2-11-03
"	"	✓		BSK	2-13-03
"	"	✓		BSK	2-14-03
"	"	✓		BSK	2-18-03
"	"	✓		BSK	2-19-03
"	"	✓		BSK	2-20-03
"	"	✓		BSK	2-21-03
"	"	✓		BSK	2-24-03
"	"	✓		BSK	2-25-03
"	"	✓		BSK	2-26-03
"	"	✓		BSK	2-27-03
"	"	✓		BSK	2-28-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	157641	✓		NRK	3-3-03
"	"	✓		NRK	3-4-03
"	"	✓		NRK	3-5-03
"	"	✓		BSK	3-6-03
"	"	✓		BSK	3-7-03
"	"	✓		NRK	3-10-03
"	"	✓		NRK	3-11-03
"	"	✓		NRK	3-12-03
"	"	✓		NRK	3-13-03
"	"	✓		NRK	3-14-03
"	"	✓		NRK	3-17-03
"	"	✓		NRK	3-18-03
"	"	✓		NRK	3-19-03
"	"	✓		NRK	3-20-03
"	"	✓		NRK	3-21-03
"	"	✓		NRK	3-24-03
"	"	✓		NRK	3-25-03
"	"	✓		NRK	3-26-03
"	"	✓		NRK	3-27-03
"	"	✓		NRK	3-28-03
"	"	✓		NRK	3-31-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	157641	✓		NRK	4-1-03
"	"	✓		BSK	4-2-03
"	"	✓		BSK	4-3-03
"	"	✓		BSK	4-4-03
"	"	✓		NRK	4-7-03
"	"	✓		NRK	4-8-03
"	"	✓		NRK	4-9-03
"	"	✓		NRK	4-10-03
"	"	✓		NRK	4-11-03
"	"	✓		NRK	4-14-03
"	"	✓		NRK	4-15-03
"	"	✓		NRK	4-16-03
"	"	✓		NRK	4-17-03
"	"	✓		BSK	4-18-03
"	"	✓		NRK	4-19-03
"	"	✓		BSK	4-21-03
"	"	✓		NRK	4-22-03
"	"	✓		NRK	4-23-03

Reviewed by _____ Date _____

Duratek

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		**Manufacturer: Ludlum**	
Address: 628 Gallaher Road, Kingston, TN 37763		**Model: 12**	**Serial Number: 75809**
Contact Name: Thomas Scott		**Probe: 44-9**	**Serial Number: 163410**
Contract/Task Number: N/A	**Work Order Number: 2002-00356**	**Calibration Method: Electronic and Source**	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration		
X 1	100	100	100	Pulser: 112860	Cal Due: 12/05/02
X 1	250	250	250	DVM: 6565015	Cal Due: 05/26/02
X 1	400	400	400	D-814: 2525	Cal Due: 02/18/03
X 10	1,000	1,000	1,000	Psychron: 5546	Cal Due: 06/12/02
X 10	2,500	2,500	2,500		
X 10	4,000	4,000	4,000	Temperature: 18.0 °C	
X 100	10,000	9,500	9,500	Pressure: 740mmHg	
X 100	25,000	25,000	25,000	Humidity: 31%	
X 100	40,000	40,000	40,000		
X 1000	100,000	95,000	95,000	Input Sensitivity: 35 mV	
X 1000	250,000	250,000	250,000	Background: 60cpm	
X 1000	400,000	400,000	400,000		
EFFICIENCY DETERMINATION					
EFF X1	Tc-99#119720	2,562dpm	12.5%		
EFF X10	Tc-99#119718	20,520dpm	10.0%	Limited Use: X1000 Scale for information only. Use with 44-9.	
EFF X100	Tc-99#099606	177,000dpm	11.3%		
High Voltage	900V	900V	11.3%		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: [signature]	**I certify that the above information is correct: Reviewed By:** [signature] **Date:** 3-25-02
Calibration Date: 03/25/02	**Calibration Due: 09/25/02**

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 12	Serial Number: 75809
Contact Name: Thomas Scott		Probe: 44-9	Serial Number: 166972
Contract/Task Number: N/A	Work Order Number: 2002-01227	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration		
X 1	100	100	100	Pulser: 101500	Cal Due: 09/11/03
X 1	250	250	250	DVM: TW12663	Cal Due: 03/18/03
X 1	400	400	400	D-814: 2525	Cal Due: 02/18/03
X 10	1,000	1,000	1,000	Psychron: 7480	Cal Due: 05/17/03
X 10	2,500	2,500	2,500		
X 10	4,000	4,000	4,000	Temperature: 23.8°C	
X 100	10,000	10,000	10,000	Pressure: 732mmHg	
X 100	25,000	25,000	25,000	Humidity: 47%	
X 100	40,000	40,000	40,000		
X 1000	100,000	100,000	100,000	Input Sensitivity: 35 mV	
X 1000	250,000	250,000	250,000	Background: 50cpm	
X 1000	400,000	395,000	395,000		
EFFICIENCY DETERMINATION					
EFF X1	Tc-99#119720	2,562dpm	10.1%		
EFF X10	Tc-99#119718	20,520dpm	10.5%	Limited Use: X1000 Scale for information only. Use with 44-9.	
EFF X100	Tc-99#099606	177,000dpm	13.0%		
High Voltage	900V	900V	11.2%		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: Mike Paul	Reviewed By: Thomas F. Scott	Date: 10-17-02
Calibration Date: 10/17/02	Calibration Due: 04/17/03	

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	75809	✓		NRK	12-2-02
"	"	✓		LCm	12-03-02
"	"	✓		LCm	12-04-02
"	"	✓		LCm	12-05-02
"	"	✓		LCm	12-06-02
"	"	✓		LCm	12-09-02
"	"	✓		LCm	12-10-02
"	"	✓		LCm	12-11-02
"	"	✓		LCm	12-12-02
"	"	✓		LCm	12-13-02
"	"	✓		LCm	12-16-02
"	"	✓		LCm	12-17-02
"	"	✓		NRK	12-18-02
"	"	✓		LCm	12-19-02
"	"	✓		NRK	12-20-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	75809	✓		NRP	1-6-03
"	"	✓		YCm	01-07-03
"	"	✓		YCm	01-08-03
"	"	✓		BSK	1-9-03
"	"	✓		BSK	1-10-03
"	"	✓		BSK	1-13-03
"	"	✓		BSK	1-14-03
"	"	✓		YCm	01-15-03
"	"	✓		YCm	01-16-03
"	"	✓		BSK	1-17-03
"	"	✓		YCm	01-20-03
"	"	✓		YCm	01-21-03
"	"	✓		YCm	01-22-03
"	"	✓		YCm	01-23-03
"	"	✓		BSK	1-24-03
"	"	✓		BSK	1-27-03
"	"	✓		BSK	1-28-03
"	"	✓		BSK	1-29-03
"	"	✓		YCm	01-30-03
"	"	✓		YCm	01-31-03
"	"	✓		BSK	2-3-03
"	"	✓		BSK	2-4-03
"	"	✓		BSK	2-5-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	75809	✓		BSK	2-6-03
"	"	✓		BSK	2-7-03
"	"	✓		BSK	2-10-03
"	"	✓		BSK	2-11-03
"	"	✓		BSK	2-12-03
"	"	✓		BSK	2-13-03
"	"	✓		BSK	2-14-03
"	"	✓		BSK	2-18-03
"	"	✓		BSK	2-19-03
"	"	✓		BSK	2-20-03
"	"	✓		BSK	2-21-03
"	"	✓		BSK	2-24-03
"	"	✓		BSK	2-25-03
"	"	✓		BSK	2-26-03
"	"	✓		BSK	2-27-03
"	"	✓		BSK	2-28-03

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	75809	✓		NRK	3-3-03
"	"	✓		NRK	3-4-03
"	"	✓		NRK	3-5-03
"	"	✓		BSK	3-6-03
"	"	✓		BSK	3-7-03
"	"	✓		NRK	3-10-03
"	"	✓		NRK	3-11-03
"	"	✓		NRK	3-12-03
"	"	✓		NRK	3-13-03
"	"	✓		NRK	3-14-03
"	"	✓		NRK	3-17-03
"	"	✓		NRK	3-18-03
"	"	✓		NRK	3-19-03
"	"	✓		NRK	3-20-03
"	"	✓		NRK	3-21-03
"	"	✓		NRK	3-24-03
"	"	✓		NRK	3-25-03
"	"	✓		NRK	3-26-03
"	"	✓		NRK	3-27-03
"	"	✓		NRK	3-28-03
"	"	✓		NRK	3-31-03

Reviewed by _____ Date _____

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: 12 Instrument ID: 75809

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X 1	300	240-360	FD184 PR 089759	3rd shelf	
X10	600	480-720		Contact	
X100					For information only
X1000					For information only

Performed by/Date _____ / _____ Reviewed by/Date _____ / _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-12	75809	✓		NRK	4-1-03
"	"	✓		BSK	4-2-03
"	"	✓		BSK	4-3-03
"	"	✓		BSK	4-4-03
"	"	✓		NRK	4-7-03
"	"	✓		NRK	4-8-03
"	"	✓		NRK	4-9-03
"	"	✓		NRK	4-10-03
"	"	✓		NRK	4-11-03
"	"	✓		NRK	4-14-03
"	"	✓		NRK	4-15-03
"	"	✓		NRK	4-16-03
"	"	✓		NRK	4-17-03

Reviewed by _____ Date _____

Duratek™

CALIBRATION CERTIFICATE

Duratek Instrument Services
628 Gallaher Road
Kingston, TN 37763
Phone: (865) 376-8337
Fax: (865) 376-8331

This Certificate will be accompanied by Calibration Charts or Readings where applicable

CUSTOMER INFORMATION		INSTRUMENT INFORMATION	
Customer Name: Duratek Instrument Services		Manufacturer: Ludlum	
Address: 628 Gallaher Road, Kingston, TN 37763		Model: 3	Serial Number: 59576
Contact Name: Thomas F. Scott		Probe: 44-9	Serial Number: 118906
Contract/Task Number: N/A	Work Order Number: 2002-01277	Calibration Method: Electronic and Source	

INSTRUMENT CALIBRATION INFORMATION

Instrument Range	Calibration Standard Value	Instrument Response		Comments	
		Before Calibration	After Calibration	Calibrated in accordance with RP-INS-I-217	
X0.1	100	100	100	Pulser: 120935	Cal Due: 03/18/03
X0.1	250	250	250	D-814: 2525	Cal Due: 02/18/03
X0.1	400	400	400	DVM: 6565015	Cal Due: 09/30/03
X1	1,000	1,000	1,000	Psychron: 7480	Cal Due: 05/17/03
X1	2,500	2,500	2,500		
X1	4,000	4,000	4,000	Temperature: 24.6°C	
X10	10,000	10,000	10,000	Pressure: 736mmHg	
X10	25,000	25,000	25,000	Humidity: 50%	
X10	40,000	40,000	40,000		
X100	100,000	100,000	100,000	Audio: SAT	Batt. Check: SAT
X100	250,000	250,000	250,000	Fast/Slow: SAT	Reset: SAT
X100	400,000	400,000	400,000	Background: 50 cpm	Threshold: 24mV
EFFICIENCY DETERMINATION				Overange: SAT	
EFF X0.1	Tc-99#119720	2,562dpm	11.7%		
EFF X1	Tc-99#119718	20,520dpm	11.2%		
EFF X10	Tc-99#099606	177,000dpm	10.7%	Limited Use: X100 Scale for information only. Use with 44-9.	
Average Efficiency	N/A	N/A	11.2%		
High Voltage	900V (±5%)	904V	904V		

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Institute of Standards and Technology. (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:	Reviewed By:	Date: 10-30-02
Calibration Date: 10/30/02	Calibration Due: ~~04/30/02~~ 4-30-03 ASL	

ATTACHMENT 6.4
INITIAL REFERENCE RESPONSE TEST FORM
(example)

Instrument Model Number: M-3 Instrument ID: 59576

Scale or Decade	Reference Reading	±20% Value of Reference Reading	Jig and Source ID Number	Geometry	Remarks
X 1	380	304-456	M-3 # 59576 TC-99 #119655	3rd shelf	
X10	700	560-840		Contact	
X100	N/A	N/A	N/A	N/A	Information Only
X1K	N/A	N/A	N/A	N/A	Information Only

Performed by/Date _____ / _____ Reviewed by/Date _____ / _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M3	59576	✓		DEK	11-1-02
"	"	✓		Ycm	11-04-02
"	"	✓		NRK	11-5-02
"	"	✓		NRK	11-6-02
"	"	✓		Ycm	11-07-02
"	"	✓		NRK	11-8-02
"	"	✓		Ycm	11-11-02
"	"	✓		Ycm	11-12-02
"	"	✓		Ycm	11-13-02
"	"	✓		Ycm	11-14-02
"	"	✓		JSK	11-15-02
"	"	✓		Ycm	11-18-02
"	"	✓		Ycm	11-19-02
"	"	✓		Ycm	11-20-02
"	"	✓		Ycm	11-21-02
"	"	✓		Ycm	11-22-02
"	"	✓		Ycm	11-25-02
"	"	✓		NRK	11-26-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-3	59576	✓		MRK	12-2-02
"	"	✓		Ycm	12-3-02
"	"	✓		Ycm	12-04-02
"	"	✓		Ycm	12-05-02
"	"	✓		Ycm	12-06-02
"	"	✓		Ycm	12-09-02
"	"	✓		Ycm	12-10-02
"	"	✓		Ycm	12-11-02
"	"	✓		Ycm	12-12-02
"	"	✓		Ycm	12-13-02
"	"	✓		Ycm	12-16-02
"	"	✓		Ycm	12-17-02
"	"	✓		MRK	12-18-02
"	"	✓		Ycm	12-19-02
"	"	✓		MRK	12-20-02

Reviewed by _____ Date _____

ATTACHMENT 6.3
RESPONSE TEST FORM
(example)

Instrument	Instrument ID	Pass	Fail	Performed by	Date
M-3	59576	✓		~~MRK~~	1-6-03
"	"	✓		YCm	01-07-03
"	"	✓		YCm	01-08-03
"	"	✓		BSK	1-9-03
"	"	✓		BSK	1-10-03 ~~1-9-03~~ BSK
"	"	✓		BSK	1-13-03
"	"	✓		BSK	1-14-03
"	"	✓		YCm	01-15-03
"	"	✓		YCm	01-16-03
"	"	✓		BSK	1-17-03
"	"	✓		YCm	01-20-03
"	"	✓		YCm	01-21-03
"	"	✓		YCm	01-22-03
"	"	✓		YCm	01-23-03
"	"	✓		YCm	01-24-03
"	"	✓		BSK	1-27-03
"	"	✓		YCm	01-28-03
"	"	✓		YCm	01-29-03
"	"	✓		YCm	01-30-03
~~"~~	~~"~~	~~✓~~		~~BSK~~	~~2-3-03~~ BSK 3-9-03

Reviewed by _____ Date _____