



**nxl** | Engineers, Surveyors  
Construction Managers

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*NMSB3*

April 9, 2007  
Nuclear Regulatory Commission  
475 Allendale Road  
King Of Prussia, PA. 19406-1415

*03037148*

Reference: Amendment to License Number 45-31134-01

Dear Sirs:

In accordance with the safety inspection and compliance inspection made by Mr. James Schmidt of your office on March 20, 2007, NXL is requesting our license be amended for the following:

**10. Radiation Safety Program**

**Radiation Detection Instruments**

NXL does not own or rent any nuclear gauges but uses gauges belonging to the Virginia Department of Transportation for any density testing that our employees perform; therefore VDOT has the survey meter listed below available in their nine Districts Offices throughout the Commonwealth of Virginia for use in the event of an incident involving the gauge.

Manufacturer: Geiger-Muller (G-M)

Model: 44-38

Type: g-m survey meter

Radiation detected: beta, gamma

Sensitivity range: up to 50 mR/hr without instrument dead time correction and up to 500 mR/hr with dead time correction. Dead time correction typically 95 microseconds

The firm that calibrates VDOT survey meters is as follows:

AKM Calibrations

InstroTek, Inc.

5908 Triangle Drive

Raleigh, NC. 27617

Please note I have attached a copy of the spec sheet for the Model 44-38 Beta-Gamma Detector as well as a copy of the calibration report.

Should you have any questions, please contact me at (804)644-4600.

*140380*

**NMSS/RGN1 MATERIALS-002**



**nxi** Engineers, Surveyors  
Construction Managers

Sincerely,

**NXL CONSTRUCTION SERVICES, INC.**

James E. Harpine  
Director CEI Services

Attachments

headquarters / 114 east cary st / suite 200 / richmond va 23219 / p 804 644 4600 / f 804 644 4674 / nxl.com

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE James E. Harpine, Director CEI Services				SIGNATURE 		DATE 4/9/07
FOR NRC USE ONLY						
TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS	
			\$			
APPROVED BY				DATE		

## Model 44-38 Beta-Gamma Detector

### 1. GENERAL

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The Model 44-38 is a Geiger-Mueller (G-M) beta/gamma survey detector that can be used with any portable ratemeter or scaler instrument that provides 850-1200 volts with an input sensitivity of  $30 \pm 10$  mV.

The detector incorporates a rotary shield, which when opened, allows the detection of beta radiation for energies above approximately 200 keV. The beta contribution from a measurement can be determined by subtracting the reading with the rotary shield closed from the reading with the shield open.

The response range of the M44-38 is nominally linear, (within  $\pm 10\%$ ) up to 50 mR/hr without instrument dead time correction and up to 500 mR/hr with dead time correction. Dead time is typically 95 microseconds.

### 2. SPECIFICATIONS

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- **OPERATING VOLTAGE:** 850-1200 volts (Recommended: 900 volts)
- **INPUT SENSITIVITY:**  $30 \text{ mV} \pm 10 \text{ mV}$
- **DEAD TIME:** Typically 95 microseconds
- **BETA CUT OFF:** approximately 200 keV
- **ENERGY RESPONSE:** Within  $\pm 15\%$  of true value from 50keV-1.25MV(closed window)
- **TUBE:** 30 mg/cm<sup>2</sup> stainless steel (Halogen quench) G-M
- **SIZE:** 1.3 inches (3.3 cm) diameter by 6.5 inches (16.5 cm) long
- **TEMPERATURE RANGE:** -4 °F (-20°C) to 122 °F (50°C)  
May be certified for operation from -40 °(-40°C) to 150 °F (65°C)
- **BODY CONSTRUCTION:** Anodized aluminum housing for energy compensation
- **WEIGHT:** 1 lb (0.5kg)
- **CONNECTOR:** series "C;" other connectors available upon request

**AKM Calibrations**  
**InstroTek, Inc**

**Calibration Report/Certification**  
**Radiation Safety Equipment**

3908 Triangle Drive Raleigh NC 27617 p:919.875.8371 f: 919.875.8328

**REPORT# 106441**

**PREPARED FOR:**

We certify that the following meter was calibrated on the indicated date using an NIST traceable radiation field source

**Model** Ludlum Model 3 **SN** 164003  
**Detector 1** External SWGM Model 44-38 Pr 168058  
**Detector 2** None  
**ID** None

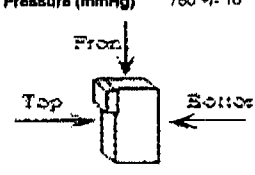
**Date** 11/4/2006  
**PO#** Confirm B. Regimand  
**Contact** InstroTek Inc  
**Calibrated By** Robert D. Pearlstein

**PRE-CALIBRATION CHECK**

- Contamination  No  Yes; returned without calibration
- Batteries  OK  Replaced  Used AC Power
- Audio  OK  Malfunction  No Audio Function
- Probe  OK  Malfunction  Repaired
- Cables  OK  Malfunction  Repaired
- Switches  OK  Malfunction  Repaired
- HV Circuit  OK As Received  Reset to 800V  Repair/ret
- Pulse Detector  OK  Malfunction  Repaired
- Electrometer  OK  Malfunction  Repaired

**CALIBRATION CONDITIONS**

- Temperature (°F) 71 Relative Humidity 25% Pressure (mmHg) 760 +/- 10
- Radiation Beam / Detector Alignment:
- External Detector Internal Detector
- normal to long axis  normal to top
- parallel to long axis  normal to bottom
- normal to detector window  normal to front
- Shield/Build-up Cap
- No shield  Shield closed
- Shield open  Build-up cap used



**INSTRUMENT ACCURACY**

UNITS: CALIBRATION SOURCE

mR/h (Cesium 137 photons)

AFTER CALIBRATION, Observed mR/h = True\* mR/h ± 10%  
 Cesium 137 photons. Normal field measurements can be made  
 without the use of Scale Calibration Factors.

Note: None

**METER CALIBRATION FACTORS**

True = Observed x CF

Multiplier/Scale	CF
x.1	1.09
x1	0.98
x10	0.96
x100	1.00

**OBSERVATIONS**

Scale/Range	Observation 1 / Units: mR/h				2 / Units: mR/h		3 / Units: CPM	
	True*	As Found	As Returned	SFM	True*	As Returned	True*	As Returned
x.1	0.18mR/h	0.165	0.165	0.009	ND	ND	200 PPM	230 CPM
x1	1.6	1.63	1.63	0.02	0.4	0.4	2K	2.3K
x10	16	16.6	16.6	0.2	4	4	20K	23K
x100	150	150	150	ND	40	40	200K	210K

Note: SEM = Standard Error of Measurement, N = 10 Observations

**COMMENTS**

Meter calibrated for survey of photon radiation fields using mR/h Scale.

*Handwritten signature and date: 11.14.06*

**SUGGESTED RECALIBRATION DATE: November 4, 2007**

Reviewed by: \_\_\_\_\_

Robert D. Pearlstein Ph.D..

\*True Cs 137 field (mR/h) estimated from NIST traceable source calibration data after correcting for source decay, source-probe geometry and filtration OR True PPM = electronically generated pulses per minute (PPS = per second). ND = Not Determined NA = Not Applicable NonL = Non-Linear

This is to acknowledge the receipt of your letter/application dated

4/9/2007, and to inform you that the initial processing which includes an administrative review has been performed.

AMEW. 45-31134-01  
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

Please provide to this office within 30 days of your receipt of this card

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A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned Mail Control Number 140380.  
When calling to inquire about this action, please refer to this control number.  
You may call us on (610) 337-5398, or 337-5260.