MS12
P2

PENNSYLVANIA EMERGENCY MANAGEMENT AGENCY
P.O. BOX 3321
HARRISBURG, PENNSYLVANIA 17105

August 29, 1984

Dr. John E. Glenn, Chief
Nuclear Materials Section 3
Division of Engineering and
Technical Programs
U.S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Dr. Glenn:

RE: Control No. 02148

Reference is made to your letter dated August 6, 1984, requesting additional information concerning our license renewal application No. 37-01359-02.

Paragraph 1:

a. The background level in the area where wipe samples will be evaluated is 40 CPM. However, the background level will be checked and recorded each time the counting instruments are put into operation.

b. The increase in instrument reading in CPM resulting from a wipe contamination will be 3460 CPM. This reading was obtained by using a Cs 137, .05 Check Source. (See attached Certificate of Calibration) which was decay corrected on August 22, 1984 to .01uCi.

The beta particle emission rate into a 2 ~~π~~ geometry at the date of calibration was 2.89×10^2 beta particle per second, converted to 3.47×10^4 dpm.

Decay correction: $A = A_o$ (decay correction factor)

$A_o = 3.47 \times 10^4$ dpm

t = Oct. 20, 1966 - Aug. 22, 1984 = 17 yr., 10 mo.

Decay correction factor: .660 (t rounded to 18 years)

$A = 3.47 \times 10^4$ dpm (.660)

$A = 22{,}902$ dpm as of Aug. 22, 1984

$\frac{22{,}902 \text{ dpm}_6}{2.22 \times 106} = .01\text{uCi}$

31 AUG 1984

02148

"OFFICIAL RECORD COPY" ML10

The above readings were taken with a CD V-700M with a Amperex 200LB End Window Tube. This instrument will be used to scan the wipes for any gross contamination. After all wipes are scanned with the CD V-700M they are then taken into the counting area, to be counted using an Amperex 200NB GM Tube and a Ludlum Model 2200 Scaler Rate Meter. (See attached Certificate of Calibration.)

The Model 2200 Scaler Rate Meter is a new piece of equipment, and has not been put into operation due to the lack of required accessory items. When the required items have been obtained the Scaler Rate Meter will be prepared for use as directed by the attached FEMA Radiation Control Committees "Procedures for Leak Testing the CD V-782 Training Source Sets," Page 3, Para. 5 and Appendix D.

Paragraph 2:

Maurice G. Hilliard has completed the FEMA Radiological Monitor Course. He is programmed to complete other radiological courses as they become available in FY 85.

Sincerely,

Maurice G. Hilliard

Maurice G. Hilliard
Radiological Officer

MGH:jmb (Tel: 717-783-8150)
Enclosures: Certificate of Calibration Cs 137 Check Source
Certificate of Calibration Model 2200 Scaler Rate Meter
FEMA Procedures for Leak Testing

cc: William Mack

BAIRD-ATOMIC

Certificate of Calibration
Beta Emission Efficiency

Cesium-137 Beta-Gamma Standard Source

The beta particle emission of Cesium-137 Beta-Gamma Standard Source Serial No. CD- 57 has been determined utilizing internal beta proportional counting techniques.

The beta particle emission rate into a 2π geometry from this source on October 20, 1966, was 2.89 x 10^2 beta particles per second. Thus the beta emission efficiency, taken as $\frac{2\pi \text{ betas per second}}{\text{disintegrations per second}}$ is 14.7 percent.

The overall accuracy of the calibration has been calculated to be ±5.0 percent. The systematic calibration error of <±1 percent assures an associated confidence level >99 percent.

Certification Date August 21, 1967

By _____
Paul M. Tyree
Technical Director
Radioactive Source Division

Certificate of Calibration

BAIRD-ATOMIC

Cesium-137 Beta-Gamma Standard Source

Nuclide: Cesium-137-Ba^{137m}
Half Life: 30 years

Radiations: Beta- 0.51 MEV (92%), 1.17 MEV (8%) Gamma- 0.662 MEV (92%) (from Ba^{137m})

Baird-Atomic, Inc. certifies that Cesium-137 Beta-Gamma Standard Source, Serial No. CD- 57 has been calibrated utilizing N.B.S. approved procedure in accordance with applicable specifications.

This Radioactive Content or this source was determined to be 196 x 10^3 disintegrations per second on October 20, 1966. The overall accuracy of the calibration has been calculated to be ± 4.5 percent. The systematic calibration error of < ± 1 percent assures an associated confidence level > 99 percent.

Certification Date November 4, 1966

By _____

Paul M. Tyree
Head, Source Production Unit
Radioactive Source Division

DESIGNER AND MANUFACTURER
OF
Scientific and Industrial
INSTRUMENTS

LUDLUM MEASUREMENTS, INC.
915 · 235-5494 TELEX No. 466832 UD
POST OFFICE BOX 248
501 OAK STREET
SWEETWATER, TEXAS, U.S.A. 79556

CERTIFICATE OF CALIBRATION

Customer Union Carbide

Order No. 83-2733

Mfg. Ludlum Model 2200 Serial No. 29741

Mfg. — Detector Model N/A Serial No. N/A

Cal. Date 1-20-84 Cal. Due 1-20-85 Temperature 75 °

Cal. Interval 1 yr. Procedure: In accordance with Mfg. Specs. Humidity 32 %

INSTRUMENT RECEIVED	INSTRUMENT RETURNED
☐ Within tolerance	☑ Threshold set for [redacted] = 10 MV
☐ Out of tolerance	☐ Detector operating voltage = _____ volts
☐ Requiring repair	☑ See comments

COMMENTS New

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Bureau of Standards, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of self-calibration techniques. The calibration system conforms to the requirements of MIL-STD-45662A and of ANSI N323-1978.

CALIBRATION EQUIPMENT

Manufacturer	Model Number	Serial Number	Accuracy
Ludlum	500	13672	Mfg. Specs.
B&K	VOM	15573	Mfg. Specs.
B&K	Oscilloscope	06004	Mfg. Specs.

CALIBRATION RANGE

☐ Cs137 Gamma traceable to NBS TFN 224008, Oct. 2, 1980, 142Mr/HR @ 1 meter

☐ Neutron Am-241/Be traceable to NBS Certification Test 223767, Aug. 21, 1980

☑ Other Electronic Calibration.

Date 1-20-84

Calibrator Elaine Wyatt Supervisor Keith D. Brock

Form 1