



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: $A = A_0$ (decay correction factor)
 $A_0 = 3.47 \times 10^4$ dpm
 $t = \text{Oct. 20, 1966} - \text{Aug. 22, 1984} = 17 \text{ yr., } 10 \text{ mo.}$

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

$$\frac{22,902 \text{ dpm}}{2.22 \times 10^6} = .01 \text{ uCi}$$

8412030231 841115
NMS LIC30
37-01359-02 PDR

02148
"OFFICIAL RECORD COPY" ML10
31 AUG 1984

Dr. John E. Glenn
August 29, 1984
Page Two

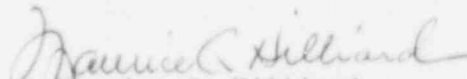
The above readings were taken with a CD V-700M with a Amperex 200LB End Window Tube. This instrument will be used to scan the wipes for any gross contamination. After all wipes are scanned with the CD V-700M they are then taken into the counting area, to be counted using an Amperex 200NB GM Tube and 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
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 2.89×10^2 beta particles per second. Thus the beta emission efficiency, taken as $\frac{2 \text{ betas per second}}{\text{disintegrations per second}}$ is 14.7 percent.

The overall accuracy of the calibration has been calculated to be ± 5.0 percent. The systematic calibration error of $< \pm 1$ 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%) Gamma- 0.662 MEV (92%)
1.17 MEV (8%) (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 of this source was determined to be 1.96×10^3 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 $< \pm 1$ percent assures an associated confidence level > 99 percent.

Certification Date November 4, 1966

By

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



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

- ☐ Within tolerance
☐ Out of tolerance
☐ Requiring repair

INSTRUMENT RETURNED

- ☒ Threshold set for ~~10~~ = 10 MV
☐ Detector operating voltage = _____ volts
☒ 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	<u>13672</u>	Mfg. Specs.
B&K	VOM	<u>15573</u>	Mfg. Specs.
B&K	Oscilloscope	<u>06004</u>	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