

CENTRAL CT CARDIOLOGISTS, LLC

19 Woodland St, Suite 35, Hartford, CT 06105 Tel. 860-525-8901

To: USNRC Region I
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

March 8, 2019

RE: License No. 06-27909-01. Docket No. 030-29568. Control No. 611210
Request for additional information.

Dear Miss Robin Elliott:

The following information is in reply to your request for the termination of activities at our Enfield office location.

Items requested:

1. There have been no leaking sealed sources at the site.
2. We used unsealed sources with half-life of less than 120 days at the location.
3. In regards to the final disposition of the 3 sealed sources, below (data from Jan 2019):

Period	Source	Model	Serial #	Nom Act (uCi)	Location*	Activity (uCi)^
Mo.Yr	Ba-133	SRV133-250U	666-17-7	286.7	HL	91
	Cs-137	SRV137-250U	686-12-15	254	HL	170.1
8.00	Co-57 fld	NES-8400	S84001227-01	10000	HL/stored	< 1

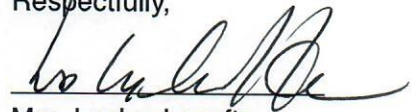
We are awaiting Cardinal Health for pickup and transfer to the Hartford office.

4. The decayed radioactive waste has been removed from the site.
5. The most recent calibration documentation for the instrumentation used to conduct the final radiation surveys of the facility and any sealed source leak tests is attached as: the most recent calibration report for the GM dated in January 2018, our QA record for the NaI probe, plus, yearly test results of its performance.

If you have any questions or desire additional information, please contact Leslye LaCafra,
Practice Manager at 860-525-4005 or our consulting physicist, Mr. Peter Mas, MS, at
860-944-0251 (email of peterjmas@aol.com).

Thank you.

Respectfully,

A handwritten signature in black ink, appearing to read 'Leslye LaCafra', written over a horizontal line.

Mrs. Leslye LaCafra
Practice Manager

CENTRAL CT CARDIOLOGISTS

Nuclear Cardiology Service
Miscellaneous Instrumentation Monthly Q. A. Record

Year: 2018

	Ludlum GM #1		Ludlum 2200 Scaler		Ludlum GM #2	
	mR/hr	Battery	125 & 30 keV	600 & 120 keV	mR/hr	Battery
Rec'd Date Jan <u>16</u>	<u>.02</u>	☒	<u>2100</u>	<u>14892</u>	<u>18341</u>	<u>150</u>
Feb <u>8</u>	<u>.02</u>	☒	<u>2138</u>	<u>14645</u>	<u>12382</u>	
Mar <u>12</u>	<u>.02</u>	☒	<u>2233</u>	<u>14769</u>	<u>12420</u>	
Apr <u>20</u>	<u>.02</u>	☒	<u>2012</u>	<u>14784</u>	<u>12283</u>	
May <u>16</u>	<u>.02</u>	☒	<u>2128</u>	<u>14677</u>	<u>12382</u>	
Jun <u>21</u>	<u>.02</u>	☒	<u>2153</u>	<u>14579</u>	<u>12483</u>	
Jul <u>17</u>	<u>.03</u>	☒	<u>2261</u>	<u>14317</u>	<u>11973</u>	
Aug <u>15</u>	<u>.03</u>	☒	<u>2295</u>	<u>14488</u>	<u>11849</u>	
Sep <u>13</u>	<u>.02</u>	☒	<u>2188</u>	<u>14771</u>	<u>11988</u>	
Oct <u>29</u>	<u>.02</u>	☒	<u>1977</u>	<u>14754</u>	<u>11805</u>	
Nov						
Dec						

Year: _____

	Ludlum GM #1		Ludlum 2200 Scaler		Ludlum GM #2	
	mR/hr	Battery	125 & 30 keV	600 & 120 keV	mR/hr	Battery
Jan						
Feb						
Mar						
Apr						
May						
Jun						
Jul						
Aug						
Sep						
Oct						
Nov						
Dec						

- NOTE:**
- All instruments have a dedicated check source. The Ludlum 2200 Scaler will be checked with the ≤ 1 μ Ci Cs-137 rod source.
 - Ludlum 2200 Scaler settings are shown as "Threshold & Window" keV values. Use with window "ON" & check the results for consistency.

CardinalHealth

Nuclear Pharmacy Services

CERTIFICATE OF CALIBRATION

CUSTOMER:

Central CT Cardiology - Enfield

Location 7013

MFG	MODEL	SERIAL NO.	TYPE	CHK SRC	cpm/mR/hr	Cap
Ludlum	14C	165631	SM			
Ludlum	44-7	PR109077	GM	4.0 mR/hr	2100	No Cap

Calibration Date
18 Jan 18

FACE ID: 202-333

FRI RANGE: 200

2ND RANGE: 4200

3RD RANGE: na

mR/hr

cpm

na

DETECTOR: 909 Units

INPUT SENS: 30 mV

BATTERY: 50K

CALIBRATION PERFORMED

W/PROBE: FIXED

CHECK SOURCE $\pm 10\%$

W/PROBE: EXPT

Zirconium [X] Rhodium [X] Cesium [X] Radium [X]

Mechanical [X] FTS Response [X] Audio [X]

NOTE: Source reading taken at the approximate center of the probe tube and 'beam' for 15 to 30 seconds.

Note: x1000 range is not usable. Probe removed.

Scale	Cal Reference	Calibration Readings				
Setting	mR/hr	As Found	As Found Err	As Left	As Left Err	Coeff
x1	1.00	1.00	0.00%	1.00	0.00%	1.000
x10	10.00	10.00	0.00%	10.00	0.00%	1.000
x100	100.00	1.50	-6.25%	1.60	3.00%	1.000
x1000	1000.00	0.50	-25.00%	0.40	3.00%	1.000
x10	10.00	1.60	0.00%	1.60	0.00%	1.000
x100	100.00	0.40	0.00%	0.40	0.00%	1.000
x1	1.00	1.50	0.00%	1.50	0.00%	1.000
x10	10.00	0.50	0.00%	0.50	0.00%	1.000

Scale	Reference	Equivalent		Equivalent			Equivalent
Setting	mR/hr	As found	As Found Err	As Left	As Left Err	Coeff	cpm
x1	1.00	1.50	0.00%	1.50	0.00%	1.000	3150
x0.1	0.10	0.50	0.00%	0.50	0.00%	1.000	315
x0.01	0.01	0.50	0.00%	0.50	0.00%	1.000	315

Calibration Source: 1.0 Ci of Co-137, radiation output 192 x (1 $\pm$ 5%) mR/hr at 180 cm on August 1, 2011

J.L. Shepherd Model 28-8A SN 10005, Co-137 Amersham type K-15 Capsule

Ludlum Mini-Pulser model 900 SN:174971 Ludlum model 2200 Rate Meter, s.n.164587.

NOTES

CALIBRATION CONDITIONS

Radiation levels are based on standards whose calibration are traceable to the NIST. All readings are corrected for background radiation. Any corrections made to the survey instrument (e.g. energy dependence) are up to the user to apply. Care must be used in applying any such factors. The GM probe front will provide the most sensitive contamination survey. The longest dimension of the probe detector tube or tube array is placed in a plane perpendicular to, and centered in, the beam of radiation.

Calibrated by:

Reviewed by:

#1

Oyando Tellus

Richard Freyer / Oyando Tellus / Louis Goodson / S. Brandi Williamson

Radiation Materials License # 039-0764-2

REV. June 2010

Print Cert

PASS

Cal Due Date

30-Jan-18

CENTRAL CT CARDIOLOGISTS @Enfield

A. Resolution Measurement, Cs-137. Dial at 2.79 is ~ 700 VDC.
The ratemeter was used as a close approximation of FWHM.

10/5/18

$$\% \text{ FWHM} = 100 * (\text{Half Max Count Rate range}) / 662 \text{ keV}$$

$$\% = 100 * (\text{HV} - \text{LV}) / 662$$

$$\% = 8.46$$

B. Chi-Square Test. NaI Wipe Test Counting System

Chi-Square (χ^2) Values

Number of "n"	PROBABILITY, P						
measures:	0.99	0.95	0.9	0.5	0.1	0.05	0.01
2	0.020	0.103	0.211	1.386	4.605	5.991	9.210
3	0.115	0.352	0.584	2.366	6.251	7.815	11.345
4	0.297	0.711	1.064	3.357	7.779	9.488	13.277
5	0.554	1.145	1.610	4.351	9.236	11.070	15.086
6	0.872	1.635	2.204	5.348	10.645	12.592	16.812
7	1.239	2.167	2.833	6.346	12.017	14.067	18.475
8	1.646	2.733	3.490	7.344	13.362	15.507	20.900
9	2.088	3.325	4.168	8.343	14.684	16.919	21.666
10	2.558	3.940	4.865	9.342	15.987	18.307	23.209
11	3.053	4.575	5.578	10.341	17.275	19.675	24.725
12	3.571	5.226	6.304	11.340	18.549	21.026	26.217
13	4.107	5.892	7.042	12.340	19.812	22.362	27.688
14	4.660	6.571	7.790	13.339	21.064	23.685	29.141
15	5.229	7.261	8.547	14.339	22.307	24.996	30.578

# Samples=	10	Mean	Chi-Square	
	count, n	value, N	Diff	value
	1403	1475.2	3.5336	16.1901
	1398		4.0400	
	1576		6.8876	
	1469		0.0261	
	1507		0.6855	
	1489		0.1291	
	1501		0.4512	
	1452		0.3649	
	1485		0.0651	
	1472		0.0069	

INTERPRETATION:
A range of $0.05 < P < 0.95$ is acceptable.
If $P < 0.01$ the random variations are too large.
If $P > 0.99$ the random variations are too small.
If P falls between 0.01-0.05 or 0.95-0.99, then consider the test inconclusive and repeat it.