



**CARDIOVASCULAR
MEDICINE**

Eugene Langevin, D.O., F.A.C.O.I., F.A.C.C.

Stonebrook Plaza 1531 W. 32nd St. Suite 208 Joplin, Missouri 64804 417-623-6343

6/13/18

US NRC Region III
Material Licensing Branch
Region III
2443 Warrenville Road, Suite 200
Lisle, IL 60532

Atten: Magdalena R Gryglak

This is a amended request for termination of an NRC license no 24-32149-01 May 24,2018 for Cardiovascular Medicine, 1531 W 32nd Ste 208 Joplin, MO. 64804. We need to expedite this request as we have to vacate our building with equipment being removed by second week of June.

Our nuclear technician has done all the wipe tests and survey areas, background readings as well as other information you need and those are being forwarded today

We used the radioisotope Sealed-Cs-137 1423 uGi
Sealed Cs-137 0.322 uCi
Sealed Cs-137 0.641 uCi
Non Sealed 99mtc -Tetrofosmin
Non Sealed 10ml - 35 ml

The sources have been picked up as outlined in the attached letter

I am forwarding this by fax and hard copy as you may need original signatures.
Thank you for any help you can give me in completion.

Sincerely,

Gene Langevin DO, MACOI, FACC

EEL/am
Fx: 630 515 1078

RECEIVED JUN 25 2018

Nuclear Rx, P.C.
1523 South Utica Avenue
Tulsa, Oklahoma 74104

Cardiovascular Medicine
1531 West 32nd Street
Joplin, MO 64804

June 5, 2018

Clay Joyner,

Nuclear Rx, P.C., Oklahoma DEQ license #OK-31035-01MD has received the listed sealed sources on May 31, 2018:

Cs137 Dose Calibrator Vial NES356-S/N S356039-025

Activity and calibration date: 219uCi on 2/11/1999

Cs137 rod source GF-0008 Lot#621-2-5

Activity and calibration date: 500nCi on 10/1/1998

We are in the process of disposition of these sources.

Thank You,

Rob Stinchcomb, DPh
Nuclear Rx, P.C.
918-749-0500



CERTIFICATE OF DISPOSITION OF MATERIALS

Estimated burden per response to comply with this mandatory collection request: 30 minutes. This submittal is used by NRC as part of the basis for its determination that the facility is released for unrestricted use. Send comments regarding burden estimate to the FOIA, Privacy, and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE08-10202, (3150-0028), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE NAME AND ADDRESS
CARDIOVASCULAR MEDICINE
1531 WEST 32ND STREET
SUITE 208
Joplin, MO 64804

LICENSE NUMBER
24-32149-01

DOCKET NUMBER
030-349150

LICENSE EXPIRATION DATE
AUGUST 31, 2019

A. LICENSE STATUS (Check the appropriate box)

- This license has expired. This license has not yet expired; please terminate it.

B. DISPOSAL OF RADIOACTIVE MATERIAL

(Check the appropriate boxes and complete as necessary. If additional space is needed, provide attachments)

The licensee, or any individual executing this certificate on behalf of the licensee, certifies that:

1. No radioactive materials have ever been procured or possessed by the licensee under this license.
 2. All activities authorized by this license have ceased, and all radioactive materials procured and/or possessed by the licensee under this license number cited above have been disposed of in the following manner.

a. Transfer of radioactive materials to the licensee listed below:

May 21, 2018 - Nuclear Rx - Robert Stinchcomb - OK DEQ #OK-31035-01 MD
see attached letter

b. Disposal of radioactive materials:

1. Directly by the licensee:

2. By licensed disposal site:

3. By waste contractor:

c. All radioactive materials have been removed such that any remaining residual radioactivity is within the limits of 10 CFR Part 20, Subpart E, and is ALARA.

C. SURVEYS PERFORMED AND REPORTED

1. A radiation survey was conducted by the licensee. The survey confirms:
 a. the absence of licensed radioactive materials
 b. that any remaining residual radioactivity is within the limits of 10 CFR 20, Subpart E, and is ALARA.

2. A copy of the radiation survey results:

a. is attached; or b. is not attached (Provide explanation); or c. was forwarded to NRC on: _____ Date

3. A radiation survey is not required as only sealed sources were ever possessed under this license, and

a. The results of the latest leak test are attached; and/or b. No leaking sources have ever been identified.

The person to be contacted regarding the information provided on this form:

NAME	TITLE	TELEPHONE (Include Area Code)	E-MAIL ADDRESS
JUDY ALANGEVIN	PRACTICE MANAGER	417 623 6343	

Mail all future correspondence regarding this license to:
JUDY A LANGEVIN
1531 W. 32ND ST 208
Joplin, MO 64804 (Will be forwarded to PO Box)

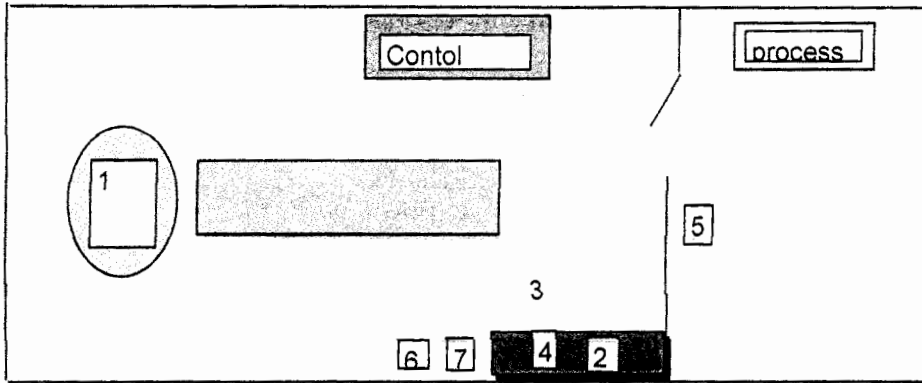
I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT

PRINTED NAME AND TITLE	SIGNATURE	DATE
JUDY A LANGEVIN CEO	<i>Judy Langevin</i>	6/12/18

WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECT. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

Facility Diagram and Radiation Survey

Note: drawing is not to scale



Location of Survey (wipe and ambient exposure)	Exposure Rate mR/hr	Wipe Count	Net DPM	Comments
1) Camera #1	.02	497	0	
2) Dose calibrator & well	.02	501	0	
3) Hot lab floor	.02	488	0	
4) Hot lab prep area	.02	476	0	
5) Injection area	.02	490	0	
6) Hot lab waste area	.02	469	0	
7) Hot lab source storage	.02	474	0	
8) Treadmill	.02	480	0	
9) Patient waiting area	.02	500	0	

Wipe test background: 508 cpm Well
 Exposure rate background: 0.02 mR/hr Ludlum 14C
 Cleaning levels: >2 X Bkgnd

close out surveys conducted by:
 L. Clay Joyner on 6/6/18

action level for surveys are as follows:
 Areas 2, 3, 4, 5, 6, 7, 8 not to exceed 0.07 mR/hr
 Areas 1, 9 not to exceed 0.5 mR/hr

action level for wipes are as follows:
 locations with wipe results above 2,000 dpm/100cm²
 must be decontaminated

RADIOLOGICAL SOLUTIONS

PO BOX 700477
TULSA, OK 74170
(918) 688-8001

Dose Calibrator Constancy Check

Institution: **Cadiovascular Medicine**
Reviewer: **K. Arcide**

NRC License No.: **24-32149-01**
Date: **15-Nov-17**

Instrument mfr.: **Capintec**
Serial number: **153263**

Model #: **CRC-15R**
Sources: **CMI**

Radionuclide Test w/Cs-137	Button Activity	Previous Activity	% Change from Prev.	Calib. Setting
Tc-99m	256	258	-0.78%	080
I-131				
I-123				
Xe-133				
Ga-67				
Tl-201	145	147	-1.36%	205
In-111				
Mo Assay				
Cs-137	138.4	140.1	-1.21%	220
Test Voltage	155.3	155.2	0.06%	
Radionuclide Test w/Co-57	mCi Activity	Previous Activity	% Change from Prev.	Dial Setting
Co-57				112
Tc-99m				080
I-131				
Radionuclide Test w/Ba-133	Button Activity	Previous Activity	% Change from Prev.	Dial Setting
Ba-133				591
I-131				

Date of last test: 15-May-17

Date of this test: 15-Nov-17

Cs-137 decay factor: -1.15%

Co-57 decay factor: -37.28%

Ba-133 decay factor: 0.00%

Zero setting: 0.0

Bkgnd: 0.44

Readings agree with last constancy readings obtained by technologist:

 X YES
NO

Physicist: *K. Arcide*

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P.O. Box 700477
Tulsa, OK 74170

Counting Equipment Calibration

Institution: **Cadiovascular Medicine**

Reviewer: **K. Arcide**

Date: **15-Nov-17**

Well and Probe Chi-Square Tests

WELL COUNTER			UPTAKE PROBE		
	Counts	(Cts-mean) ²		Counts	(Cts-mean) ²
1)	14030	169.0	1)		
2)	13870	29929.0	2)		
3)	13930	12769.0	3)		
4)	14350	94249.0	4)		
5)	14030	169.0	5)		
6)	14110	4489.0	6)		
7)	13970	5329.0	7)		
8)	14230	34969.0	8)		
9)	14040	9.0	9)		
10)	13870	29929.0	10)		
Mean:	14043		Mean:		
Chi-Square =	15.1		Chi-Square =		
Acceptable range (90% confidence):	3.3-16.9		Acceptable range (90% confidence):	3.3-16.9	
Chi-Square value acceptable?	YES		Chi-Square value acceptable?		

Energy Resolution Test

WELL COUNTER	UPTAKE PROBE
Cs-137 Test: OK -3.8% Gain: 1461	Full width at half maximum:
Energy Dev.: -3.00%	

Efficiency of System Used to Count Wipes:

Source Nuclide	Calibration Date	Initial Activity	Present Activity	Date of Count	Window net cpm	Bkgd. cpm	Percent Efficiency
Tc-99m (Co-57)	8/1/2011	0.9807	0.0028	15-Nov-17	5573	64	90.4%
I-131 (Ba-133)	8/1/2011	0.103	0.0680	15-Nov-17	48971	271	32.7%
Cs-137	9/1/1996	0.1045	0.0642	15-Nov-17	14206	163	11.1%
Source Nuclide	Calibration Date	Initial Activity	Present Activity	Date of Count	Open window (wipe) cpm	Bkgd. cpm	Percent Efficiency
Tc-99m (Co-57)	8/1/2011	0.9807	0.0028	15-Nov-17	9286	508	100.0%
I-131 (Ba-133)	8/1/2011	0.103	0.0680	15-Nov-17	133408	508	89.3%
Cs-137	9/1/1996	0.1045	0.0642	15-Nov-17	43828	508	34.1%

Detection system: Capintec Caprac Sources used: as above

Window set: Co-57: Ch 2 Ba-133: Ch 3 & 4 Cs-137: Ch 4 & 5

Physicist:



Kari S. Arcide, MS

RADIOLOGICAL SOLUTIONS

PO BOX 700477
TULSA, OK 74170
(918) 688-8001

Dose Calibrator Accuracy Calibration

Institution:	Cadiovascular Medicine	NRC License No.: 24-32149-01
Reviewer:	K. Arcide, M.S	Date: 15-Nov-17

Instrument mfr.:	Capintec	Model No.: CRC-15R
Serial number:	153263	Sources: CMI

	Cesium-137	Cobalt-57	Barium-133	Barium-133
Standard Source Model	NES-356	CH	NAS MED-3550	NAS MED-3550
Standard Source Serial Number	S356039-025	1145-51-3	49409	49409
Half life	11012 days	271.77 days	3835 days	3835 days
Calibration Date	11-Feb-99	1-Apr-06	1-Mar-04	1-Mar-04
Calibration μCi	219	5281	284.4	284.4
Instrument Setting	Button	button	591	635
Background Rdg.	0	0.0	0.0	0.0
Measured μCi 1	138.4		119.4	
Measured mCi 2	138.3		119.1	
Measured mCi 3	138.4		119.2	
Average μCi	138.4	-	119.2	-
Current Activity	142.3	-	119.0	119.0
Percent Error	-2.85%	-	0.22%	-
Error Acceptable?	YES	-	YES	-

The instrument accuracy is acceptable if the measurement error is $< \pm 10\%$.
For Ba-133, the manufacturer's specification is $\pm 10\%$.

Next accuracy measurement due : **May-18** Ba-133: 5/15/2017

Sticker displayed on dose calibrator: X Yes
 No
 Wrong Sticker
 Not required

Physicist: *jsal*

RSO: _____


Institution: **Cadiovascular Medicine**
Reviewer: **K. Arcide**

NRC License No.: **24-32149-01**
Date: **15-Nov-17**

Equipment List

Equipment Type	Manufacturer	Model #	Serial #	Range
Survey meter	Ludlum Instruments	14c	148650	0-2000 mR/hr
Pancake probe	Ludlum Instruments	44-9	pr-151225	
Dose Calibrator	Capintec	CRC-15R	153263	
SPECT Single Head	Siemens	Orbiter		
Scintillation Camera	ADAC			
Processing				
Scintillation Well	Capintec	Caprac	000 773	
Scaler	Capintec			

Survey meter
Ludlow 14C

Meter Model: 14c S/N 148650
Probe Model: pgm S/N 151225
Calibrated with Cs-137
Calibration Geometry: 
Calibration Window: open
Battery Check: OK
Check Source Reading 7.0 mR/hr +/- 20%
Check Source Window: open
Calib. Date: 11/16/2017 Calib. Due: 11/16/2018 Calibrated By: C.Artinger

Scale	Correction Factor	
	+/-10%	Lower Upper
x 1000	x	
x 100	x	
x 10	x	
x 1	x	
x 0.1	x	



Mid-America Calibrations 808 SW Nautica Court Lee's Summit, MO 64082
816.537.4147 800.488.1391 NRC License # 24-32531-01

RADIOLOGICAL SOLUTIONS

PO BOX 700477
TULSA, OK 74170
(918) 688-8001

Nuclear Medicine Sealed Source Inventory

Institution: **Cadiovascular Medicine** NRC License No.: **24-32149-01**
Reviewer: **K. Arcide, M.S.** Date: **15-Nov-17**

Leak tests performed? **YES** Leak tests are due: **Nov-17**

Source Mfr.	Model Number	Serial Number	Radio-nuclide	μ Ci at calib.	Date of calibration	Present μ Ci	Leak test req'd?	Storage location
Dupont	NES-356	S356039-025	Cs-137	219.0	11-Feb-99	142.3	YES	Hot lab bin
IPL	rod	621-2-5	Cs-137	0.500	1-Oct-98	0.322	NO	Hot lab bin
The Source	Disk	1750	Cs-137	1.0	15-Jul-98	0.641	NO	Ludlum meter (At calibration)

***Bold** items are new to the inventory

Verified by: *Kari S. Arcide*
Kari S. Arcide, MS

RSO: _____

→ this source is part of the Ludlum 14C survey meter

RADIOLOGICAL SOLUTIONS

PO BOX 700477
TULSA, OK 74170-0477
(918) 688-8001

Sealed Source Leak Test

Institution: Cardiovascular Medicine	USNRC License No.: 24-32149-01
Reviewer: K. Arcide, M.S.	Wipe Date: 15-Nov-17
Wipes by: K. Arcide, M.S.	Count Date: 15-Nov-17

Source Nuclide	Curent Activity μ Ci	Calib. Date	Source Model	Source Serial No.	Wipe cpm	Bkgd cpm	μ Ci Removed	Acceptable? (<0.005 μ Ci)
Cs-137	142.3	11-Feb-99	NES-356	S356039-025	135	163	NDA	YES

Note: "NDA" is no detectable activity (e.g., net cts < Bkgd cts + 3Sqrt(Bkgd cts.))

Determination of Efficiency of Counting System

Source Nuclide	Calibration Date	Initial Activity	Present Activity	Date of Count	Window net cpm	Bkgd. cpm	Percent Efficiency	MDA ₉₅ nCi
c-99m (Co-57)	8/1/2011	0.9807	0.0028	15-Nov-17	5573	64	90.4%	0.102
-131 (Ba-133)	8/1/2011	0.103	0.0680	15-Nov-17	48971	271	32.7%	0.577
Cs-137	9/1/1996	0.1045	0.0642	15-Nov-17	14206	163	11.1%	1.326

Detection system: Capintec Caprac Sources used: as above

Window set: Co-57: Ch 2 Ba-133: Ch 3 & 4 Cs-137: Ch 4 & 5

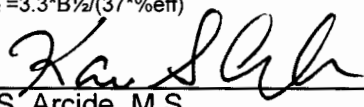
Sources: NIST traceable. Radiological Solutions: Oklahoma RAM License No. OK-31030-01

Note: Wipe test samples are collected by wiping the exposed surface of the source housing, seams, covers, lids, or other potential leakage areas with an alcohol pad.

Minimum Detectable Activity

Nuclide	Bkg cps	MDA ₉₅ nCi
Co-57	1.07	0.1
Ba-133	4.52	0.6
Cs-137	2.72	1.3

MDA₉₅ = $K_{\alpha} * K_{\beta} * \gamma * B^{1/2} = 3.3 * B^{1/2} / (37 * \% \text{eff})$

Physicist: 
Kari S. Arcide, M.S.
Certified: ABR(DRP), ABSNM

RSO: _____

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FROM:

CARDIOVASCULAR MEDICINE
DR. GENE LANGEVIN
1631 W 32ND STE 268 *to Ben 2046*
JOPLIN, MO 64804

TO:

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