Windham Hospital
A Hartford HealthCare Partner

To: Janice Nguyen, Senior Health Physicist
Medical and Licensing Assistance Branch (MLAB)
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road, Suite 102
King of Prussia, PA 19406-1415

19 January 2024

From: Windham Hospital
112 Mansfield Avenue
Willimantic, CT 06226

Subject: Radioactive Materials License Amendment Request (RAML 006-15203-01)

Dear Ms. Nguyen,
Kindly amend our Nuclear Regulatory Materials License (06-15203-01) as follows:

1. Please remove our old hot lab (Rm 1406 on floor plan attached) as an area of use. No radioactive materials, including radioactive source, have been stored in this room since 3 October 2023.

Attached, please find the survey results confirming that there is no fixed or removable contamination present in this area of use.

For any questions regarding this action please contact Erik Lyons, Asst. RSO at erik.lyons@hhchealth.org.

Sincerely,

Matthew Kaufman
Vice President, Operations
Hartford Healthcare East Region
Matthew.Kaufman@hhchealth.org

Windham Hot Lab Decommission Surveys. All measurements performed on 01/18/2024.

ROOM AND EQUIPMENT WIPES

WELL COUNTER- Captus 4000e

Serial#: 941303

ION CHAMBER- 451P-RYR

SERIAL#: 8508

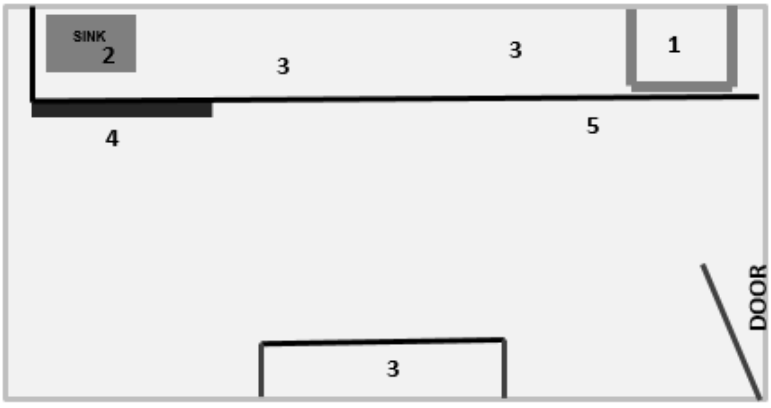
Cal Date- 04/22/23

ROOM AND EQUIPMENT SURVEYS

Wipe Background: 657 CPM **Exposure Background: 0.025mR/hr**

LOCATION	Area Surveys	Area Wipes
Lead Brick Area	0.011 mR/hr	-59 cpm
Hot Lab Sink	0.010 mR/hr	-72 cpm
Hot Lab Counters	0.011 mR/hr	11 cpm
Hot Lab Trash Area	0.011 mR/hr	-40 cpm
Hot Lab Sealed Source Storage Area	0.010 mR/hr	-40 cpm

Hot Lab Rm 1406



Locations to Survey for Contamination
1: Lead Brick cave
2: Sink
3: Counters
4: Trash Storage area (under counter cabinets)
5: Sealed source storage (under counter cabinets)

Windham Hospital
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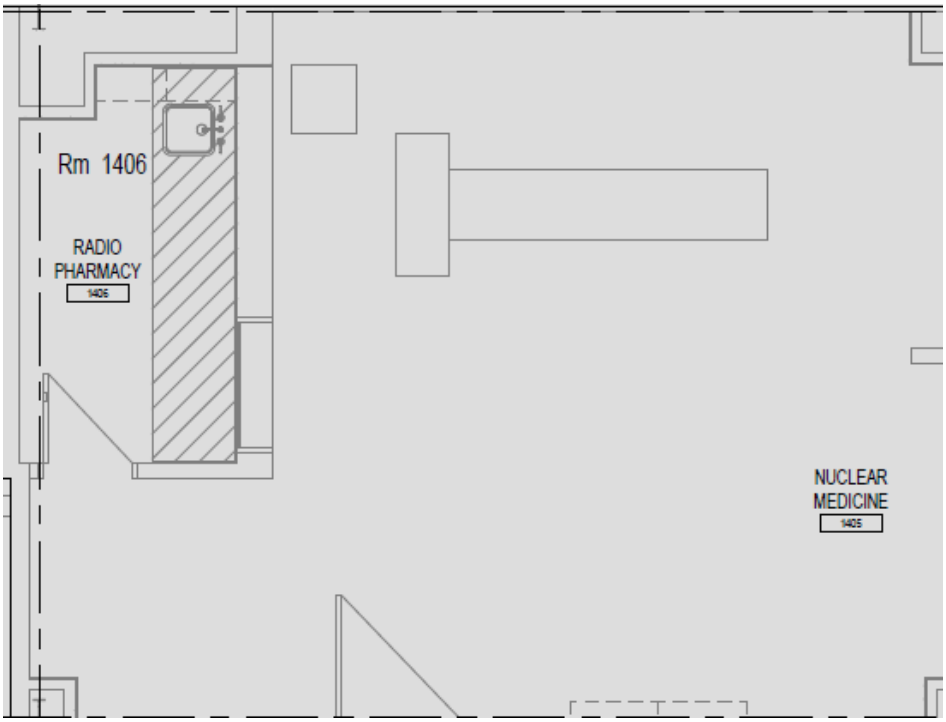
Hot lab (Rm 1406) identified as Radiopharmacy on drawing.



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Designer and Manufacturer of Scientific and Industrial Instruments

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.

ilac-MRA A2LA ACCREDITED
CERT # 4084.01

Customer WINDHAM HOSPITAL ORDER NO. 20444606/539277

Mfg. Fluke Model 451P-RYR Serial No. 8508

Mfg. _____ Model _____ Serial No. _____

Cal. Date 22-Apr-23 Cal Due Date 22-Apr-24 Cal. Interval 1 Year Meterface Digital

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 33 % Alt 709.0 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☐ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☐ F/S Resp. ck ☐ Reset ck. ☐ Window Operation ☐ Geotropism
☐ Audio ck. ☐ Alarm Setting ck. ☐ Batt. ck.

☐ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set _____ V Input Sens. _____ mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

☐ HV Readout (2 points) Ref./Inst. _____ / _____ V Ref./Inst. _____ / _____ V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.
Multimeter uncertainty within 1.3% of reading, Gamma uncertainty within 5.0% of reading, Neutron uncertainty within 7.0% of reading, Count rate uncertainty within 5.4% of reading

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING
Digital			
Digital			
Digital			
Digital			
Digital			
Digital			
Digital			
Digital			
Digital			
Digital			

Range(s) Calibrated Electronically

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Digital Readout	2 R/hr	1.85 R/hr	2.0 R/hr
	200 mR/hr	192 mR/hr	200 mR/hr
	20 mR/hr	18.3 S	20
	2 mR/hr	1.87 S	2.0 S
	200 µR/hr	189 µR/hr	200 µR/hr

Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, 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 calibration techniques.
All pass/fail determinations are based on the manufacturer's specifications without considering uncertainty factors.
Measurement results represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k=2.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323AB-2013
ISO/IEC 17025:2017(E)
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☑ 2324/2521
☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☑ G112 ☑ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982
☐ E551 ☐ 5105 ☐ CSV280

☐ Alpha S/N _____ ☐ Beta S/N _____ ☐ Other _____

☐ m 500 S/N _____ ☐ Oscilloscope S/N _____ ☐ Multimeter S/N _____

Calibrator Donnie Miekos / Donnie Miekos Title Calibrator Date 22-Apr-23

QC'd By _____ Title Final QC Date 24 Apr 23

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed: _____

Date: 1/4/2024

Nuclide: Cs137
Reference Activity: 0.5 uCi
Reference Date: 11/1/2023
SN: 2398-44-31

Windham Hospital

Capintec 4000e SN#: 941303

Minimum Detectable Activity Calculation (MDA)

Nuclide:	Cs-137	Counter Efficiency:	0.405	
Counts(N):	614	Counting Time:	1	minutes
PF:	3.0	CF:	4.65	
MDA:	291.91	**dpm**		
	0.000131	**µCi**		

$$MDC_{(gamma)} = \frac{3 + 4.65\sqrt{COUNT_{(BACKGROUND)}}}{Efficiency * Counting\ Time}$$

MDA should be less than 0.005uCi for passing

Note: Counter Efficiency (CE) 30% = 0.300
Counts (Net) =Net Background Counts

Sample #		$[(N_i) - N_i \text{ Avg}]$	$[(N_i) - N_i \text{ Avg}] \text{ X } [(N_i) - N_i \text{ Avg}]$	Date: 1/4/2024	
1	22952	256.50	65792.25	Instument SN#:	941303
2	22587	-108.50	11772.25		
3	22641	-54.50	2970.25	Nuclide: Cs137	
4	22586	-109.50	11990.25	Reference Activity: 0.5 uCi	
5	22755	59.50	3540.25	Reference Date: 11/1/2023	
6	22726	30.50	930.25	SN: 2398-44-31	
7	22754	58.50	3422.25		
8	22754	58.50	3422.25		
9	22674	-21.50	462.25		
10	22526	-169.50	28730.25		
N_i Sum	226955				
$N_{i\ Avg}$	22696				
		Sum	133033		
		CHI Square	5.86		

The probability is that it should fail 20% of the time: 10% high and 10% low. The Chi-Square result should be between 4.168 and 14.684.

1/4/2024

Windham Hospital

Capintec 4000e SN#: 941303

Nuclide: Cs137
Reference Activity: 0.5 uCi
Reference Date: 11/1/2023
SN: 2398-44-31

$$\text{Efficiency} = \frac{\text{Measured STD Activity (cpm) - bkg(cpm)}}{\text{Standard(uCi) (2.22x10^6 dpm/uCi)}} * 100 =$$

	Nuclide	cpm	Activity (uCi)
Measured Standard Source	Cs-137	448200	
Measured Background		614	
Current Standard Source Activity:			0.4979

447586
1105338

% Efficiency
40.49