Cheyenne Regional
Medical Center

214 East 23rd Street
Cheyenne, WY 82001
307·634·2273
www.crmcwy.org

6 April 2012

Michelle Simmons, Health Physicist
Nuclear Regulatory Commission, Region IV
612 East Lamar Blvd., Suite 400
Arlington, Texas 76011-4125

Subj: **AMENDMENT OF LICENSE NO. 49-01380-01**

Dear Ms Simmons;

I am writing this letter to request the following changes to our license:

1.) To remove from our Materials License the area of use 2301 House Avenue, suite 301 Cheyenne Wyoming. A closeout survey was performed by Pacific Health Physics Inc. This survey is enclosed for your review.
2.) To remove from our Materials License the Treadmill rooms 6109 and 6107 at 214 east 23rd Street Cheyenne Wyoming. A closeout survey was performed by Radiology staff. This survey is also enclosed for your review.

If you have any questions I can be reached at 307.633.7838. Or you can e-mail me at todd.christensen@crmcwy.org
Thank you .
Sincerely,

Todd A. Christensen MS DABR
Radiation Safety Officer
Cheyenne Regional Medical Center
214 East 23rd Street
Cheyenne WY 82001

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Sincerely,

Todd A. Christensen MS DABR
Radiation Safety Officer
Cheyenne Regional Medical Center
214 East 23rd Street
Cheyenne WY 82001

PACIFIC HEALTH PHYSICS, Inc.

14603 SE 173rd Street, Renton, WA 98058
(425) 228-2932 - Fax (425) 271-6698
α β γ

March 14, 2012

Todd Christensen, MS
Radiation Safety Officer
Cheyenne Regional Medical Center
Cheyenne, WY 82001

Dear Mr. Christensen:

Enclosed please find the Closeout Survey Report and related attachments for your nuclear cardiology clinic. In summary, we did not identify any fixed or removable radioactivity in the locations described in the report. Therefore, the nuclear cardiology imaging room, treadmill rooms, and radiopharmaceutical administration area (Patient Dressing Room) are suitable for release per NRC regulatory requirements.

Please call me if you have any questions concerning this report or the survey methods used during the performance of our work at your facility.

Sincerely yours,

Michael C. Simmons

Health Physicist
President

Nuclear Cardiology Closeout Survey Report

On behalf of:
Cheyenne Cardiology Associates
dba Cheyenne Regional Medical Center
Cheyenne, WY 82001

Pacific Health Physics, Inc. 14603 SE 173rd Street, Renton, WA 98058
425.228.2932 - Office
425.271.6698 - Fax

Section A – Closeout Survey Narrative

Cheyenne Cardiology Associates
dba Cheyenne Regional Medical Center
Cheyenne, WY 82001

Pacific Health Physics, Inc. 14603 SE 173rd Street, Renton, WA 98058
425.228.2932 - Office
425.271.6698 - Fax

Survey Certification

Cheyenne Cardiology Associates
dba Cheyenne Regional Medical Center
Cheyenne, WY 82001

The survey sample assay results contained herein certify that radioactive materials use and storage locations comprised of the nuclear cardiology imaging room, treadmill rooms, hot lab area, and the radiopharmaceutical administration room at the licensee's above location of use were determined to be free of removable and fixed radiological contamination at the conclusion of the closeout surveys described in this report.

Michael C. Simmons

Date: March 12, 2012

Michael C. Simmons
Health Physicist
Pacific Health Physics, Inc.

Cheyenne Cardiology Associates
dba Cheyenne Regional Medical Center
Cheyenne, WY 82001

Closeout Survey Narrative
Survey Date: March 12, 2012

1. List of isotopes, quantities, and dates of last use for radioactive materials used: Radioactive materials use included the radioactive materials listed below

1. Radionuclide	2. Monthly Quantity (curies/month)	3. Physical Form	4. Last Date of Use
A. 99mTc	A. 2.0	A. Liquid	A. 21 Feb 2012
B. I-131	B. 0.04	B. Solid	B. 15 April 2011
C.	C.	C.	C.
D.	D.	D.	D.
E.	E.	E.	E.

2. The physical form for the isotopes was primarily liquid as radiopharmaceuticals used for nuclear cardiology studies, and solids as sodium iodide I-131 capsules <33 mCi per dosage for outpatient treatment of graves disease. Encapsulated materials were never opened or breached.

3. History of major spills or possible spread of contamination to inaccessible areas: No major spills or radiologic contamination.

4. Sealed source information: All qualifying sealed sources at this location were leak tested at six-month intervals. None of the sealed sources were ever found to be leaking.

5. The closeout survey results are as follows:

a. Dose rate surveys were performed at each numbered location on the attached survey maps. The survey results were obtained by holding the detector one meter above work surfaces, allowing the meter to stabilize, and noting the exposure rate. Representative background readings were obtained from a non-radioactive materials use area, (hallway outside the imaging room). Dose rate survey results did not locate any radiation above background readings, (14-16 uR/hour).

b. Scanning surveys were performed over 100% of affected work surfaces and fixtures/furnishings by moving the detector slowly back and forth at a speed of about one detector width per second and at a nominal distance of 1 centimeter. Representative background readings were obtained from a non-radioactive materials use area, (hallway outside the imaging room). Scanning survey results did not locate any radioactive contamination above background readings, (35 counts per minute).

c. Wipe surveys were taken from each numbered location on the attached survey maps. Removable activity sampling was performed using thin soft absorbent paper squares,

approximately 2 x 2 cm in size. Moderate pressure was applied to the smear with two or three fingers during surface wipe sampling. Wipe sampling occurred as a repeated "S" pattern over the entire sampling area. The smears were then placed in individual counting vials and identified with the numbered location or other pertinent information. One smear sample for removable contamination was obtained from each measurement location. The samples were assayed for gamma content using an Atomlab Model 950 multichannel analyzer interfaced with two inch drilled sodium iodide crystal housed in a shielded counting chamber. The counting windows were set to include the isotope energies for the radioactive materials listed in paragraph 1 above, (119-162, and for samples taken from the I-131 dose storage and dose administration areas 316-416 keV). Wipe survey results did not locate any radioactive contamination above background.

Survey results were compared with guideline values appended to this report as Section D.

6. Miscellaneous Surveys – wipe, scanning, and dose rate surveys were taken from the imaging room work table and file cabinet, and department light switches, door handles, and telephones. The survey results did not identify any fixed or removable radioactivity above background levels.

7. Survey instrument calibration data is appended to this report. The wipe samples were assayed in a two inch drilled well counter to evaluate the presence of gamma radiation. The well counter used to assay the wipe samples for gamma content has a proven efficiency of 16.9 % for ^{137}Cs.

The system MDA for gamma analysis was calculated using the Sorensen formula. The system MDA is 3*sqrt backround cpm / system efficiency = $3*(30)^{(1/2)} / 0.169 = 56$ dpm.
The system MDC is 56 dpm / 2.22 e6 dpm / uCi = 2.5 e-5 uCi.

8. Decontamination of the nuclear cardiology imaging room, treadmill room, radiopharmaceutical administration area, and hot lab area is unnecessary since the closeout survey did not identify any fixed or removable radioactive contamination.

9. Radioactive materials use was confined to the use of solids and non-volatile solutions that did not require the use of a fume hood or consideration for airborne radioactive contamination.

Cheyenne Cardiology Associates, dba Cheyenne Regional Medical Center
Gamma Wipe Sample Assay Results

Sample #	Sample CPM	Sample DPM	I-131 CPM	I-131 DPM
1	25	148		
2	17	101		
3	25	148		
4	27	160		
5	19	112		
6	22	130		
7	35	207		
8	26	154		
9	28	166		
10	27	160		
11	30	178		
12	30	178		
13	35	207		
14	33	195		
15	27	160		
16	30	178		
17	16	95		
18	19	112		
19	34	201		
20	27	160		
21	28	166		
22	20	118		
23	26	154		
24	24	142		
25	24	142		
26	34	201		
27	21	124		
28	28	166	24	142
29	24	142	23	136
30	21	124	32	189
31	34	201		
32	29	172		
33	29	172		
34	34	201		
35	21	124		
36	31	183		
37	28	166		
38	27	160		
39	24	142		
40	28	166		
41	29	172		
42	25	148		

Cheyenne Cardiology Associates, dba Cheyenne Regional Medical Center
Gamma Wipe Sample Assay Results

	43	32	189		
	44	30	178		
	45	22	130		
	46	25	148		
	47	17	101		
	48	30	178		
	49	33	195		
	50	26	154		
	51	29	172		
	52	21	124		
	53	36	213		
	54	26	154		
	55	38	225		
	56	29	172		
	57	28	166		
	58	32	189		
	59	31	183		
	60	33	195		
	61	31	183		
	62	22	130		
	63	22	130		
	64	33	195		
	65	26	154		
	66	21	124		
	67	20	118		
	68	24	142	28	166
	69	25	148	25	148
	70	29	172	33	195
	71	28	166	32	189
	72	33	195	27	160
	73	23	136	30	178
	74	29	172	33	195
	75	23	136	32	189
Blank		30	178	31	183

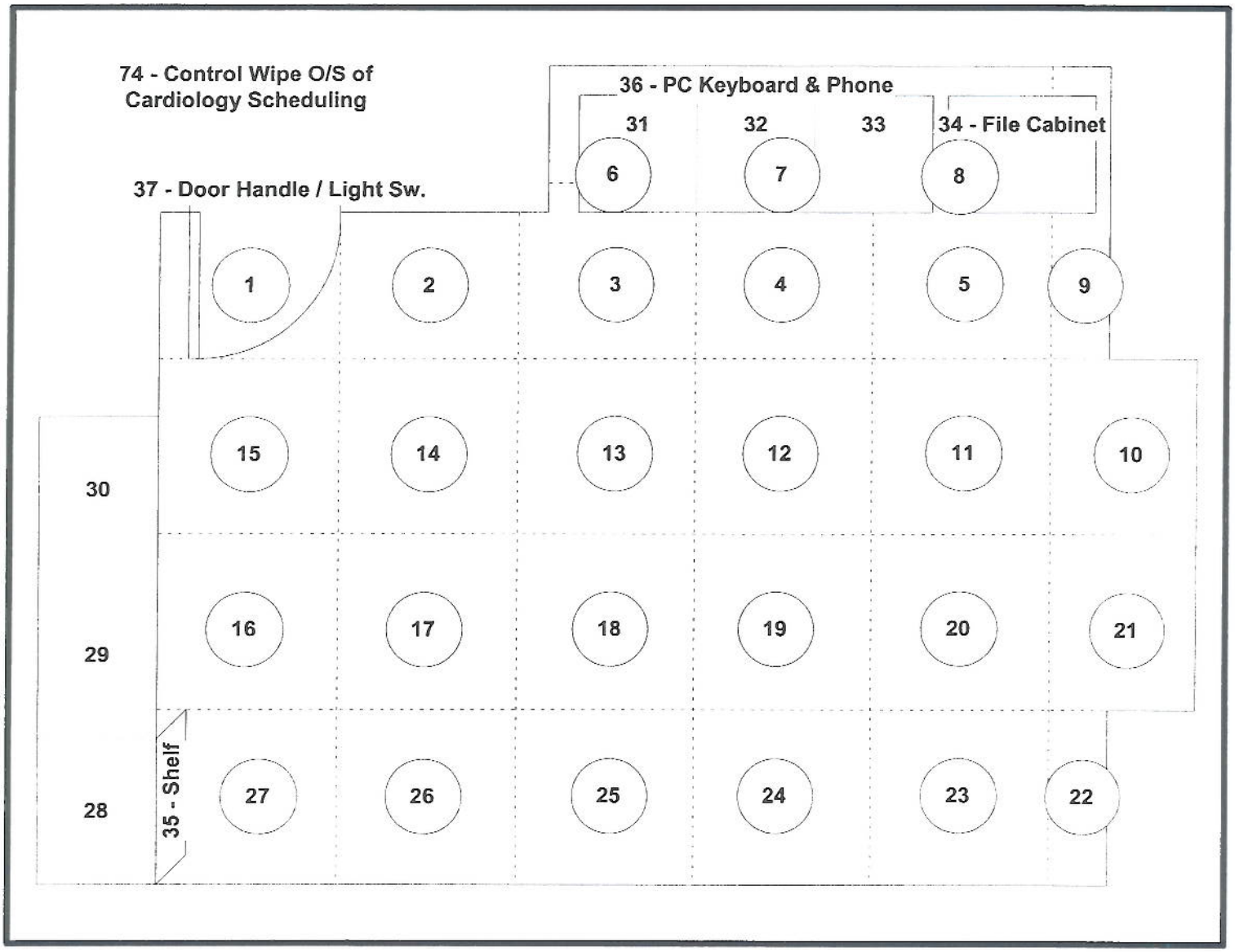
Sample #75 is a representative background sample taken from a common hallway located at the opposite end of the clinic from the imaging room.

Section B – Locator Maps and Grid Coordinates

Cheyenne Cardiology Associates
dba Cheyenne Regional Medical Center
Cheyenne, WY 82001

Pacific Health Physics, Inc. 14603 SE 173rd Street, Renton, WA 98058
425.228.2932 - Office
425.271.6698 - Fax

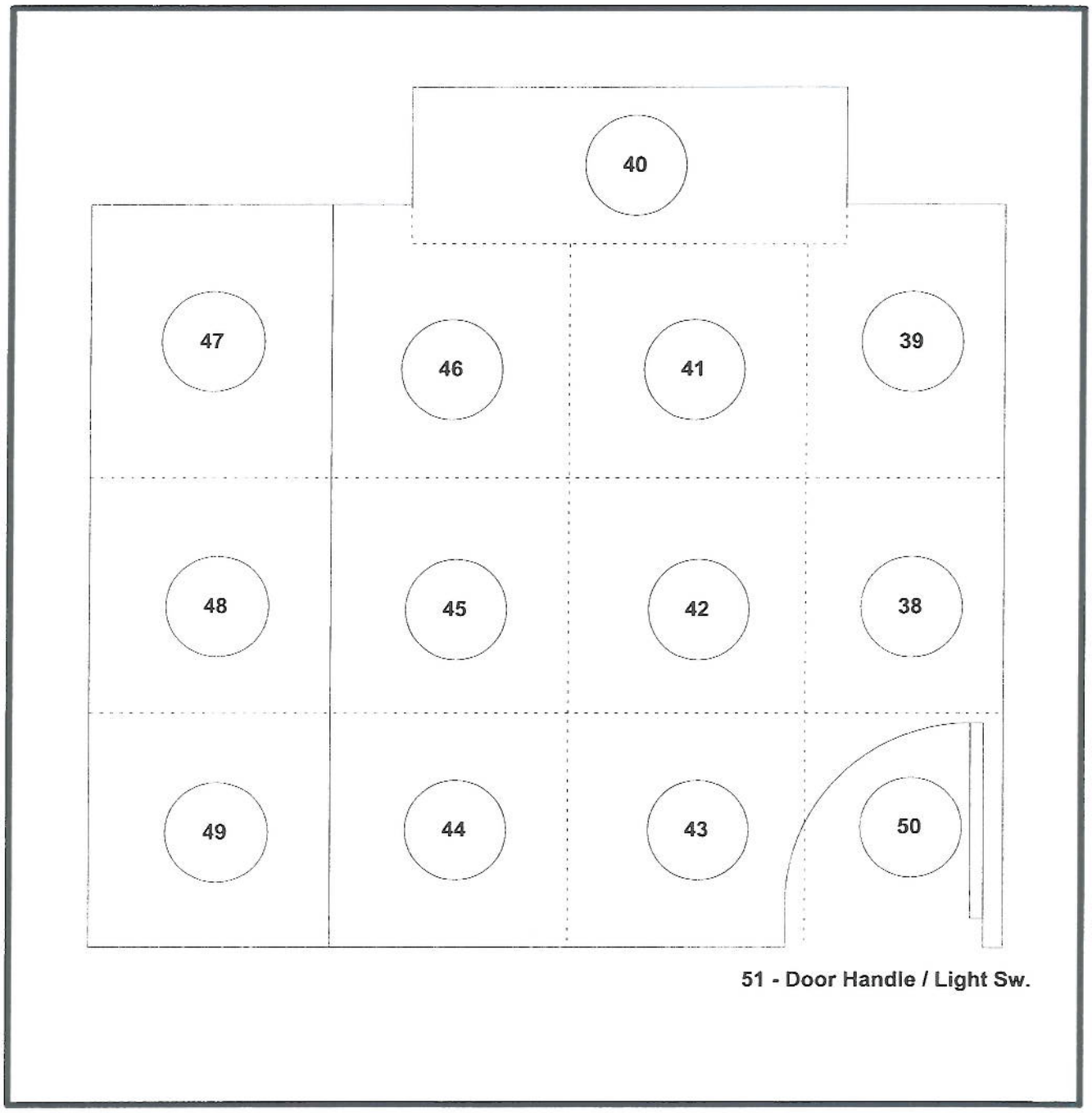
Pacific Health Physics, Inc.
Closeout Survey
Facility - Cheyenne Regional Medical Center
Location - Cardiology Imaging Room
Date of Survey: 3/12/12



Scale = 3/8" = 1 Foot

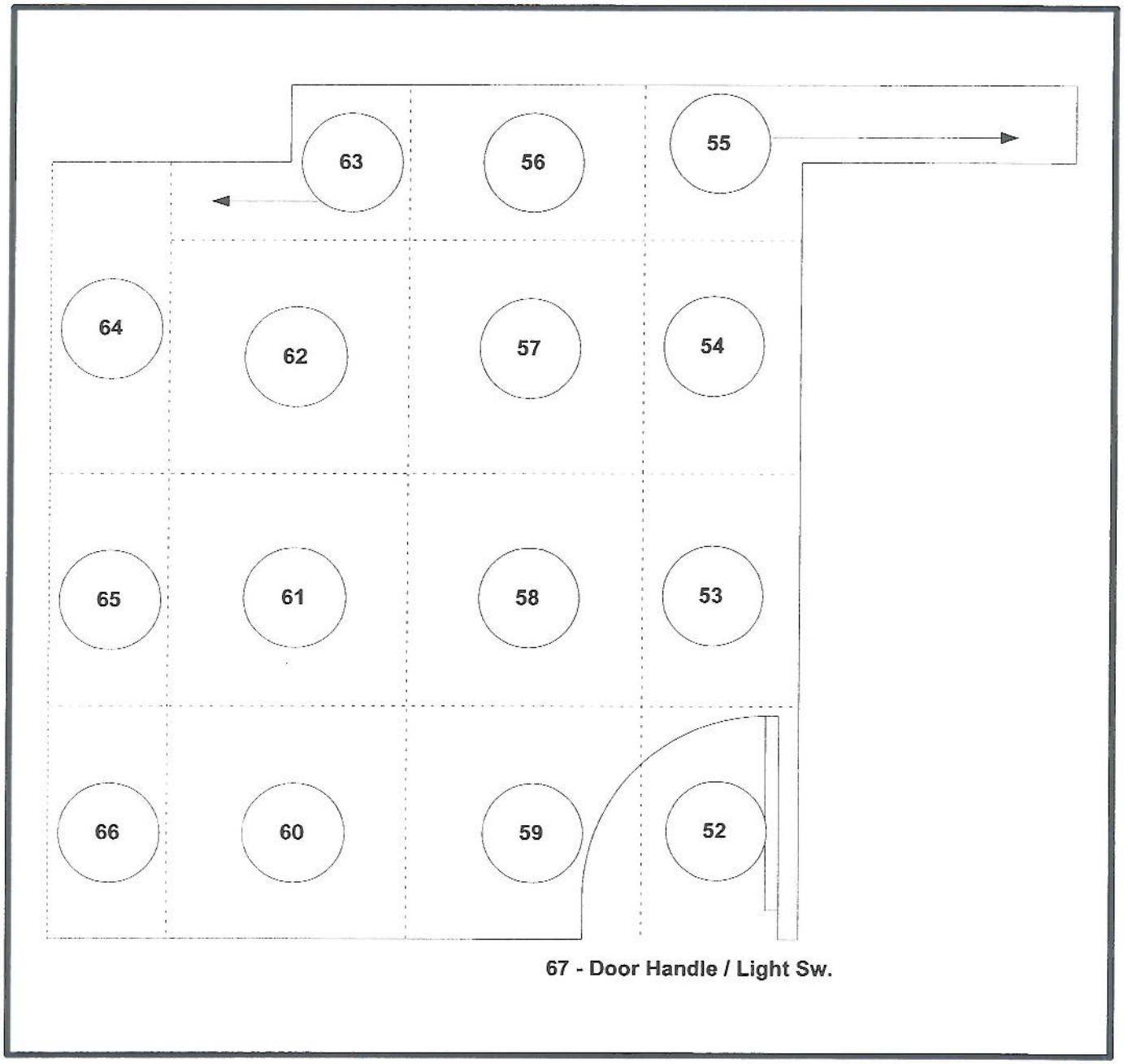
No 5 7 7 3 6 4

Pacific Health Physics, Inc.
Closeout Survey
Facility - Cheyenne Regional Medical Center
Location - Cardiology Imaging, Treadmill 2
Date of Survey: 3/12/12



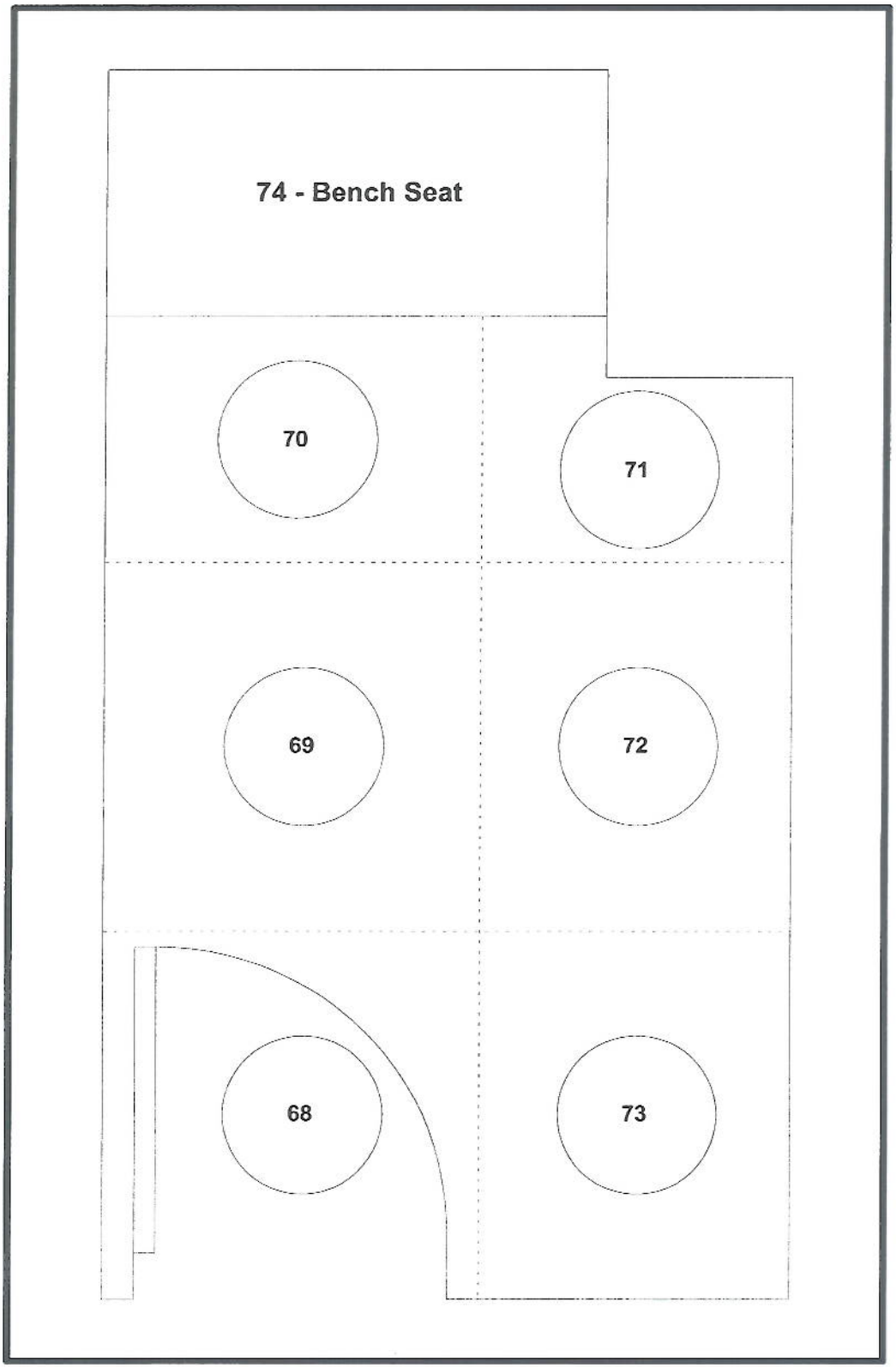
Scale = 1/2" = 1 Foot

Pacific Health Physics, Inc.
Closeout Survey
Facility - Cheyenne Regional Medical Center
Location - Cardiology Imaging, Treadmill 1
Date of Survey: 3/12/12



Scale = 1/2" = 1 Foot

Pacific Health Physics, Inc.
Closeout Survey
Facility - Cheyenne Regional Medical Center
Location - Cardiology Imaging, Dressing Rm. 2
Date of Survey: 3/12/12



Scale = 3/4" = 1 Foot

Section C – Radiological Survey Instrumentation and Sensitivity

Cheyenne Cardiology Associates
dba Cheyenne Regional Medical Center
Cheyenne, WY 82001

Pacific Health Physics, Inc. 14603 SE 173rd Street, Renton, WA 98058
425.228.2932 - Office
425.271.6698 - Fax

SECTION C

CLOSEOUT SURVEY AND ANALYTICAL PROCEDURES

SURVEY PROCEDURES

Dose Rate Measurements:

Dose rate surveys were performed at each numbered location on the attached survey maps. The survey results were obtained by holding the detector, (Victoreen 450P ion chamber) one meter above work surfaces, allowing the meter to stabilize, and noting the exposure rate. Representative background readings were obtained from a non-radioactive materials use area, (common hallway at the opposite end of the clinic). Dose rate survey results did not locate any radiation above background readings, (14-16 uR/hour).

Surface Scans

Scanning surveys were performed by passing the detector slowly over surfaces of interest at a speed of 1 detector width per second. The distance between the detector and the surface was maintained at a minimum - nominally about 1 centimeter. A thin window halogen quenched GM pancake detector coupled to a portable survey meter with an audible indicator was used to scan the floors, cabinetry, shelves, equipment, and room fixtures of the surveyed areas. Identification of elevated levels was based on increases in the audible signal from the survey instrument.

Removable Activity Measurements

Removable activity levels were determined using pre-numbered thin soft absorbant paper squares, approximately 2 x 2 cm. Moderate pressure was applied to the wipe with two or three fingers during surface wipe sampling. Wipe sampling occurred as a repeated "S" pattern over the entire work surface or piece of equipment. The wipes were then placed in individual counting vials and identified with the numbered location or other pertinent information. One wipe sample for removable contamination was obtained from each measurement location. Representative background wipe samples were obtained from a non-radioactive materials use area, (common hallway at the opposite end of the clinic). The wipe survey results did not locate any radiation above background readings, (refer to data sheets).

ANALYTICAL PROCEDURES

Removable Activity

Gross Gamma Counting

Wipe samples were assayed in a Atomlab Model 950 two inch drilled sodium iodide crystal shielded well counter. The counting system was calibrated with a NIST Cs-137 rod source immediately prior to the sample assays. The samples were individually counted for one minute each. The assay results are detailed in a separate worksheet.

Pacific Health Physics, Inc.
Facility: Cheyenne Cardiology Associates
dba Cheyenne Regional Medical Center
Nuclear Cardiology Closeout Survey

Gamma Counter Sensitivity And Detection Limits

The analytical data presented in this report represent the 99 % confidence level for that data. These data were calculated based on gross sample count levels and the associated background count levels. When the net sample count was less than 3 multiplied by the statistical deviation of the background count [3* (background CPM)$^{1/2}$] / total instrument efficiency], the sample concentration was reported as less than the detection limit of the detection system. Because of variations in background levels and measurement efficiencies, the detection limits may differ from sample to sample and from instrument to instrument.

Radiation Survey Instrument Calibration And Quality Assurance

Portable survey equipment is calibrated on an annual frequency, see attached calibration documents. The well counter was calibrated on March 12, 2012. Survey instrument calibration documents are appended to this section.

Calibration of field and laboratory instrumentation is based on standards and sources traceable to the National Institute of Standards and Traceability.

PHP quality control procedures include:

- Daily or each time used instrument background and constancy check source/NIST source measurements to confirm that equipment operation is within acceptable limits,
- Documents review to ensure agreement between survey findings and report data,
- Training and certification of individuals supervising or performing the survey procedures.

Instrument Sensitivity

1. The following calculations are for surveys, including scanning surveys performed in support of the closeout survey for the Cheyenne Cardiology location of use. The survey instrument is a Ludlum Model 14C meter with a Ludlum Model 44-9 pancake detector. The calibration data for the survey instrument are from 30 August 2011.

2. NUREG-1556, Volume 11, Table S.5, has release criteria for the radionuclides commonly used in research. A Historical Site Analysis or appropriate survey results should be used to determine the % contribution for each radionuclide. In this case, a typical % contribution for the two radionuclides is shown in the table below. Since the radiation safety practices for the two radionuclides are equivalent, one method for the closeout surveys is to use results for ^{99m}Tc as a basis to conclude scanning instrument sensitivity.

Radionuclide	Release Limit Maximum (dpm/100 cm^2)	% Contribution
^{131}I	3,000	2% **
^{99m}Tc	15,000	98%

**I-131 contribution is negligible due to physical decay; according to the HSA the last date of use was 15 April 2011.

3. The sample calculations below are based on NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual, (MARSSIM)."

4. The survey instrument used for surface scans for fixed radioactivity (either scanning or direct measurement surveys) must be sufficiently sensitive to detect the radionuclides present. The total efficiency for a survey instrument is the sum of the efficiencies for individual radionuclides. The total efficiency was calculated using the manufacturer's calibration data.

$$\text{Efficiency}_{\text{total}} = (0.05)\ (0.25) = \underline{0.012} \text{ or about 1\% total efficiency.}$$

Where 5% is the 2 II ^{14}C efficiency and 25 % is the β energy efficiency per ISO 7503.

5. The MDC_{static} for a survey instrument should be less than 50% of the RLw. The expression for MDC_{static} is below where *b* is the usual background counting rate (e.g., 35 cpm for the survey instrument):

$$MDC_{static} = \frac{3 * 4.65\ (b)^{1/2}}{\text{Efficiency}_{total}}$$

and 435 dpm / 15,000 dpm = $\underline{< 3\% \text{ of the RLw}}$

6. The minimum detectable count rate (MDCR) and scan MDC are calculated as follows.

$$MDCR = d' * \frac{\sqrt{b_i}}{(i * \sqrt{P})}$$

Where
b_i = Background counts in the observations interval (35 cpm X 2 s ÷ 60 s = 1.16 counts)
d' = Detectability index (2.32 from MARSSIM)
P = Surveyor efficiency relative to the ideal observer (0.5 from MARSSIM)
i = Survey observation interval of 2 seconds[1]

MDCR = (2.32) (sqrt 1.16) / (sqrt 0.5) (2s) = 1.75 cps

(1.75 cps) (60 s / m) = 105 cpm

Scan MDC = MDCR / $Efficieny_{total}$ = dpm / 100 cm^2

Scan MDC = 105 cpm / 0.012 = 8750 dpm / 100 cm^2

7. Conclusion: The survey instrument is adequate to use for surface scans for fixed radioactivity for the use scenario described above. Surface scan results that do not exceed 105 cpm using acceptable methods and techniques are less than the weighted release limits.

Pacific Health Physics, Inc.
Well Counter Calibration and Test Report

Facility:	Cheyenne Regional Medical Center Cheyenne, Wyoming	Calibration Date:	12-Mar-12
Equipment:	Well Counter - #2250510226		

Calibration Information:

NIST Standard:	Cs-137	Standard Bkg. CPM:	60
NIST Standard Activity:	0.35900uCi	Standard CPM:	135066
NIST Standard DPM:	796980		
Lower Limit of Detection:	137.12 DPM	Eff:	0.169
Minimum Detectable Activity:	**6.17654E-05** uCi		

Efficiency = standard cpm / standard dpm

Background count rate assumed based on independent measurements.
This well counter meets the lower limit of detection (LLD) for systems used to assay radioactive samples.
An acceptable LLD is 2000 dpm based on Nuclear Regulatory Commission NUREG 1556 Volumes 9 and 11.

Report By: Michael C. Simmons

Digitally signed by
Michael Simmons
Date: 2012.03.13
11:58:02 -07'00'

CardinalHealth

CERTIFICATE OF CALIBRATION

FACILITY: CHEYENNE CARDIOVASCULAR — CARDINAL HEALTH: 145 FORT COLLINS

METER MAKE:	LUDLUM	**MODEL:**	14-C	**S/N:**	184385	**TYPE:**	GM	
PROBE MAKE:	LUDLUM	**MODEL:**	44-9	**S/N:**	PR 192663	**TYPE:**	PGM	mR/hr

BATTERY: O.K.

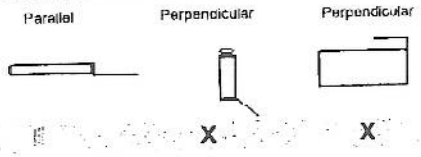
CHECK SOURCE READING 1.4 mR/hr

Calibration Date 30-Aug-11

WINDOW: OPENED — CLOSED — FIXED X

RADIATION FIELD DIRECTION

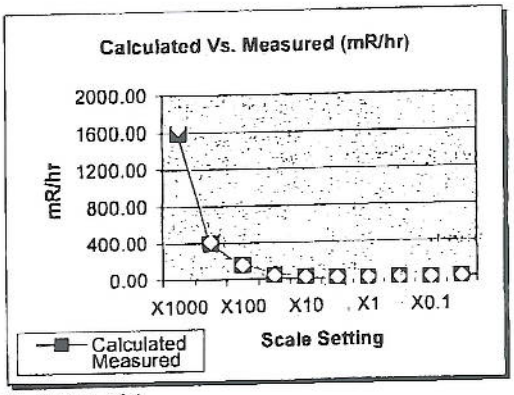
CALIBRATION GEOMETRY:



X — X

ATTENUATION FACTOR: 1=1, 2=1.99, 3=4.66, 4=11.9, 5=119

Scale Setting	Attn. Factor	Distance cm	Calculated mR/hr	Measured mR/hr	Correction Factor	% Error
X1000	1	33	1584.18	1650.00	0.96	4.15%
X1000	1	66	396.04	410.00	0.97	3.52%
X100	1	104	159.50	155.00	1.03	-2.82%
X100	3	96	40.17	39.00	1.03	-2.91%
X10	4	95	16.06	16.00	1.00	-0.39%
X10	4	190	4.02	4.00	1.00	-0.39%
X1	5	95	1.61	1.60	1.00	-0.39%
X1	5	190	0.40	0.40	1.00	-0.39%
X0.1	MINI-PULSER	PARALLEL OFF-set	0.16	0.159	1.00	-0.63%
X0.1	MINI-PULSER	PARALLEL OFF-set	0.04	0.040	1.00	0.50%



Calibration Source: 1 Ci of Cs-137; Radiation output 335 mR/hr at 100 cm on December 14, 1982 (± 5%)
J.L. Shepherd, Model 28-6A with Amersham type X.19 source, S/N: 0568GN & Ludlum Mini Pulser, S/N: 21053

CALIBRATION NOTES AND COMMENTS

RADIATION LEVELS ARE BASED ON STANDARDS WHOSE CALIBRATION ARE TRACEABLE TO THE N.I.S.T. THE FORMULA FOR % ERROR IS: (Measured reading - calculated reading)/calculated reading/100.
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. DURING CALIBRATION THE FRONT OF THE PGM PROBE WAS POSITIONED PERPENDICULAR TO THE BEAM AXIS.

[X] CHECK SOURCE MEASURMENT MADE WITHOUT THE BETA SHIELD.

Calibrated by: DANNY SAVORY

Reviewed by: DEB SMITH
RADIATION SAFETY OFFICER
California Radioactive Material License #: 5218-36

PASS

Next Due Date 29-Aug-12

793 Via Lata Colton, CA 92324 (866) 723-0664

K&S Associates, Inc.
1926 Elm Tree Drive
Nashville, Tennessee 37210-3718
615-883-9760 Fax 615-871-0856

Date:	4/5/2011
Due Date:	
Report #:	110887
Test #:	M110785

ACCREDITED
CALIBRATION CERT #1566.01

CERTIFICATE OF CALIBRATION

This is to certify that the instrument described below was calibrated by measurement in a radiation beam having a calibration which is traceable to the National Institute of Standards and Technology. This calibration has been performed with a Quality Assurance Program which complies with 10 CFR 50, Appendix B and ISO/IEC 17025:2005. Unless stated otherwise, the Calibration Values represent an average of at least two points on each scale. The "best" combined expanded uncertainty with a coverage factor of 2 (95% confidence) of the calibration is 8%. (Best refers to the uncertainty of the calibration of a high quality survey instrument.) Accredited Health Physics Society (HPS) calibration. Procedure: HPS 21

Caution: If a calibration due date is shown, it is shown for the convenience of the user only. The interval is not a recommendation by K + S but is based on either the customer's requirements or the manufacturer's recommendations. Any number of factors, such as time, environment and handling may cause the instrument to drift out of calibration prior to the indicated date.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in this report.

MULTIPLY the reading of the instrument by the listed Calibration Value to obtain an exposure or exposure rate value.

Customer #:	3664
Name	CHEYENNE REGIONAL MEDICAL CENTER
Address	RADIATION ONCOLOGY
Address	214 EAST 23RD STREET
Address	CHEYENNE, WY 82001
Type	DIGITAL
Mfgr	VICTOREEN
Model	450P
Serial	2590

Source 1	Cs-137
Source 2	
Source 3	
Probe Type:	ION CHAMBER
Probe Mfgr:	
Probe Model:	
Probe Serial:	
Probe Window:	
Probe Orientation:	BOTTOM TOWARD SOURCE

Temp	Pressure	RH%
21 deg C	749 mmHg	50

Check Source	Conditions	Reading	Battery Chk:	OK
NO				

Status	HPS	Beam	Scale mR/h	Ref. Rate mR/h	Reading mR/h	Ref. Rate mR/h	Reading mR/h	Calibration Value
F	Y		500 uR/h	0.100 *	98 uR/h	0.40	407 uR/h	1.00
F	Y		5	2.5	2.40	---	---	---
L	Y		5	2.5	2.51	1.00	1.05	---
L	Y		5	4.0	3.98	---	---	0.98
F	Y		50	10.0	10.2	40	39.5	1.00
F	Y		500	250	241	---	---	---
L	Y		500	250	251	100	102	---
L	Y		500	400	394	---	---	1.00
F	N		5 R/h	2500	2.49 R/h	---	---	---
F	Y		5 R/h	1000	0.98 R/h	---	---	1.01

STATUS: F = AS FOUND; L = AS LEFT. HPS: Accredited Procedure = "Y" for yes, "N" for no. Label: Cal by: REH

CAUTION: 1. Application of the factors to an individual measurement is the responsibility of the user.
2. The factors shown are not necessarily valid over the entire scale.
3. Exercise caution in the interpolation or extrapolation of the factors.

NOTE: Please report any problems with the service provided by this HPS accredited laboratory to the HPS Secretariat.

Comments * With "true" bkg exposure rate of 6.8 uR/h, instrument reading was 14 uR/h.
Replaced 2 (9V) #EN22 battery.

Calibrated by: _____ Reviewed by: _____

Title: Richard Hardison
Calibration Technician

Title: Paul Sappenfield
Laboratory Supervisor

Log: M-34 Page 194
Log: N-17 Page 211
Log: Page

Pacific Health Physics, Inc.
Facility: Cheyenne Cardiology Associates
dba Cheyenne Regional Medical Center

SECTION D

WAC 246-232-140 SCHEDULE D

ACCEPTABLE SURFACE CONTAMINATION LEVELS FOR UNCONTROLLED RELEASE OF FACILITIES AND EQUIPMENT *

Nuclide [A]	Average [B,C]	Maximum [B,D]	Removable [B,E]
U-nat, U-235, U-238 and associated decay products	5,000 dpm /100 cm^2	15,000 dpm /100 cm^2	1,000 dpm /100 cm^2
Transuranics, Ra-226 Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125,I-129	100 dpm /100 cm^2	300 dpm /100 cm^2	20 dpm /100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126,I-131,I-133	1,000 dpm /100 cm^2	3,000 dpm /100 cm^2	200 dpm /100 cm^2
Beta-gamma emitters (nuclides with decay modes by other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 dpm /100 cm^2	15,000 dpm /100 cm^2	1,000 dpm /100 cm^2

*Also Regulatory Guide 8.23 and 1.86.

[A] Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma- emitting nuclides should apply independently.

[B] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[C] Measurements of average contaminate should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[D] The maximum contamination level applies to an area of not more than 100 cm^2.

[E] The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionately and the entire surface should be wiped.

Cheyenne Regional
Medical Center

214 EAST 23RD STREET
CHEYENNE, WY 82001
307·634·2273
www.crmcwy.org

ROOM 6109 CLOSEOUT

WIPE AND SURVEY RESULTS

AREA LOCATION:

FLOOR AT ENTRANCE: BKG 614 DPM / WIPE 0 DPM
BKG 0.04 mr/hr SURVEY 0.04 mr/hr
FLOOR BY TREADMILL: WIPE 17 DPM
SURVEY 0.04 mr/hr

ROOM 6107 CLOSEOUT

WIPE AND SURVEY RESULTS

AREA LOCATION:

FLOOR AT ENTRANCE: BKG 614 DPM / WIPE 0 DPM
BKG 0.04 mr/hr SURVEY 0.04 mr/hr
FLOOR BY TREADMILL: WIPE 12 DPM
SURVEY 0.04 mr/hr

Rec Survey CNMT 11-3-12

No 577364

Cheyenne Regional
Medical Center
214 East 23rd Street
Cheyenne, WY 82001

Michelle Simmons, Health Physicist
Nuclear Regulatory Commission, Region IV
612 East Lamar Blvd., Suite 400
Arlington, Texas 76011-4125

M 5 7 7 3 6 4

NRC FORM 532
(1-2012)

U. S. NUCLEAR REGULATORY COMMISSION

DATE

04/17/2012

NAME AND ADDRESS OF APPLICANT AND/OR LICENSEE	LICENSE NUMBER
Cheyenne Regional Medical Center, Dept of Radiology ATTN: Todd A. Christensen, MS DABR Radiation Safety Officer 214 East 23rd Street Cheyenne, Wyoming 82001	49-01380-01
	MAIL CONTROL NUMBER 577364
	LICENSING AND/OR TECHNICAL REVIEWER ch

This is to acknowledge the receipt of your:

☑ LETTER and/or ☐ APPLICATION DATED: 04/06/2012

The initial processing, which included an administrative review, has been performed.

☑ AMENDMENT ☐ TERMINATION ☐ NEW LICENSE ☐ RENEWAL

☑ There were no administrative omissions identified during our initial review.

☐ This is to acknowledge receipt of your application for renewal of the material(s) license identified above. Your application is deemed timely filed, and accordingly, the license will not expire until final action has been taken by this office.

☐ Your application for a new NRC license did not include your taxpayer identification number. Please fill out NRC Form 531, located at the following link:

http://www.nrc.gov/reading-rm/doc-collections/forms/nrc531.pdf

Send the completed NRC Form 531, by facsimile, to the following number: (301) 415-5387

A copy of your action has been emailed to our License Fee and Accounts Receivable Branch, in our Headquarters office in Rockville, MD. You will be contacted separately if there is a fee issue involved.

Your application has been assigned the above listed **MAIL CONTROL NUMBER.** When calling to inquire about this action, please refer to this control number. Your application has been forwarded to a technical reviewer. Please note that the technical review, which is normally completed within 180 days for a renewal application (90 days for all other requests), may identify additional omissions or require additional information. If you have any questions concerning the processing of your application, our contact information is listed below:

Region IV
U. S. Nuclear Regulatory Commission
DNMS/NMSB - B
1600 E. Lamar Boulevard
Arlington, TX 76011-4511
(817) 200-1103 or (817) 200-1140

emailed 4/17/12

BETWEEN:

Accounts Receivable/Payable
and
Regional Licensing Branches

[FOR ARPB USE]
INFORMATION FROM LTS

Program Code: 02230
Status Code: Pending Amendment
Fee Category: 7C
Exp. Date:
Fee Comments: CODE 13
Decom Fin Assur Reqd: N

License Fee Worksheet - License Fee Transmittal

A. REGION

1. APPLICATION ATTACHED

Applicant/Licensee:	MEMORIAL HOSPITAL OF LARAMIE CTY.
Received Date:	04/16/2012
Docket Number:	3003496
Mail Control Number:	577364
License Number:	49-01380-01
Action Type:	Amendment

2. FEE ATTACHED

Amount: _____

Check No.: _____

3. COMMENTS

Signed: Carol L Hess

Date: 4/17/12

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered / /)

1. Fee Category and Amount: _____

2. Correct Fee Paid. Application may be processed for:

Amendment: _____

Renewal: _____

License: _____

3. OTHER _____

_____

Signed: _____

Date: _____