

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD
ARLINGTON TX 76011-4511

Diagnostic Imaging Services of Idaho
1951 Bench Road, Suite F
Pocatello, ID 83201
U.S. NRC RAM License 11-34221-01

1. Regarding the facilities at 1951 Bench Road, Suite F, when I was there for the inspection at this location, I was told that it was an office only, and that no radioactive materials were used or stored there. With the renewal there was a drawing submitted showing an imaging room at this location with sealed source storage. Can you clarify? Was this imaging room added after my inspection? How often is imaging performed at this location (daily, once a week, etc.)?

Response

The facilities at 1951 Bench Road, Suite F, have been reassigned and a room in the facility designated a fixed site nuclear medicine department with a separate processing room. We have been granted approval from the NRC to do diagnostic nuclear medicine procedures and to store sealed sources used for quality control. Currently we are performing nuclear medicine procedures 2-3 days per week and hope to move to 5 days per week as our volume allows. The sealed sources will be kept in a locked cabinet in the nuclear medicine and/or processing room. Please see revised map showing complete facility, scanning room, and processing room.

2. You did not have a dosimeter from DISI and stated that you used a RADOS for your work with DISI. Do you have records to this effect? Or, do you have something documented that you will not receive 10% of the regulatory limit? If so, provide.

Response

Upon recommendation from the NRC, I have switched to:

MP Dosimetry
3 Hutton Centre, Suite 100
Santa Ana, CA 92707
Tollfree Phone: (800) 633-1352 x 2710
Fax: (949) 859-5010

My exchange frequency is quarterly. I have enclosed my last dosimetry report. Prior to retiring my RADOS, it showed no activity as I provided services at the Diagnostic Imaging site.

3. On my list of open items I had that you were going to provide me with the leak test on the flood source used in the coach. Can you send me the last 3 years of leak tests for this source? I have in my notes it was serial 1563-175, but we couldn't find the model number because it was not listed in the inventory.

Response

Please see the attached leak tests for the sealed source 1563-175. You will notice that we used a Ludlum 14C with a pancake probe, which measured at 45 CPM, which is background. In your last inspection, it was pointed out that using a Ludlum 14C with a pancake probe was not acceptable, due to the inability to get a efficiency on the meter. The Ludlum 14C with a pancake probe does have the ability to read in CPM's. We have been inspected several times by the NRC and this practice has not been scrutinized.

4. For the Ludlum 14-C with pancake used for wipe tests, how was the conversion made from CPM to DPM? What efficiency was used and how was that determined? You and I had discussed that the label said it was 35% efficient for Tc-99, which is different than Tc-99m. Were you able to determine the efficiency for Tc-99m?

Response

After consulting with Qal Tek, who does our survey meter calibrations, it is not possible to get a Tc^{99m} efficiency on our Ludlum 14C with a pancake probe, they do not provide an efficiency for any meter calibrated with Tc99m. Upon further investigation, there are no calibration companies giving efficiencies for Tc99m. We have purchased a Ludlum 2200 single channel analyzer with a sodium iodide crystal probe. I have included the latest calibration from Qal-Tek. I find it interesting that manufacturer instruction for calibrating our Ludlum 2200 and getting an efficiency requires us to use Cs-137. Qal-Tek also gives everyone an efficiency for Cs-137 on every meter they calibrate.

5. Has a new Co-57 test source been purchased for the CRC-15R dose calibrator? If so, provide the source certificate and date of receipt.

Response

I believe you are looking for the Co⁵⁷ sheet source for the gamma camera, but I have included both Co⁵⁷ sources purchased in 2015.

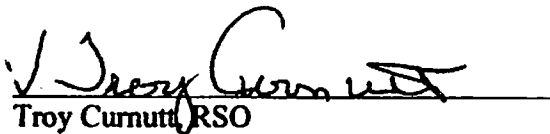
Manufacturer	Isotope	Model	Serial	Activity	Cal. Date
RadQual	Co57	BM01L-10	1015225104	10 mCi	9-12-2015
RadQual	Co57	BM06S	15107105	5.81 mCi	04-28-2015

6. We talked about the coach not having a sink. What provisions are in place for personnel decontamination? Your current application 2015 says to "wash affected area with soap and water." Does this mean that potentially contaminated personnel will need to enter into a client facility to decontaminate?

Response

We have spray Radiacwash, spray water, paper towels, and garbage bags. We also have both survey and wipe capability. Our interpretation of wash affected area with soap and water, would not be douse the area in a sink, but rather spray the affected area with spray radiacwash or soap and spray water first, wipe off with paper towels, measure, repeat as necessary.

Thank you for your time. If you have any questions, do not hesitate to contact me.


Troy Curnutt, RSO

Diagnostic Imaging Services of Idaho
1951 Bench Road, Suite F
Pocatello, ID 83201
208-406-2543 cel
nukemdude@gmail.com

2-17-16
Date

cc:

Kevin Leckington, Administrator
Diagnostic Imaging Services of Idaho
1951 Bench Road, Suite F
Pocatello, ID 83201
208-237-0977 office
208-221-7974 cellular
kleckington@diagnosticimagingSvc.com

Sealed Source Leak Test

FACILITY NAME/ADDRESS:

Diagnostic Imaging Service of Idaho
1951 Bench Rd., Suite F
Pocatello, ID. 83201
(208) 237-0977

DATE TESTED: 05/21/2012 07:16**NEXT DUE** 11/21/2012**INSTRUMENT INFORMATION:**

Model Number: 14C
Manufacturer: Ludlum
Serial Number: 231424

Efficiency: ~~100~~ %**SOURCE INFORMATION:**

Nuclide:
Source Type: C0-57
Manufacturer: Eckert+ ziegler

Serial Number: 1563-175
Calibration Amt: 10000.00 uCi
Calibration D/T: 01/12/2011 12:00

LEAK TEST DATA.

Measurement	Wipe (CPM)	Background (CPM)	NET (CPM)	NET (DPM)	NET (uCi)
1	45	45	0	0	0.000000
2	45	45	0	0	0.000000
3	45	45	0	0	0.000000
Average	45	45	0	0	0.000000

NOTES:

NET (CPM) = Wipe (CPM) - Background (CPM)

NET (DPM) = NET (CPM) / Efficiency

NET (uCi) = NET (DPM) / 2.2×10^6 DPM/uCi

If leak test results are greater than 0.005 uCi of removable contamination, the source is to be removed from use.

TEST RESULTS: pass

no removable contamination

TEST DATA:

Performed by:

Peter Aagard
RT(N)

Licensee: Diagnostic Imaging Service of Idaho

Registration: 11-34221-01 exp. 8-31-2015

Prepared by: Aagard, Peter

Printed: 2/10/2016 1:36:35 PM

Sealed Source Leak Test

FACILITY NAME/ADDRESS:

Diagnostic Imaging Service of Idaho
1951 Bench Rd., Suite F
Pocatello, ID. 83201
(208) 237-0977

DATE TESTED: 01/07/2013 08:46**NEXT DUE** 07/07/2013**INSTRUMENT INFORMATION:**

Model Number: 14C
Manufacturer: Ludlum
Serial Number: 231424

Efficiency: ~~1000~~ %**SOURCE INFORMATION:**

Nuclide:
Source Type: C0-57
Manufacturer: Eckert+ ziegler

Serial Number: 1563-175
Calibration Amt: 10000.00 uCi
Calibration D/T: 01/12/2011 12:00

LEAK TEST DATA:

Measurement	Wipe (CPM)	Background (CPM)	NET (CPM)	NET (DPM)	NET (uCi)
1	45	45	0	0	0.000000
2	45	45	0	0	0.000000
3	45	45	0	0	0.000000
Average	45	45	0	0	0.000000

NOTES:

NET (CPM) = Wipe (CPM) - Background (CPM)

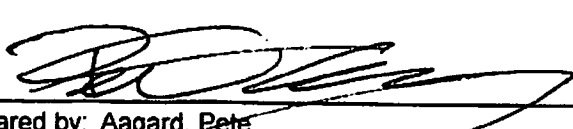
NET (DPM) = NET (CPM) / Efficiency

NET (uCi) = NET (DPM) / 2.2×10^6 DPM/uCi

If leak test results are greater than 0.005 uCi of removable contamination, the source is to be removed from use.

TEST RESULTS: pass**TEST DATA:****Performed by:**

Peter Aagard

Licensee: Diagnostic Imaging Service of Idaho**Registration:** 11-34221-01 exp. 8-31-2015
Prepared by: Aagard, Pete**Printed:** 2/10/2016 1:57:26 PM

Sealed Source Leak Test

FACILITY NAME/ADDRESS:

Diagnostic Imaging Service of Idaho
1951 Bench Rd., Suite F
Pocatello, ID. 83201
(208) 237-0977

DATE TESTED: 06/03/2013 13:42**NEXT DUE** 12/03/2013**INSTRUMENT INFORMATION:**

Model Number: 14C
Manufacturer: Ludlum
Serial Number: 231424

Efficiency: 18.00 %**SOURCE INFORMATION:**

Nuclide:
Source Type: C0-57
Manufacturer: Eckert+ ziegler

Serial Number: 1563-175
Calibration Amt: 10000.00 uCi
Calibration D/T: 01/12/2011 12:00

LEAK TEST DATA:

Measurement	Wipe (CPM)	Background (CPM)	NET (CPM)	NET (DPM)	NET (uCi)
1	45	45	0	0	0.000000
2	45	45	0	0	0.000000
3	45	45	0	0	0.000000
Average	45	45	0	0	0.000000

NOTES:

NET (CPM) = Wipe (CPM) - Background (CPM)

NET (DPM) = NET (CPM) / Efficiency

NET (uCi) = NET (DPM) / 2.2×10^6 DPM/uCi

If leak test results are greater than 0.005 uCi of removable contamination, the source is to be removed from use.

TEST RESULTS:**TEST DATA:**

Performed by: _____

Licensee: Diagnostic Imaging Service of Idaho
Registration 11-34221-01 exp. 8-31-2015

Prepared by:  Aagard, Pete

Printed: 2/17/2016 2:03:36 PM

Sealed Source Leak Test

FACILITY NAME/ADDRESS:
Diagnostic Imaging Service of Idaho
1951 Bench Rd., Suite F
Pocatello, ID. 83201
(208) 237-0977

DATE TESTED: 12/16/2013 17:21

NEXT DUE 06/16/2014

INSTRUMENT INFORMATION:

Model Number: 14C
Manufacturer: Ludlum
Serial Number: 231424

Efficiency: 18.00 %

SOURCE INFORMATION:

Nuclide:
Source Type: C0-57
Manufacturer: Eckert+ ziegler

Serial Number: 1563-175
Calibration Amt: 10000.00 uCi
Calibration D/T: 01/12/2011 12:00

LEAK TEST DATA:

Measurement	Wipe (CPM)	Background (CPM)	NET (CPM)	NET (DPM)	NET (uCi)
1	45	45	0	0	0.000000
2	45	45	0	0	0.000000
3	45	45	0	0	0.000000
Average	45	45	0	0	0.000000

NOTES:

NET (CPM) = Wipe (CPM) - Background (CPM)

NET (DPM) = NET (CPM) / Efficiency

NET (uCi) = NET (DPM) / 2.2×10^6 DPM/uCi

If leak test results are greater than 0.005 uCi of removable contamination, the source is to be removed from use.

TEST RESULTS: pass

TEST DATA:

Performed by:

Peter Aagard

Licensee: Diagnostic Imaging Service of Idaho

Registration: 11-34221-01 exp. 8-31-2015

Prepared by: Aagard, Pete

Printed: 2/15/2016 5:24:01 PM



HPMV
Hazardous Waste
Management & Remediation Services

LEAK TEST RESULTS

Leaking Services of Idaho
700 Jeffrey Johnson
4024 Bench Rd. Ste. F
Pocatello, ID 83201

<u>SOURCE</u>	<u>MODEL #</u>	<u>SERIAL #</u>	<u>MATERIAL</u>	<u>ACTIVITY</u>	<u>RESULTS</u> uCi
<u>MEG. BY:</u> Isotope Products Laboratories North American Scientific	MODEL 3550	1145-9-23	Cs-137	198.6uCi	<0.000109
		66388	Co-57	5.554mCi	<0.000056

TEST DATA

Gamma samples are counted for 1 minute using a Ludlum Model 2500 Scaler and well counter. Alpha and Beta samples are counted for 1 minute using a Ludlum Model 1000 Scaler with alpha and beta probes. NIST traceable reference standards are used to measure sensitivity. Background is counted for 10 minutes. Minimum detectable activity is determined statistically.

Sample taken: 06/24/2014

(Activity greater than 0.005 uCi indicates a leaking source.)

DATE: 06/27/2014

BY:

David Dyer

Sealed Source Leak Test

FACILITY NAME/ADDRESS:

Diagnostic Imaging Service of Idaho
1951 Bench Rd., Suite F
Pocatello, ID. 83201
(208) 237-0977

DATE TESTED: 06/02/2014 08:07**NEXT DUE** 12/02/2014**INSTRUMENT INFORMATION:**

Model Number: 14C
Manufacturer: Ludlum
Serial Number: 231424

Efficiency: 18.00 %**SOURCE INFORMATION:**

Nuclide:
Source Type: C0-57
Manufacturer: Eckert+ ziegler

Serial Number: 1563-175
Calibration Amt: 10000.00 uCi
Calibration D/T: 01/12/2011 12:00

LEAK TEST DATA:

Measurement	Wipe (CPM)	Background (CPM)	NET (CPM)	NET (DPM)	NET (uCi)
1	45	45	0	0	0.000000
2	45	45	0	0	0.000000
3	45	45	0	0	0.000000
Average	45	45	0	0	0.000000

NOTES:

NET (CPM) = Wipe (CPM) - Background (CPM)


NET (DPM) = NET (CPM) / Efficiency

NET (uCi) = NET (DPM) / 2.2×10^6 DPM/uCi

If leak test results are greater than 0.005 uCi of removable contamination, the source is to be removed from use.

TEST RESULTS: pass**TEST DATA:****Performed by:** _____

Peter Aagard

Licensee: Diagnostic Imaging Service of Idaho**Registration:** 11-34221-01 exp. 8-31-2015
Prepared by: Aagard, Peter**Printed:** 2/15/2016 5:20:54 PM

Sealed Source Leak Test

FACILITY NAME/ADDRESS:

Diagnostic Imaging Service of Idaho
1951 Bench Rd., Suite F
Pocatello, ID. 83201
(208) 237-0977

DATE TESTED: 12/29/2014 18:48**NEXT DUE** 06/29/2015**INSTRUMENT INFORMATION:**

Model Number: 14C
Manufacturer: Ludlum
Serial Number: 231424

Efficiency: 100 %**SOURCE INFORMATION:**

Nuclide:
Source Type: C0-57
Manufacturer: Eckert+ ziegler

Serial Number: 1563-175
Calibration Amt: 10000.00 uCi
Calibration D/T: 01/12/2011 12:00

LEAK TEST DATA:

Measurement	Wipe (CPM)	Background (CPM)	NET (CPM)	NET (DPM)	NET (uCi)
1	45	45	0	0	0.000000
2	45	45	0	0	0.000000
3	45	45	0	0	0.000000
Average	45	45	0	0	0.000000

NOTES:

NET (CPM) = Wipe (CPM) - Background (CPM)


NET (DPM) = NET (CPM) / Efficiency

NET (uCi) = NET (DPM) / 2.2×10^6 DPM/uCi

If leak test results are greater than 0.005 uCi of removable contamination, the source is to be removed from use.

TEST RESULTS: pass**TEST DATA:****Performed by:** _____

Peter Aagard

Licensee: Diagnostic Imaging Service of Idaho**Registration:** 11-34221-01 exp. 8-31-2015
Prepared by: Aagard, Pete**Printed:** 2/10/2016 1:58:01 PM

Sealed Source Leak Test

FACILITY NAME/ADDRESS:

Diagnostic Imaging Service of Idaho
1951 Bench Rd., Suite F
Pocatello, ID. 83201
(208) 237-0977

DATE TESTED: 06/08/2015 12:50**NEXT DUE** 12/08/2015**INSTRUMENT INFORMATION:**

Model Number: 14C
Manufacturer: Ludlum
Serial Number: 231424

Efficiency: 1000 %**SOURCE INFORMATION:**

Nuclide:
Source Type: C0-57
Manufacturer: Eckert+ ziegler

Serial Number: 1563-175
Calibration Amt: 10000.00 uCi
Calibration D/T: 01/12/2011 12:00

LEAK TEST DATA:

Measurement	Wipe (CPM)	Background (CPM)	NET (CPM)	NET (DPM)	NET (uCi)
1	45	45	0	0	0.000000
2	45	45	0	0	0.000000
3	45	45	0	0	0.000000
Average	45	45	0	0	0.000000

NOTES:

NET (CPM) = Wipe (CPM) - Background (CPM)

NET (DPM) = NET (CPM) / Efficiency

NET (uCi) = NET (DPM) / 2.2×10^6 DPM/uCi

If leak test results are greater than 0.005 uCi of removable contamination, the source is to be removed from use.

TEST RESULTS: pass**TEST DATA:****Performed by:** _____

Peter Aagard

Licensee: Diagnostic Imaging Service of Idaho**Registration:** 11-34221-01 exp. 8-31-2015
Prepared by: Aagard, Pete**Printed:** 2/10/2016 2:02:10 PM

Sealed Source Leak Test

FACILITY NAME/ADDRESS:

Diagnostic Imaging Service of Idaho
1951 Bench Rd., Suite F
Pocatello, ID 83201
(208) 237-0977

DATE TESTED: 08/20/2015 14:00**NEXT DUE** 02/20/2016**INSTRUMENT INFORMATION:**

Model Number: 14C
Manufacturer: Ludlum
Serial Number: 231424

Efficiency: ~~0.000~~ %**SOURCE INFORMATION:**

Nuclide:
Source Type: C0-57
Manufacturer: Eckert+ ziegler

Serial Number: 1563-175
Calibration Amt: 10000.00 uCi
Calibration D/T: 01/12/2011 12:00

LEAK TEST DATA:

Measurement	Wipe (CPM)	Background (CPM)	NET (CPM)	NET (DPM)	NET (uCi)
1	45	45	0	0	0.000000
2	45	45	0	0	0.000000
3	45	45	0	0	0.000000
Average	45	45	0	0	0.000000

NOTES:

NET (CPM) = Wipe (CPM) - Background (CPM)

NET (DPM) = NET (CPM) / Efficiency

NET (uCi) = NET (DPM) / 2.2×10^6 DPM/uCi

If leak test results are greater than 0.005 uCi of removable contamination, the source is to be removed from use.
returned sheet source upon receiving replacement

TEST RESULTS: pass

Returned to Rad Qual

TEST DATA:**Performed by:**

Peter Aagard

Licensee: Diagnostic Imaging Service of Idaho
Registration: 11-34221-01 exp. 8-31-2015

Prepared by: Aagard, Pete

Printed: 2/10/2016 2:03:30 PM

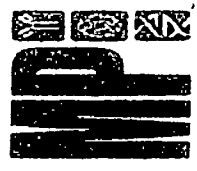
3

QUARTERLY DOSIMETRY REPORT

ACCOUNT GROUP 103940 0
WEAR PERIODS BEGINNING DECEMBER 2015
VER 1
PUBLISHED 1/5/2016
REPORT NO 20945612
143388

PH	NAME	CONTROL	CALCULATION	DOSIMETER TYPE	LOX	WEAR PERIOD	NOTES	MDU	CURRENT DOSE (MILLIREM) DEEP	DOSE THIS YEAR (MILLIREM) DEEP	LIFETIME DOSE (MILLIREM) DEEP
2722519			Control	82	XC	09/20/2015-12/19/2015	Control				
2722520			Standard	82	CH	09/20/2015-12/19/2015	Body dose				

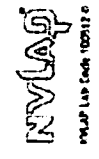
MP Biomedicals, LLC



3 Hutton Centre, Suite 100
Santa Ana, CA 92707

Toll Free: 800.633.1352

Processed by
radiation detection company



3517 Sneed Drive
Georgetown, Texas 78626
Phone (512) 831-7000
Fax (512) 831-0456
www.radco.com

Michael Smith, Dosimetry Operations Manager

ENVIRONMENTAL REPORT

REPORT NO
20945612E

PUBLISHED
1/9/2016

VER
1

WEAR PERIODS BEGINNING
DECEMBER 2015

ACCOUNT GROUP
103340 0

143386

NAME
2722521 AREA MONITOR

*Source
Locker
@ surface*

LIFETIME DOSE (MILLIREM)
DEEP 982 982 982
EYE SHALLOW 982 982 982

DOSE THIS YEAR (MILLIREM)
DEEP 982 982 982
EYE SHALLOW 982 982 982

CURRENT DOSE (MILLIREM)
DEEP 982 982 982
EYE SHALLOW 982 982 982

RTU

NOTES

Body dose

WEAR PERIOD

DOSIMETER
TYPE LOC

CALCULATION

Environmental BZE EV 09/20/2015-12/19/2015

radiation detection company

THERE IS NO CURRENT ACCREDITATION AVAILABLE FOR ENVIRONMENTAL DOSIMETERS



International Isotopes Inc.

Technical Data

Date: 11/13/2014 Nuclide: Cs-137 Quantity: 1 μ Ci Serial Number: CS1370114311206

Source Type: Cs-137 check source

Radiation Safety Instructions and Recommendations For Use and Storage of Reference Sources

This Reference Source has been designed and manufactured to provide maximum safety and service, having satisfied the safety performance requirements of ANSI Standard 43.6-1997 for classification C22212, as recommended for calibration (reference) sources.

Leak Test Results

The subject source was tested for leakage and surface contamination as described by ANSI N43.6-1997. Any leakage and /or contamination detected did not exceed 5×10^{-3} microcuries.

By: 

Date: 11-13-14

Recommended Use and Service

This Reference Source is intended for use as an approximate 1 μ Ci or 10 μ Ci uncalibrated source of Cesium-137 to be used for operability checks of a variety of gamma radiation measurement devices.

For maximum safety and service, the Reference Source(s) should be used and stored at 10-40° C, 10-80% humidity and ambient air pressure. Avoid contact with organic solvents and hot surfaces.

Radiation Safety Recommendations

1. Frequent and/or prolonged contact with the Reference Source(s) by user or patient can result in significant localized radiation exposure, even though the source contains a relatively small level of radioactivity compared to the scanning agents activity levels.
2. Forceps or other convenient handling tools are strongly recommended for frequent handling of the source. Grip source at edge or ends with extended fingers if direct handling is required.
3. Placement of the source in contact with a patient for location reference imaging during scanning procedures should be conducted in a manner that minimizes duration of contact.
4. To prevent unauthorized use or removal the source should be secured in a restricted access area in the container provided.
5. Decayed or otherwise unusable sources should be disposed of by the authorized radioactive waste disposal method employed by your facility for solid materials.
6. Contamination / leakage smear tests conducted on this source should be done with instrumentation having appropriate energy response calibration.

Certificate of Calibration

MODEL BM06S GAMMA REFERENCE STANDARD

Nominal Value 5.0 mCi

Radionuclide: Co-57 Assay Value: 5.81 mCi 214.97 MBq

Serial Number BM06057S15107105 Reference Date: 4/28/2015

Half Life¹ 271.79 days

Principal Gamma Emissions¹

Photon Energy	Abundance
14.413 keV	9.16 %
122.0614 keV	85.6 %
136.47 keV	10.68 %

Source Description:

The activity is uniformly distributed throughout approximately 3 milliliters of colored epoxy resin. The colored epoxy resin is sealed with a clear layer of inactive epoxy resin in a machined acrylic body. The source is sealed with a threaded and chemically bonded cap.

Method of Calibration:

The calibration source was calibrated by direct comparison of standardized solutions traceable to the National Institute of Standards and Technology (NIST), in an identical geometry, using a pressurized ion chamber. This standard is indirectly (implicitly) traceable to the National Institute of Standards and Technology (NIST).

RadQual's contract manufacturer, International Isotopes Inc. actively participates in the Radioactivity Measurement Assurance Program conducted by the National Institute of Standards and Technology (NIST).

Total Uncertainty (95% Confidence Level) 1.29%



Calibration Technologist

4/28/15

Date

¹ Table of Isotopes, Eighth Edition 1996

RadQual LLC -- PO Box 82 Weare NH 03281 (603)-513-1221 -- (603)-415-0160

CE



RadQual, LLC
PO Box 82
Weare, NH 03281
(603) 513-1221 • (603) 415-0160 Fax
www.radqual.com

Technical Data

CE

Test and Measurement Report

Model #: BM01L- 10 Serial #: BM01L1015225104 Reference Date: September 12, 2015

Radioactive Isotope Information at Reference Date

Primary Nuclide:	Co-57	10 mCi	370 MBq	
Principle Contaminants:	Co-56	0.005 mCi	0.1998 MBq	0.054%
	Co-58	0.003 mCi	0.1036 MBq	0.028%

Leak Test Results

The subject source was tested for radioactivity leakage and surface contamination as described by ANSI Standard N43.6-1997. Any leakage and/or contamination detected did not exceed 5×10^{-3} microcuries.

By: 

Date: 8-14-15

Physical Properties (for reference only)

Total Dimensions: 16.7" (42.4 cm) x 24.2" (61.5 cm)
Active Dimensions: 16.4" (41.9 cm) x 23.9" (60.7 cm)

Physical Properties as Tested for Uniformity (for reference only)

Total Field of View: 16.4" (41.9 cm) x 23.9" (60.7 cm)
Useful Field of View: 14.9" (37.9 cm) x 21.5" (54.6 cm)

Source Decay Characteristics¹

Cobalt-57 half-life is 271.7 days

Photon Energies (keV)		Abundance (%)
γ_1	14.4	9.5
γ_2	122	85.6
γ_3	136	10.6
γ_9	692	0.16

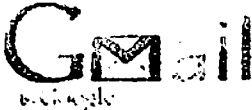
(1) "A Handbook of Radioactivity Measurement Procedures", NRC Report No. 58, Second Edition, (February 1985).

Most gamma cameras tend to resolve the γ_2 and γ_3 as a single non-Gaussian peak for window alignment during quality control procedures. The medium and high-energy gamma emissions from the trace Co-56 and Co-58 (0.5 MeV — 3.0 MeV) impurities decrease relative to the Co-57 with an effective half-life of 105 days.

6/22/2015

Gmail - Return Acknowledgement

Handwritten signature



Troy Cumutt <nukemdude@gmail.com>

Return Acknowledgement

1 message

International Isotopes Inc. <info@intisoid.com>
To: nukemdude@gmail.com
Cc: admin@intisoid.com

Mon, Jun 22, 2015 at 3:55 PM



International Isotopes Inc.

Return Acknowledgement

4137 Commerce Circle • Idaho Falls, ID. 83401 • Phone: 208-524-5300 • Toll Free: 800-699-3108 • Fax: 208-524-1411 • Web: www.intisoid.com

To: Diagnostic Imaging
Attn: Troy Cumutt RSO
From: _____

By sending this letter, International Isotopes, Inc. NRC license number 11-27680-01, acknowledges the receipt and transfer of possession of the radioactive source(s) described below.
International Isotopes, Inc. received the source(s) at our facility located in Idaho Falls, Idaho.

Isotope	Manufacturer	Reference Date	Labeled Activity	Serial Number	Date Received	RA Number
Co-57	North American	9/1/2005	5.554 mCi	66388	6/22/2015	024930

/s/ Erika Prestwich

Signature

F162 D Return Acknowledgement

6/22/2015 9:55 pm

Certificate of Calibration

Calibration Location:
3998 Commerce Circle
Idaho Falls, ID 83401
Ph: 208 523-5557



Qal-Tek™

Customer: Diagnostic Imaging Services
Address: 1951 Bench Road, Suite F
Phone: 208-221-3949

Att.: Peter Aagard
City: Pocatello

State: ID Zip: 83201

Serial Number: **70304**
Probe Serial Number: **N/A**
Calibration Date: **04-Feb-2016**

Mfg: Ludlum Model: 2200
Probe Mfg: Ludlum Probe Model: N/A

Ref. #: W15492-065927

Calibration/Ver. Due Date: **04-Feb-2017**

HP Count Rate (2pi)

Basic Information	
Ambient Temperature	Pressure (hg)
21.9	25.46
Humidity (%)	Lab Elevation (ft)
9	4750

As Found Pulser Linearity Checks						
Input (cpm)	Reading (cpm)	Tolerance (cpm)	High Voltage	Base Threshold	Window	Upper Threshold
10000	9960	[9000-11000]	1300	4.0 mV	N/A	50 mV

Count Rate Probe Test Results						
Source ID	Isotope	2pi Activity (cpm)	Observed (cpm)	Background (cpm)	Net (cpm)	Efficiency (%)
4820	Cs-137	69573	13982	3433	10559	15.18
4817	SrY-90	29400	13365	3433	9932	33.78

Calibration Comments

Performed high voltage plateau with Cs-137. High voltage setting on instrument: 512. Window setting on instrument: 831. Threshold setting on instrument: 754.

Calibration Operational Checks

Reproducibility	Pass
High Voltage	OK
Geotropism	Pass
Zero Check	Pass
Calibration Constant	N/A
Dead Time	N/A
CALIBRATION RESULTS	Pass

Calibration Instruments Information:

Cs-137 : 4820 - Cal. Date: 14-Aug-2015 - 4pi CPM: 139147 - 2pi CPM: 69573
SrY-90 : 4817 - Cal. Date: 14-Aug-2015 - 4pi CPM: 58800 - 2pi CPM: 29400
Ludlum : 500 pulser : 121041 - Cal. Date: 06-Oct-2015

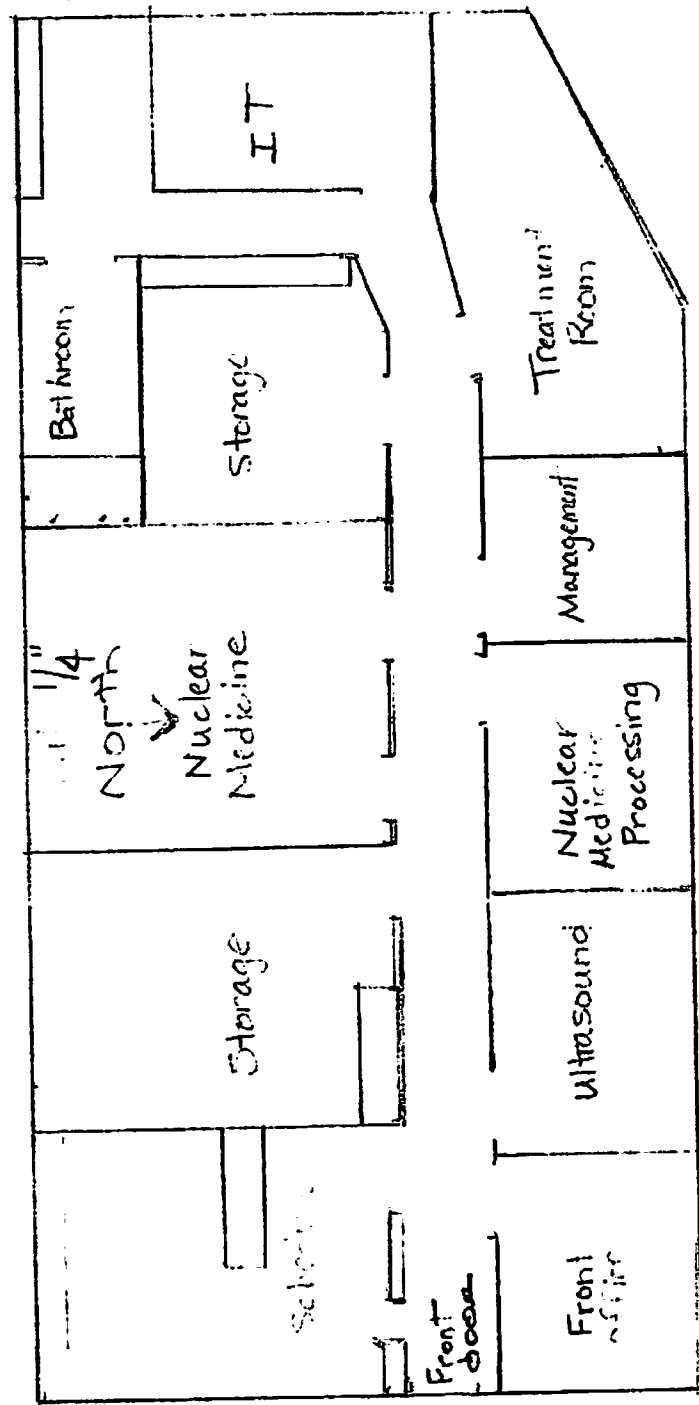
Cal. Procedure: CP-PRO-170

Date of Service: 04-Feb-2016

Service Technician: Doug Bloxham

Doug Bloxham

This Certificate of Calibration shall not be reproduced except in full, without the written approval of Qal-Tek Associates.
Results relate only to item calibrated. Uncertainty of measurement was estimated at approximately 95% confidence level, (k=2).
All reference standards used are traceable to NIST. Qal-Tek Associates maintains a quality system (Quality Assurance Management Plan) that meets or exceeds the requirements set forth in the following documents: ANSI / NGSL Z540-1 1994 and ISO / IEC 17025.



Diagnostic Imaging Services of Idaho
 1951 Birch Pk., Suite 1
 Bozelle, Idaho 83201

