

From: [Brian Livingston](#)
To: [Lawyer, Dennis](#)
Cc: [Marie Parry](#)
Subject: RE: NRC License Renewal
Date: Friday, April 03, 2015 1:27:54 PM
Attachments: [Efficiency Count G5000.pdf](#)
[Americium Check Source.pdf](#)

19-08330-02
030-04545

Mr. Lawyer-

Here are the answers to a few questions we discussed earlier this week:

1. We run an efficiency count on the G5000 annually. Our last one, performed last April, is attached. The next one is due 21 April 2015, which we will likely do next week.
2. The Americium-241 check source certificate is also attached. I'm not sure why this is a separate item on the license. We can probably delete that since item I covers materials with atomic numbers 84-103.
3. The Chairman of the RXSS agrees that RXSS will stand for "Radionuclide and X-Ray Safety Subcommittee" from now on.
4. The Cs-137 card sources we discussed say exactly the following on them: "Exempt Quantities from NRC and State Licenses, Spectrum Techniques, Oak Ridge, TN 37830". Is this something we can exclude from the license entirely?

Thank you Sir and have a good weekend,

BRIAN E. LIVINGSTON, CHP

Chief, Health Physics Division

Radiation Safety Officer

Armed Forces Radiobiology Research Institute
Uniformed Services University of the Health Sciences
brian.livingston@usuhs.edu
301-295-1285 (DSN 295-1285)

From: Lawyer, Dennis [mailto:Dennis.Lawyer@nrc.gov]
Sent: Tuesday, March 31, 2015 1:48 PM
To: Brian Livingston (brian.livingston@usuhs.edu)
Subject: NRC License Renewal

Mr. Livingston,

Sometimes I know your phone doesn't work, so I am following up with an email.

I have additional questions and comments on your renewal. Most can be answered by phone. I will need a new Certification of Financial Assurance though.

585397

Dennis Lawyer
Health Physicist
U.S. Nuclear Regulatory Commission
Division of Nuclear Material Safety
610-337-5366
610-337-5269 (F)

HEALTH PHYSICS DIVISION

G-5000W Standard Two Analysis Report

Machine Name: HPD A/B Counting System
 U R ID: admin

Group Date/Time: 2014/04/21 12:15:36.00
 System Serial #: 2000-120399

Sample Position	Sample Ident	Sample Type	Elapsed Count Time	Alpha Counts	Alpha Net cpm	Alpha Conc.	Beta Counts	Beta Net cpm	Beta Conc.
1	Blank	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 1	0.0	0.0
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 53854	26925	44875
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 53765	26880	44801
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 53701	26848	44747
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 54034	27015	45025
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 53737	26866	44777
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 54405	27200	45334
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 53847	26921	44869
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 54180	27088	45146
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 53649	26822	44704
2	C-14 Source ID 10-035	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 54231	27113	45189
1	Blank	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 0	0.0	0.0
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	1	0.45	1.286	PM/swp 162840	81418	135696
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 162608	81302	135503
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	1	0.45	1.286	PM/swp 162033	81014	135024
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 162885	81440	135734
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	2	0.95	2.714	PM/swp 161894	80945	134908
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 163360	81678	136130
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 162815	81405	135676
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	1	0.45	1.286	PM/swp 162353	81174	135291
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	2	0.95	2.714	PM/swp 162407	81201	135336
3	Sr-90 Source ID 10-033	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 162868	81432	135720
1	Blank	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 1	0.0	0.0
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	1	0.45	1.286	PM/swp 136572	68284	113806
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	1	0.45	1.286	PM/swp 136420	68208	113680
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	4	1.95	5.571	PM/swp 136275	68135	113559
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 136934	68465	114108
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 136498	68247	113745
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	2	0.95	2.714	PM/swp 136252	68124	113540
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	1	0.45	1.286	PM/swp 135993	67994	113324
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	1	0.45	1.286	PM/swp 135788	67892	113153
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 136081	68038	113397
4	Tc-99 Source ID 10-034	Default	2 Min 0 Sec	2	0.95	2.714	PM/swp 136781	68388	113981

<u>SOURCE</u>	<u>ACTIVITY</u>	<u>DATE</u>
C-14	101.4 nCi	11/1/10
Y/Sr-90	103.2 nCi	11/1/10
Tc-99	103.8 nCi	11/1/10

C-14 AVG. = $53940/2 = 26970$
 CURRENT 225013

Sr-90 AVG. = $162606/2 = 81303$
 CURRENT 210729

Tc-99 AVG. = $136359/2 = 68180$
 CURRENT 230433

EFF = 12.0%

EFF = 38.6%

EFF = 29.6%

Health Physics Specialist: *David L. ...* Date: 22 Apr 14

HEALTH PHYSICS DIVISION

G-5000W Standard Two Analysis Report

Machine Name: HPD A/B Counting System
 U R ID: admin

Group Date/Time: 2014/04/21 13:25:40.00
 System Serial #: 2000-120399

Sample Position	Sample Ident	Sample Type	Elapsed Count Time	Alpha Counts	Alpha Net cpm	Alpha Conc.	Beta Counts	Beta Net cpm	Beta Conc.
1	Blank	Default	2 Min 0 Sec	0	0.0	0.0	PM/swp 2	0.0	0.0
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	130567	65283	186524	PM/swp 71892	35944	59906
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	130522	65261	186460	PM/swp 71980	35988	59980
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	131876	65938	188394	PM/swp 72551	36273	60456
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	131761	65880	188230	PM/swp 71626	35811	59685
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	132054	66027	188648	PM/swp 72151	36073	60122
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	132246	66123	188923	PM/swp 72314	36155	60258
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	132561	66280	189373	PM/swp 72129	36062	60104
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	132363	66181	189090	PM/swp 72359	36177	60296
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	132881	66440	189830	PM/swp 72143	36069	60116
2	Am-241 Source ID 10-032	Default	2 Min 0 Sec	132860	66430	189800	PM/swp 72319	36157	60262

AM-241 105.4 nCi 12/1/10

AM-241 AVG. = $\frac{131969}{2} = 65985$

CURRENT 232719

EFF = 28.4 %

Health Physics Specialist: *Brian L. Sullivan* Date: 22 Apr 14



Eckert & Ziegler

Isotope Products

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661-309-1010

Fax 661-257-8303

10-074

CERTIFICATE OF CALIBRATION ALPHA STANDARD SOURCE

Radionuclide: Am-241
Half-life: 432.17 ± 0.66 years
Catalog No.: EAB-241-50LB
Source No.: H4-818

Customer: UNIFORMED SERVICES UNIV./HEALTH SCIENCES
P.O. No.: HU0001-10-M-V476
Reference Date: 1-Dec-10 12:00 PST
Contained Radioactivity: 105.4 nCi 3900 Bq

Physical Description:

- A. Capsule type: EAB-LB (50.8 mm OD x 3.18 mm THK)
- B. Nature of active deposit: Electrodeposited and diffusion bonded oxide
- C. Active diameter/volume: 45 mm
- D. Backing: Stainless steel
- E. Cover: None

CAUTION!
DELICATE SURFACE
DO NOT WIPE
ACTIVE AREA

Radioimpurities:

None detected

Method of Calibration:

This source was assayed using a windowless internal gas flow proportional counter.

Uncertainty of Measurement:

- A. Type A (random) uncertainty: ± 0.2 %
- B. Type B (systematic) uncertainty: ± 3.0 %
- C. Uncertainty in aliquot weighing: ± 0.0 %
- D. Total uncertainty at the 99% confidence level: ± 3.0 %

Notes:

- See reverse side for leak test(s) performed on this source.
- EZIP participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (as in NRC Regulatory Guide 4.15).
- Nuclear data was taken from IAEA-TECDOC-619, 1991.
- This source has a working life of 2 years.
- This source had a surface emission rate of 115800 α/min in 2π on 19-Oct-10.

Daniel James Van Dalsen
Quality Control

20-OCT-10
Date

EZIP Ref. No.: 1451-63

ISO 9001 CERTIFIED