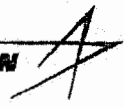


LOCKHEED MARTIN



USNRC Region 1 DNMS

Attn: Mr. John J. Miller

2100 Renaissance Blvd

King of Prussia, PA 19406-2713

J-4

January 27, 2017

Subject: License Amendment Request

Reference: Mail Control No. 592529

Docket No. 030-10638

License: Lockheed Martin USNRC Operating No. 10-01425-16

03010638

Dear Sir,

In accordance with your communication received on January 23, 2017, I am submitting this addendum to our original license amendment request.

Amendment Justification

On November 15th, 2016, three representatives from Ecology Services Inc. came to the Marietta site for a disposal project to remove some radioactive materials from storage. A number of these sources had been in storage for a significant amount of time. As part of this project, Ecology Services Inc. was contracted to take the Plutonium-Beryllium (Pu-Be) source material, encased in paraffin, and melt it down to inspect the source material and verify activity, condition, etc. The task was required at the request of OSRP (Off-Site Source Recovery Project) prior to potential transfer of ownership of the source material. The Pu-Be melt down and subsequent inspection was conducted inside the high hazard building (T-779) under the supervision of Mrs. Barbara Foster, Lockheed Martin-Marietta Hazardous Materials Manager. When the paraffin melt down was complete, the project Health Physicist, Mr. Colt Greer, determined that *no Pu-Be source material was evident* and consistent surveys conducted throughout the process indicated a non-detect condition. The conclusion reached by all parties was that the paraffin encased source holders were empty. It is important to note that a corroded metal identification tag (Serial M-572) was attached to one of the source holders indicating 1.0 curie of Pu-Be. The justification for this tag not being removed prior to material transfer is unknown.

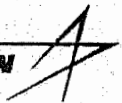
A report summarizing the results and methodology utilized by Mr. Greer in determining no activity or source material was evident is attached. Mr. Greer provided the written report at my request.

Information regarding the suspected disposition of the Pu-Be material has been received from Mr. Leonard Manzanares of the OSRP. According to inventory data records at the Hanford nuclear site,

592529

NMSS/RGN1 MATERIALS-002

LOCKHEED MARTIN



a Pu-Be source in storage was identified bearing the exact same serial number (M-572) identified by metal tag in Marietta; country of origin listed as USA; pedigree identified as Defense; and a manufacture date of origin listed as August 24, 1961. The recorded date of manufacture corresponds to the time frame when the Dawsonville research project, reportedly utilizing the Pu-Be material, was decommissioned and terminated. In conjunction with this new information provided by OSRP, it is our firm belief that the Pu-Be source material was transferred directly to the Hanford nuclear site following the termination of research operations in Dawsonville, Georgia.

If there should be additional questions regarding this matter, please contact me directly at (770)-494-2531. Mr. Colt Greer, health physicist, may be contacted as necessary at 610-750-3860.

Respectfully,

Neale A. Parkinson

Radiation Safety Officer

Lockheed Martin-Marietta

Approved:

Lisa L. Bosserman

Environmental, Safety & Health Engineering Manager

Nap/cc: L. Bosserman

ECOLOGY SERVICES, INC.

9135 Guilford Road, Suite 200
Columbia, Maryland 21046
(301) 362-6700
Fax (301) 490.0172

January 27, 2017

Mr. Neale Parkinson
Lockheed Martin - Marietta
86 South Cobb Drive, Dept RE4M
Marietta, GA 30063

Re: PuBe Survey Results

Dear Mr. Parkinson,

On November 15th, 2016 ESI planned to remove suspected PuBe source(s) that were embedded in paraffin. Prior to the commencement of this operation the HP performed a survey on contact with the container, revealing no detectable neutrons or gammas above background.

The paraffin was slowly melted down revealing 5 stainless cylindrical tubes and a source identification tag connected to a metal clamp. Some of tubes contained a foil, four in total. The tubes, foils and source tag were directly monitored by an alpha scintillator, REM Ball and ion chamber. These items were scanned on contact with all three instruments. Then a 60 second static was performed on the foils with the alpha scintillator. None of these item revealed results distinguishable from background (Attachment A).

Three wipes were collected (foils, tubes and metal clamp) and analyzed using a windowless gas-flow proportional counter for total alpha. The findings corroborated with the field measurements taken, specifically revealing no residual contamination distinguishable from background (Attachment B).

From the results, it can be concluded that no residual contamination is present on the items extracted from the block of paraffin.

If you have any questions or concerns, please contact me anytime. Thank you for your continued use with Ecology Services, Inc. for your health physics service needs.

Sincerely,



Colt Greer
Health Physicist

Attachment A

Lockheed Martin

PuBe Extraction

Location: Marietta, GA

Static Instrumentation Details

Rate Meter: Ludlum-2221 S/N 313977 DOC: January 19th, 2016
Probe: Ludlum 43-90 S/N PR228907 Background: 1 cpm
Probe Area: 125 cm² MDC_{STATIC}: 58 dpm/100cm²
Efficiency: e_i: 0.423 e_s: 0.25 Survey Date: November 15th, 2016

Item	Piece	Static Count (cts.)	Count Time (seconds)	Total Alpha ~dpm/100cm ²	MDC (cts.)	BKG (cts.)	MDC dpm/100cm ²
Foils	ALL	5	60	<MDC	9	1	57.9

11/15/16

Lockheed - Manhattan

0474 43-90 BKG 0,1, 2,2,0 ambient

0474 RD-20 BKG ~ 0.1 mR/hr

REM BKG ϕ (34.5 cpm/mR/hr)

5 Source Holders - metal stainless 3 short 2 long

1111 Foils - APPEAR TO BE AL Foil NOT source Foils
Foil are very thin

Source ID
Attached to
Clump

"Source F1

1 ci PuBe

M 572

Foils States 5 cpm W/ 43-90 - static

No den rate No no in anything

No α

No Source

Wipes:

Foils

Source Holders

Clump/ID Tag



ECOLOGY SERVICES, INC.

9135 GUILFORD ROAD SUITE 200
COLUMBIA, MARYLAND 21046
(800) 932-7299
FAX (301) 490-0172

Certificate of Calibration

Issued To:

Ecology Services, Inc.
9135 Guilford Rd., Suite 200
Columbia, MD

Calibrated on: 1/19/2016

Calibration cycle: 360

Calibration Due: 1/13/2017

Job Number:

Instrument Identification:

SN:

Ludlum 2221 313977

Detectors:

Ludlum model 43-90 PR228907

Calibration Data:

Counts per minute

Equipment: Ludlum model 500-8 Pulse Generator (SN: 117553)

Scale/ Range:	Actual (Test Point):	As Found Reading:	Indicated Reading:	Correction Factor:
x1	200	200	200	1.00
	400	400	400	1.00
x10	2K	2K	2K	1.00
	4K	4K	4K	1.00
x100	20K	20K	20K	1.00
	40K	40K	40K	1.00
x1K	200K	200K	200K	1.00
	400K	400K	400K	1.00
xLOG	500	498	498	1.00
	5000	5000	5000	1.00
	50000	50000	50000	1.00
	500000	500000	500000	1.00

Precalibration Checks:

Battery reading: 5.6V

Detector shield: N/A

Condition received: Good

Contamination levels (dpm): < 100

Input Sensitivity (mV): 5

High Voltage (V): 400

Audio response: Sat

Meter deflection/response: Sat

Reset: Sat

Light: Sat

Zero adjust: N/A

Temperature (C): N/A

Pressure (mmHg): N/A

Relative humidity (%): N/A

Detector Response: Detector 1

Detector Orientation: Parallel

Radionuclide: 239Pu

Source SN: P5564

Efficiency (4Pi): 21.03%

Uncertainty (+/-): 10%

Check Source:

Radionuclide:

Scale/Range:

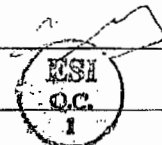
Indication:

Comments:

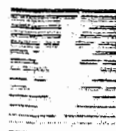
Digital CF ~1.

Serviced by:

Reviewed by:



Ecology Services, Inc., certifies that the above instrument has been calibrated by standards traceable to the National Institutes of Standards and Technologies (NIST), has been derived from accepted values of natural physical constants or has been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of MIL-STD-45662-A, ANSI N323-1978, NCRP Report No. 112, NRC Reg Guide 10.8 Rev. 2, 1987, and 10 CFR Part 35.



9135 GUILFORD ROAD SUITE 200
COLUMBIA, MARYLAND 21046
(800) 932-7299
FAX (301) 490-0172

ECOLOGY SERVICES, INC.

Certificate of Calibration

Issued To:

Ecology Services, Inc.
9135 Guilford Rd., Suite 200
Columbia, MD 21046

Calibrated on: 8/1/2016
Calibration cycle: 360
Calibration Due: 7/27/2017

Job Number:

Instrument Identification:

SN:

Eberline RO20 0474
Detectors:

Calibration Data:

mR/hr

Equipment: J.L. Shepherd model 28-5A Source Calibrator (SN:
10245, 137Cs) 32.67 mRHM

Scale/ Range:	Actual (Test Point):	As Found Reading:	Indicated Reading:	Correction Factor:
5	1.5	1.6	1.6	0.94
	3.5	3.5	3.5	1.00
50	15	15	15	1.00
	35	34	34	1.03
500	150	145	145	1.03
	350	340	340	1.03
5K*	1000	1000	1000	1.00
50K*	1000	1000	1000	1.00

Precalibration Checks:

Battery reading: BAT Test
Detector shield: N/A
Condition received: Good
Contamination levels (dpm): < 100
Input Sensitivity (mV): N/A
High Voltage (V): N/A
Audio response: N/A
Meter deflection/response: Sat
Reset: N/A
Light: Sat
Zero adjust: Zeroed
Temperature (C): N/A
Pressure (mmHg): N/A
Relative humidity (%): N/A

Detector Response:

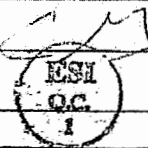
Detector Orientation: Front
Radionuclide:
Source SN:
Efficiency (4Pi):
Uncertainty (+/-):

Check Source:

Radionuclide:
Scale/Range:
Indication:

Serviced by:

Reviewed by:



Comments:

*Scale not calibrated but functional and approximately correct.

Ecology Services, Inc., certifies that the above instrument has been calibrated by standards traceable to the National Institutes of Standards and Technologies (NIST), has been derived from accepted values of natural physical constants or has been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of MIL-STD-45662-A, ANSI N323-1978, NCRP Report No. 112, NRC Reg Guide 10.8 Rev. 2, 1987, and 10 CFR Part 35.

Attachment B

REPORT OF SAMPLE ANALYSIS

Rev 1.3

For: Lockheed Martin - Marietta
Job: PuBe Source Holder & Foils
Sample Type: Gross Alpha

Date: 18-Nov-16
By: CG
Sample Date: 15-Nov-16
Counting Parameters: Gross Alpha

Equipment Description:
Counter: Gas Proportional
Detector: EIC FP-2 GFPC

Input Background Data:			
Background Cts	Ct Time (m)	Background CPM	% Error
3	2	1.50	113.16%

Input Efficiency Data:					
Isotope	Gross Counts	Time (m)	DPM	Efficiency (4 Pi)	% Error
PU-239	10670	2	1.05E+04	50.65%	4.00%

MDA Calculation:				
MDA (Net CPM)	MDA (DPM)	MDA (uCi)	MDA (pCi)	
7	14	6.399E-06	6.399	

Sample Data: <small>Note: A zero reading for DPM or pCi/gm values indicates only that the sample activity was less than the MDA.</small>							
Sequence Number	Sample ID	Gross Counts	Ct Time (m)	CF	Decay Factor	DPM/Sample	Error at 95% C.L.
1	BKG 1	2	2	1	0.97	< MDA	N/A
2	BKG 2	4	2	1	0.97	< MDA	N/A
3	Source ²³⁹ Pu SN: P-5564 1	10670	2	1	0.97	10530	6.68%
4	Foils	4	2	1	0.97	< MDA	N/A
5	Source Holders	4	2	1	0.97	< MDA	N/A
6	Metal Clamp	2	2	1	0.97	< MDA	N/A

"Missed Activity" 10 2 1 0.97 < MDA N/A