



DONALD DANFORTH  
PLANT SCIENCE CENTER

August 9, 2011

Toye Simmons  
Materials Licensing Branch  
U.S. Nuclear Regulatory Commission  
Region III  
2443 Warrenville Road, Suite 210  
Lisle, IL 60532-4352

**Howard F. Beittenmiller**  
Radiation Safety Officer  
Donald Danforth Plant Science Center  
  
975 North Warson Road  
St. Louis, Missouri 63132

**Re: Addendum to July 1, 2011 Request to Amend License Number 24-32339-01**  
Control Number 575 533

Ms. Simmons,

Enclosed, please find Radiation Survey Report for Room 2036. No residual radioactivity was found nor any exposure potential. Pursuant to our conversation of today, after removal of casework and fume hood from room, areas behind and under casework/fume hood as well as the fume hood exhaust duct will be surveyed in a manner similar to and by the same Health Physicist as in the attached report.

Thank you very much for your help in this matter.

Sincerely,

Howard F. Beittenmiller  
Radiation Safety Officer  
Donald Danforth Plant Science Center

**R. M. WESTER & ASSOCIATES, INC.**

215 INDACOM DRIVE - ST. PETERS, MISSOURI 63376

[www.rmwest.com](http://www.rmwest.com)

(636) 928-9628 - FAX 928-9857

**Radiation Survey Report**

**Room 2036**

**Donald Danforth Plant Science Center**

Performed By:

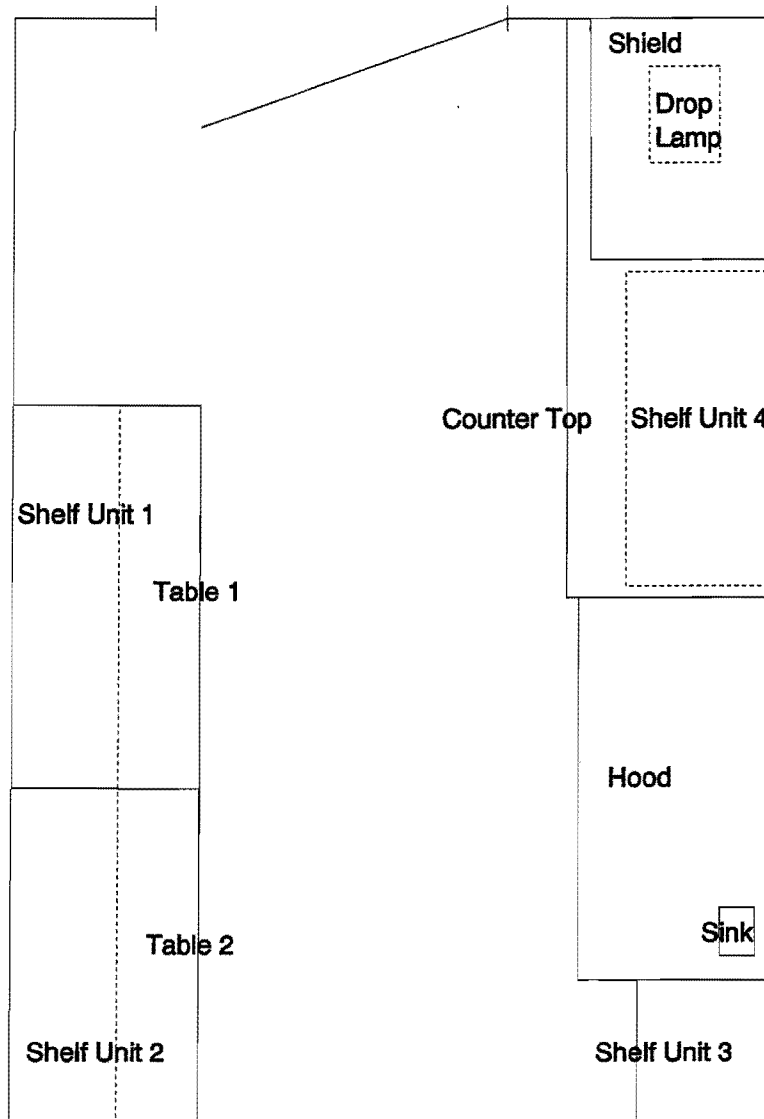
R. M. Wester & Associates, Inc.  
Health Physicist: Kevin McCann

Date: July 7, 2011



Enclosure 1

Room 2036



Drawing not to scale

Enclosure 1

Enclosure 2

Wipe Number	Location
1	Shelf Unit 1 - Lower Shelf
2	Shelf Unit 1 - Middle Shelf
3	Shelf Unit 1 - Top Shelf
4	Shelf Unit 2 - Lower Shelf
5	Shelf Unit 2 - Middle Shelf
6	Shelf Unit 2 - Top Shelf
7	Shelf Unit 3 - Lower Shelf
8	Shelf Unit 3 - Second Shelf
9	Shelf Unit 3 - Third Shelf
10	Shelf Unit 3 - Fourth Shelf
11	Shelf Unit 3 - Top Shelf
12	Table 1 - Left
13	Table 1 - Right
14	Table 2 - Left
15	Table 2 - Right
16	Shelf Unit 4 - Lower Shelf
17	Shelf Unit 4 - Middle Shelf
18	Shelf Unit 4 - Top Shelf
19	Left Interior of Shelf Unit 3 - Top
20	Left Interior of Shelf Unit 3 - Bottom
21	Right Interior of Shelf Unit 3 - Top
22	Right Interior of Shelf Unit 3 - Bottom
23	Back Wall of Shelf Unit 3 - Top
24	Back Wall of Shelf Unit 3 - Bottom
25	Table 1 - Lower Shelf - Left
26	Table 1 - Lower Shelf - Right
27	Table 2 - Lower Shelf - Left
28	Table 2 - Lower Shelf - Right

Wipe Number	Location
29	Back Wall - Top Left
30	Back Wall - Bottom Left
31	Back Wall - Top Right
32	Back Wall - Bottom Right
33	Left Wall - Top Left
34	Left Wall - Top Middle
35	Left Wall - Top Right
36	Left Wall - Midpoint Left
37	Left Wall - Midpoint Middle
38	Left Wall - Midpoint Right
39	Left Wall - Bottom Left
40	Left Wall - Bottom Middle
41	Left Wall - Bottom Right
42	Front Wall - Upper
43	Front Wall - Lower
44	Interior of Door - Upper
45	Interior of Door - Lower
46	Exterior of Hood Cabinets
47	Exterior of Hood - Shelf
48	Hood Interior - Left Wall
49	Hood Interior - Right Wall
50	Hood Interior - Back Wall
51	Hood Interior - Ceiling
52	Hood Exterior - Left Side
53	Hood Exterior - Right Side
54	Hood Door - Interior
55	Hood Door - Exterior
56	Hood - Sink Surfaces

Wipe Number	Location
57	Hood - Exterior Controls
58	Counter Top
59	Shield - Outer Right
60	Shield - Inner Right
61	Shield - Floor
62	Shield - Left Wall
63	Shield - Back Wall
64	Drop Light
65	Shield - Inner Front
66	Shield - Outer Front
67	Floor - Back Left
68	Floor - Back Middle
69	Floor - Back Right
70	Floor - Midpoint Left
71	Floor - Midpoint Middle
72	Floor - Midpoint Right
73	Floor - Front Left
74	Floor - Front Middle
75	Floor - Front Right
76	Counter Underside
77	Miscellaneous Horizontals
78	Miscellaneous Horizontals
79	Shelf Unit 3 outside right
80	Shelf Unit 3 outside left
81	Shield back wall
82	Shelf Unit 1 outside right
83	Shelf Unit 2 underside
84	Shelf Unit 1 undersides
85	Venetian blinds on Door
86	Cabinet under counter facing

87	Miscellaneous upright areas
88	Miscellaneous facings
89	Wall under counter top
90	Cabinet under shield - Left side
91	Hood under counter - Right side
92	Sink - Trap
93	Miscellaneous Surfaces
94	Miscellaneous Surfaces
95	Miscellaneous Surfaces
96	Background of Adjacent Lab Floor

Enclosure 3

Wipe Number	Gross Gamma CPM	Net CPM	Net DPM
1	400.3	-15.3	≤ 72.3
2	407.4	-8.2	≤ 72.3
3	403.9	-11.7	≤ 72.3
4	413.8	-1.8	≤ 72.3
5	406.1	-9.5	≤ 72.3
6	419.3	3.7	≤ 72.3
7	431.0	15.4	≤ 72.3
8	458.5	42.9	≤ 72.3
9	424.5	8.9	≤ 72.3
10	425.1	9.5	≤ 72.3
11	416.1	0.5	≤ 72.3
12	427.6	12.0	≤ 72.3
13	423.3	7.7	≤ 72.3
14	402.5	-13.1	≤ 72.3
15	406.9	-8.7	≤ 72.3
16	406.8	-8.8	≤ 72.3
17	427.3	11.7	≤ 72.3
18	415.8	0.2	≤ 72.3
19	404.1	-11.5	≤ 72.3
20	414.3	-1.3	≤ 72.3
21	403.7	-11.9	≤ 72.3
22	408.8	-6.8	≤ 72.3
23	410.6	-5.0	≤ 72.3
24	414.4	-1.2	≤ 72.3
25	405.6	-10.0	≤ 72.3
26	413.4	-2.2	≤ 72.3
27	412.9	-2.7	≤ 72.3
28	412.6	-3.0	≤ 72.3

Wipe Number	Gross Gamma CPM	Net CPM	Net DPM
29	412.3	-3.3	≤ 72.3
30	398.9	-16.7	≤ 72.3
31	414.3	-1.3	≤ 72.3
32	413.5	-2.1	≤ 72.3
33	424.2	8.6	≤ 72.3
34	395.4	-20.2	≤ 72.3
35	416.8	1.2	≤ 72.3
36	408.3	-7.3	≤ 72.3
37	424.3	8.7	≤ 72.3
38	410.4	-5.2	≤ 72.3
39	419.4	3.8	≤ 72.3
40	414.5	-1.1	≤ 72.3
41	412.9	-2.7	≤ 72.3
42	418.6	3.0	≤ 72.3
43	411.8	-3.8	≤ 72.3
44	393.4	-22.2	≤ 72.3
45	408.0	-7.6	≤ 72.3
46	408.9	-6.7	≤ 72.3
47	402.1	-13.5	≤ 72.3
48	407.3	-8.3	≤ 72.3
49	411.0	-4.6	≤ 72.3
50	409.3	-6.3	≤ 72.3
51	413.8	-1.8	≤ 72.3
52	429.0	13.4	≤ 72.3
53	407.9	-7.7	≤ 72.3
54	420.4	4.8	≤ 72.3
55	418.6	3.0	≤ 72.3
56	397.6	-18.0	≤ 72.3

Wipe Number	Gross Gamma CPM	Net CPM	Net DPM
57	392.9	-22.7	≤ 72.3
58	401.6	-14.0	≤ 72.3
59	409.4	-6.2	≤ 72.3
60	407.3	-8.3	≤ 72.3
61	411.4	-4.2	≤ 72.3
62	418.0	2.4	≤ 72.3
63	404.6	-11.0	≤ 72.3
64	416.3	0.7	≤ 72.3
65	403.7	-11.9	≤ 72.3
66	411.8	-3.8	≤ 72.3
67	416.4	0.8	≤ 72.3
68	406.1	-9.5	≤ 72.3
69	411.4	-4.2	≤ 72.3
70	407.0	-8.6	≤ 72.3
71	406.5	-9.1	≤ 72.3
72	422.8	7.2	≤ 72.3
73	412.8	-2.8	≤ 72.3
74	421.0	5.4	≤ 72.3
75	408.6	-7.0	≤ 72.3
76	417.3	1.7	≤ 72.3
77	411.4	-4.2	≤ 72.3
78	406.4	-9.2	≤ 72.3
79	410.0	-5.6	≤ 72.3
80	409.3	-6.3	≤ 72.3
81	402.0	-13.6	≤ 72.3
82	424.4	8.8	≤ 72.3
83	404.1	-11.5	≤ 72.3
84	406.0	-9.6	≤ 72.3
85	415.6	0.0	≤ 72.3

Wipe Number	Gross Gamma CPM	Net CPM	Net DPM
86	426.4	10.8	≤ 72.3
87	418.2	2.6	≤ 72.3
88	424.2	8.6	≤ 72.3
89	391.5	-24.1	≤ 72.3
90	412.9	-2.7	≤ 72.3
91	423.0	7.4	≤ 72.3
92	409.5	-6.1	≤ 72.3
93	418.9	3.3	≤ 72.3
94	415.1	-0.5	≤ 72.3
95	404.8	-10.8	≤ 72.3
96	421.9	6.3	≤ 72.3

**BG = 415.6 CPM**

**Cs-137 efficiency = 47.7%**

**Minimum Detectable Activity  
 (MDA) =  
 72.3 DPM or  
 3.26 x 10<sup>-5</sup> μCi**

Wipe Number	Gross Alpha-Beta CPM	Net CPM	Net DPM
1	6.70	-32.00	≤ 67.3
2	10.10	-28.60	≤ 67.3
3	9.70	-29.00	≤ 67.3
4	2.70	-36.00	≤ 67.3
5	8.70	-30.00	≤ 67.3
6	0.00	-38.70	≤ 67.3
7	7.70	-31.00	≤ 67.3
8	13.70	-25.00	≤ 67.3
9	0.00	-38.70	≤ 67.3
10	3.70	-35.00	≤ 67.3
11	15.70	-23.00	≤ 67.3
12	2.70	-36.00	≤ 67.3
13	10.70	-28.00	≤ 67.3
14	15.70	-23.00	≤ 67.3
15	10.70	-28.00	≤ 67.3
16	0.00	-38.70	≤ 67.3
17	37.70	-1.00	≤ 67.3
18	11.70	-27.00	≤ 67.3
19	22.70	-16.00	≤ 67.3
20	13.10	-25.60	≤ 67.3
21	13.70	-25.00	≤ 67.3
22	23.70	-15.00	≤ 67.3
23	24.70	-14.00	≤ 67.3
24	12.40	-26.30	≤ 67.3
25	0.00	-38.70	≤ 67.3
26	11.70	-27.00	≤ 67.3
27	5.70	-33.00	≤ 67.3
28	0.00	-38.70	≤ 67.3
29	10.70	-28.00	≤ 67.3

Wipe Number	Gross Alpha-Beta CPM	Net CPM	Net DPM
30	6.70	-32.00	≤ 67.3
31	10.10	-28.60	≤ 67.3
32	24.70	-14.00	≤ 67.3
33	13.10	-25.60	≤ 67.3
34	8.70	-30.00	≤ 67.3
35	17.70	-21.00	≤ 67.3
36	15.70	-23.00	≤ 67.3
37	14.70	-24.00	≤ 67.3
38	12.40	-26.30	≤ 67.3
39	1.70	-37.00	≤ 67.3
40	12.10	-26.60	≤ 67.3
41	0.70	-38.00	≤ 67.3
42	18.70	-20.00	≤ 67.3
43	19.70	-19.00	≤ 67.3
44	12.70	-26.00	≤ 67.3
45	0.70	-38.00	≤ 67.3
46	4.70	-34.00	≤ 67.3
47	10.70	-28.00	≤ 67.3
48	5.20	-33.50	≤ 67.3
49	7.70	-31.00	≤ 67.3
50	23.70	-15.00	≤ 67.3
51	10.70	-28.00	≤ 67.3
52	10.70	-28.00	≤ 67.3
53	28.70	-10.00	≤ 67.3
54	27.70	-11.00	≤ 67.3
55	8.70	-30.00	≤ 67.3
56	14.70	-24.00	≤ 67.3
57	12.70	-26.00	≤ 67.3
58	0.70	-38.00	≤ 67.3

Wipe Number	Gross Alpha-Beta CPM	Net CPM	Net DPM
59	14.70	-24.00	≤ 67.3
60	0.00	-38.70	≤ 67.3
61	0.00	-38.70	≤ 67.3
62	0.00	-38.70	≤ 67.3
63	12.70	-26.00	≤ 67.3
64	15.70	-23.00	≤ 67.3
65	11.70	-27.00	≤ 67.3
66	6.70	-32.00	≤ 67.3
67	0.00	-38.70	≤ 67.3
68	19.70	-19.00	≤ 67.3
69	34.70	-4.00	≤ 67.3
70	35.70	-3.00	≤ 67.3
71	26.70	-12.00	≤ 67.3
72	0.70	-38.00	≤ 67.3
73	9.70	-29.00	≤ 67.3
74	4.70	-34.00	≤ 67.3
75	3.70	-35.00	≤ 67.3
76	3.70	-35.00	≤ 67.3
77	13.70	-25.00	≤ 67.3
78	8.70	-30.00	≤ 67.3
79	15.70	-23.00	≤ 67.3
80	16.70	-22.00	≤ 67.3
81	2.70	-36.00	≤ 67.3
82	35.70	-3.00	≤ 67.3
83	23.70	-15.00	≤ 67.3
84	23.70	-15.00	≤ 67.3
85	7.70	-31.00	≤ 67.3
86	0.00	-38.70	≤ 67.3
87	0.00	-38.70	≤ 67.3

Wipe Number	Gross Alpha-Beta CPM	Net CPM	Net DPM
88	2.70	-36.00	≤ 67.3
89	1.70	-37.00	≤ 67.3
90	13.70	-25.00	≤ 67.3
91	9.70	-29.00	≤ 67.3
92	16.70	-22.00	≤ 67.3
93	14.70	-24.00	≤ 67.3
94	20.70	-18.00	≤ 67.3
95	4.70	-34.00	≤ 67.3
96	10.70	-28.00	≤ 67.3

**BG = 38.7 CPM**

**H-3 efficiency = 59.0%**  
**C-14 efficiency = 93.2%**

**Minimum Detectable Activity (MDA) =**  
**67.3 DPM**  
 **$3.03 \times 10^{-5} \mu\text{Ci}$**

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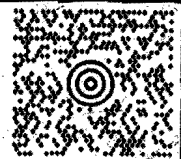
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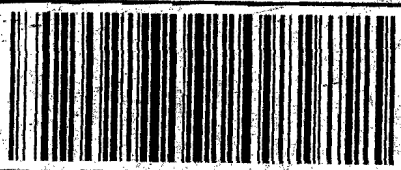
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