

UNIVERSITY OF MIAMI
ROSENSTIEL
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Tritium Laboratory
28 December 2016

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SWAB REPORT # 841

SWAB DATE: 17 December 2016

R/V Sikuliaq

Dr. James D. Happell
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Distribution:
SWAB Committee
Steven Hartz

COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for ^3H and ^{14}C are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

All samples are counted for 60 minutes, the instrument background is subtracted, and activities are reported in dpm/m^2 . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m^2 . An error larger than the activity indicates that the activity is not significantly different from zero.

Criteria for SWAB Results

Category	^3H (dpm/m^2)	^{14}C (dpm m^2)	Recommendations
A	<500	<50	No action
B*	500-10,000	50-10,000	Needs cleaning before any natural tracer work. Decks in radiation vans with activities above $1000 \text{ dpm}/\text{m}^2$ should be cleaned.
C**	10,000-100,000	10,000-50,000	Must be cleaned before any use.
D***	>100,000	>50,000	May be a health hazard. Notify local radiation safety official.

Note: ^{14}C and ^{35}S have peak energies of 156 and 167 KeV, respectively; thus ^{35}S will be registered as ^{14}C by our counting techniques. Categories A, B and C are not a health hazard.

Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

^3H : Wash and scrub with radioactive cleanup detergent such as COUNT-OFF (50 ml COUNT-OFF to 4 liters of water), using sponges to distribute solution and reabsorb it.

^{14}C : Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing $^{14}\text{CO}_2$). Follow up with wash as if for ^3H .

Disposal of Cleaning Materials (gloves, sponges, etc)

Categories A & B dispose as ordinary garbage, C & D contact your institution's radiation safety office.

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

REPORT FOR SWAB # 841

LOCATION: San Diego, CA

DATE: 17 December 2016

VESSEL: R/V Sikuliaq

TECHNICIAN: Jim Happell

Sample # Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
	activity	error	activity	error
1 1st Vial Bkgnd	0	± 0	0	± 0
2 Initial bucket blank	-55	± 137	-15	± 75
<u>BioAnalytical Lab (Figure 1)</u>				
3 Port benchtop	-31	± 78	-20	± 98
4 Inside fume hood	-17	± 176	-7	± 75
5 Forward sink area	-23	± 58	-28	± 71
6 Deck inside starboard entrance	-54	± 136	-7	± 69
7 Inside So-Low refrigerator	-18	± 46	-25	± 62
8 Aft benchtop	-101	± 252	8	± 101
<u>Climate Control Chamber (Figure 2)</u>				
9 Deck outside Science Freezer	-59	± 147	-15	± 73
10 Forward benchtop in Climate Control Chamber	-72	± 181	-12	± 58
11 Deck outside Climate Control Chamber	-40	± 99	-19	± 94
<u>Electronics/Computer Lab (Figure 3)</u>				
12 Deck inside aft entrance	3	± 33	-28	± 70
13 Deck inside forward entrance	-35	± 89	-31	± 79
<u>Main Deck Miscellaneous (Figure 4)</u>				
14 Deck inside Ship Office	-24	± 60	-19	± 97
15 Deck between Laundry & Tech Stores	-43	± 109	1	± 9
16 Deck near stair in Forward Hold	-23	± 58	-19	± 96
<u>Wet Lab (Figure 5)</u>				
17 Inside fume hood	-22	± 54	-29	± 72
18 Port sink area	-55	± 138	-34	± 86
19 Deck inside aft entrance	-26	± 64	-25	± 63
20 Starboard benchtop aft section	-80	± 200	-21	± 53
21 Starboard benchtop forward section	-40	± 101	-12	± 61
22 Aft sink area	-16	± 39	-36	± 91
23 Deck inside port entrance	-13	± 32	-26	± 65
24 Inside Cospolich refrigerator	-7	± 17	-22	± 55
25 Inside Cospolich freezer	-46	± 114	6	± 64

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Main Lab (Figure 6)</u>					
26	Deck inside aft entrance	-6	± 15	-27	± 69
27	Port sink area	-33	± 83	-33	± 82
28	Forward starboard sink area	-19	± 47	-28	± 70
29	Benchtop between starboard sinks	-88	± 220	-16	± 82
30	Aft starboard benchtop	-107	± 267	-8	± 89
31	inside forward port fume hood	-8	± 20	-51	± 128
32	Inside aft port fumehood	-33	± 82	-27	± 66
33	Aft sink area	-38	± 94	-26	± 66
34	Forward sink area	-17	± 42	-22	± 56
35	Deck between forward sink and -80°C freezer	-34	± 85	-37	± 92
36	Deck inside forward port entrance	-25	± 63	-20	± 98
37	Benchtop forward of port sink	-50	± 125	-26	± 64
<u>Baltic Room (Figure 7)</u>					
38	Deck in center of CTD hanger	-56	± 141	-16	± 80
<u>Fantail (Figure 8)</u>					
39	Deck near door to Rad Van	-27	± 67	-14	± 69
40	Deck where rad waste stored	-31	± 78	-12	± 61
41	Deck where incubators stood	-29	± 72	-26	± 65
42	Final bucket blank	-12.97	± 32.4	-44.04	± 110

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded the negative values to zero. Values are only significantly above background when they are positive and larger than the error. All areas tested inside the ship were free from isotope contamination that requires cleaning.

Figure 1
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R/V Sikuliaq BioAnalytical Lab

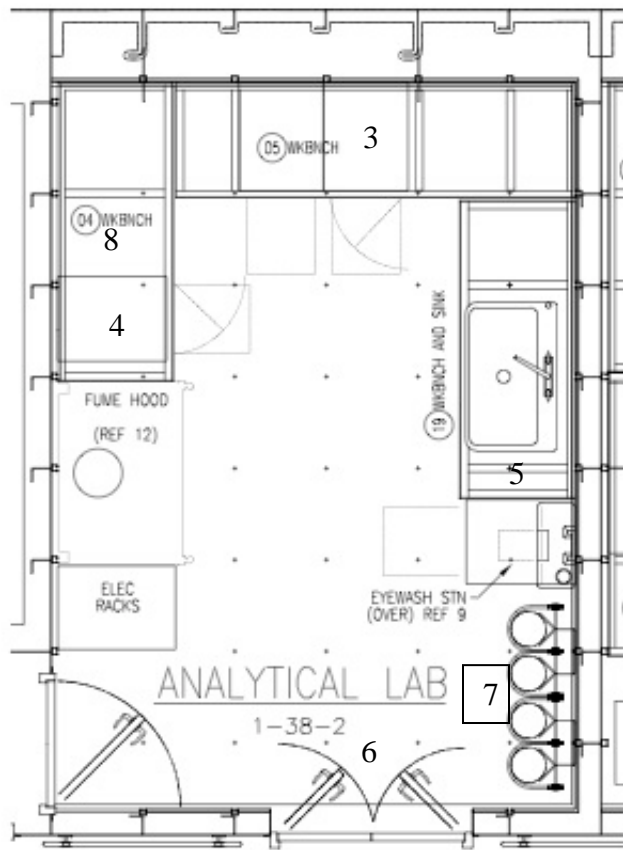


Figure 2
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R/V Sikuliaq Climate Control Chamber/Science Freezer

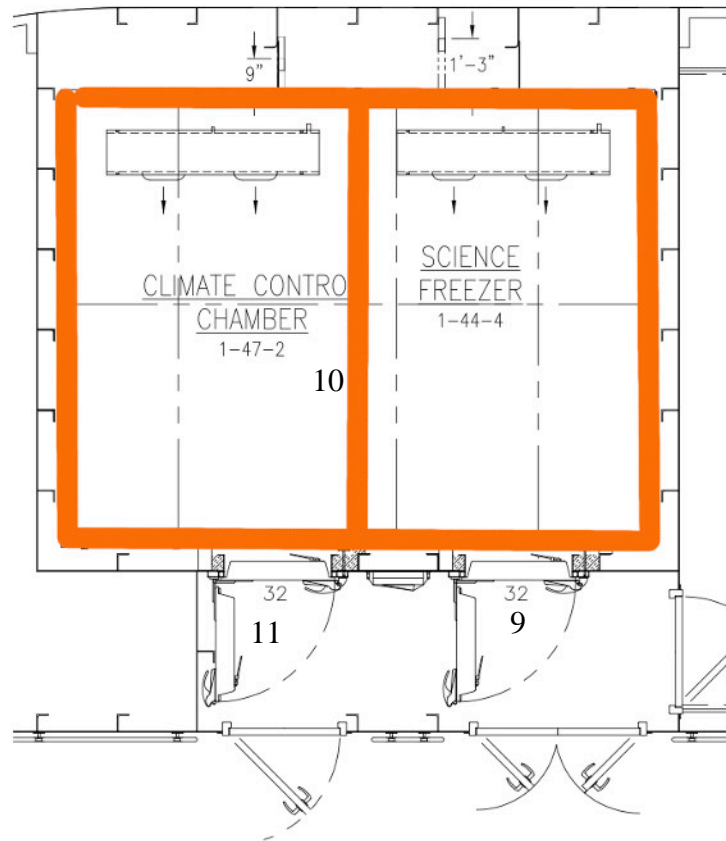


Figure 3
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R/V Sikuliaq Electronics/Computer Lab

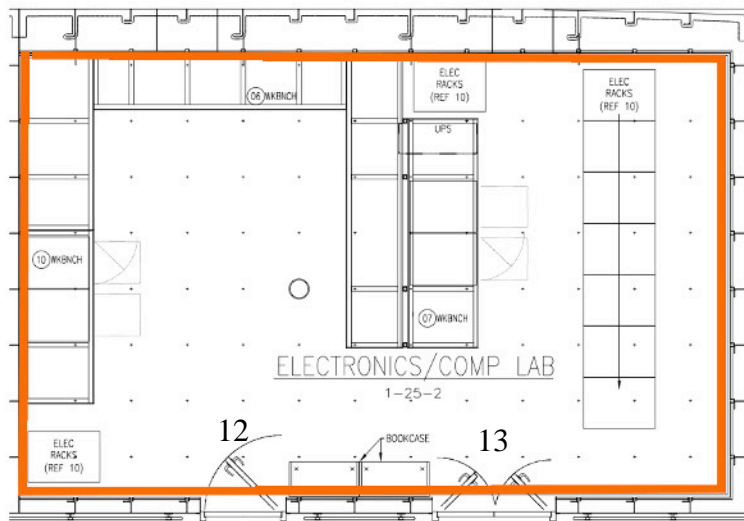


Figure 4
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R/V Sikuliaq Main Deck

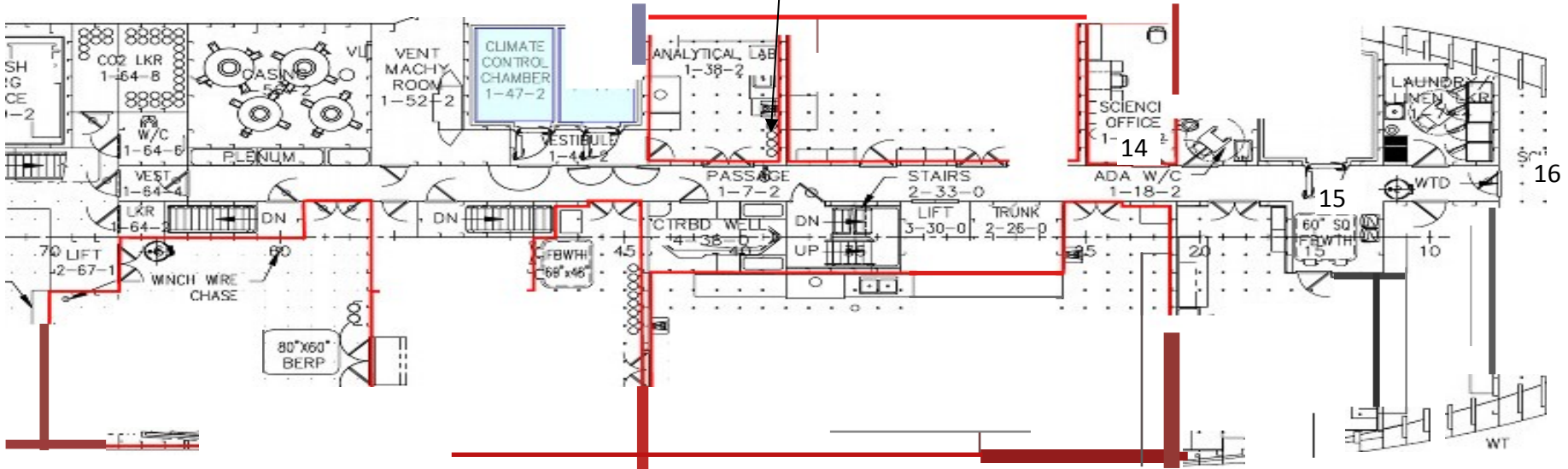


Figure 5
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R/V Sikuliaq Wet Lab

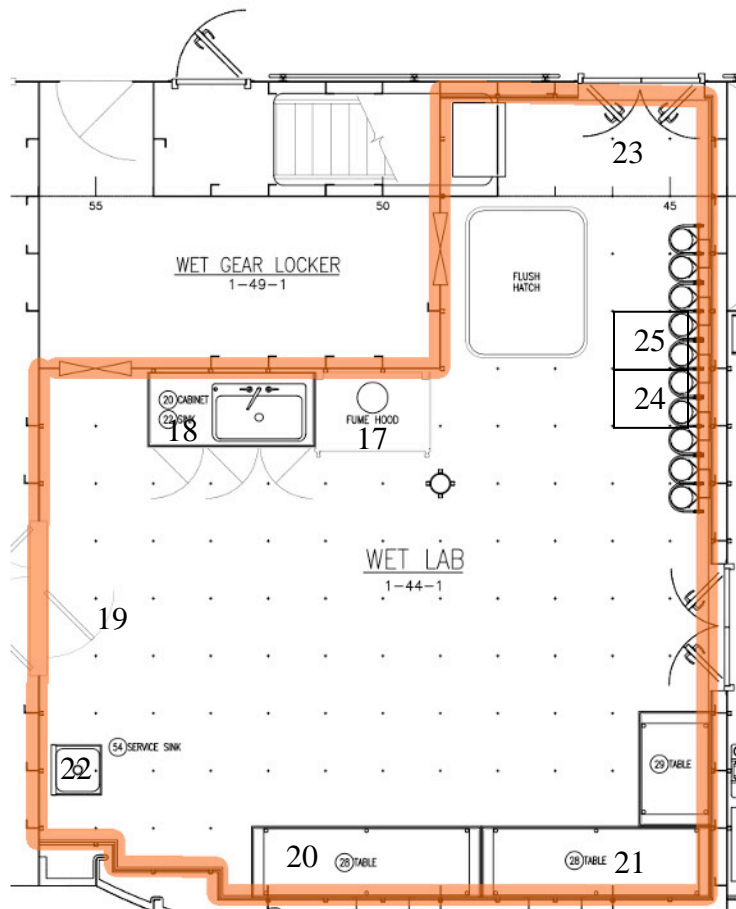


Figure 7
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R/V Sikuliaq Baltic Room

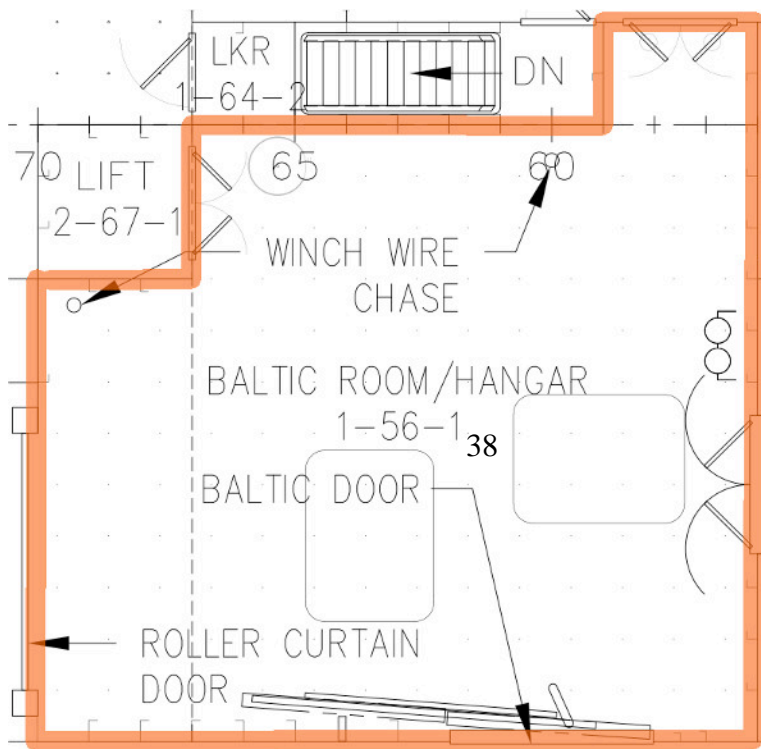


Figure 8
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R/V Sikuliaq Aft Maindeck

