

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

19 May 2016

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SWAB REPORT # 812

SWAB DATE: 13 May 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 # 812

LOCATION: San Diego, CA
VESSEL: R/V Sikuliaq

DATE: 13 May 2016
TECHNICIAN: Charlene Grall

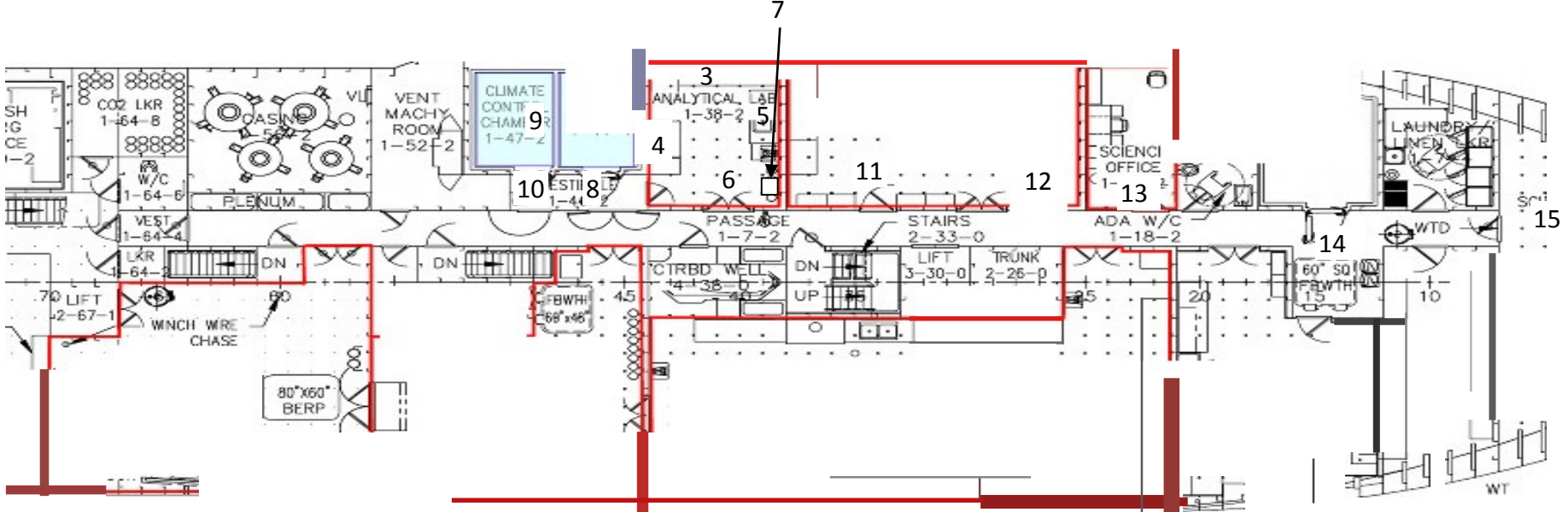
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	18	± 83	-16	± 36
<u>BioAnalytical Lab (Figure 1)</u>					
3	Port benchtop	295	± 78	-7	± 29
4	Inside fume hood	36	± 84	-32	± 45
5	Forward sink area	44	± 61	-11	± 32
6	Deck inside starboard entrance	-15	± 35	-21	± 54
7	Inside So-Low refrigerator	13	± 140	-18	± 47
8	Deck outside Science Freezer	17	± 45	-43	± 74
Forward stainless benchtop in Climate Control Chamber					
9	Chamber	-13	± 32	-23	± 54
10	Deck outside entrance Climate Control Chamber	0	± 0	-4	± 29
<u>Electronics/Computer Lab (Figure 1)</u>					
11	Inside aft entrance	24	± 102	-27	± 29
12	Inside forward entrance	10	± 193	-16	± 32
<u>Main Deck Miscellaneous (Figure 1)</u>					
13	Deck inside Ship Office	-53	± 99	0	± 0
14	Companionway between Laundry and Tech Stores	-1	± 5	-28	± 30
15	Deck near stair in Forward Hold	7	± 17	-40	± 71
<u>Wet Lab (Figure 2)</u>					
16	Inside fume hood	-17	± 36	3	± 57
17	Aft sink area	-16	± 35	-31	± 44
18	Deck inside aft entrance	-30	± 74	-35	± 49
19	Starboard benchtop, forward section	24	± 113	-29	± 29
20	Starboard benchtop, aft section	19	± 57	-5	± 18
21	Port sink area	-20	± 45	-9	± 34
22	Deck inside port entrance	-18	± 43	-12	± 30
23	Inside Cospolich refrigerator	2	± 8	-16	± 32
<u>Main Lab (Figure 2)</u>					
24	Deck inside aft entrance	-31	± 43	-29	± 18

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
25	Starboard sink area	-53	± 99	-5	± 30
26	Forward starboard sink area	-16	± 39	9	± 43
27	Benchtop between startboard sinks	-65	± 108	0	± 0
28	Aft startboard benchtop	-60	± 102	-10	± 29
29	Inside forward port fume hood	-48	± 87	-22	± 52
30	Inside aft port fume hood	-25	± 51	-8	± 29
31	Port sink area	-4	± 20	-14	± 35
32	Forward sink area	6	± 305	-10	± 29
33	Deck between forward sink and SoLow freezer	-47	± 83	-22	± 51
34	Deck inside forward port entrance	1	± 6	-5	± 30
<u>Fantail (Figure 3)</u>					
35	Fantail deck where door to rad van stood	21	± 41	16	± 37
36	Deck where rad waste was stored	1	± 7	-11	± 29
37	Deck where incubators stood	15	± 111	-16	± 36
38	Final bucket blank (C.O. #1)	-7	± 25	-18	± 38
<u>Clean Van 625.4.05 (Figure 4)</u>					
39	Initial bucket blank (C.O.#2)	13	± 19	-27	± 63
40	Deck of vestibule	-4	± 20	-22	± 52
41	Sink area	3	± 12	-25	± 57
42	Benchtop across from sink	-30	± 71	-27	± 63
43	Benchtop left of rear door	-2	± 18	-25	± 57
44	Benchtop adjacent to sink	20	± 450	-39	± 51
45	Inside refrigerator	-2	± 20	-23	± 52
46	Inside freezer	5	± 19	-30	± 49
47	Deck inside rear entrance	-25	± 48	-10	± 29
<u>Van 625.1.01-5 (See Figure 5)</u>					
48	Inside fume hood	376	± 48	*595	± 55
49	Benchtop adjacent to fume hood	*4042	± 171	*576	± 44
50	Sink area	*561	± 75	*107	± 33
51	Benchtop adjacent to sink	91	± 44	*53	± 37
52	Benchtop across from fume hood	78	± 39	*75	± 39
53	Inside refrigerator (standing water)	**57024	± 627	*980	± 27
54	Inside freezer	*6709	± 77	***102058	± 541
55	Deck inside entrance near fume hood	*1004	± 94	*240	± 39
56	Deck inside entrance near sink	*1081	± 97	*194	± 36
57	Final bucket blank (C.O.#2)	-20	± 29	-26	± 60

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. Radioisotope Van 625.1.01-5 contained tritium and radiocarbon activity in and around the fume hood, as well as significant activity inside the refrigerator and freezer. Minor activity was also found on the deck. The freezer, refrigerator, fume hood area, and the deck of the rad van should be thoroughly cleaned.

Figure 1
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R/V Sikuliaq Main Deck

Figure 2
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R/V Sikuliaq

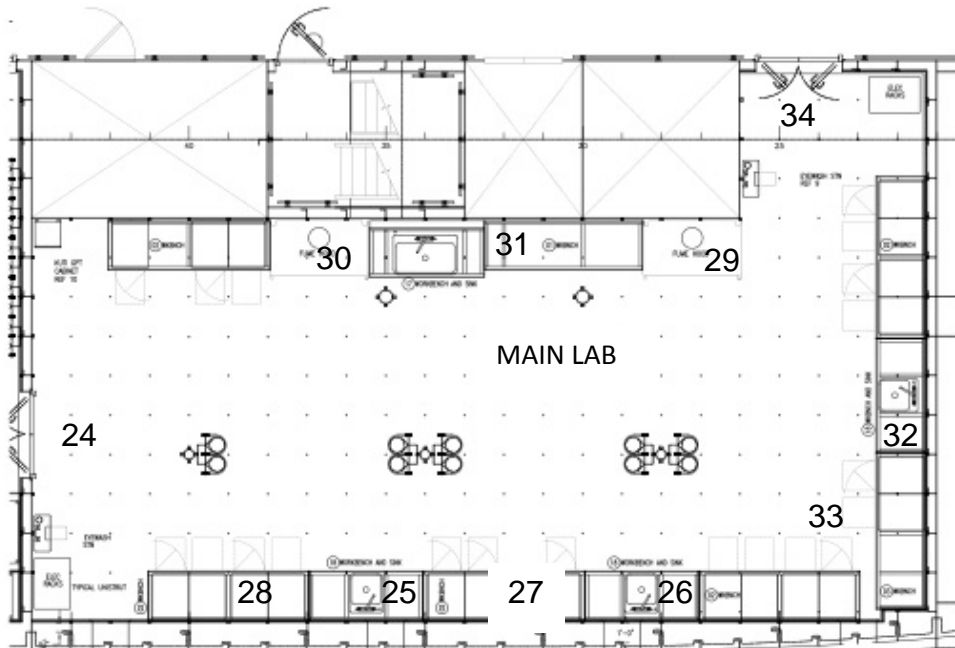
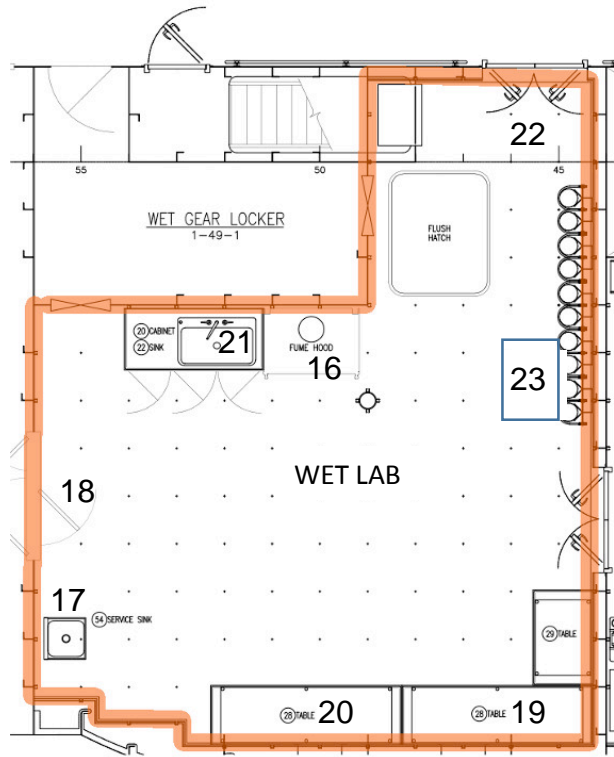


Figure 3.
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R/V Sikuliaq Aft Maindeck

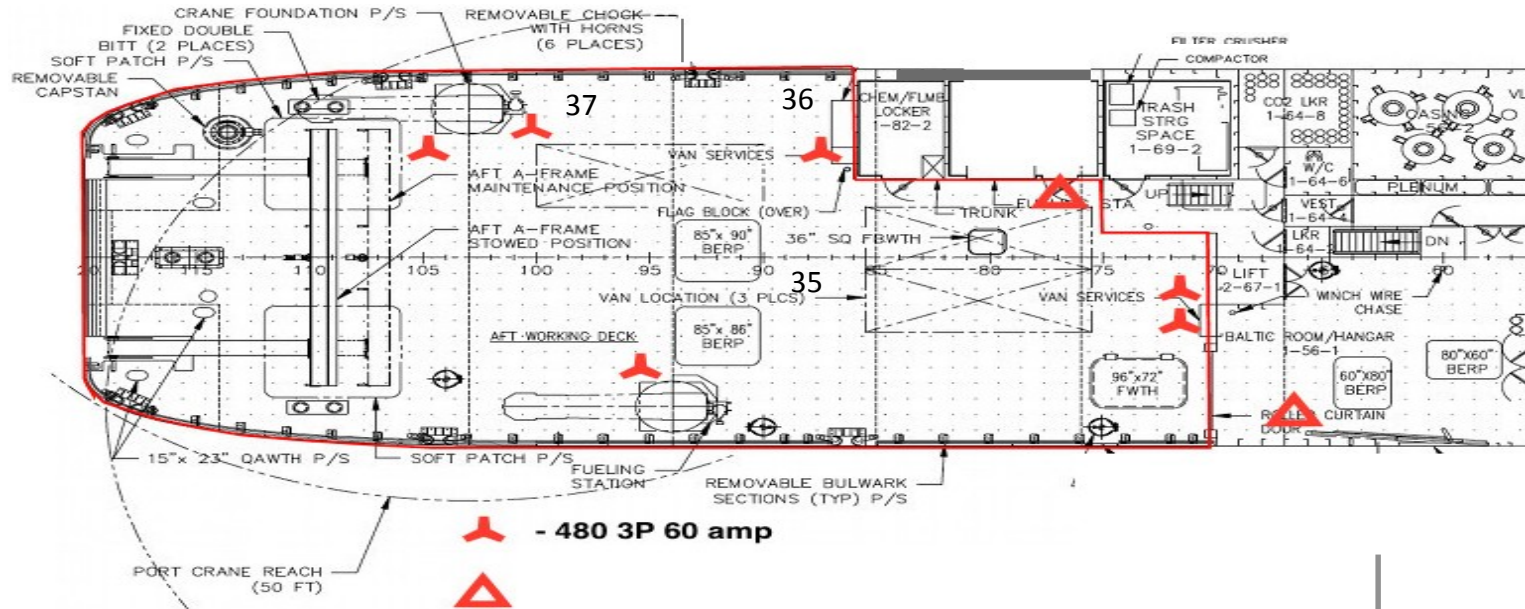


Figure 4
SWAB #812
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UNOLS CLEAN VAN

625 405

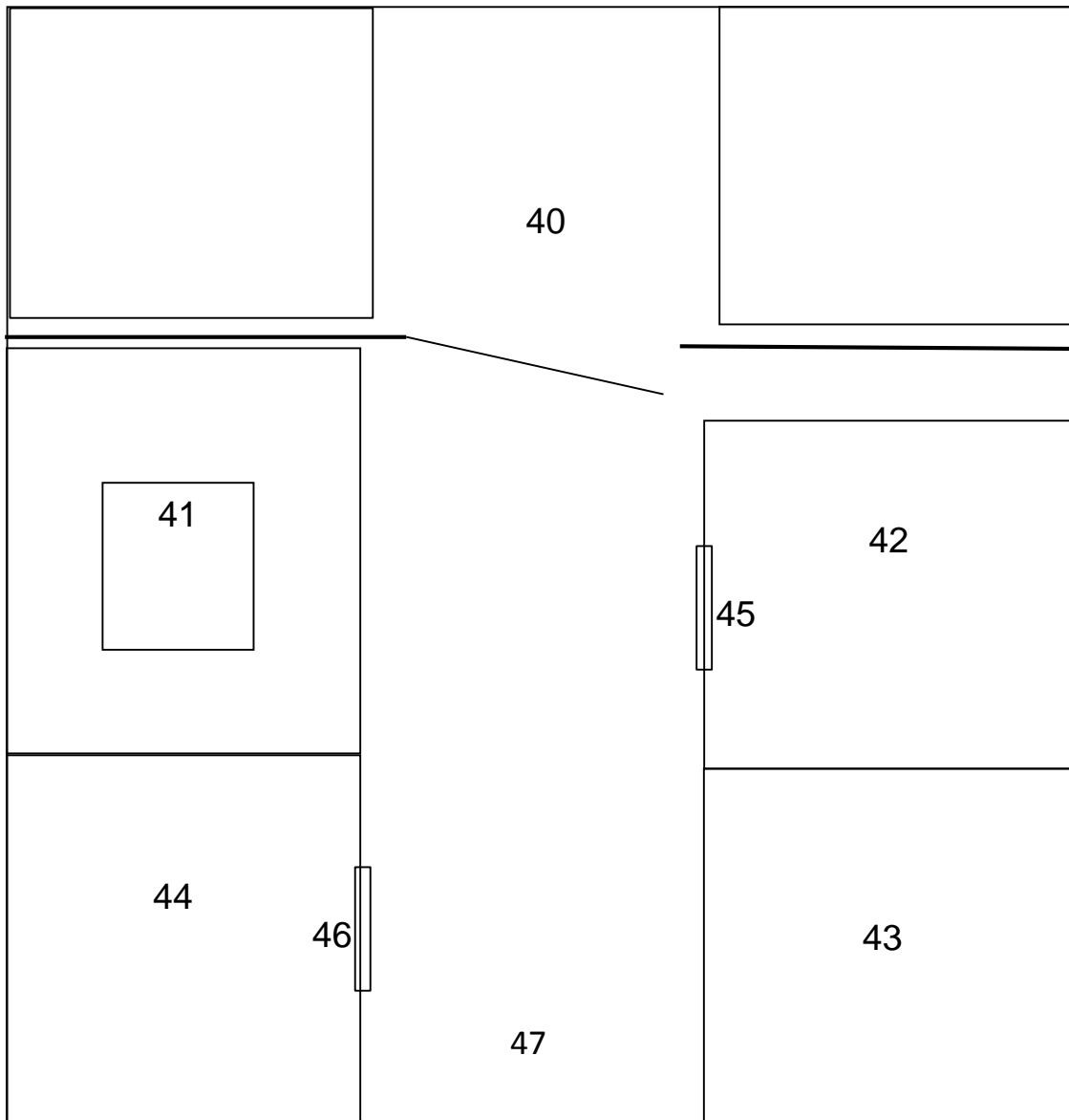


Figure 5
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UNOLS Radiation Van 625.1.01-5

