

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
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Tritium Laboratory

27 August 2020

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SWAB REPORT # 988

SWAB DATE: 6 August 2020

R/V Sikuliaq

Dr. James D. Happell
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Distribution:
SWAB Committee
Ethan Roth

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 # 988

LOCATION: Seward, AK

DATE: 6 August 2020

VESSEL: *R/V Sikuliaq*

TECHNICIAN: Bernard McKiernan

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	59	± 46	7	± 25
	<u>Main Lab (Figure 1)</u>				
3	Forward sink	22	± 46	1	± 14
4	Inboard forward space entry main lab deck	17	± 30	20	± 36
5	Inside fume hood port forward	44	± 45	7	± 27
6	Forward starboard sink area	28	± 32	29	± 36
7	Aft starboard sink area	11	± 29	12	± 35
8	Deck aft inside entrance	21	± 43	3	± 27
9	Inside aft fume hood	17	± 31	17	± 35
10	Port sink area	36	± 47	0	± 1
11	Deck in front of sink port side	28	± 39	13	± 33
12	Deck in front of sink aft starboard	52	± 42	20	± 33
13	Lab bench port aft under sea wall sensors	21	± 38	19	± 35
14	Deck forward starboard sink	8	± 23	17	± 36
15	Center desk	-74	± 59	23	± 46
	<u>Wet Lab (Figure 2)</u>				
16	Deck entrance port side	40	± 39	20	± 34
17	Inside Cospolich freezer	27	± 39	11	± 33
18	Inside Cospolich refrigerator	33	± 33	32	± 36
19	Deck inside wet gear locker	-10	± 57	37	± 38
20	Inside fume hood	59	± 49	8	± 26
21	Port sink area	33	± 36	22	± 34
22	Deck aft door entry	-20	± 38	27	± 39
23	Starboard aft bench	20	± 38	9	± 33
24	Starboard fwd bench	-3	± 48	14	± 34
25	Aft sink PCO ₂	43	± 51	-3	± 30
26	Deck inside forward entrance	61	± 49	2	± 12
27	Deck in front of fume hood	45	± 54	-14	± 35

Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
	activity	error	activity	error
<u>Bio-Analytical Lab (Figure 3)</u>				
28 Forward sink	23	± 38	11	± 33
29 Fume hood	56	± 60	-25	± 37
30 Inside analytical/science So-Low refrigerator	16	± 119	-23	± 36
31 Wooden port bench	31	± 37	27	± 35
32 Deck between sink and fume hood	26	± 59	-13	± 32
33 Analytical lab entrance	54	± 48	0	± 7
<u>Main Deck Miscellaneous (Figure 4)</u>				
34 Deck outside science freezer	20	± 66	-13	± 32
35 Deck outside climate chamber	-1	± 6	28	± 38
36 Deck of computer lab printer	7	± 34	5	± 34
37 Deck of science office middle	60	± 46	8	± 27
38 Science freezer middle aft shelf	27	± 52	-7	± 24
39 Science freezer middle port shelf	38	± 43	9	± 30
40 Climate control aft bench top	51	± 45	8	± 27
<u>Aft Main Deck (Figure 5)</u>				
41 Baltic deck by CTD rosette	35	± 40	15	± 33
42 Deck fantail forward of rad van area	52	± 49	-1	± 38
43 Deck fantail aft of rad van area	51	± 57	-19	± 37
44 Deck for incubators	27	± 40	8	± 31
45 Final bucket blank	40	± 50	-7	± 25

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 positive and larger than the error. All areas tested on the ship were free from any isotope contamination that requires cleaning.

Figure 1
SWAB 988
6 August 2020

R/V Sikuliaq Main Lab

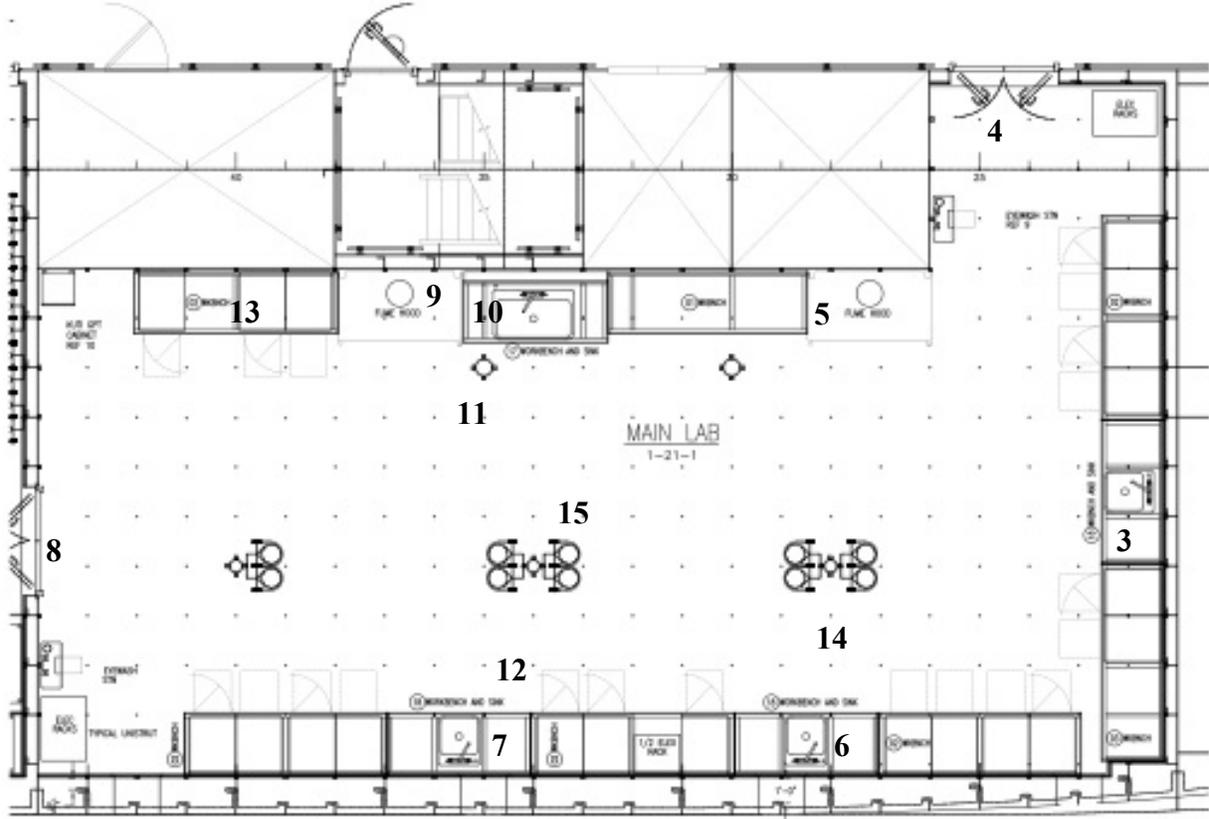


Figure 2
SWAB 988
6 August 2020

R/V Sikuliaq Wet Lab

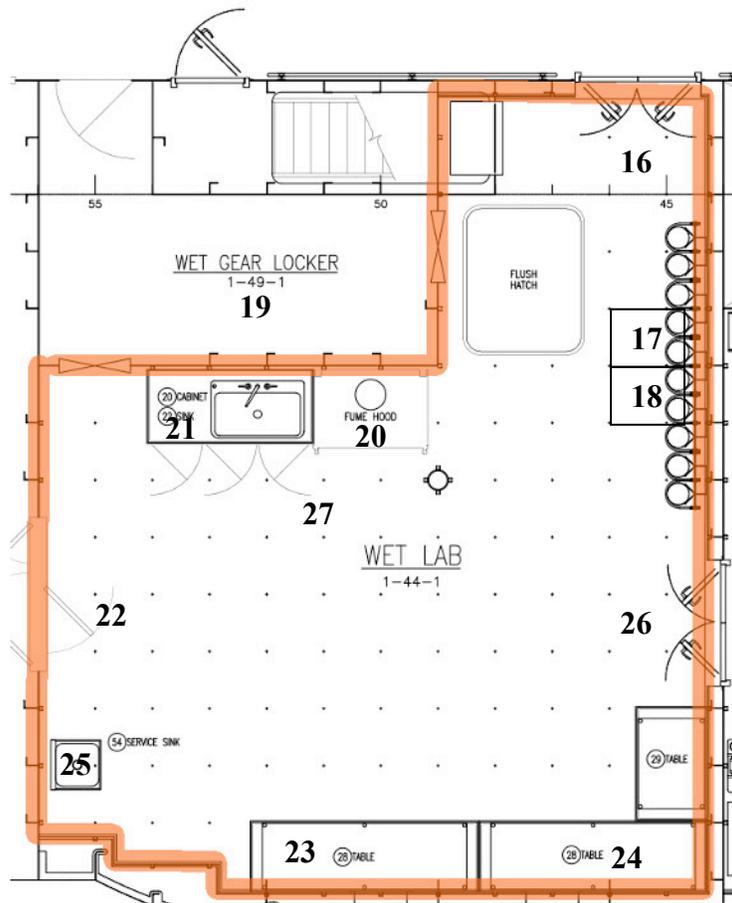
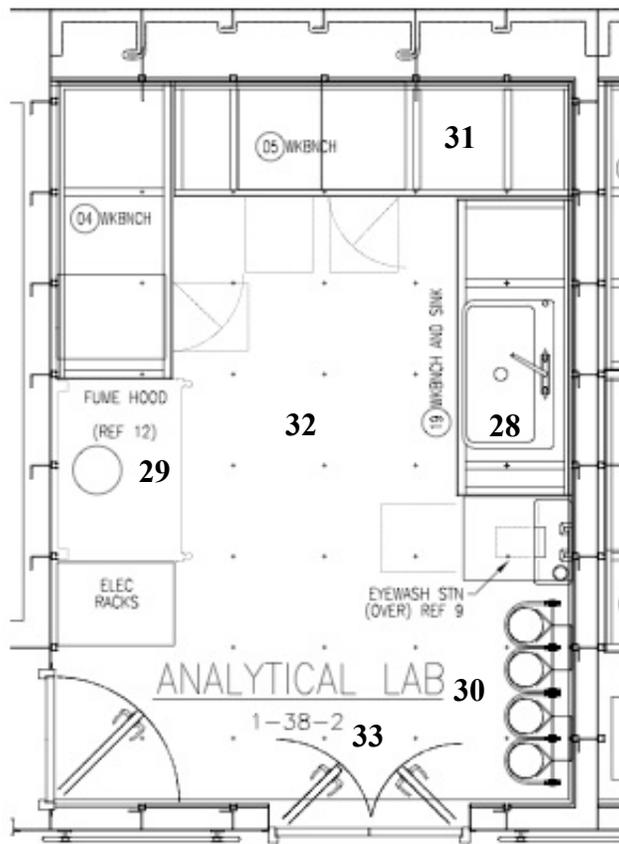


Figure 3
SWAB 988
6 August 2020

R/V Sikuliaq BioAnalytical Lab



.-44-4 Figure 4
SWAB 988
6 August 2020

R/V Sikuliaq Main Deck

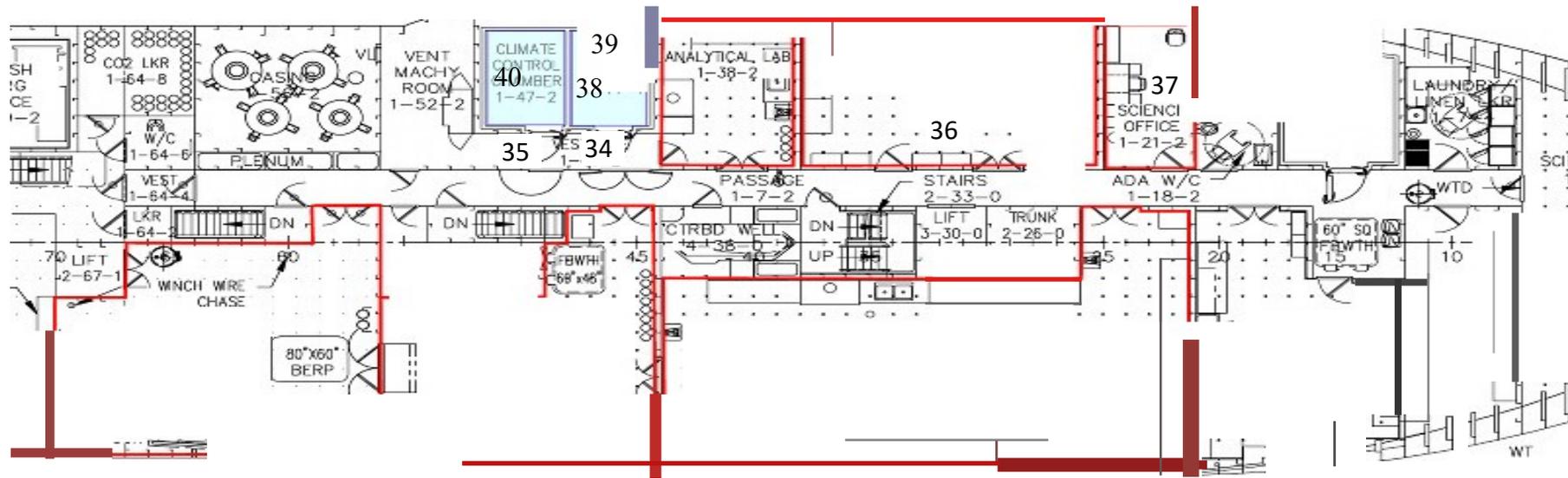


Figure 5
SWAB 988
6 August 2020

R/V Sikuliaq Aft Maindeck

