

UNIVERSITY OF MIAMI

ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

15 March 2021

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SWAB REPORT # 994

SWAB DATE: 9 March 2021

R/V Roger Revelle and Van 2408-01

Dr. James D. Happell
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Distribution:
SWAB Committee
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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 institution promptly by phone or email.

REPORT FOR SWAB # 994

LOCATION: San Diego, CA
VESSEL: R/V Roger Revelle, Van 2408-01

DATE: 9 March 2021
TECHNICIAN: Jim Happell

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	-22	± 55	-7	± 29
	<u>Main Lab (Figure 1)</u>				
3	Starboard sink area	26	± 65	-12	± 40
4	Bench aft of starboard sink	11	± 56	-4	± 28
5	Starboard bench below giant monitor	-9	± 64	2	± 51
6	Forward center benchtop	37	± 53	-7	± 30
7	Inside fume hood	5	± 37	-12	± 41
8	Top of freezer	-3	± 24	-4	± 30
9	Aft workbench	-8	± 53	-6	± 26
10	Deck inside aft entrance	-2	± 18	-32	± 38
11	Deck inside aft port entrance	-1	± 6	-10	± 34
12	Benchtop forward of starboard sink	70	± 61	-27	± 33
13	Forward starboard benchtop	1	± 9	-18	± 59
14	Deck inside port entrance	2	± 17	-32	± 38
15	Port sink area	15	± 78	-13	± 44
16	Deck below port sink	150	± 59	-16	± 53
17	Desk inside forward port entrance	-11	± 50	-7	± 29
18	Deck below forward bench	2	± 11	11	± 37
	<u>Bio-Analytical Lab (Figure 1)</u>				
19	Aft sink area	-49	± 71	-9	± 37
20	Foreward deck	-38	± 55	15	± 43
21	Inside fume hood	-28	± 71	20	± 41
22	Forward sink area	-4	± 31	-13	± 42
23	Inside freezer	-38	± 54	-11	± 35
24	Deck at starboard entrance	8	± 59	-3	± 24
25	Deck at aft entrance	-20	± 50	-4	± 30
26	Inside refrigerator	-9	± 65	1	± 87
	<u>Miscellaneous Areas (Figure 1)</u>				
27	Deck outside walkin refrigerator	-24	± 59	-11	± 37
28	Deck inside walkin freezer	-25	± 62	0	± 2
29	Deck inside walkin refrigerator	-32	± 46	-15	± 51

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
30	Deck of vestibule adjacent to companionway	-53	± 77	1	± 4
31	Deck inside darkroom	-28	± 70	3	± 66
32	Deck inside gym	-23	± 59	-4	± 28
33	Deck science storeroom	-20	± 51	-18	± 60
<u>Hydro Lab (Figure 2)</u>					
34	Starboard sink area	-5	± 37	-17	± 56
35	Inside fume hood	-165	± 238	-12	± 41
36	Forward deck	9	± 49	0	± 12
37	Benchtop aft of stbd sink area	-13	± 60	13	± 40
38	Inside Cospolish refrigerator top	-14	± 67	-12	± 40
39	Port bench	19	± 54	-3	± 24
40	Inside Cospolish freezer bottom	80	± 63	-15	± 48
41	Deck inside starboard entrance	6	± 41	-16	± 52
42	Deck in front of aft port sink	4	± 29	-19	± 63
43	Aft port sink area	-31	± 45	6	± 51
<u>Wet Lab (Figure 2)</u>					
44	Deck at aft entrance	-60	± 87	10	± 55
45	Forward benchtop	-42	± 61	-5	± 22
46	Sink area	-37	± 53	-5	± 21
47	Inside fume hood	-11	± 52	-15	± 50
48	Deck in center of lab	15	± 69	-5	± 20
49	Deck in center of staging bay	-34	± 50	-21	± 25
50	Sink area	-28	± 69	-7	± 29
51	Benchtop adjacent to sink	-4	± 195	9	± 38
<u>Radioisotope Van #2408-01 (Figure 3)</u>					
52	Benchtop adjacent to fume hood	-4	± 256	11	± 38
53	Inside fume hood	36	± 100	-34	± 41
54	Benchtop adjacent to LSC	-14	± 66	15	± 39
55	Benchtop across from sink	-20	± 51	1	± 5
56	Inside refrigerator	*743	± 91	44	± 21
57	Inside freezer	56	± 50	2	± 15
58	Deck between LSC and fume hood	16	± 22	46	± 38
59	Deck in center of van	19	± 30	30	± 37
60	Deck at van entrance (shoe change area)	3	± 11	26	± 38
61	Final bucket blank	38	± 66	-24	± 0

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 isotope contamination that requires cleaning. Minor ^3H contamination found in Van #2408.01. No action is necessary.

R/V ROGER REVELLE

Figure 1
SWAB 994
9 March 2021

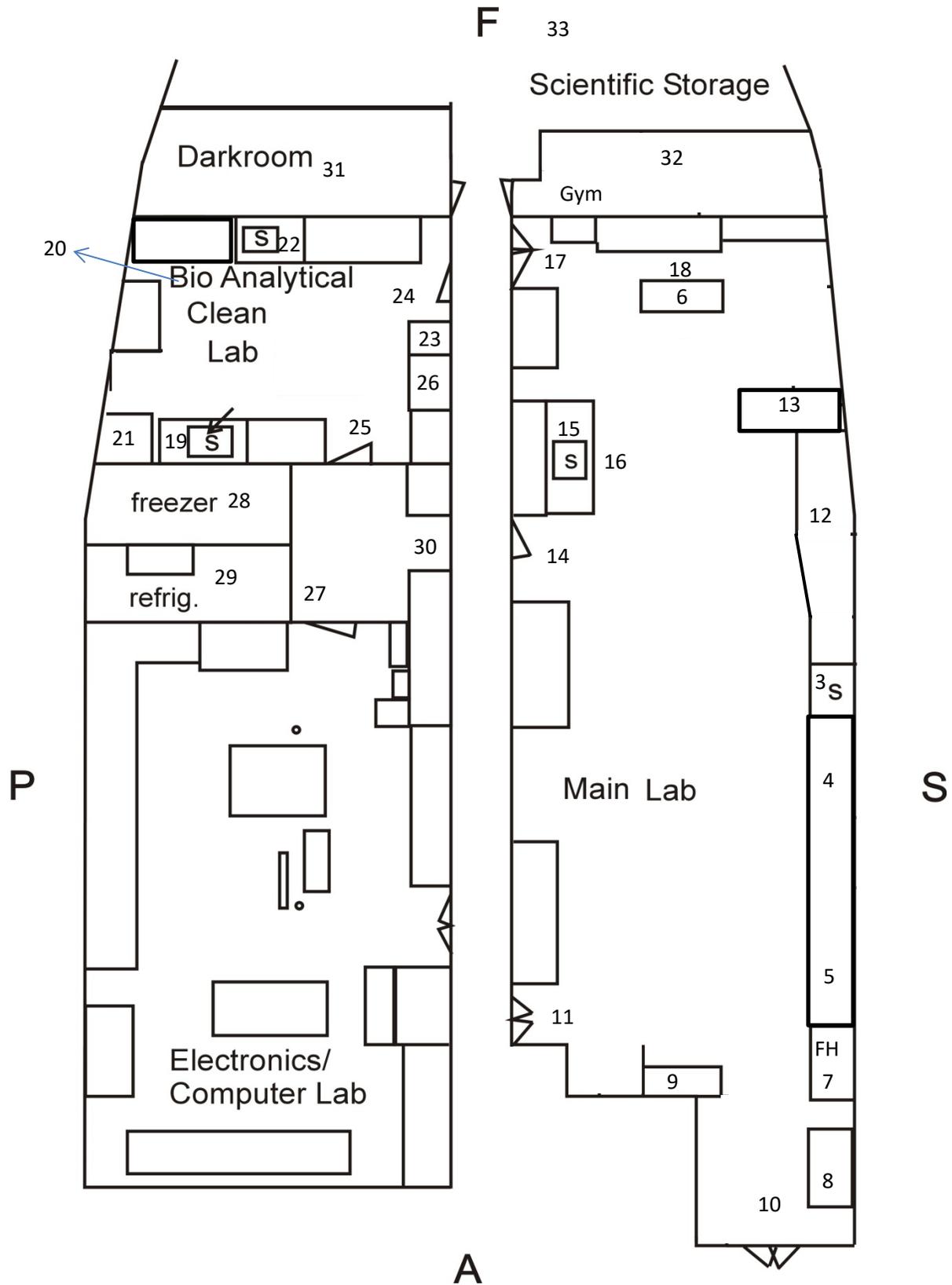


Figure 2
SWAB 994
9 March 2021

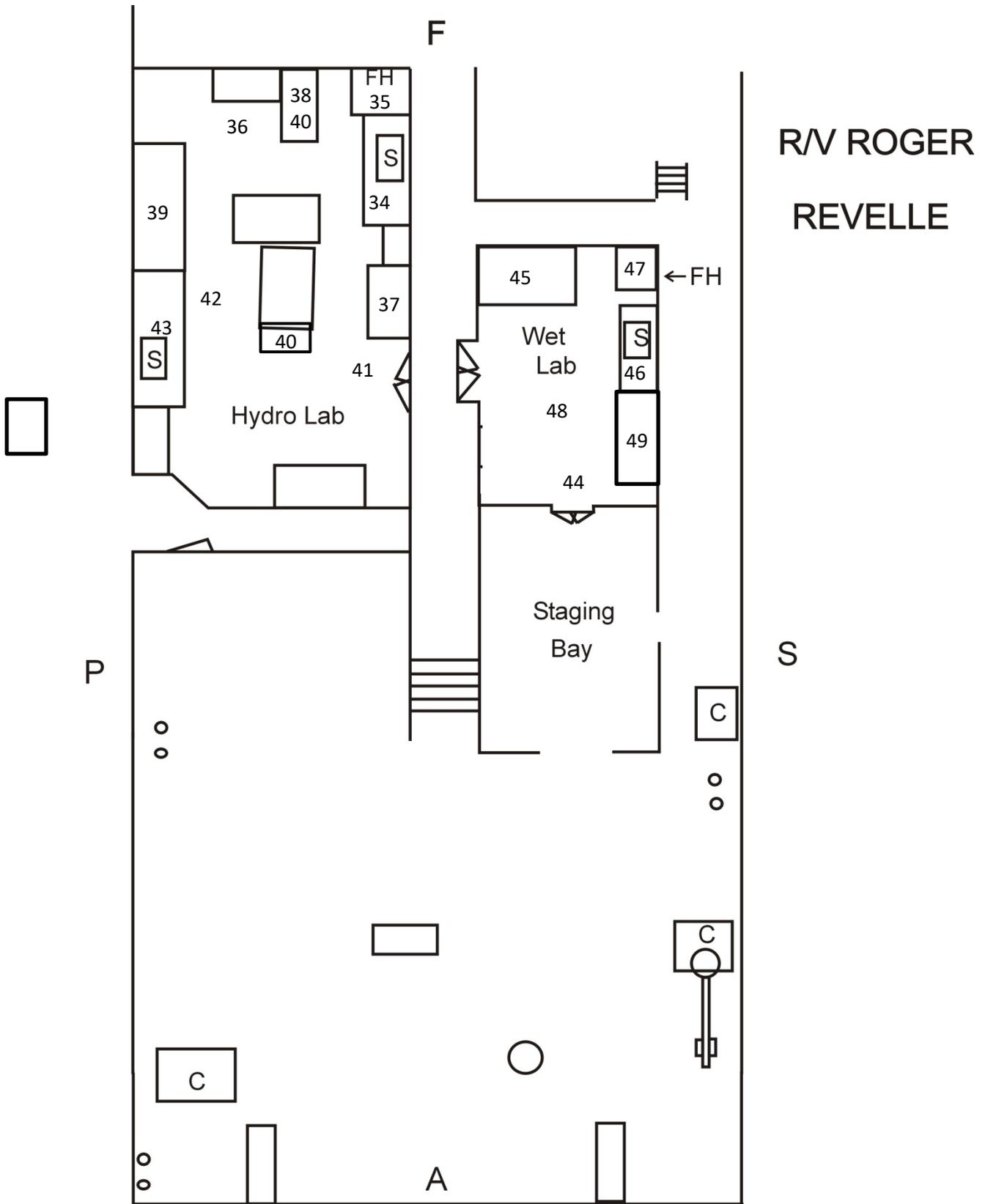


Figure 3
SWAB #994
9 March 2021

Rad Van 2408-01

