

UNIVERSITY OF MIAMI  
ROSENSTIEL  
SCHOOL of MARINE &  
ATMOSPHERIC SCIENCE



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Tritium Laboratory  
23 December 2018

SWAB REPORT #923

SWAB DATE: 14 December 2018

*R/V Kilo Moana*

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Distribution:  
SWAB Committee  
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## COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for  $^3\text{H}$  and  $^{14}\text{C}$  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  $\text{dpm}/\text{m}^2$ . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in  $\text{dpm}/\text{m}^2$ . An error larger than the activity indicates that the activity is not significantly different from zero.

### Criteria for SWAB Results

Category	$^3\text{H}$ ( $\text{dpm}/\text{m}^2$ )	$^{14}\text{C}$ ( $\text{dpm m}^2$ )	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:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : 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.

$^{14}\text{C}$ : 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  $^3\text{H}$ .

### 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 # 923

LOCATION: Honolulu, Hawaii  
VESSEL/LAB: R/V Kilo Moana

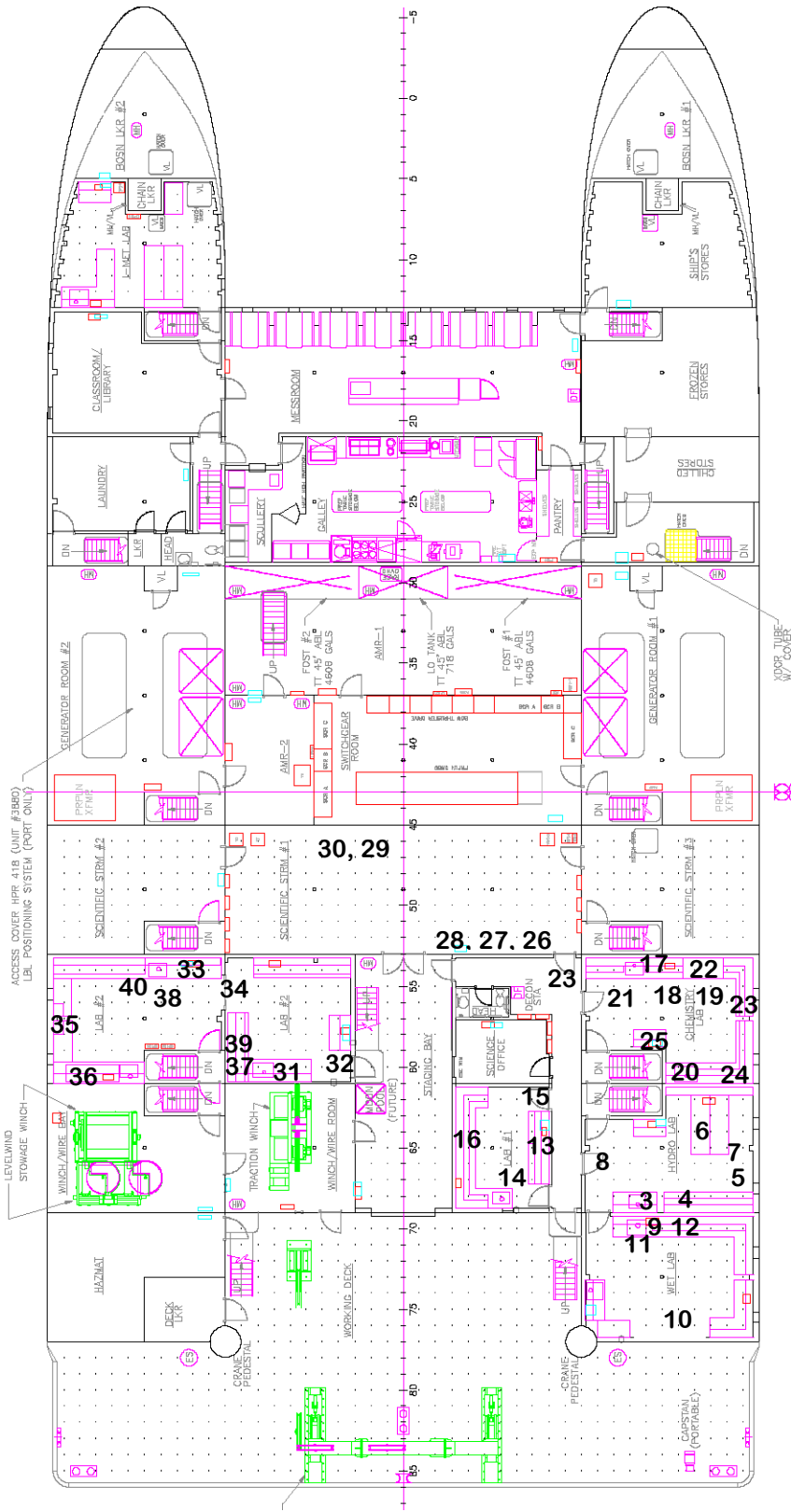
DATE: 14 December 2018  
TECHNICIAN: Yudy Mendoza

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	19	± 45	5	± 32
<u>Hydro Lab (Figure 1)</u>					
3	Aft sink area	-9	± 101	-5	± 28
4	Benchtop next to sink	84	± 63	-21	± 30
5	Starboard benchtop aft section	43	± 66	-17	± 38
6	Port benchtop	7	± 77	-5	± 29
7	Deck in front of starboard bench	2	± 19	-6	± 35
8	Deck inside port entrance	-2	± 23	0	± 0
<u>Wet Lab (Figure 1)</u>					
9	Sink area	-16	± 91	6	± 43
10	Deck inside aft hanger door entrance	13	± 67	-6	± 32
11	Deck below sink	-14	± 80	-23	± 32
12	Benchtop next to sink	13	± 77	-12	± 27
<u>Lab #1 (Figure 1)</u>					
13	Starboard benchtop	11	± 107	-11	± 25
14	Deck below after sink	29	± 67	-12	± 27
15	Deck at forward entrance	7	± 84	-24	± 34
16	Port benchtop	35	± 64	-10	± 23
<u>Chemistry Lab (Figure 1)</u>					
17	Forward sink area	29	± 54	0	± 12
18	Deck in front of Kenmore refrigerator	25	± 66	-10	± 58
19	Deck below fume hood	31	± 52	0	± 1
20	After sink area	-25	± 57	2	± 119
21	Deck at port entrance	-5	± 53	-6	± 33
22	Inside fume hood	65	± 68	-23	± 32
23	Starboard benchtop	2	± 20	7	± 37
24	After benchtop	15	± 497	-26	± 37
25	Center benchtop	85	± 72	-36	± 51

Sample #	Sample Identification	$^3\text{H}$ dpm/m <sup>2</sup>		$^{14}\text{C}$ dpm/m <sup>2</sup>	
		activity	error	activity	error
<u>Scientific Storage Area (Figure 1)</u>					
26	Inside Cospolich refrigerator 1	19	± 44	5	± 31
27	Inside Cospolich refrigerator 2	29	± 69	-15	± 34
28	Inside Cospolich refrigerator 3	6	± 346	-11	± 26
29	Top of center GE chest freezer	6	± 71	-33	± 47
30	Top of Kenmore chest freezer	24	± 77	-16	± 36
<u>Lab #2 (Figure 1)</u>					
31	Aft sink area	29	± 107	-29	± 41
32	Deck inside entrance	-14	± 81	-15	± 34
33	Forward sink area	48	± 53	4	± 22
34	Deck at bulkhead between lab spaces	4	± 45	1	± 31
35	Port benchtop center section	-12	± 67	-18	± 40
36	Port after sink area	-12	± 282	28	± 39
37	Benchtop next to aft sink	15	± 144	-19	± 27
38	Deck in front of forward sink	-17	± 98	-5	± 26
39	Benchtop against center bulkhead	11	± 30	16	± 36
40	Center benchtop	7	± 80	-29	± 42
41	Intermediate bucket blank	-4	± 49	-7	± 38
<u>Kilo Moana Rad Van (Figure #2)</u>					
42	Benchtop to right of door	-10	± 111	2	± 50
43	Benchtop next to fume hood	-1	± 14	-21	± 29
44	Inside fume hood	35	± 73	-23	± 33
45	Deck in front of fume hood	*955	± 111	21	± 12
46	Inside refrigerator right of door	-3	± 36	-24	± 34
47	Inside refrigerator across from LSC	12	± 72	-42	± 60
48	Benchtop next to LSC	16	± 45	3	± 29
49	Benchtop across from entrance door	70	± 63	-20	± 29
50	Deck inside entrance door	341	± 79	17	± 19
51	Final bucket blank	-15	± 54	60	± 40

### 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 on the ship were free from contamination that requires cleaning. Kilo Moana Rad Van had minor  $^3\text{H}$  contamination. No action is required, but we recommend that the deck be cleaned to help prevent tracking contamination out of van.



UNIVERSITY OF HAWAII  
*RV KILO MOANA*  
RADIOISOTOPE VAN

Figure 2  
SWAB # 923  
14 December 2018

