



Tritium Laboratory  
13 August 2021

SWAB REPORT #1008

SWAB DATE: 6 August 2021

*R/V Kilo Moana, Hawaii Van #23, & OTG Radioisotope Van*

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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 # 1003

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

DATE: 6 August 2021  
TECHNICIAN: Charlene Grall

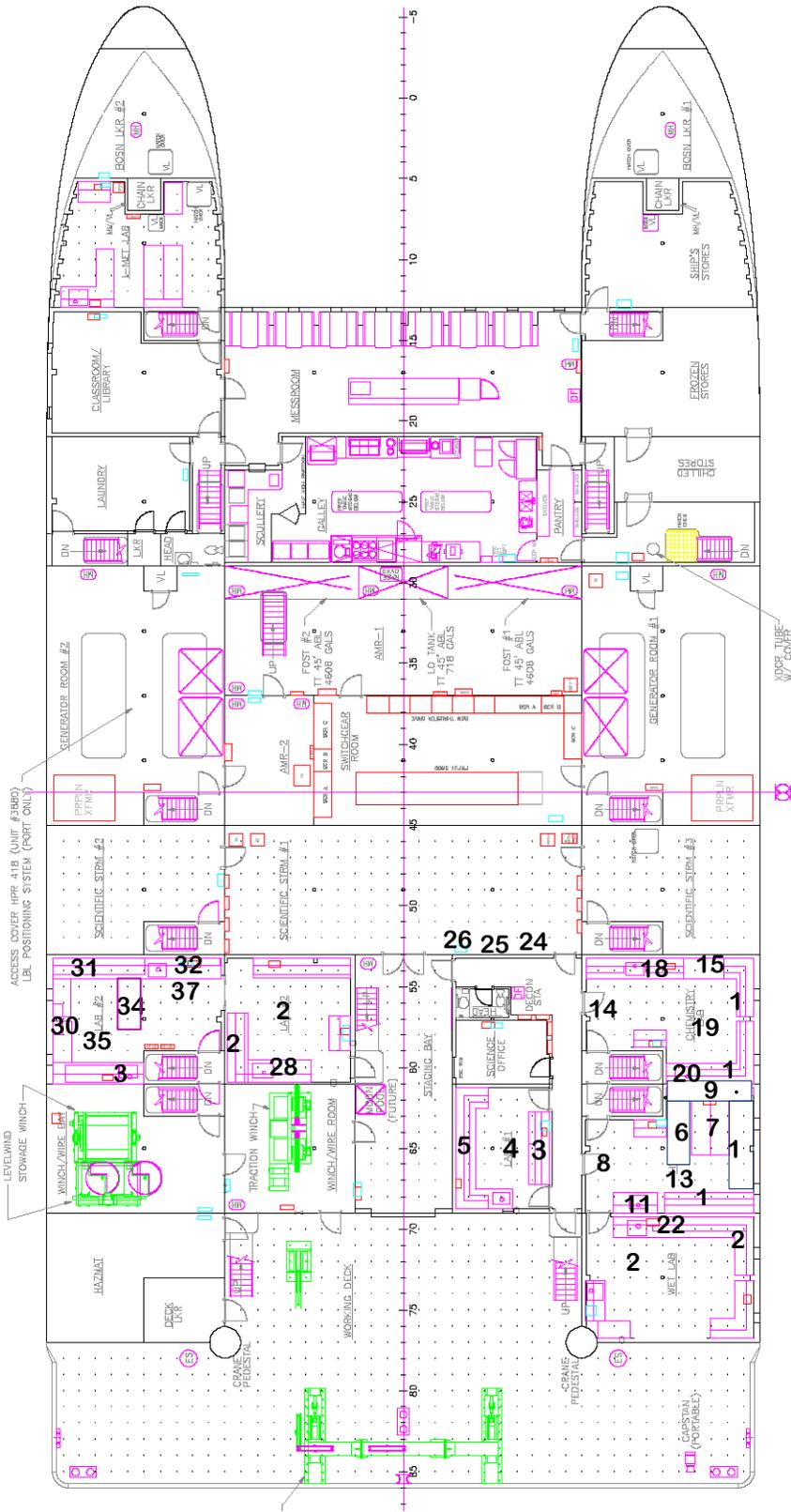
Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	4	± 45	1	± 25
	<u>Lab #1 (Figure 1)</u>				
3	Starboard benchtop	-75	± 22	4	± 15
4	Deck in center of lab	-39	± 89	32	± 39
5	Port benchtop	-24	± 536	53	± 39
	<u>Hydro Lab (Figure 1)</u>				
6	Port benchtop	-17	± 107	13	± 39
7	Deck in front of starboard bench	-31	± 96	41	± 39
8	Deck inside port entrance	-13	± 44	22	± 38
9	Forward benchtop	27	± 40	15	± 33
10	Starboard benchtop forward section	-12	± 702	28	± 38
11	Aft sink area	4	± 11	32	± 37
12	Aft benchtop	50	± 53	-5	± 24
13	Deck in front of aft benchtop	-6	± 54	25	± 37
	<u>Chemistry Lab (Figure 1)</u>				
14	Deck at port entrance	28	± 45	8	± 30
15	Inside fume hood	28	± 46	7	± 29
16	Starboard benchtop between portholes	3	± 118	-4	± 54
17	Aft benchtop	-13	± 67	23	± 38
18	Forward sink area	289	± 70	-4	± 14
19	Deck in front of starboard benchtop	-23	± 101	36	± 38
20	Aft sink area	-10	± 49	10	± 38
	<u>Wet Lab (Figure 1)</u>				
21	Starboard benchtop	10	± 30	16	± 35
22	Forward sink area and adjacent benchtop	-20	± 679	45	± 38
23	Deck in front of sink fwd of CTD	6	± 21	16	± 36
	<u>Science Storeroom (Figure 1)</u>				
24	Inside Cospolich refrigerator 1	57	± 47	12	± 29
25	Inside Cospolich refrigerator 2	-7	± 19	-13	± 88
26	Inside Cospolich refrigerator 3	-10	± 53	3	± 43

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
<u>Lab #2 (Figure 1)</u>					
27	Port benchtop in starboard lab section	-47	± 0	4	± 118
28	Starboard sink area and adjacent benchtop	1	± 4	29	± 37
29	Deck in center of starboard lab section	-10	± 22	-6	± 32
30	Port benchtop between portholes	-27	± 37	0	± 47
31	Forward benchtop in port lab section	-17	± 39	1	± 15
32	Forward sink area and adjacent stbd bench	48	± 44	23	± 33
33	Aft sink area with bench in port lab sec	26	± 54	-4	± 32
34	Benchtop opposite of port area aft sink	-29	± 48	6	± 49
35	Deck in center of port lab section	-27	± 99	-8	± 91
36	Intermediate bucket blank	-23	± 65	-4	± 43
<u>Hawaii Rad Van #23 (Figure 2)</u>					
37	Sink area & adj bench	28	± 24	108*	± 41
38	Benchtop to right of door	37	± 70	8	± 31
39	Inside refrigerator	286	± 58	171*	± 39
40	Inside freezer	18	± 3	795*	± 59
41	Benchtop to left of door	-161	± 203	67*	± 44
42	Benchtop on opposite wall on right	48	± 53	48	± 38
43	Benchtop on opposite wall on left	-95	± 1241	85*	± 43
44	Floor inside van entrance	629*	± 87	181*	± 37
<u>OTG Rad Van, Ser#592.2.01 (Figure 3)</u>					
45	Benchtop adjacent to LSC	165	± 57	62*	± 34
46	Benchtop next to entrance	2568*	± 170	106*	± 20
47	Benchtop next to fume hood	163,471**	± 1112	1522*	± 26
48	Inside fume hood	805*	± 91	171*	± 35
49	Benchtop across from entrance	224	± 52	109*	± 36
50	Deck inside back entrance, by fume hood	1615*	± 106	160*	± 28
51	Deck inside front entrance	622*	± 83	211	± 39
52	Final bucket blank	-8	± 0	12	± 37

### Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. Reports may now contain values less than zero. 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. Minor <sup>3</sup>H and <sup>14</sup>C contamination was found in the Hawaii Rad Van #23. No action is necessary other than cleaning the deck near the entrance to help prevent tracking contamination out of the van. The OTG radioisotope van had a large amount of tritium on the benchtop next to the fume hood. Because of this activity a thorough cleaning and decon of the benchtop, sink and deck is recommended. No contamination that requires cleaning was detected inside the ship, however the forward sink area in chemistry lab had <sup>3</sup>H above background.

Figure 1  
 SWAB # 1008  
 6 August 2021



MAIN DECK

# Hawaii Van #23

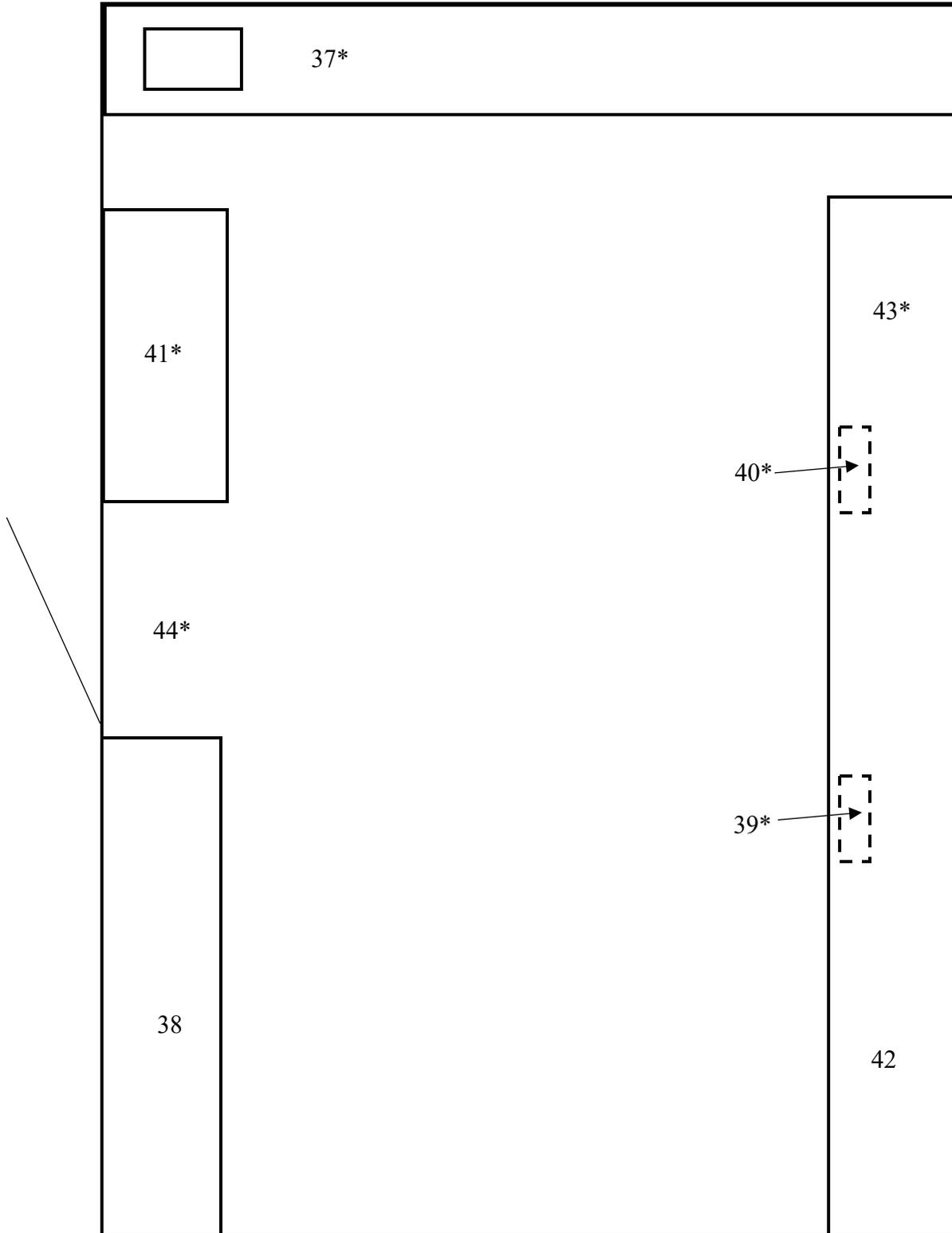


Figure #3  
 SWAB# 1008  
 6 August 2021

