



Tritium Laboratory
29 August 2022

SWAB REPORT #1037

SWAB DATE: 21 AUGUST 2022

R/V Kilo Moana & OTG Rad Van

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Distribution:
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COMMENTS TO SWAB REPORTS

15 December 2021

The LSC is now a Quantulus GCT 6220, with the SWAB counting assay having background cpm of 0.3 & 1.2 for ^3H & ^{14}C . This replaces an LSC with background cpm of 1.6 & 5.5 for ^3H & ^{14}C .

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. All activities significantly above background will be in **bold**.

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 dpm/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 # 1037

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

DATE: 21 August 2022
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 CO #1	-73	± 74	12	± 17
	<u>Lab #1 (Figure 1)</u>				
3	Starboard benchtop	-37	± 37	15	± 14
4	Deck in center of lab	-49	± 49	19	± 14
5	Port Benchtop	-57	± 57	5	± 28
	<u>Hydro Lab (Figure 1)</u>				
6	Starboard benchtop center section	-20	± 20	6	± 14
7	Deck in front of starboard bench	125	± 45	28	± 11
8	Deck inside port entrance	-43	± 43	9	± 15
9	Aft benchtop	-65	± 66	19	± 15
10	Forward benchtop	-67	± 68	11	± 17
11	Aft sink area	-24	± 24	19	± 13
12	Port benchtop	-67	± 67	10	± 17
	<u>Chemistry Lab (Figure 1)</u>				
13	Forward section of starboard benchtop	-65	± 65	0	± 1
14	Deck at port entrance	-63	± 64	6	± 25
15	Inside fume hood	-70	± 71	12	± 17
16	Aft section of starboard benchtop	-56	± 56	5	± 23
17	Aft benchtop opposite sink	-16	± 16	10	± 13
18	Forward sink area	-26	± 27	3	± 18
19	Deck in front of fume hood	-42	± 42	16	± 14
20	Aft sink area	-81	± 82	31	± 15
21	Aft benchtop	-59	± 60	7	± 20
22	Forward benchtop	-33	± 33	2	± 35
23	Deck in front of aft sink	-44	± 44	11	± 15
	<u>Wet Lab (Figure 1)</u>				
24	Forward sink area and adjacent benchtop	-41	± 42	27	± 14
25	Deck in front of sink, forward of CTD	-52	± 52	17	± 14
26	Starboard benchtop	-63	± 64	20	± 15
27	Deck aft of CTD	-66	± 67	15	± 15

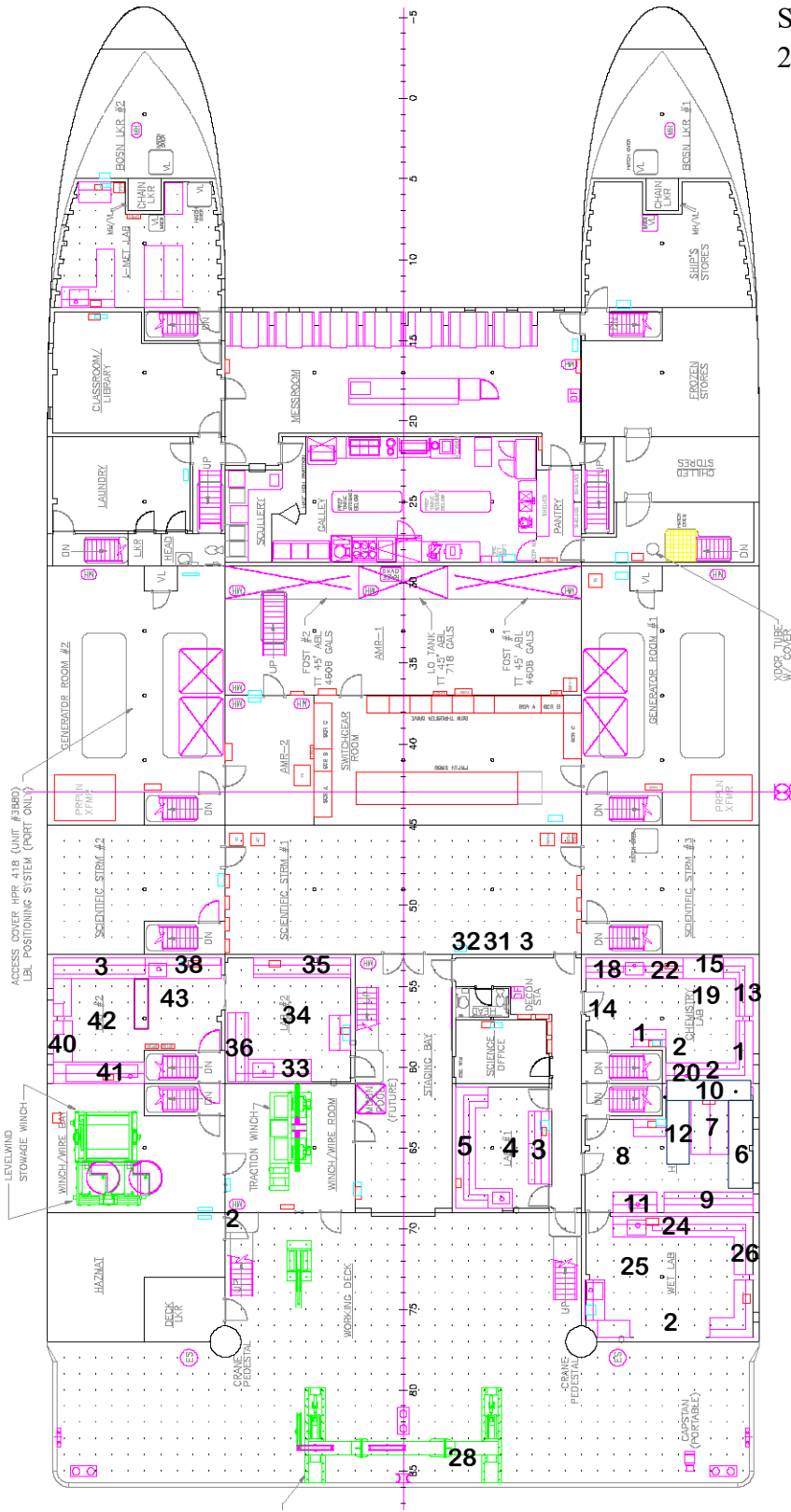
Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
<u>Aft Deck (Figure 1)</u>					
28	Deck inside starboard leg of A frame	-76	± 76	26	± 15
29	Deck at top of port stair to 01 Deck	-38	± 38	5	± 17
<u>Science Storeroom (Figure 1)</u>					
30	Inside Cospolich refrigerator #1	-19	± 19	20	± 13
31	Inside Cospolich refrigerator #2	-51	± 52	12	± 15
32	Inside Cospolich refrigerator #3	-31	± 31	3	± 23
<u>Lab #2 Starboard side (Figure 1)</u>					
33	Aft sink and adjacent benchtop	-35	± 36	0	± 2
34	Deck in center of lab	-59	± 59	24	± 14
35	Fwd benchtop	-54	± 54	16	± 14
36	Port benchtop	-35	± 36	13	± 14
37	Bucket blank CO#2	-54	± 54	10	± 16
<u>Lab #2 Port side (Figure 1)</u>					
38	Forward sink and adjacent benchtop	-38	± 38	17	± 14
39	Forward benchtop	-33	± 33	4	± 18
40	Middle section of port benchtop	-36	± 36	17	± 14
41	Aft sink and adjacent benchtop	-59	± 60	1	± 8
42	Deck in center of lab	-55	± 56	5	± 24
43	Deck in front forward sink	-55	± 56	-2	± 10
<u>OTG Rad Van, Ser#592.2.01 (Figure 2)</u>					
44	Inside refrigerator near entrance	-29	± 30	21	± 13
45	Inside refrigerator near fume hood	315	± 57	33	± 10
46	Benchtop next to entrance	97	± 43	3	± 5
47	Benchtop next to fume hood	*4047	± 173	*78	± 7
48	Inside fume hood	107	± 43	24	± 11
49	Benctop across from entrance	-24	± 24	14	± 13
50	Deck inside entrance near fume hood	*1519	± 139	*137	± 15
51	Deck inside front entrance	*575	± 82	39	± 9
52	Benchtop next to LSC	78	± 41	11	± 9
53	Final bucket blank CO #2	-86	± 87	7	± 31

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. Please note that we are now using a Quantulus 6220 LSC which counts very near natural

background. While the cleanup standards have not changed all values above background will now be in bold. All areas on the ship were free from isotope contamination requiring cleaning. The Rad Van had ^3H and ^{14}C contamination, and while no action is necessary we recommend cleaning the deck to help prevent tracking of ^3H out of the van.

Figure 1
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Figure #2
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