



Tritium Laboratory
27 March 2023

SWAB REPORT #1054

SWAB DATE: February 15, 2023

R/V Kilo Moana & OTG Rad Van

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Distribution:
SWAB Committee
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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 # 1054

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

DATE: 15 February 2023
TECHNICIAN: Yudy Mendoza

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	49	± 25	-26	± 28
	<u>Lab #1 (Figure 1)</u>				
3	Starboard benchtop	72	± 27	-21	± 23
4	Deck in center of lab	26	± 27	-17	± 36
5	Port Benchtop	50	± 31	-14	± 30
	<u>Hydro Lab (Figure 1)</u>				
6	Starboard benchtop center section	71	± 26	-11	± 23
7	Deck in front of starboard bench	61	± 39	-22	± 24
8	Deck inside port entrance	57	± 36	-34	± 38
9	Aft benchtop	43	± 22	-28	± 31
10	Forward benchtop	57	± 36	-16	± 33
11	Benchtop next to aft sink	42	± 22	-21	± 23
12	Port benchtop	37	± 24	-22	± 25
	<u>Chemistry Lab (Figure 1)</u>				
13	Forward section of starboard benchtop	79	± 29	-31	± 34
14	Deck at port entrance	59	± 37	-25	± 28
15	Inside fume hood	66	± 43	-17	± 37
16	Aft section of starboard benchtop	55	± 34	-10	± 21
17	Center benchtop in front of aft sink	36	± 24	-13	± 27
18	Forward sink area	54	± 34	-21	± 23
19	Deck in front of fume hood	51	± 32	-28	± 31
20	Aft sink area	40	± 27	-24	± 26
21	Aft benchtop next to sink	25	± 25	-14	± 30
22	Forward benchtop next to sink	47	± 24	-21	± 23
23	Deck in front of aft sink	56	± 35	-3	± 7
	<u>Wet Lab (Figure 1)</u>				
24	Forward sink area and adjacent benchtop	49	± 25	-25	± 28
25	Deck in front of sink forward of CTD	41	± 21	-11	± 23
26	Starboard benchtop	38	± 39	-20	± 41
27	Deck aft of CTD	54	± 34	-17	± 35

Sample #	Sample Identification	³ H 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	29	± 29	-4	± 9
29	Deck at top of port stair to 01 Deck	70	± 26	-21	± 23
<u>Science Storeroom (Figure 1)</u>					
30	Inside Cospolich refrigerator #1	60	± 37	-14	± 30
31	Inside Cospolich refrigerator #2	44	± 23	-19	± 40
32	Inside Cospolich refrigerator #3	94	± 34	-32	± 35
<u>Lab #2 Starboard side (Figure 1)</u>					
33	Aft sink and adjacent benchtop	60	± 39	-11	± 23
34	Deck in center of lab	33	± 22	-10	± 21
35	Forward benchtop	46	± 24	-21	± 23
36	Port benchtop	50	± 33	-13	± 28
37	Deck at entrance	59	± 38	-19	± 40
<u>Lab #2 Port side (Figure 1)</u>					
38	Forward sink and adjacent benchtop	76	± 28	-17	± 35
39	Center benchtop	86	± 31	-39	± 43
40	Middle section of port benchtop	35	± 24	-27	± 29
41	Aft sink and adjacent benchtop	25	± 26	-21	± 23
42	Deck in front of aft sink	24	± 24	-9	± 19
43	Deck in front of foward sink	21	± 21	-39	± 43
44	Intermediate bucket blank	57	± 37	-32	± 36
<u>OTG Rad Van, Ser#592.2.01 (Figure 2)</u>					
45	Designated Rad waste area	*653	± 95	28	± 9
46	Inside fume hood	108	± 32	-38	± 42
47	Deck inside entrance near fume hood	*702	± 102	6	± 3
48	Benchtop next to fume hood	*1395	± 139	24	± 26
49	Inside refrigerator near fume hood	104	± 31	-22	± 24
50	Benchtop next to LSC	88	± 32	-18	± 20
51	Benchtop next to entrance	96	± 35	-4	± 199
52	Inside refrigerator near entrance	46	± 24	-1	± 15
53	Benchtop across from entrance	128	± 38	-17	± 19
54	Deck inside front entrance	146	± 44	-15	± 17
55	Final bucket blank	27	± 28	-16	± 17

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 minor ^3H contamination. No action is necessary

Figure #2
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