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Tritium Laboratory
10 January 2022

SWAB REPORT # 1022

SWAB DATE: 4 January 2022

R/V Savannah and Van #625.3.08

James D. Happell

Distribution:
SWAB Committee
John Bichy

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 $1000 \text{ dpm}/\text{m}^2$ 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 insitution promptly by phone or email.

REPORT FOR SWAB # 1022

LOCATION: Savannah, GA

DATE: 4 January 2022

VESSEL: R/V Savannah

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	20	± 20	17	± 12
	<u>Dry Lab (Figure 1)</u>				
3	Inside fume hood	**26272	± 570	*557	± 19
4	Benchtop next to fume hood	26	± 22	9	± 10
5	Deck in front of fume hood	47	± 36	-3	± 9
6	Benchtop after of sink	-9	± 26	18	± 13
7	Benchtop forward of sink	12	± 18	6	± 11
8	Center benchtop	22	± 21	12	± 11
9	Deck at aft entrance	5	± 11	11	± 12
10	Forward deck	23	± 20	18	± 12
	<u>Miscellaneous Areas (Figure 1)</u>				
11	Deck under water fountain	19	± 18	16	± 11
12	Deck at bottom of stairs	21	± 16	19	± 12
13	Deck inside forward door	9	± 25	-2	± 6
	<u>Wet Lab (Figure 1)</u>				
14	Port benchtop	18	± 35	-13	± 22
15	Benchtop forward of sink	-10	± 28	16	± 12
16	Benchtop aft of sink	17	± 25	-1	± 3
17	Inside Summit freezer	17	± 31	-8	± 13
18	Deck in front of Summit freezer	36	± 27	-2	± 193
19	Deck at aft entrance	25	± 23	7	± 10
20	Deck inside port entrance	3	± 10	8	± 11
	<u>Aft Deck (Figure 1)</u>				
21	Deck near incubator	26	± 25	12	± 11
22	Deck near CTD	18	± 28	13	± 12

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
	<u>Van #625.3.08 (Figure 2)</u>				
23	Deck inside van door	124	± 38	-3	± 10
24	Stainless steel benchtop	45	± 25	12	± 10
26	Inside fume hood	62	± 29	10	± 9
27	Deck between hood and LSC	73	± 30	20	± 11
28	Inside refrigerator	37	± 25	12	± 10
29	Inside freezer	107	± 39	10	± 8
30	Deck outside van door	14	± 22	7	± 11
31	Final bucket blank	9	± 17	20	± 13

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. The fume hood in the dry lab had major ³H contamination. Although there looks to be minor ¹⁴C contamination in this sample this is probably just spill over from the high ³H values because the two spectra overlap slightly. All enhanced level ³H work should be conducted in a Rad Van. This area needs to be cleaned ASAP. All other areas in the ship and Rad Van were free from isotope contamination that requires cleaning

Figure 1
 SWAB #1022
 4 January 2022

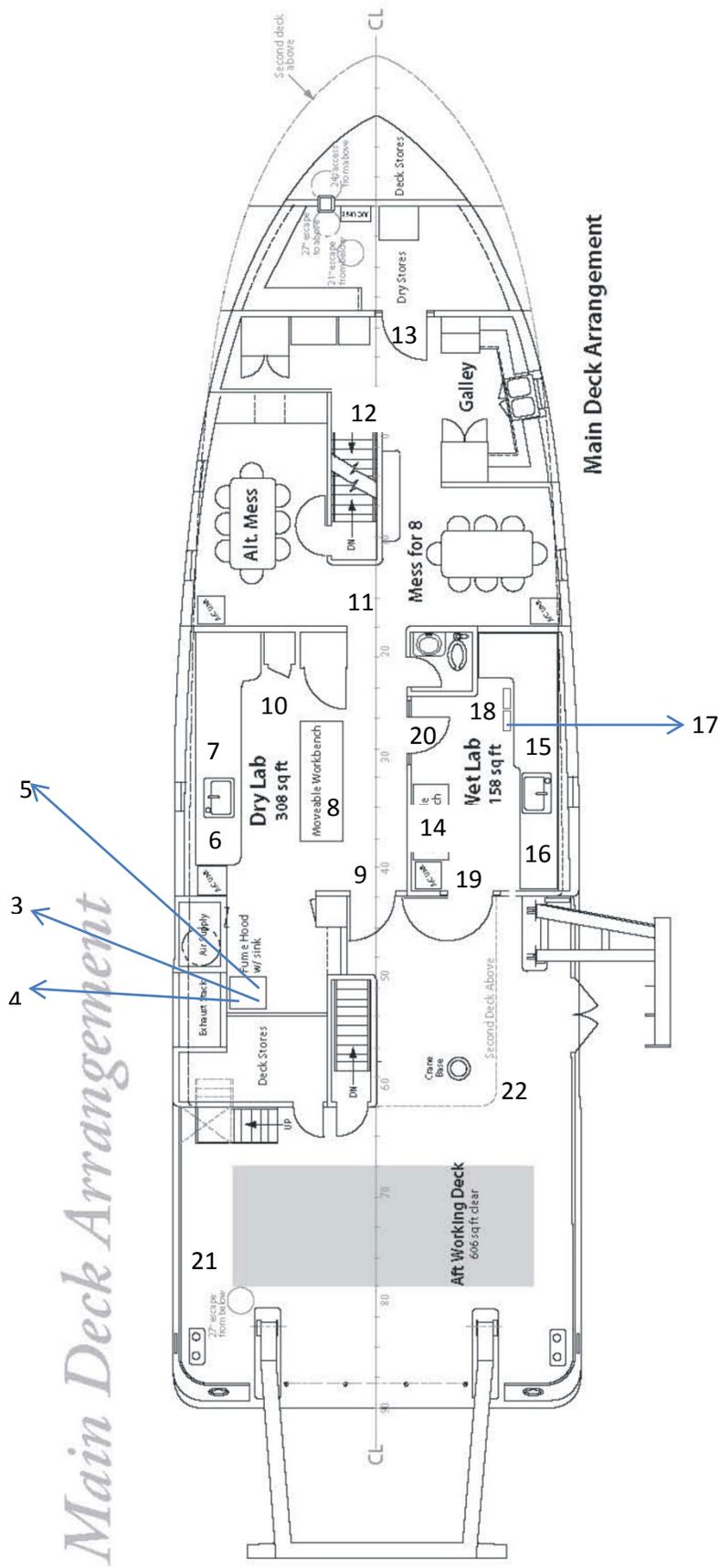


Figure 2
SWAB # 1022
4 January 2022

UNOLS Rad Van 625.3.08

