

UNIVERSITY OF MIAMI

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Tritium Laboratory  
8 September 2022

SWAB REPORT # 1039

SWAB DATE: 2 September 2022

*R/V Savannah*

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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  $^3\text{H}$  &  $^{14}\text{C}$ . This replaces an LSC with background cpm of 1.6 & 5.5 for  $^3\text{H}$  &  $^{14}\text{C}$ .

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

### 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 # 1039

LOCATION: Savannah, GA  
VESSEL: R/V Savannah

DATE: 2 September 2022  
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	1 ±	17	-5 ±	22
	<u>Dry Lab (Figure 1)</u>				
3	Inside stainless tray in fume hood	-42 ±	50	5 ±	22
4	Under stainless tray in fume hood	19 ±	31	-5 ±	23
5	Inside Magic Chef freezer	17 ±	31	-3 ±	13
6	Deck in front of fume hood	-1 ±	21	2 ±	13
7	Benchtop aft of sink	-27 ±	44	8 ±	15
8	Benchtop forward of sink	-30 ±	49	0 ±	2
9	Center benchtop	18 ±	34	-8 ±	16
10	Deck at aft entrance	-7 ±	32	5 ±	14
11	Forward deck	-21 ±	35	<b>16 ±</b>	<b>14</b>
12	Deck in front of A/C vent	-44 ±	53	12 ±	16
	<u>Miscellaneous Areas (Figure 1)</u>				
13	Deck under water fountain	-36 ±	44	-12 ±	16
14	Deck at bottom of stairs	-15 ±	27	-2 ±	8
15	Deck inside forward door	-31 ±	37	-1 ±	3
	<u>Wet Lab (Figure 1)</u>				
16	Port benchtop	-23 ±	37	<b>17 ±</b>	<b>14</b>
17	Benchtop forward of sink	-4 ±	80	-17 ±	24
18	Sink area	8 ±	36	-4 ±	18
19	Inside Summit freezer	-50 ±	60	9 ±	17
20	Deck in front of Summit freezer	-46 ±	56	5 ±	22
21	Deck at aft entrance	-7 ±	33	-5 ±	22
22	Deck inside port entrance	6 ±	107	-9 ±	18
	<u>Aft Deck (Figure 1)</u>				
23	Deck outside Dry Lab	-4 ±	68	-6 ±	26
24	Deck outside Wet Lab	0 ±	3	-3 ±	13
25	Final bucket blank	-17 ±	30	6 ±	15

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 in the ship were free from isotope contamination that requires cleaning.

Figure 1  
 SWAB #1039  
 2 September 2022

