



Tritium Laboratory  
16 March 2022

SWAB REPORT # 1026

SWAB DATE: 10 March 2022

*R/V Savannah and Van #625.3.08*

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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 # 1022

LOCATION: Savannah, GA  
VESSEL: R/V Savannah

DATE: 10 March 2022  
TECHNICIAN: Jim Happell

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	-35	± 49	4	± 22
	<u>Dry Lab (Figure 1)</u>				
3	Inside stainless tray in fume hood	*1216	± 114	21	± 5
4	Under stainless tray in fume hood	8	± 40	-4	± 23
5	Benchtop next to fume hood	32	± 31	-3	± 17
6	Deck in front of fume hood	9	± 27	2	± 10
7	Benchtop aft of sink	-18	± 26	2	± 27
8	Benchtop forward of sink	-14	± 20	8	± 13
9	Center benchtop	-13	± 19	9	± 13
10	Deck at aft entrance	5	± 140	-9	± 14
11	Forward deck	-5	± 140	-12	± 19
	<u>Miscellaneous Areas (Figure 1)</u>				
12	Deck under water fountain	9	± 25	13	± 13
13	Deck at bottom of stairs	-23	± 33	-7	± 43
14	Deck inside forward door	-24	± 34	8	± 14
	<u>Wet Lab (Figure 1)</u>				
15	Port benchtop	-2	± 64	-4	± 25
16	Benchtop forward of sink	-1	± 31	-6	± 38
17	Benchtop aft of sink	-21	± 29	-6	± 40
18	Inside Summit freezer	13	± 25	2	± 9
19	Deck in front of Summit freezer	-25	± 36	6	± 15
20	Deck at aft entrance	-10	± 30	6	± 13
21	Deck inside port entrance	-17	± 25	-4	± 23
	<u>Aft Deck (Figure 1)</u>				
22	Deck near incubator	20	± 28	-1	± 6
23	Deck near CTD	-22	± 31	-1	± 5

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>Van #625.3.08 (Figure 2)</u>				
24	Deck inside van door	<b>282</b>	± <b>54</b>	<b>6</b>	± <b>4</b>
25	Stainless steel benchtop	<b>56</b>	± <b>35</b>	-3	± 17
26	Inside fume hood	<b>68</b>	± <b>35</b>	-2	± 19
27	Deck between hood and LSC	<b>210</b>	± <b>48</b>	<b>13</b>	± <b>8</b>
28	Inside refrigerator	<b>59</b>	± <b>35</b>	-8	± 19
29	Inside freezer	5	± 14	10	± 12
30	Deck outside van door	-15	± 22	0	± 3
31	Final bucket blank	-12	± 17	-5	± 29

### 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 stainless steel tray in the fume hood in the dry lab had minor <sup>3</sup>H contamination. If enhanced level isotope work is to be conducted inside the ship it should all be done inside the stainless steel tray. All other areas in the ship and Rad Van were free from isotope contamination that requires cleaning.

Figure 1  
 SWAB #1026  
 10 March 2022

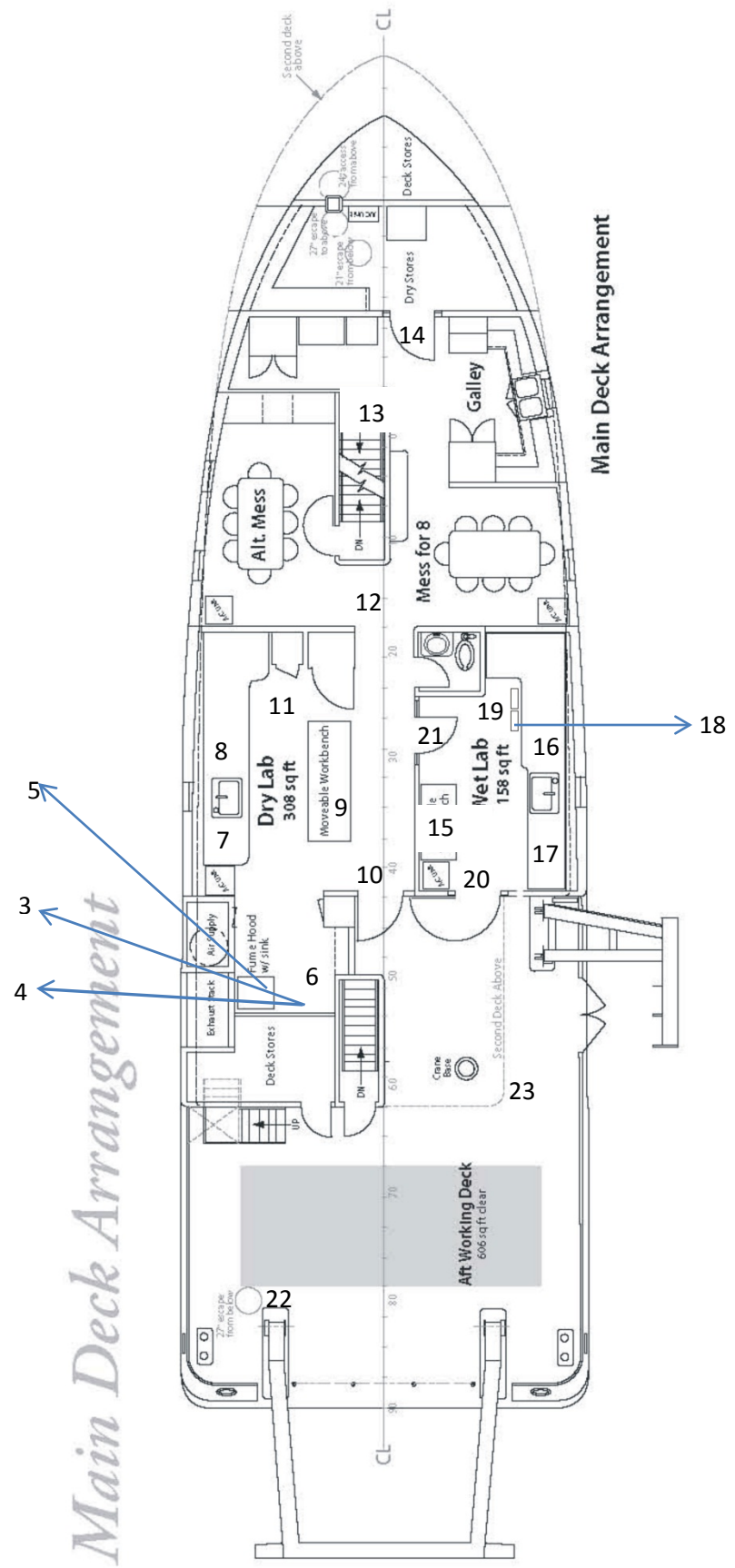


Figure 2  
SWAB # 1026  
10 March 2022

# UNOLS Rad Van 625.3.08

