

UNIVERSITY OF MIAMI  
ROSENSTIEL  
SCHOOL of MARINE &  
ATMOSPHERIC SCIENCE



Tritium Laboratory  
4600 Rickenbacker Causeway  
Miami, Florida 33149-1031

Ph: 305-421-4100  
Fax: 305-421-4112  
E-mail: Tritium@rsmas.miami.edu

17 October 2011

SWAB REPORT # 603

SWAB DATE: 8 October 2011

*R/V Savannah*

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James D. Happell

Distribution:  
SWAB Committee  
John Bichy  
Jim Nelson

## COMMENTS TO SWAB REPORTS

23 November 2010

Typical LSC instrument background values for  $^3\text{H}$  and  $^{14}\text{C}$  are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

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.

### 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 dispose in radiation waste system.

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

REPORT FOR SWAB # 603

LOCATION: Savannah, Georgia  
VESSEL/LAB: R/V Savannah

DATE: 10 October 2011  
TECHNICIAN: Cecilia Roig

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	22	± 159	0	± 0
<u>Rad Van 625.3.08 (See Figure 1)</u>					
3	Stainless bench top	*1018	± 101	27	± 13
4	Top of LSC	*1011	± 104	9	± 6
5	Fume hood	*1210	± 105	*126	± 29
6	Sink area	**17280	± 358	*306	± 17
7	Refrigerator next to door	*6112	± 211	*721	± 45
8	Freezer next to LSC	*1152	± 104	37	± 15
9	Deck in front of hood	*3053	± 158	44	± 10
10	Deck under escape hatch	*1766	± 124	37	± 12
11	Deck at entrance	*2828	± 156	*89	± 17
12	Intermediate bucket blank	0	± 0	0	± 0
<u>Dry Lab (see Figure 2)</u>					
13	Fume hood	68	± 61	0	± 0
14	Bench top next to fume hood	69	± 63	0	± 0
15	Deck in front of fume hood	31	± 62	0	± 0
16	Bench top aft of sink	44	± 70	0	± 0
17	Bench top forward of sink	26	± 215	0	± 0
18	Center bench top	6	± 0	0	± 0
19	Deck inside aft entrance	76	± 65	0	± 0
<u>Miscellaneous areas See Figure 2)</u>					
20	Deck under water fountain	166	± 69	0	± 0
21	Deck inside forward door	56	± 62	0	± 0
22	Deck at bottom of stairs	0	± 0	0	± 0
23	Deck at entrance to stairs	136	± 60	17	± 27

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
Wet lab (see Figure 2)					
24	Port bench top	1	± 0	0	± 0
25	Bench top forward of sink	34	± 81	0	± 0
26	Bench top aft of sink	0	± 0	0	± 0
27	Inside Thermo/Revco refrigerator	0	± 0	0	± 0
28	Inside Isotemp/Fisher refrigerator	4	± 0	0	± 0
29	Deck in front of fire locker	76	± 63	0	± 0
30	Deck inside port entrance	89	± 64	0	± 0
31	Final bucket blank	0	± 0	0	± 0

### Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. All areas tested on the ship were free from radioisotope contamination that requires cleaning. However there does appear to be wide spread very minor <sup>3</sup>H throughout the ship. The radiation van had minor <sup>14</sup>C and minor to moderate <sup>3</sup>H contamination. The sink area needs to be cleaned before any additional use. Although it is not required we recommend cleaning the decks in the van to help prevent tracking contamination into the ship.

Figure 1  
SWAB 603  
10 October 2011

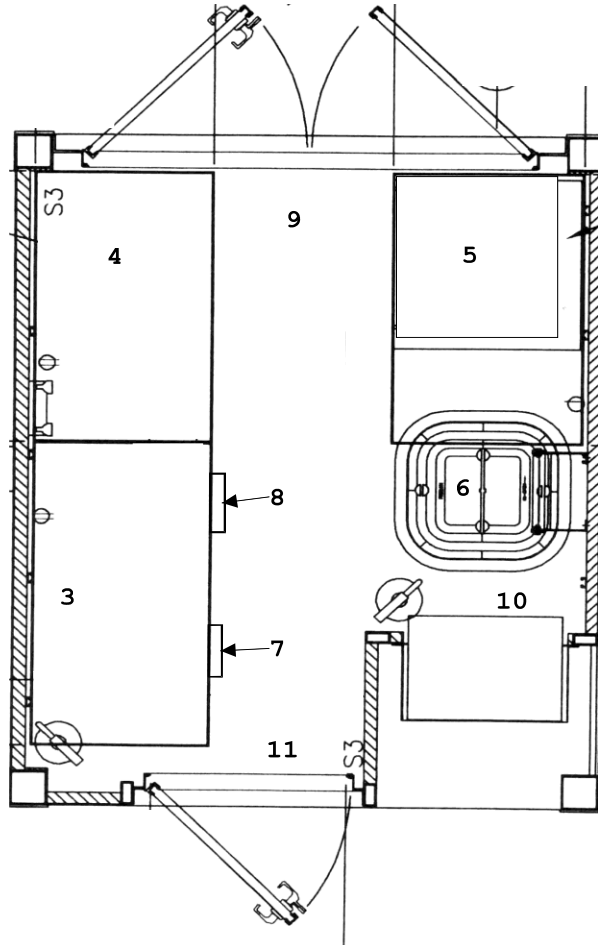
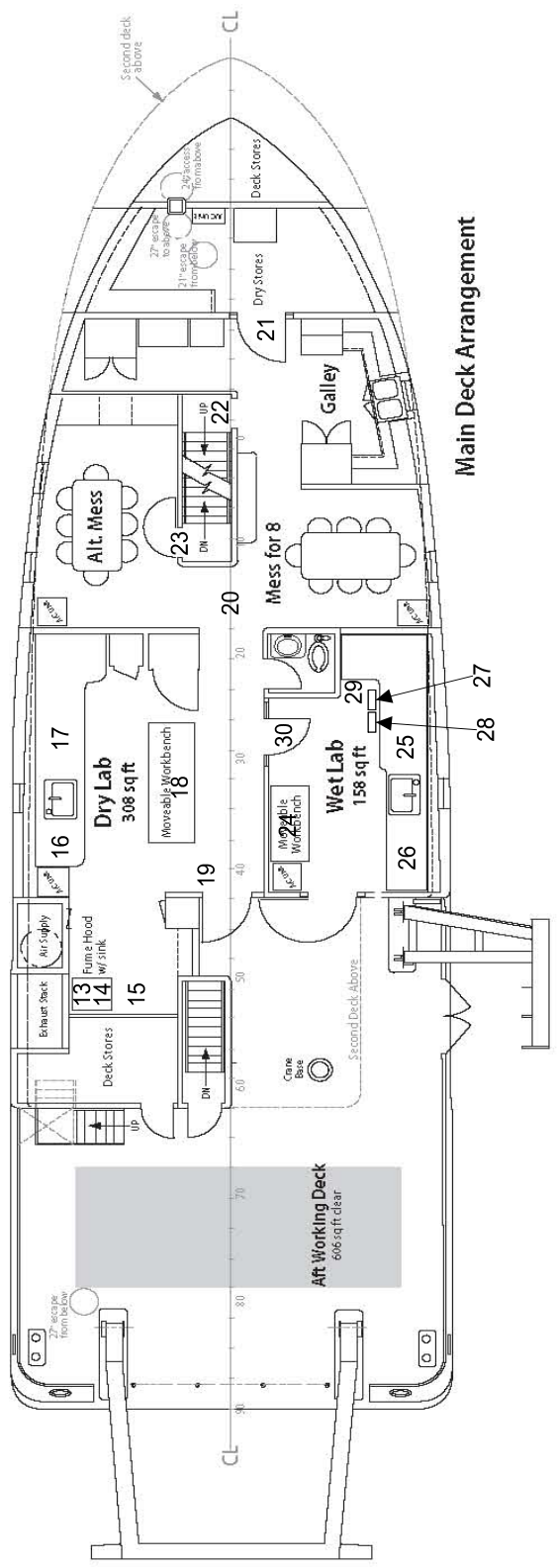


Figure 2  
 SWAB #603  
 10 October 2011

*Main Deck Arrangement*



Main Deck Arrangement