

UNIVERSITY OF MIAMI  
ROSENSTIEL  
SCHOOL of MARINE &  
ATMOSPHERIC SCIENCE



Tritium Laboratory  
29 October 2012

---

Tritium Laboratory      Ph: 305-421-4100  
4600 Rickenbacker Causeway      Fax: 305-421-4112  
Miami, Florida 33149-1031      E-mail: Tritium@rsmas.miami.edu

SWAB REPORT # 653

SWAB DATE: 25 October 2012

*R/V Atlantic Explorer* and UNOLS Van #2409.01

---

Dr. James D. Happell  
Associate Research Professor

Distribution:  
SWAB Committee  
James Caison

## 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 # 653

LOCATION: St. George, Bermuda  
VESSEL: R/V Atlantic Explorer

DATE: 25 October 2012  
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 #1	0	± 0	0	± 0
	<u>Aft/Wet Lab (Figure 1)</u>				
3	Inside fume hood	0	± 0	1	± 0
4	Deck at entrance to hood room	0	± 0	0	± 0
5	Bench top forward of sink	0	± 0	16	± 36
6	Inside Roper freezer top	0	± 0	0	± 0
7	Inside Roper fridge bottom	0	± 0	2	± 81
8	Inside GE freezer	0	± 0	5	± 46
9	Inside small black GE	0	± 0	13	± 36
10	Center bench top	0	± 0	3	± 50
11	Deck at forward entrance	0	± 0	0	± 0
12	Forward bench top	0	± 0	10	± 39
	<u>Forward Lab (Figure 1)</u>				
13	Bench top forward of sink	0	± 0	7	± 45
14	Forward bench top	6	± 26	9	± 31
15	Deck at starboard entrance	0	± 0	9	± 37
16	Deck at infirmary entrance	0	± 0	10	± 40
17	Deck at top of stairs	0	± 0	0	± 0
18	Ice inside VWR freezer	18	± 64	0	± 0
19	Center bench top	0	± 0	12	± 34
20	Bench top aft of sink	0	± 0	11	± 38
21	Deck in Enviro Room	0	± 0	0	± 0
22	Bench top inside Enviro Room	0	± 0	0	± 0
	<u>Main Lab (Figure 1)</u>				
23	Starboard forward freezer	18	± 41	0	± -8
24	Port forward freezer	15	± 64	0	± 0
25	Starboard bench top	0	± 0	18	± 37
26	Aft bench top	0	± 0	8	± 45
27	Deck in front of freezers	0	± 0	6	± 52
28	Deck in front of starboard bench	0	± 0	12	± 36
29	Deck inside aft entrance	0	± 0	9	± 42

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
30	Center bench top	0	± 0	0	± 0
31	Bench top aft of sink	0	± 0	24	± 35
32	Bench top forward of sink	0	± 0	4	± 56
33	Inside clean air bench	0	± 0	0	± 0
34	Intermediate bucket blank	3	± 56	0	± 0
<u>UNOLS Shared Use Van 2409.01 (Figure 2)</u>					
35	Sink area	8	± 20	23	± 33
36	Bench top next to LSC	**10539	± 252	*387	± 24
37	Inside fume hood	241	± 45	*221	± 39
38	Top of LSC	48	± 37	35	± 31
39	Deck between LSC and hood	388	± 58	*53	± 25
40	Deck at entrance	125	± 44	32	± 27
41	Forward bench top	271	± 54	25	± 21
42	Inside Danby under sink, before cleaning	*972	± 76	*478	± 45
43	Inside Danby under sink, after cleaning	108	± 40	*86	± 34
44	Final bucket blank	0	± 0	5	± 40

### Comments

Please note that the error reported for each isotope is the two-standard deviation counting error.

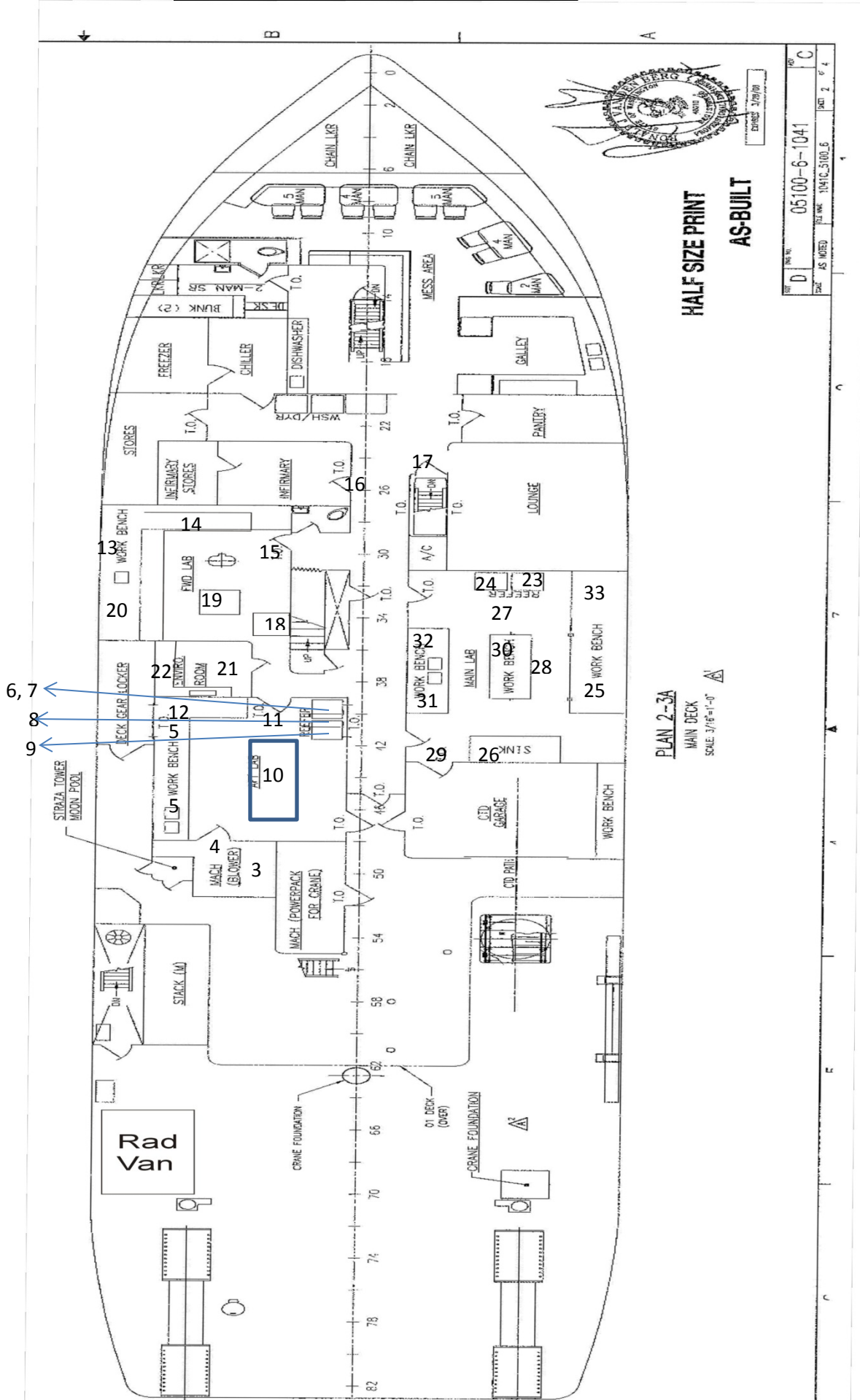
All areas tested in the ship were free from <sup>3</sup>H or <sup>14</sup>C contamination that requires cleaning.

Minor to moderate <sup>3</sup>H and minor <sup>14</sup>C contamination found in the van. The bench top next to the LSC needs to be cleaned before any further use.

Cleaning of deck is recommended to prevent tracking contamination out of van.

# R/V Atlantic Explorer Main Deck

SWAB #653  
 Figure 1  
 25 October 2012



HALF SIZE PRINT  
 AS-BUILT

PLAN 2-3A  
 MAIN DECK  
 SCALE 3/16"=1'-0"

NO.	C
REV.	D
DATE	05100-6-1041
BY	AS BUILT
CHKD.	1041G.3100.6
SHEET	2 OF 4

UNOLS Shared Use Van 2409.01

Figure 2  
SWAB 653  
25 October 2012

