

UNIVERSITY OF MIAMI  
ROSENSTIEL  
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Tritium Laboratory  
19 September 2013

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SWAB REPORT # 699

SWAB DATE: 13 September 2013

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

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Distribution:  
SWAB Committee  
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## 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 # 699

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

DATE: 13 September 2013  
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	0	± 0	32	± 38
	<u>Aft/Wet Lab (Figure 1)</u>				
3	Inside fume hood	0	± 0	34	± 37
4	Deck at entrance to hood room	4	± 32	5	± 32
5	Benchtop forward of sink	0	± 0	23	± 38
6	Inside Roper freezer top	0	± 0	29	± 36
7	Inside Roper fridge bottom	0	± 0	28	± 36
8	Inside GE freezer	0	± 0	17	± 37
9	Inside small black GE	0	± 0	12	± 38
10	Center benchtop	0	± 0	49	± 39
11	Deck at forward entrance	0	± 0	42	± 36
12	Forward benchtop	0	± 0	27	± 37
	<u>Forward Lab (Figure 1)</u>				
13	Benchtop forward of sink	0	± 0	46	± 37
14	Forward benchtop	0	± 0	21	± 40
15	Deck at starboard entrance	0	± 0	16	± 41
16	Deck at infirmary entrance	0	± 0	28	± 39
17	Deck at top of stairs	0	± 0	19	± 37
18	Inside VWR freezer	0	± 0	14	± 39
19	Center benchtop	0	± 0	0	± 0
20	Benchtop aft of sink	0	± 0	36	± 37
21	Benchtop inside Enviro Room	0	± 0	26	± 37
22	Deck in Enviro Room	6	± 20	21	± 34
	<u>Main Lab (Figure 1)</u>				
23	Starboard forward freezer	7	± 29	10	± 32
24	Port forward freezer	0	± 0	19	± 35
25	Starboard benchtop	0	± 0	7	± 48
26	Deck in front of port benchtop	0	± 0	5	± 51
27	Deck in front of freezers	0	± 0	24	± 36
28	Deck in front of stbd. benchtop	0	± 0	7	± 34
29	Deck inside aft entrance	0	± 0	10	± 39

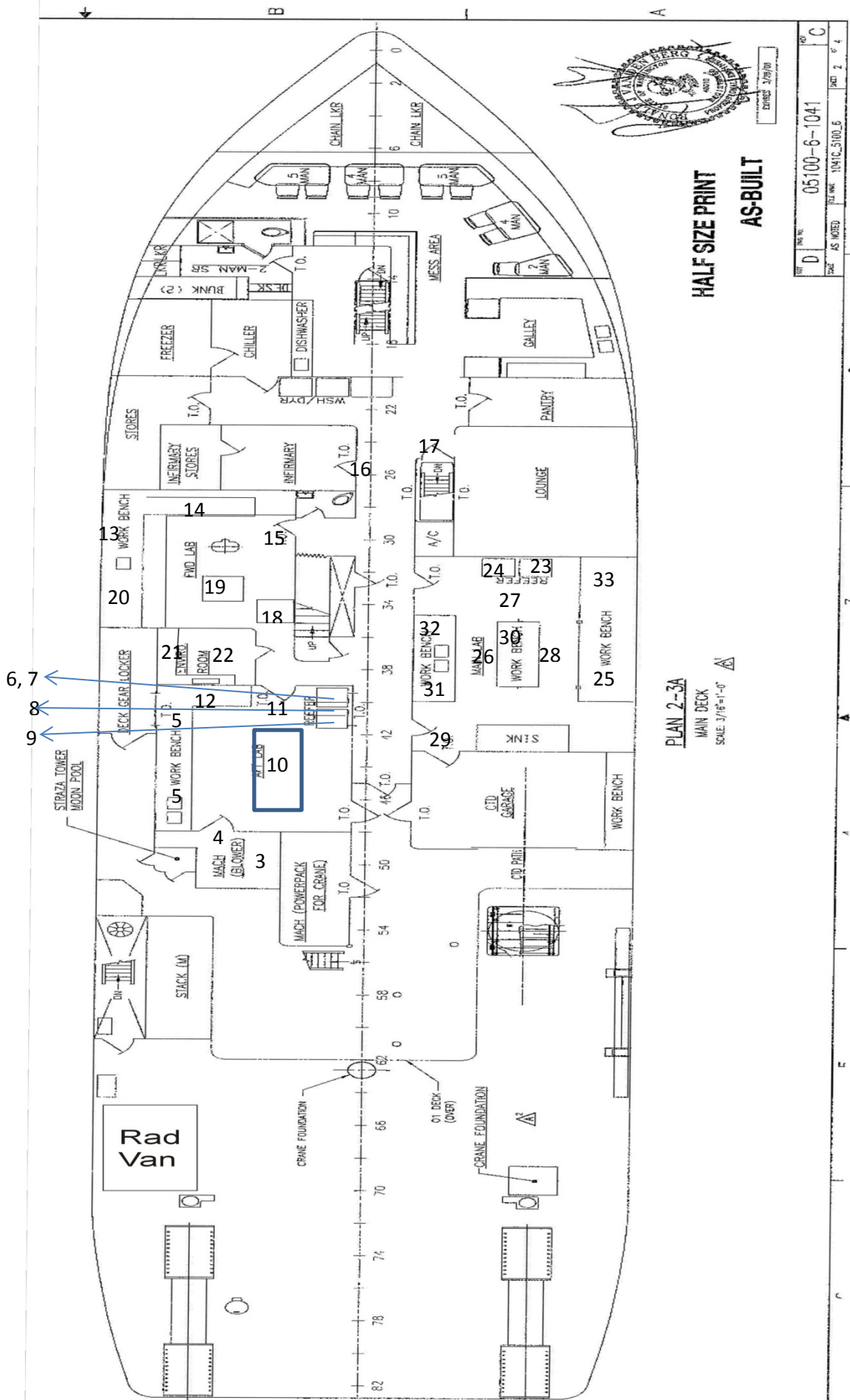
Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
30	Center benchtop	0	± 0	44	± 36
31	Benchtop aft of sink	0	± 0	17	± 37
32	Sink area	0	± 0	17	± 37
33	Inside clean air bench	0	± 0	3	± 78
34	Intermediate bucket blank	0	± 0	14	± 42
	<u>UNOLS Share Use Van 2409.01 (Figure 2)</u>				
35	Sink area	9	± 14	*51	± 35
36	Benchtop next to LSC	108	± 50	33	± 30
37	Inside fume hood	128	± 53	36	± 29
38	Top of LSC	210	± 59	*50	± 29
39	Deck between LSC and hood	375	± 69	*95	± 31
40	Deck at entrance	*873	± 100	*180	± 34
41	Inside Danby under sink	*7,650	± 213	*5,738	± 127
42	Forward benchtop	74	± 18	*433	± 48
43	Final bucket blank	0	± 0	22	± 36

### 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 isotope contamination that requires cleaning. Minor <sup>14</sup>C and <sup>3</sup>H contamination was detected in the radioisotope van. No action is required but it is recommended the van be cleaned to help prevent tracking radioisotopes into the ship.

Figure 1  
 SWAB #699  
 13 September 2013



HALF SIZE PRINT  
 AS-BUILT

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

NO.	REV.	DATE	BY	CHKD.
1	D	05100-6-1041		C
DATE AS BUILT		10/12/00		
DATE		10/12/00		

SWAB #699

Figure 2

13 September 2013

