

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

29 August 2016

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SWAB REPORT # 829

SWAB DATE: 23 August 2016

R/V Atlantic Explorer

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Distribution:
SWAB Committee
Ronald H. Harelstad
Rod Johnson
Justin Smith

COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for ^3H and ^{14}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 dpm/m^2 . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m^2 . An error larger than the activity indicates that the activity is not significantly different from zero.

Criteria for SWAB Results

Category	^3H (dpm/m^2)	^{14}C (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}C and ^{35}S have peak energies of 156 and 167 KeV, respectively; thus ^{35}S will be registered as ^{14}C by our counting techniques. Categories A, B and C are not a health hazard.

Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

^3H : 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}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 ^3H .

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 # 829

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

DATE: 23 August 2016
TECHNICIAN: Charlene Grall

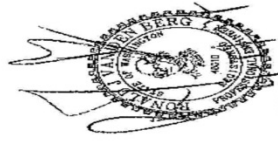
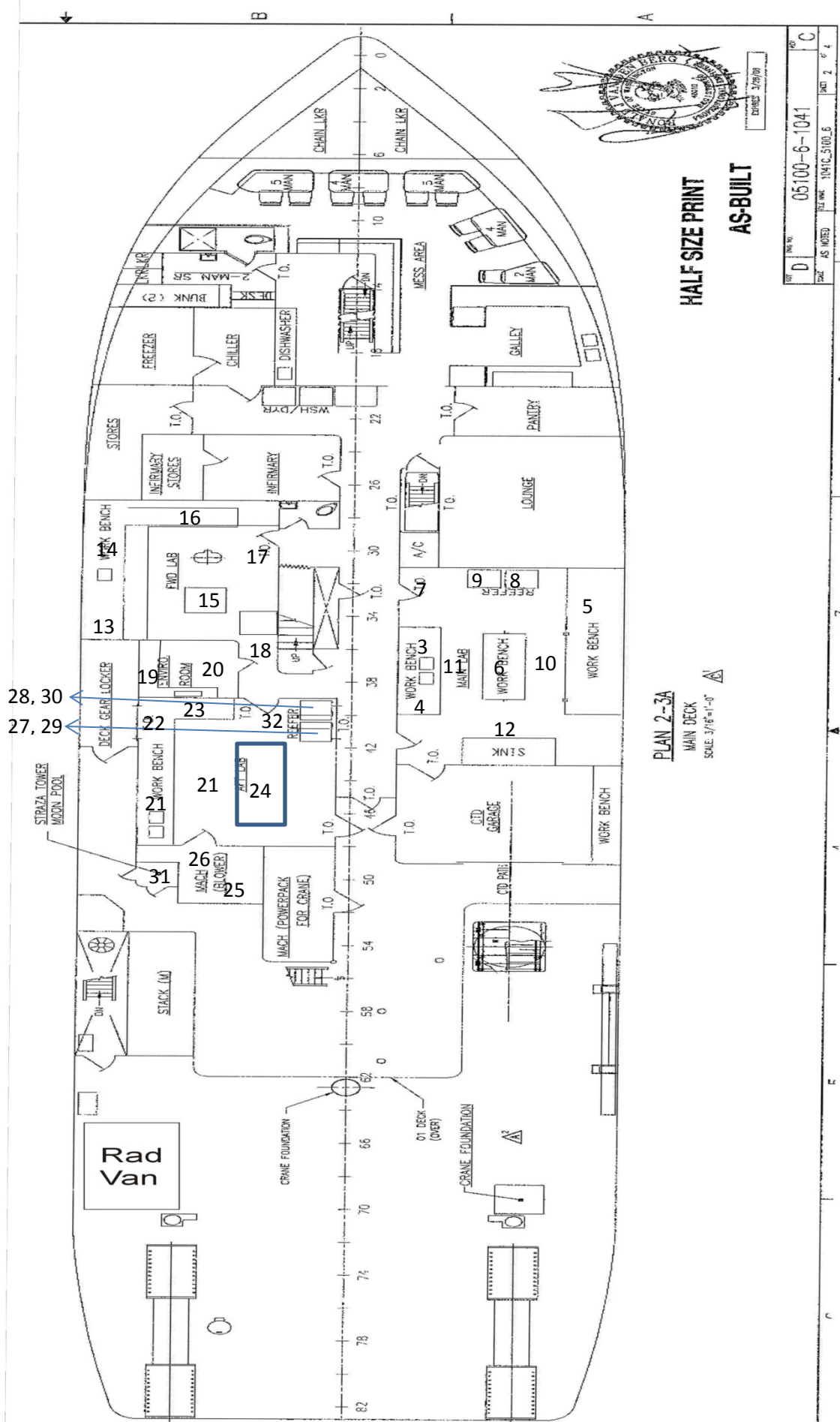
Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	11	± 205	-19	± 75
	<u>Main Lab (Figure 1)</u>				
3	Port sink area	8	± 58	-4	± 14
4	Benchtop aft of port sink	-8	± 55	-9	± 36
5	Inside clean bench area	4	± 26	-16	± 63
6	Center benchtop	24	± 60	-10	± 39
7	Deck inside forward entrance	15	± 143	-23	± 89
8	Inside starboard freezer	4	± 28	-34	± 131
9	Inside port freezer	-2	± 12	-31	± 120
10	Deck in front of Starboard benchtop	-20	± 47	11	± 42
11	Deck between sink and forward benchtop	32	± 74	-23	± 91
12	Deck in front of aft bulkhead	10	± 104	-12	± 45
	<u>Forward Lab (Figure 1)</u>				
13	Port benchtop aft of sink	27	± 70	-17	± 67
14	Port sink area	39	± 78	-33	± 126
15	Center benchtop	25	± 38	-14	± 53
16	Forward benchtop	29	± 49	1	± 14
17	Deck at starboard entrance	6	± 40	-29	± 113
18	Deck at aft entrance	43	± 79	-37	± 145
19	Benchtop inside Enviro Room	14	± 41	4	± 32
20	Deck in Enviro Room	4	± 26	-20	± 79
	<u>Aft Lab (Figure 1)</u>				
21	Port sink area	-14	± 32	-8	± 30
22	Port benchtop forward of sink	13	± 30	-41	± 158
23	Forward benchtop	-1	± 5	-26	± 99
24	Center benchtop	10	± 67	-7	± 27
25	Inside fume hood	-3	± 19	-3	± 10
26	Deck below fume hood	27	± 108	-30	± 117
27	Inside aft Cospolich refrigerator	4	± 29	-9	± 35
28	Inside forward Cospolich refrigerator	-13	± 30	-8	± 31
29	Inside aft Cospolich freezer	4	± 81	-4	± 14

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
30	Inside forward Cospolich freezer	-9	± 62	-20	± 76
31	Deck inside aft entrance	7	± 47	-18	± 70
32	Deck in front of Cospolich freezers	19	± 65	-12	± 45
<u>Rad Van #2409-01 (Figure 2)</u>					
33	Sink area	280	± 59	*67	± 33
34	Top of LSC	*4392	± 184	*319	± 32
35	Inside fume hood	270	± 63	14	± 19
36	Deck between LSC and hood	**20814	± 416	*711	± 32
37	Benchtop across from sink	*5008	± 204	*395	± 35
38	Inside Danby refrigerator under sink	**24665	± 390	*8232	± 146
39	Deck at entrance	*3856	± 174	*493	± 41
40	Final bucket blank	-30	± 47	-31	± 206

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When 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. All areas tested on the ship were free from any isotope contamination that requires cleaning. Minor ^3H and minor to moderate ^{14}C contamination found in the rad van. The deck between the LSC and fume hood and the refrigerator should be cleaned before any further use.

Figure 1
 SWAB #829
 23 August 2016



HALF SIZE PRINT
 AS-BUILT

NO.	C
REV.	D
DATE	05100-6-1041
BY	AS NOTED
DATE	1941C, 5100.6
NO.	2 of 4

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

SWAB #829

Figure 2

23 August 2016

UNOLS Shared Use Van 2409-01

