

UNIVERSITY OF MIAMI

ROSENSTIEL
SCHOOL of MARINE &
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Tritium Laboratory

19 September 2018

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SWAB REPORT # 914

SWAB DATE: 7 September 2018

R/V Atlantic Explorer

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Distribution:
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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 institution promptly by phone or email.

REPORT FOR SWAB # 914

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

DATE: 7 September 2018
TECHNICIAN: Yudy Mendoza

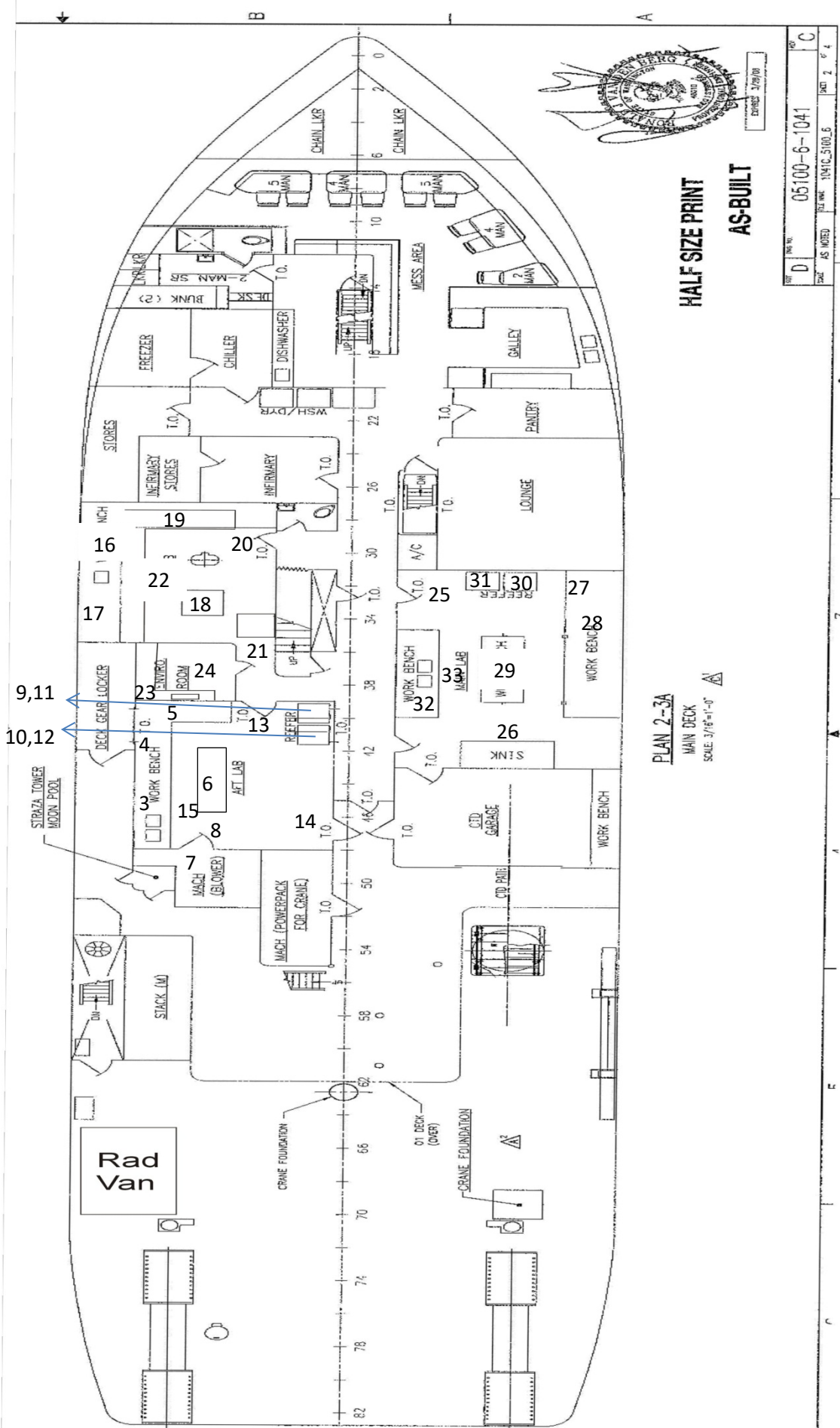
Sample # Sample Identification	³ H dpm/m ²			¹⁴ C dpm/m ²		
	activity	±	error	activity	±	error
1 1st Vial Bkgnd	0	±	0	0	±	0
2 Initial bucket blank	-32	±	9	11	±	43
<u>Aft Lab (Figure 1)</u>						
3 Port sink area	-18	±	15	-1	±	10
4 Benchttop forward of sink	-69	±	23	7	±	75
5 Forward benchttop	-12	±	43	-11	±	3
6 Center benchttop	3	±	25	-23	±	19
7 Inside fume hood	-21	±	15	5	±	48
8 Deck in front of fume hood	-30	±	18	33	±	39
9 Inside forward Cospolich refrigerator	-32	±	22	17	±	40
10 Inside aft Cospolich refrigerator	-32	±	43	1	±	5
11 Inside forward Cospolich freezer	-50	±	30	15	±	44
12 Inside aft Cospolich freezer	-43	±	22	-2	±	15
13 Deck inside forward entrance	-23	±	18	2	±	98
14 Deck inside aft entrance	-45	±	42	-3	±	8
15 Deck in front of pork sink	-42	±	16	-26	±	17
<u>Forward Lab (Figure 1)</u>						
16 Port sink area	-47	±	30	4	±	109
17 Benchttop aft of sink	-34	±	18	-4	±	12
18 Center benchttop	-20	±	21	-6	±	23
19 Forward benchttop	-22	±	13	-8	±	30
20 Deck at forward entrance	-57	±	14	0	±	0
21 Deck at aft entrance	-20	±	16	-3	±	5
22 Deck in front of port sink	-25	±	20	-12	±	14
23 Benchttop inside Enviro Room	-18	±	22	0	±	0
24 Deck in Enviro Room	5	±	8	-12	±	16

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Main Lab (Figure 1)</u>					
25	Deck inside forward entrance	-9	± 16	7	± 38
26	Deck in front of CTD bottle rack	0	± 32	3	± 36
27	Forward starboard benchtop	-14	± 21	12	± 39
28	Inside fume hood	-33	± 12	-1	± 30
29	Center benchtop	-3	± 15	-20	± 18
30	Inside forward starboard freezer	-29	± 21	19	± 40
31	Inside forward port freezer	-48	± 32	23	± 41
32	Benchtop aft of sink	-27	± 7	16	± 40
33	Deck in front of port sink	3	± 24	-24	± 19
34	Deck outside Main Lab aft entrance	-41	± 16	6	± 59
35	Intermediate bucket blank	-15	± 17	-24	± 33
<u>Radioisotope Van 2409-01 (Figure 2)</u>					
36	Sink area	128	± 51	38	± 32
37	Benchtop across from sink	*2767	± 153	*95	± 17
38	Inside fume hood	67	± 45	34	± 34
39	Top of LSC	*1236	± 107	*52	± 18
40	Inside Danby refrigerator	164	± 57	26	± 28
41	Deck between LSC and fume hood	*2477	± 140	*68	± 14
42	Deck at entrance	*5531	± 204	*124	± 15
43	Deck outside van entrance on 01 Deck	7	± 22	21	± 36
44	Top of stairs on 01 Deck	-38	± 15	2	± 31
45	Final bucket blank	-46	± 40	3	± 135

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. Minor ¹⁴C and minor ³H contamination was found in the Rad Van. No action is necessary, but cleaning the deck of the rad van would help prevent tracking contamination out of the van. All areas tested on the ship were free from isotope contamination that requires cleaning.

Figure 1
 SWAB #914
 7 September 2018



UNOLS Shared Use Van 2409-01

SWAB #914

Figure 2

7 September 2018

