

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
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Tritium Laboratory
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SWAB REPORT # 739

SWAB DATE: 8 September 2014

R/V Atlantic Explorer and UNOLS Van # 2409.01

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Distribution:
SWAB Committee
James Caison

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 # 739

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

DATE: 15 September 2014
TECHNICIAN: Jim Happell

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	19	± 37	6	± 29
	<u>Aft Wet Lab (Figure 1)</u>				
3	Inside fume hood	8	± 18	23	± 34
4	Deck at entrance to hood room	72	± 42	20	± 29
5	Benchtop forward of sink	12	± 40	1	± 18
6	Inside Roper freezer top	8	± 34	3	± 30
7	Inside Roper fridge bottom	0	± 0	33	± 35
8	Inside GE freezer	43	± 58	0	± 0
9	Inside small black GE	3	± 21	6	± 33
10	Center benchtop	30	± 38	11	± 29
11	Deck at forward entrance	19	± 29	21	± 33
12	Forward benchtop	49	± 44	4	± 20
13	Deck at aft entrance	55	± 46	0	± 0
	<u>Forward Lab (Figure 1)</u>				
14	Benchtop forward of sink	99	± 46	2	± 8
15	Forward benchtop	65	± 41	18	± 29
16	Deck at starboard entrance	62	± 47	0	± 0
17	Deck at infirmary entrance	48	± 45	0	± 0
18	Deck at top of stairs	36	± 59	0	± 0
19	Inside VWR freezer	28	± 50	0	± 0
20	Center benchtop	52	± 46	0	± 0
21	Benchtop aft of sink	39	± 50	0	± 0
22	Benchtop inside Enviro Room	97	± 47	4	± 15
23	Deck in Enviro Room	54	± 49	0	± 0
	<u>Main Lab (Figure 1)</u>				
24	Starboard forward freezer	23	± 42	1	± 16
25	Port forward freezer	21	± 27	28	± 33
26	Starboard benchtop	7	± 26	10	± 33
27	Deck in front of port benchtop	15	± 51	0	± 0
28	Deck in front of freezers	79	± 50	0	± 0
29	Deck in front of stbd. benchtop	28	± 55	0	± 0

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
30	Deck inside aft entrance	49	± 44	4	± 20
31	Center benchtop	32	± 46	0	± 0
32	Inside clean air bench	36	± 40	8	± 27
33	Sink area	44	± 40	13	± 29
34	Benchtop aft of sink	27	± 51	0	± 0
35	Deck by forward entrance	31	± 28	41	± 34
<u>UNOLS Shared Use Van 2409.01 (Figure 2)</u>					
36	Sink area	137	± 53	3	± 11
37	Inside fume hood	*1327	± 79	*1940	± 80
38	Top of LSC	398	± 67	37	± 23
39	Benchtop next to LSC	229	± 58	10	± 15
40	Deck between LSC and hood	388	± 65	*60	± 27
41	Forward benchtop	13	± 26	21	± 33
42	Inside Danby under sink	*8848	± 256	*348	± 25
43	Deck at entrance	117	± 46	42	± 31
44	Deck outside van entrance	49	± 52	0	± 0
45	Final bucket blank	36	± 52	0	± 0

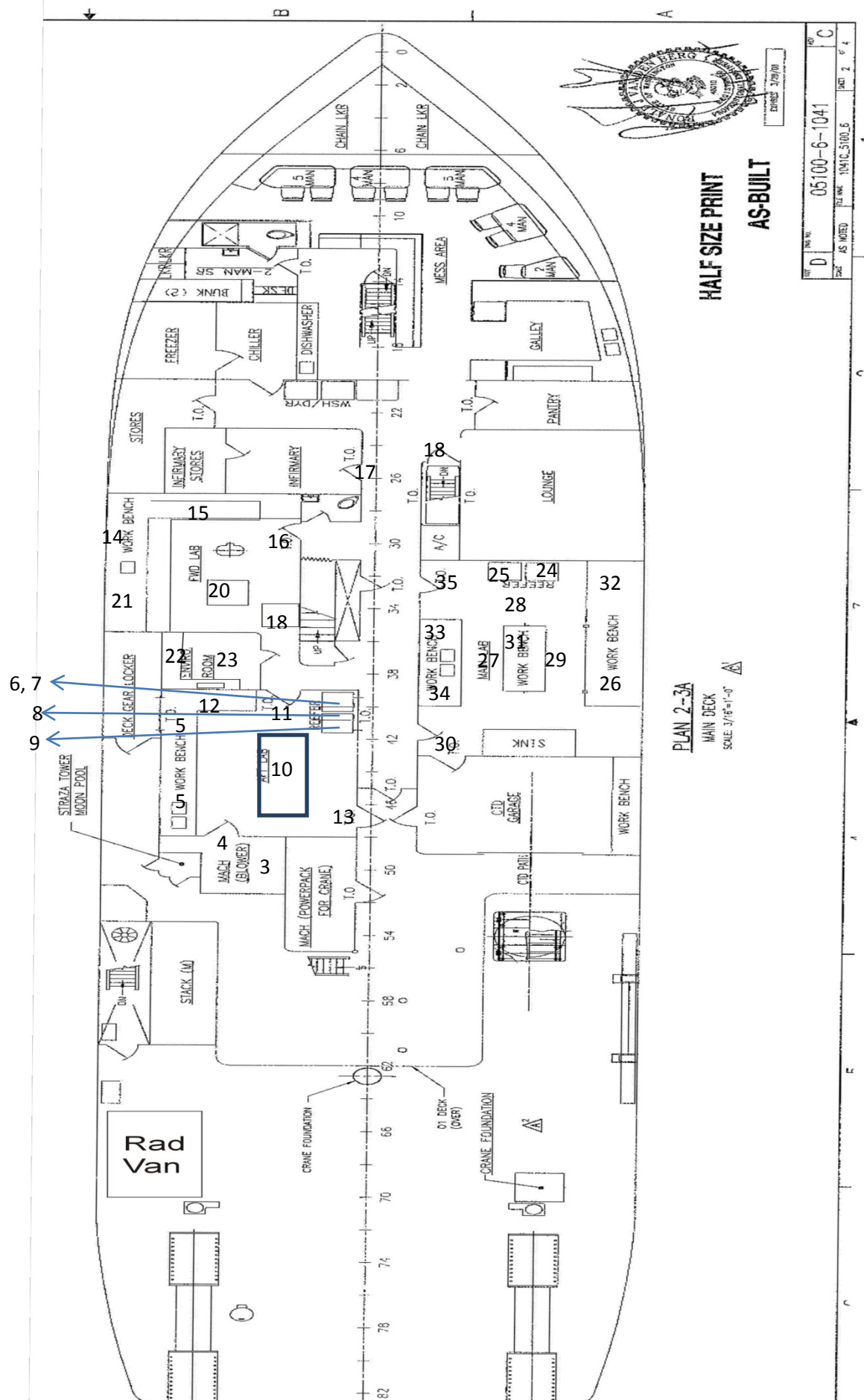
Comments

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 ³H and ¹⁴C contamination was detected in the radioisotope van. Cleaning is not needed.

Figure 1
 SWAB #739
 8 September 2014



HALF SIZE PRINT
 AS-BUILT

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

NO.	C
REV.	D
DATE	AS BUILT
BY	1041C.5100.6
CHECKED	2/2/00

6, 7
 8
 9

STRAZA TOWER
 MOON POOL

Rad Van

CRANE FOUNDATION

01 DECK (OVER)

CRANE FOUNDATION

PLAN 2-3A

MAIN DECK

SCALE: 3/16"=1'-0"

UNOLS Shared Use Van 2409.01

SWAB #739

Figure 2

8 September 2014

