

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
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Tritium Laboratory
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SWAB REPORT # 704

SWAB DATE: 21 November 2013

R/V Atlantic Explorer and UNOLS Van # 2409.01

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Distribution:
SWAB Committee
James Caison

COMMENTS TO SWAB REPORTS

23 November 2010

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 dpm/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 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 # 704

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

DATE: 21 November 2013
TECHNICIAN: Cecilia Roig

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	14	± 135	0	± 0
	<u>Aft Wet Lab (Figure 1)</u>				
3	Inside fume hood	12	± 0	0	± 0
4	Deck at entrance to hood room	18	± 413	0	± 0
5	Benchtop forward of sink	0	± 0	0	± 0
6	Inside Roper freezer top	22	± 60	0	± 0
7	Inside Roper fridge bottom	0	± 0	0	± 0
8	Inside GE freezer	0	± 0	6	± 89
9	Inside small black GE	0	± 0	0	± 0
10	Center benchtop	0	± 0	0	± 0
11	Deck at forward entrance	18	± 82	0	± 0
12	Forward benchtop	0	± 0	0	± 0
	<u>Forward Lab (Figure 1)</u>				
13	Benchtop forward of sink	9	± 0	0	± 0
14	Forward benchtop	0	± 0	0	± 0
15	Deck at starboard entrance	18	± 208	0	± 0
16	Deck at infirmary entrance	0	± 0	0	± 0
17	Deck at top of stairs	26	± 82	0	± 0
18	Inside VWR freezer	0	± 0	0	± 0
19	Center benchtop	0	± 0	0	± 0
20	Benchtop aft of sink	0	± 0	0	± 0
21	Benchtop inside Enviro Room	9	± 0	0	± 0
22	Deck in Enviro Room	0	± 0	0	± 0
	<u>Main Lab (Figure 1)</u>				
23	Starboard forward freezer	0	± 0	0	± 0
24	Port forward freezer	0	± 0	0	± 0
25	Starboard benchtop	10	± 122	0	± 0
26	Deck in front of port benchtop	0	± 0	0	± 0
27	Deck in front of freezers	14	± 202	0	± 0
28	Deck in front of stbd. benchtop	0	± 0	0	± 0
29	Deck inside aft entrance	6	± 0	0	± 0

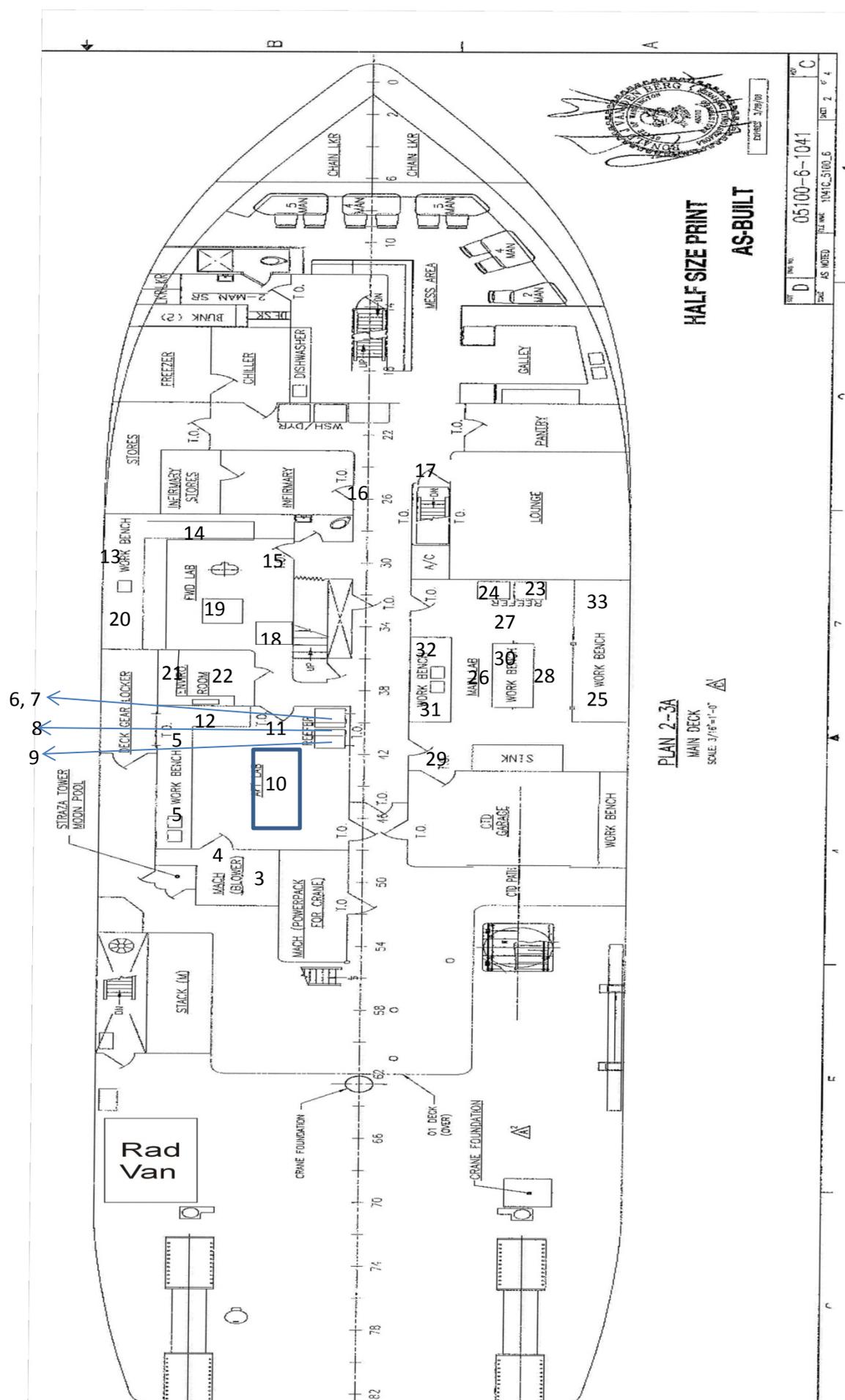
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
30	Center benchtop	4	± 0	0	± 0
31	Benchtop aft of sink	26	± 117	0	± 0
32	Sink area	0	± 0	0	± 0
33	Inside clean air bench	0	± 0	0	± 0
34	Intermediate bucket blank	22	± 97	0	± 0
	<u>UNOLS Share Use Van 2409.01 (Figure 2)</u>				
35	Sink area	*1,416	± 116	0	± -4
36	Benchtop next to LSC	*1,715	± 125	30	± 10
37	Inside fume hood	261	± 65	0	± -25
38	Top of LSC	*4,204	± 184	*69	± 11
39	Deck between LSC and hood	*2,048	± 134	*51	± 13
40	Deck at entrance	*1,394	± 113	16	± 7
41	Inside Danby under sink	**23,600	± 432	*1,821	± 60
42	Forward benchtop	65	± 53	1	± 8
43	Final bucket blank	7	± 0	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. Minor ¹⁴C and ³H contamination was detected in the radioisotope van. Moderate ³H contamination was detected in sample taken inside van's Danby fridge, cleaning required in this area. Cleaning of van deck is also recommended to help prevent tracking radioisotopes into the ship.

Figure 1
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HALF SIZE PRINT
 AS-BUILT

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

NO.	C
REV.	D
DATE	AS NOTED
TITLE	05100-6-1041
SCALE	3/16"=1'-0"
SHEET	2 OF 4

6, 7
 8
 9

STRAZA TOWER
 MOON POOL

Rad Van

10

CRANE FOUNDATION

01 DECK (OVER)

CRANE FOUNDATION

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

SWAB #704

Figure 2

21 November 2013

