

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

1 November 2021

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SWAB REPORT # 1017

SWAB DATE: 26 October 2021

R/V Atlantic Explorer and Van #625.5.02

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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 insitution promptly by phone or email.

REPORT FOR SWAB # 1017

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

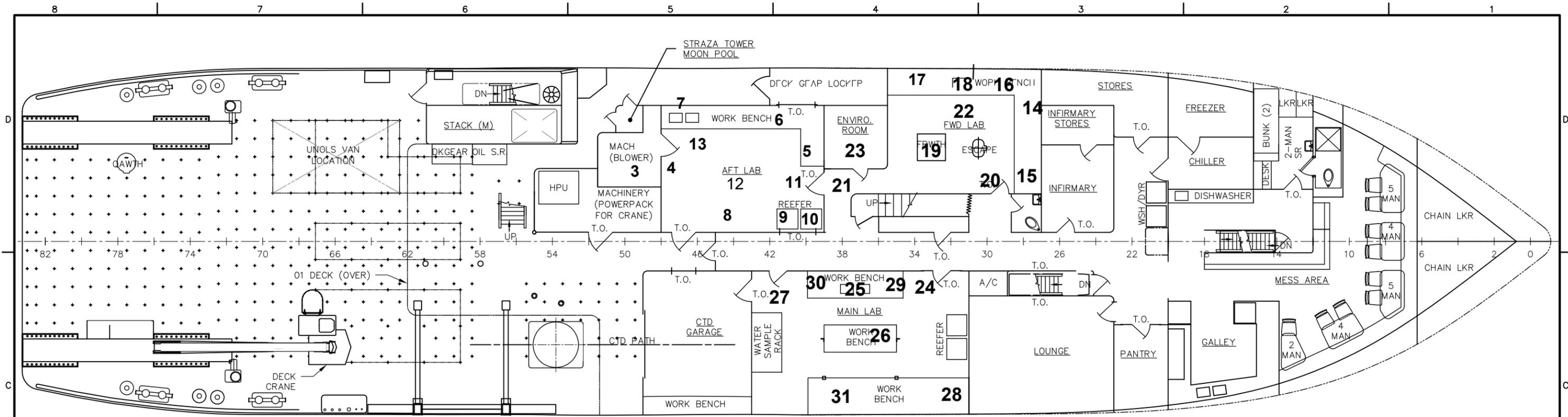
DATE: 26 October 2021
TECHNICIAN: Charlene Grall

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	13	± 109	14	± 38
	<u>Aft Lab (Figure 1)</u>				
3	Inside fume hood	-19	± 289	26	± 40
4	Deck in front of fume hood	-12	± 185	-17	± 2
5	Forward benchtop	-6	± 86	3	± 41
6	Benchtop forward of sink	-1	± 11	-25	± 3
7	Port sink area	20	± 273	-40	± 4
8	Deck below -80 °C freezer #2	-1	± 42	7	± 38
9	Inside DEAD Cospolich refrigerator	-14	± 211	-6	± 1
10	Inside LIVE Cospolich refrigerator	-11	± 169	-34	± 4
11	Deck at forward entrance	13	± 125	-20	± 2
12	Center benchtop	-3	± 47	-20	± 2
13	Deck below sink area	-17	± 256	-16	± 93
	<u>Forward Lab (Figure 1)</u>				
14	Starboard side of forward benchtop	-7	± 101	-3	± 19
15	Port side of forward benchtop	11	± 2	-26	± 148
16	Port benchtop forward of sink	-15	± 236	-7	± 42
17	Port benchtop aft of sink	9	± 76	-9	± 49
18	Port sink area	-24	± 363	-9	± 51
19	Center benchtop	-25	± 380	-8	± 47
20	Deck inside starboard entrance	-2	± 31	-11	± 64
21	Deck inside aft entrance	-4	± 65	-2	± 10
22	Deck in front of sink	-4	± 57	-31	± 173
23	Deck inside Enviro Room	-1	± 15	-22	± 126
	<u>Main Lab (Figure 1)</u>				
24	Deck inside forward entrance	-12	± 188	-8	± 47
25	Port sink area	-21	± 322	-20	± 111
26	Center benchtop opposite of sink	4	± 62	-3	± 15
27	Deck inside aft entrances	35	± 76	-31	± 176
28	Benchtop adjacent to laminar flow hood	13	± 155	-22	± 124
29	Port benchtop forward of sink	11	± 210	-20	± 113

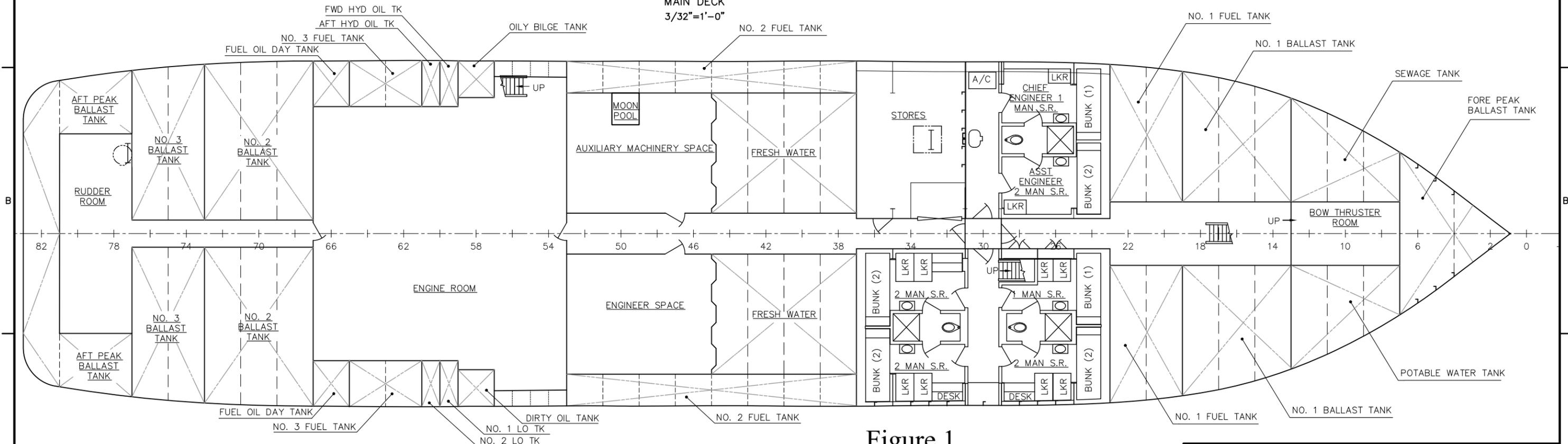
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
30	Port benchtop aft of sink	10	± 116	-15	± 83
31	Starboard Benchtop	0	± 8	-19	± 105
32	Intermediate bucket blank	-34	± 526	-18	± 104
<u>Radiation Van #625.5.02 (Figure 2)</u>					
33	Sink area	26	± 37	17	± 35
34	Benchtop adjacent to sink	156	± 57	-8	± 775
35	Benchtop adjacent to fume hood	21	± 52	-6	± 12
36	Inside fume hood and adjacent benchtop	69	± 52	-8	± 16
37	Top of LSC	57	± 67	-31	± 65
38	Inside freezer	-3	± 41	-5	± 11
39	Inside refrigerator	506*	± 72	46	± 25
40	Benchtop adjacent to LSC	8	± 120	-26	± 14
41	Deck in front of and below fume hood	86	± 50	6	± 20
42	Deck between LSC and freezer	113	± 55	-6	± 3
43	Deck inside entrance	108	± 50	18	± 28
44	Final bucket blank	-10	± 152	-26	± 14

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 isotope contamination that requires cleaning. Minor ³H contamination was detected in the radioisotope van but no action is necessary.



PLAN 2-5C
MAIN DECK
 3/32"=1'-0"



PLAN 2-5A
HOLD LEVEL
 3/32"=1'-0"

Figure 1
SWAB #1017
26 October 2021

BIOS ST. GEORGE'S, BERMUDA R/V ATLANTIC EXPLORER GENERAL ARRANGEMENT HOLD LEVEL AND MAIN DECK PLANS			
THE GLOSTEN ASSOCIATES <i>Consulting Engineers Serving the Marine Community</i>		1201 Western Avenue, Suite 200 Seattle, Washington 98101-2953 TEL 206.624.7850 WEB www.glosten.com	
Drawn TGA	Checked CSC	Approved DHK	Date 05/30/2014
Scale AS NOTED	Drawing Number 12146-070-01	Sheet 2 of 4	Revision A

UNOLS Rad Van #625.5.02

Figure 2
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