

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
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Tritium Laboratory

23 July 2021

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SWAB REPORT # 1006

SWAB DATE: 18 July 2021

R/V Atlantic Explorer and Van #625.5.02

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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 # 1006

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

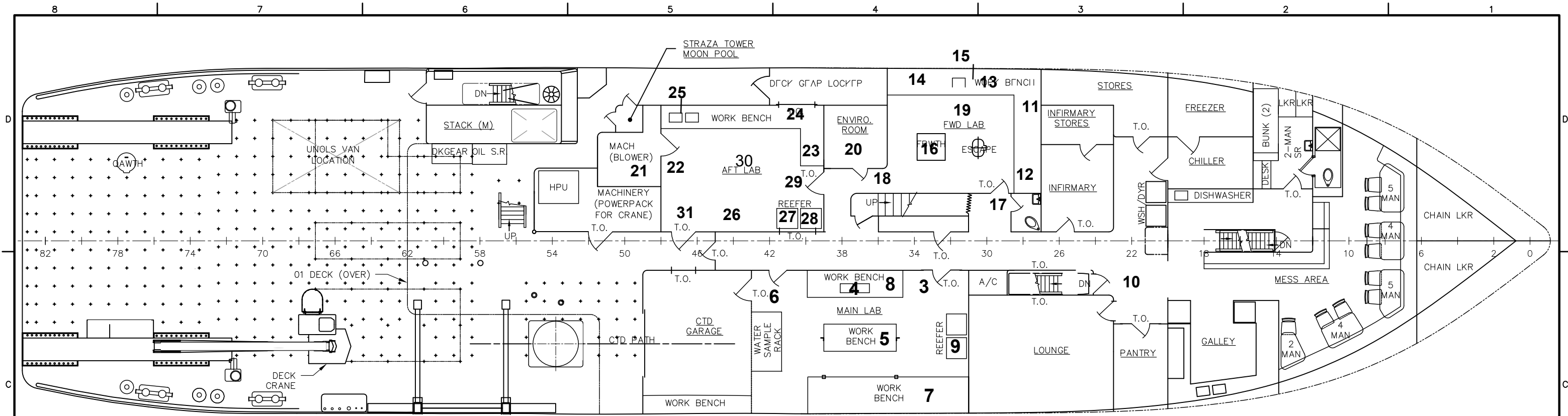
DATE: 18 July 2021
 TECHNICIAN: Charlene Grall

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	-11	± 211	14	± 38
	<u>Main Lab (Figure 1)</u>				
3	Deck inside forward entrance	-14	± 279	25	± 38
4	Port sink area	-16	± 317	15	± 39
5	Center benchtop opposite of sink	2	± 15	-13	± 35
6	Deck inside aft entrances	-1	± 7	11	± 37
7	Inside laminar flow hood (clean bench)	-30	± 87	-4	± 37
8	Port benchtop forward of sink	-58	± 48	19	± 44
9	Inside starboard freezer	-8	± 100	4	± 41
10	Deck outside Lounge	0	± 1	14	± 38
	<u>Forward Lab (Figure 1)</u>				
11	Starboard side of forward benchtop	62	± 58	-15	± 39
12	Forward benchtop, port section	245	± 62	26	± 25
13	Port benchtop forward of sink	63	± 45	26	± 33
14	Port benchtop aft of sink	10	± 63	-5	± 47
15	Port sink area	27	± 38	18	± 34
16	Center benchtop	-17	± 336	1	± 98
17	Deck inside starboard entrance	1	± 8	-8	± 27
18	Deck inside aft entrance	9	± 78	-8	± 26
19	Deck in front of sink	105	± 58	-15	± 41
20	Deck inside Enviro Room	-11	± 217	-5	± 51

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
<u>Aft Lab (Figure 1)</u>					
21	Inside fume hood	6	± 125	-9	± 29
22	Deck in front of fume hood	6	± 92	-6	± 21
23	Forward benchtop	12	± 410	-23	± 35
24	Benchtop forward of sink	-12	± 230	31	± 38
25	Port sink area	-64	± 46	5	± 125
26	Inside -80 °C freezer #2	-17	± 344	0	± 8
27	Inside DEAD Cospolich refrigerator	30	± 86	-29	± 45
28	Inside LIVE Cospolich refrigerator	1	± 5	-12	± 33
29	Deck below Cospolich refrigerator/freezers	-28	± 81	25	± 40
30	Center benchtop	11	± 95	-12	± 32
31	Deck inside starboard entrance	189	± 64	-24	± 37
32	Intermediate bucket blank	6	± 47	0	± 19
<u>Radiation Van #625.5.02 (Figure 2)</u>					
33	Sink area	-7	± 83	-1	± 5
34	Benchtop adjacent to sink	511*	± 77	19	± 15
35	Benchtop adjacent to fume hood	98	± 54	10	± 25
36	Inside fume hood and adjacent benchtop	59	± 49	10	± 28
37	Top of LSC	179	± 59	-1	± 6
38	Inside freezer	-5	± 61	20	± 38
39	Inside refrigerator	1287*	± 107	160*	± 31
40	Benchtop adjacent to LSC	138	± 56	11	± 22
41	Deck in front of and below fume hood	67	± 50	10	± 27
42	Deck between LSC and freezer	39	± 40	46	± 37
43	Deck in middle of van in front of sink and refrigerator	185	± 65	47	± 32
44	Benchtop across from sink	36	± 50	9	± 30
45	Deck inside entrance	148	± 58	27	± 29
46	Deck outside Rad Van door	-48	± 50	34	± 42
47	Final bucket blank	13	± 54	-3	± 26

Comments

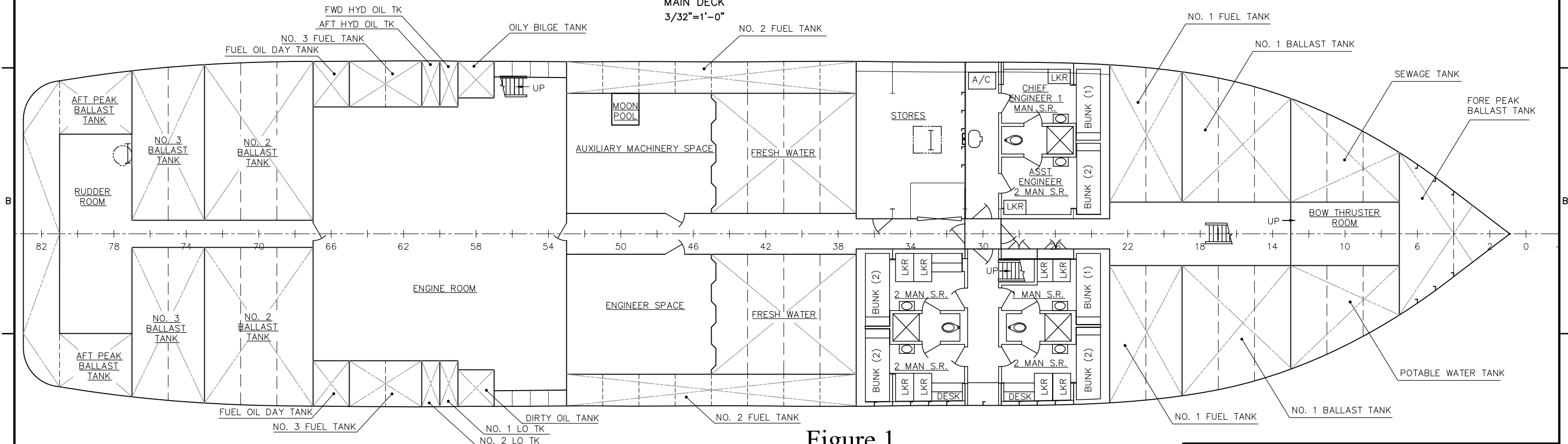
Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded 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, although three samples (#12, 19, 31) had ^3H that was above background. Minor ^3H and ^{14}C contamination was detected in the rad 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 #1006
18 July 2021

BIOS ST. GEORGE'S, BERMUDA			
R/V ATLANTIC EXPLORER GENERAL ARRANGEMENT HOLD LEVEL AND MAIN DECK PLANS			
THE GLOSTJEN ASSOCIATES <i>Consulting Engineers Serving the Marine Community</i>		1201 Western Avenue, Suite 200 Seattle, Washington 98101-2953 TEL: 206.624.7850 WEB: www.glostjen.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
SWAB #1006
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