

UNIVERSITY OF MIAMI
ROSENSTIEL SCHOOL of
MARINE, ATMOSPHERIC
& EARTH SCIENCE



Tritium Laboratory

25 July 2022

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SWAB REPORT # 1036

SWAB DATE: 20 July 2022

RV Atlantic Explorer Van #625.5.02

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Distribution:
SWAB Committee
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COMMENTS TO SWAB REPORTS

15 December 2021

The LSC is now a Quantulus GCT 6220, with the SWAB counting assay having background cpm of 0.3 & 1.2 for ^3H & ^{14}C . This replaces an LSC with background cpm of 1.6 & 5.5 for ^3H & ^{14}C .

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. All activities significantly above background will be in **bold**.

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 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 # 1036

LOCATION: Ferry Reach, St. Georges, Bermuda
VESSEL: R/V Atlantic Explorer & Van #625.5.02

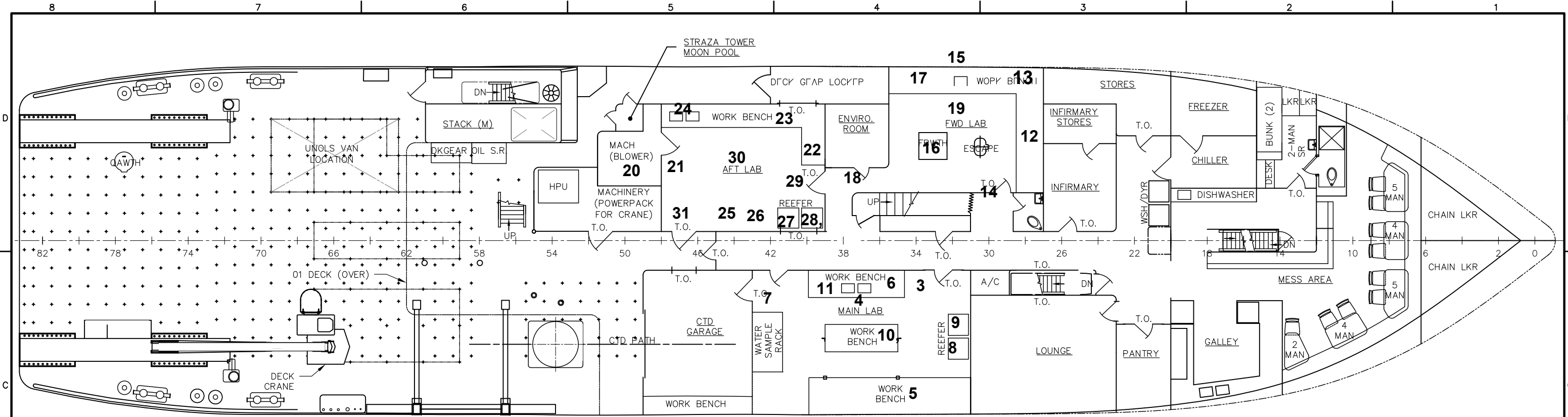
DATE: 20 July 2022
TECHNICIAN: Charlene Grall

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	27	± 28	-6	± 11
	<u>Main Lab (Figure 1)</u>				
3	Deck inside forward entrance	23	± 30	-10	± 20
4	Port sink area	-26	± 34	1	± 251
5	Benchtop inside laminar flow hood	-6	± 20	6	± 13
6	Port benchtop forward of sink	-1	± 4	-1	± 6
7	Deck inside aft entrances	-12	± 15	6	± 14
8	Inside freezer	5	± 17	3	± 11
9	Inside refrigerator	-2	± 6	0	± 1
10	Center benchtop	-27	± 36	11	± 14
11	Port benchtop aft of sink	-3	± 10	0	± 1
	<u>Forward Lab (Figure 1)</u>				
12	Forward Lab Forward benchtop	-7	± 24	5	± 13
13	Port benchtop forward of sink	10	± 21	-2	± 9
14	Deck inside starboard entrance	-11	± 14	5	± 14
15	Port sink area	-3	± 11	-2	± 9
16	Center benchtop	-14	± 17	-7	± 16
17	Port benchtop aft of sink	-8	± 26	-3	± 13
18	Deck outside Enviro Room	-16	± 19	4	± 15
19	Deck in front of sink	-13	± 16	1	± 28
	<u>Aft Lab (Figure 1)</u>				
20	Forward sink area	0	± 3	5	± 12
21	Inside fume hood	-22	± 30	-8	± 17
22	Inside Solo refrigerator	8	± 85	-13	± 27
23	Wooden port benchtop	-7	± 25	3	± 14
24	Deck between sink and fume hood	24	± 26	-3	± 14
25	Deck inside Starboard entrance	36	± 28	-8	± 16
26	Deck below -80 freezers	-9	± 24	-1	± 5
27	Inside DEAD Cospolich refrigerator	4	± 15	3	± 11
28	Inside LIVE Cospolich refrigerator	51	± 29	2	± 5
29	Deck inside forward entrance	9	± 23	-1	± 5
30	Center benchtop	-11	± 14	2	± 17
31	Deck inside aft entrance	19	± 31	-9	± 18

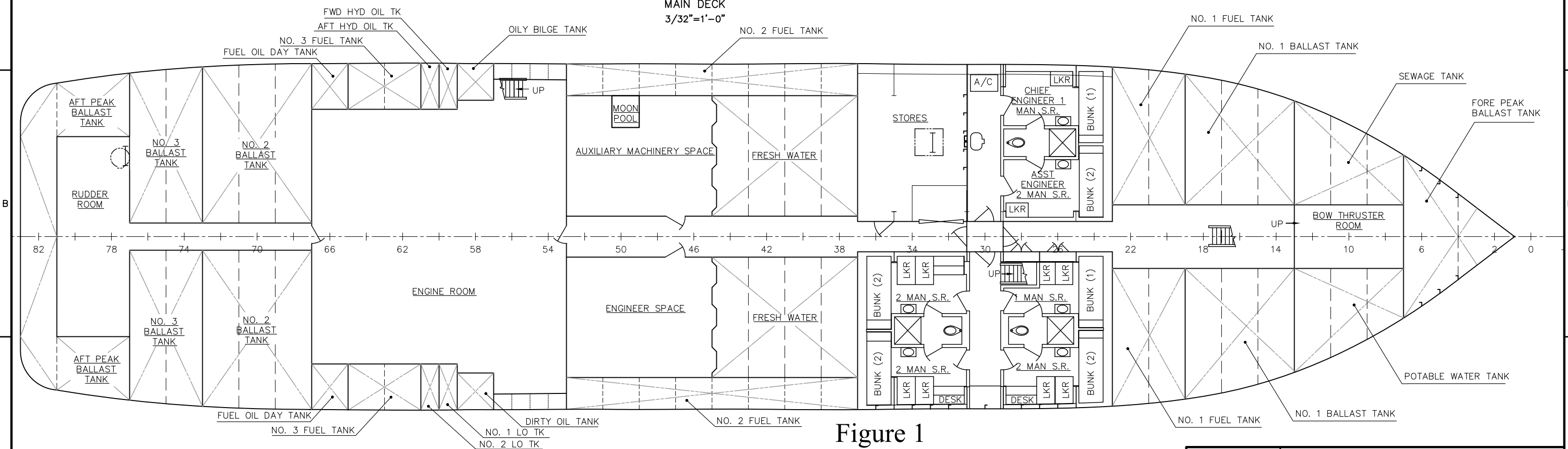
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
	<u>Radioisotope Van #625.5.02</u>				
32	Deck outside Radioisotope Van	18	± 21	11	± 12
33	Sink area	174	± 42	-7	± 62
34	Benchtop adjacent to sink	*870	± 83	22	± 5
35	Benchtop adjacent to fume hood	*522	± 64	9	± 4
36	Inside fume hood and adjacent benchtop	154	± 38	-2	± 5
37	Top of the LSC	247	± 45	34	± 11
38	Inside freezer	43	± 27	0	± 1
39	Inside refrigerator	*2197	± 126	*243	± 19
40	Benchtop adjacent to fume hood	12	± 14	16	± 13
41	Deck in front of fume hood	105	± 33	17	± 10
42	Benchtop across from sink	106	± 33	6	± 7
43	Deck between refrigerator & freezer	45	± 23	21	± 12
44	Deck inside entrance	177	± 41	23	± 10
45	Final bucket blank	26	± 31	-13	± 27

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. Reports may now contain values less than zero. 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. Please note that we are now using a Quantulus 6220 LSC which counts very near natural background. While the cleanup standards have not changed all values above background will now be in bold. All areas tested inside the ship had no contamination that requires cleaning, although the ³H activity in the Cosplich LIVE refrigerator in the Aft Lab was above background. The deck inside the starboard entrance of the Aft Lab also showed ³H activity above background. Minor ³H and ¹⁴C contamination was found in the Rad Van. 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 #1036
20 July 2022

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

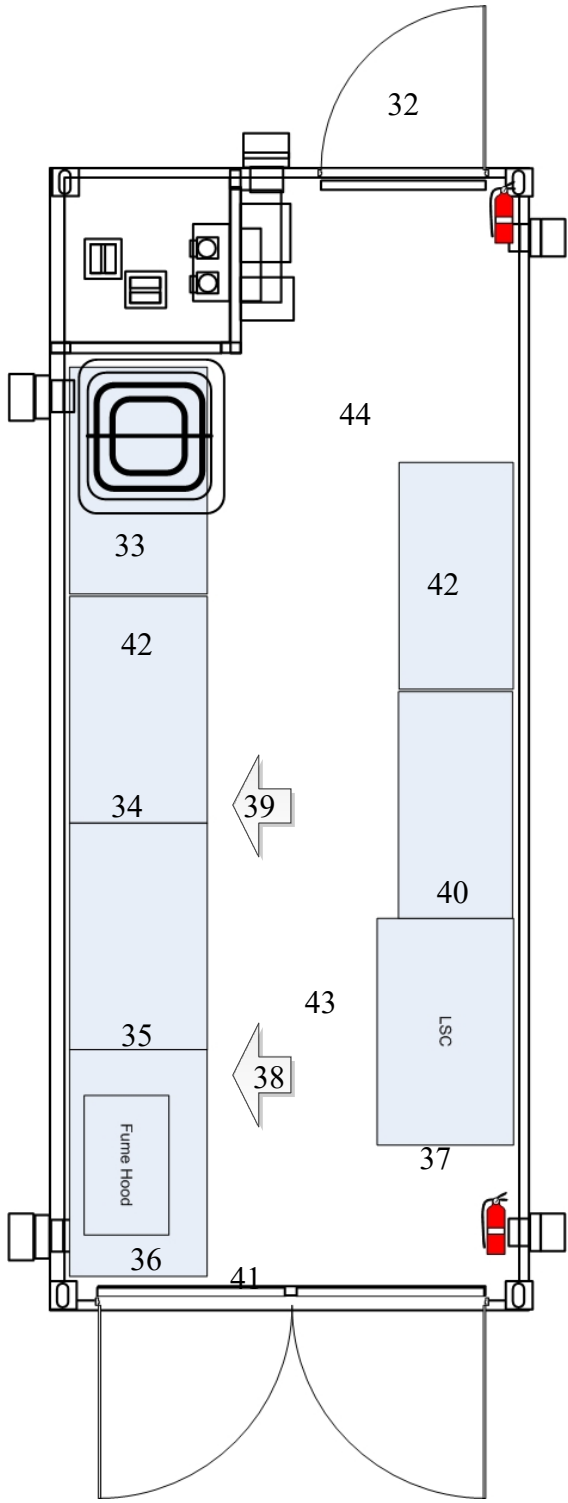


Figure 2
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