



Tritium Laboratory  
4 June 2024

SWAB REPORT # 1095

SWAB DATE: 30 May 2024

*R/V Atlantic Explorer*  
UNOLS Radioisotope Van #2408-04

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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  $^3\text{H}$  &  $^{14}\text{C}$ . This replaces an LSC with background cpm of 1.6 & 5.5 for  $^3\text{H}$  &  $^{14}\text{C}$ .

All samples are counted for 60 minutes, the instrument background is subtracted, and activities are reported in  $\text{dpm}/\text{m}^2$ . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in  $\text{dpm}/\text{m}^2$ . 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	$^3\text{H}$ ( $\text{dpm}/\text{m}^2$ )	$^{14}\text{C}$ ( $\text{dpm m}^2$ )	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:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : 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.

$^{14}\text{C}$ : 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  $^3\text{H}$ .

### 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 # 1095

LOCATION: Morehead City, NC

DATE: 30 May 2024

VESSEL: *R/V Atlantic Explorer*

TECHNICIAN: Jim Happell

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Bkgnd	0 ±	0	0 ±	0
2	Initial bucket blank	20 ±	25	-12 ±	13
	<u>Forward Lab (Figure 1)</u>				
3	Forward benchtop	<b>29 ±</b>	<b>20</b>	4 ±	10
4	Port benchtop forward of sink	14 ±	21	-4 ±	11
5	Deck inside starboard entrance	<b>25 ±</b>	<b>20</b>	-2 ±	5
6	Port sink area	16 ±	28	-11 ±	12
7	Center benchtop	8 ±	21	-4 ±	11
8	Port benchtop aft of sink	14 ±	62	-23 ±	24
9	Deck outside Enviro Room	1 ±	8	-17 ±	18
10	Deck in front of sink	16 ±	24	-9 ±	24
	<u>Main Lab (Figure 1)</u>				
11	Deck inside forward entrance	<b>28 ±</b>	<b>23</b>	-9 ±	23
12	Port sink area	<b>58 ±</b>	<b>31</b>	-27 ±	29
13	Benchtop inside laminar flow hood	18 ±	28	-14 ±	14
14	Deck inside aft entrances	<b>54 ±</b>	<b>29</b>	-23 ±	24
15	Deft aft of starboard bench top	<b>29 ±</b>	<b>21</b>	-1 ±	56
16	Inside Fridgidaire freezer	-3 ±	33	-7 ±	19
17	Inside Whirlpool freezer	16 ±	32	-16 ±	17
18	Port benchtop aft of sink	9 ±	26	-7 ±	18
19	Port benchtop forward of sink	13 ±	26	-9 ±	23
20	Center benchtop	<b>27 ±</b>	<b>25</b>	-14 ±	15
	<u>Aft Lab (Figure 1)</u>				
21	Deck inside forward entrance	13 ±	144	-24 ±	26
22	Forward benchtop	26 ±	32	-24 ±	25
23	Inside -80°C freezer #2	7 ±	47	-10 ±	26
24	Inside fume hood	-313 ±	401	-140 ±	147
25	Port sink area	1 ±	8	-8 ±	21
26	Deck inside starboard aft entrance	8 ±	22	-4 ±	12
27	Center benchtop	4 ±	39	-5 ±	13
28	Inside dead Cospolich refrgerator	7 ±	54	-11 ±	12
29	Inside dead Cospolich freezer	9 ±	68	-14 ±	15
30	Inside live Cospolich refrgerator	-2 ±	23	-24 ±	25

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
31	Inside live Cospolich freezer	9	± 39	-11	± 11
32	CTD Bay port benchtop	<b>55</b>	± <b>27</b>	-12	± 13
33	CTD Bay starboard benchtop	-25	± 37	-11	± 12
<u>Radioisotope Van #2408-04 (Figure 2)</u>					
34	Benchtop adjacent to sink	<b>251</b>	± <b>45</b>	1	± 1
35	Benchtop adjacent to fume hood	<b>*2855</b>	± <b>146</b>	<b>*58</b>	± <b>7</b>
36	Inside fume hood	<b>28</b>	± <b>24</b>	-11	± 11
37	Top of LSC	<b>105</b>	± <b>33</b>	-11	± 12
38	Inside freezer	4	± 37	-16	± 17
39	Inside refrigerator	<b>389</b>	± <b>56</b>	0	± 0
40	Benchtop adjacent to LSC	15	± 67	-24	± 25
41	Deck in front of fume hood	<b>242</b>	± <b>43</b>	21	± 10
42	Sink area	<b>*516</b>	± <b>63</b>	-2	± 6
43	Benchtop across from sink	<b>28</b>	± <b>20</b>	3	± 9
44	Deck in center of van	<b>237</b>	± <b>43</b>	8	± 6
45	Deck inside entrance	<b>111</b>	± <b>33</b>	-12	± 12
46	Final Bucket blank	-14	± 62	-6	± 15

### 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 sampled inside the ship were free from contamination requiring cleaning.

Minor <sup>3</sup>H and <sup>14</sup>C contamination was found in the Rad Van. No action is necessary in the Rad Van.

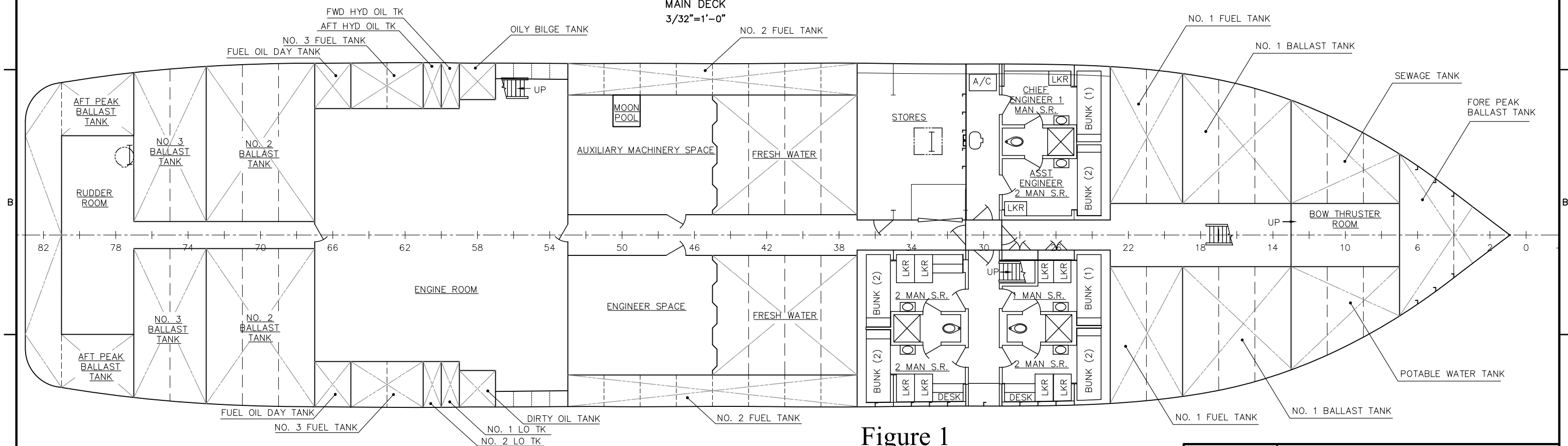
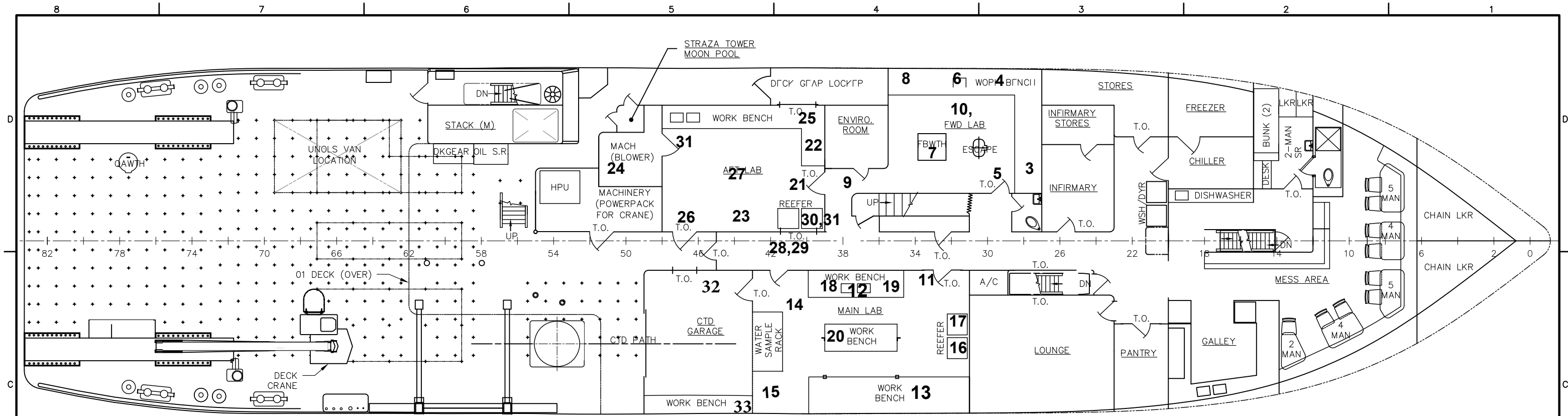


Figure 1  
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<b>BIOS</b> ST. GEORGE'S, BERMUDA <b>R/V ATLANTIC EXPLORER</b> GENERAL ARRANGEMENT HOLD LEVEL AND MAIN DECK PLANS			
<b>THE GLOSTEN ASSOCIATES</b> <i>Consulting Engineers Serving the Marine Community</i>		1201 Western Avenue, Suite 200 Seattle, 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 2408-04

Figure 2  
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