



Tritium Laboratory  
23 February 2023

SWAB REPORT # 1053

SWAB DATE: 17 February 2023

*R/V Atlantic Explorer*  
UNOLS Radioisotope 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  $^3\text{H}$  &  $^{14}\text{C}$ . 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 # 1053

LOCATION: St. Petersburg, FL  
VESSEL: R/V Atlantic Explorer

DATE: 16 February 2023  
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	-12	± 50	-12	± 40
	<u>Forward Lab (Figure 1)</u>				
3	Forward benchtop	-14	± 56	-5	± 17
4	Port benchtop forward of sink	-14	± 59	-21	± 74
5	Deck inside starboard entrance	-16	± 65	-30	± 104
6	Port sink area	2	± 13	-9	± 33
7	Center benchtop	-19	± 79	0	± 2
8	Port benchtop aft of sink	-13	± 53	-10	± 34
9	Deck outside Enviro Room	7	± 40	-21	± 73
10	Deck in front of sink	-13	± 51	-7	± 26
	<u>Main Lab (Figure 1)</u>				
11	Deck inside forward entrance	1	± 6	-13	± 47
12	Port sink area	-29	± 86	-24	± 83
13	Benchtop inside laminar flow hood	-26	± 77	-8	± 29
14	Deck inside aft entrances	-8	± 0	-10	± 34
15	Inside Whirlpool freezer	23	± 67	-28	± 96
16	Inside Frigidaire freezer	-24	± 71	-15	± 51
17	Center benchtop	-40	± 118	0	± 37
18	Port benchtop aft of sink	-19	± 75	-13	± 46
19	Port benchtop forward of sink	-7	± 39	-14	± 50
20	Aft starboard benchtop	-12	± 48	-21	± 72
	<u>Main Lab (Figure 1)</u>				
21	Inside fume hood	9	± 51	-26	± 90
22	Forward benchtop	-27	± 80	-17	± 58
23	Inside -80°C freezer #2	-43	± 126	-16	± 57
24	Port benchtop forward of sink	-42	± 125	-2	± 19
25	Port sink area	-21	± 62	2	± 23
26	Deck inside starboard aft entrance	2	± 11	-15	± 53
27	Forward section of center benchtop	-22	± 65	-4	± 15
28	Inside DEAD Cospolich refrigerator	-21	± 63	-19	± 66
29	Inside LIVE Cospolich refrigerator	-28	± 84	-17	± 59

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
30	Deck inside forward entrance	-14	± 59	-2	± 15
31	Deck in front of port sink	10	± 42	-7	± 26
32	Inside -80°C freezer #1	-19	± 76	-21	± 72
33	Inside DEAD Cospolich freezer	-24	± 70	1	± 7
34	Inside LIVE Cospolich freezer	-22	± 66	-5	± 17
<u>Radioisotope Van (Figure 2)</u>					
35	Deck outside van entrance	-36	± 107	6	± 19
36	Sink area	-2	± 13	-3	± 10
37	Benchtop adjacent to sink	<b>99</b>	± <b>36</b>	<b>11</b>	± <b>10</b>
38	Benchtop adjacent to fume hood	6	± 38	-4	± 15
39	Inside refrigerator	<b>80</b>	± <b>30</b>	<b>39</b>	± <b>14</b>
40	Benchtop adjacent to LSC	-10	± 42	4	± 15
41	Benchtop across from sink	26	± 32	-5	± 18
42	Center Deck	<b>280</b>	± <b>56</b>	<b>48</b>	± <b>13</b>
43	Deck inside entrance	<b>81</b>	± <b>38</b>	<b>29</b>	± <b>13</b>
44	Final bucket blank	-44	± 129	-1	± 9

### 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. There was no isotope contamination that requires cleaning detected in samples from the ship or from the rad van.

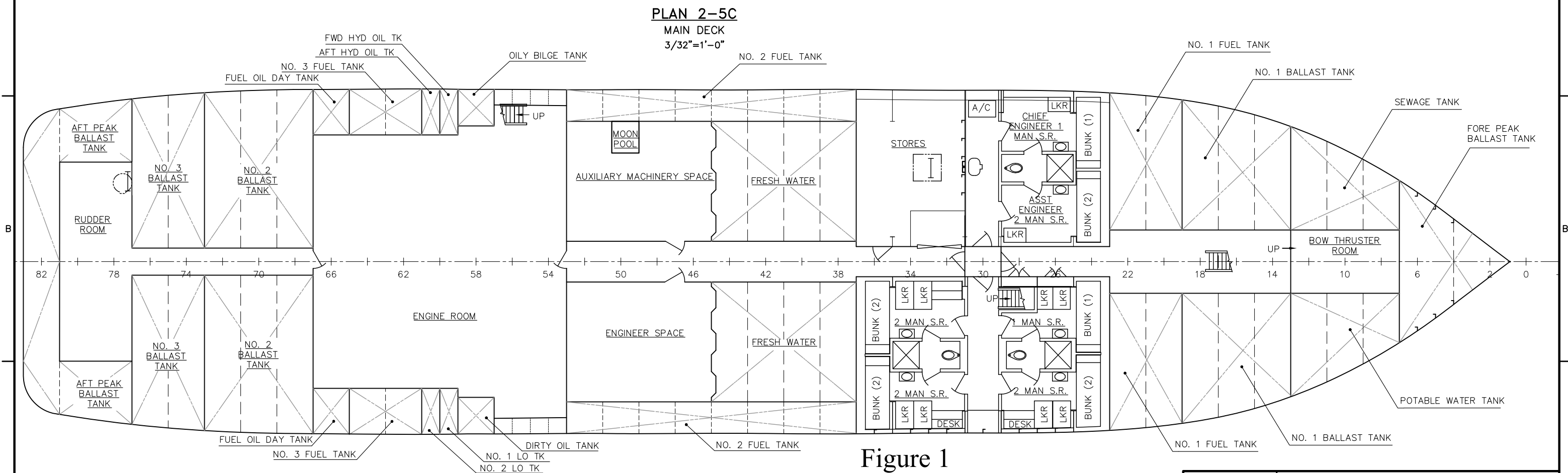
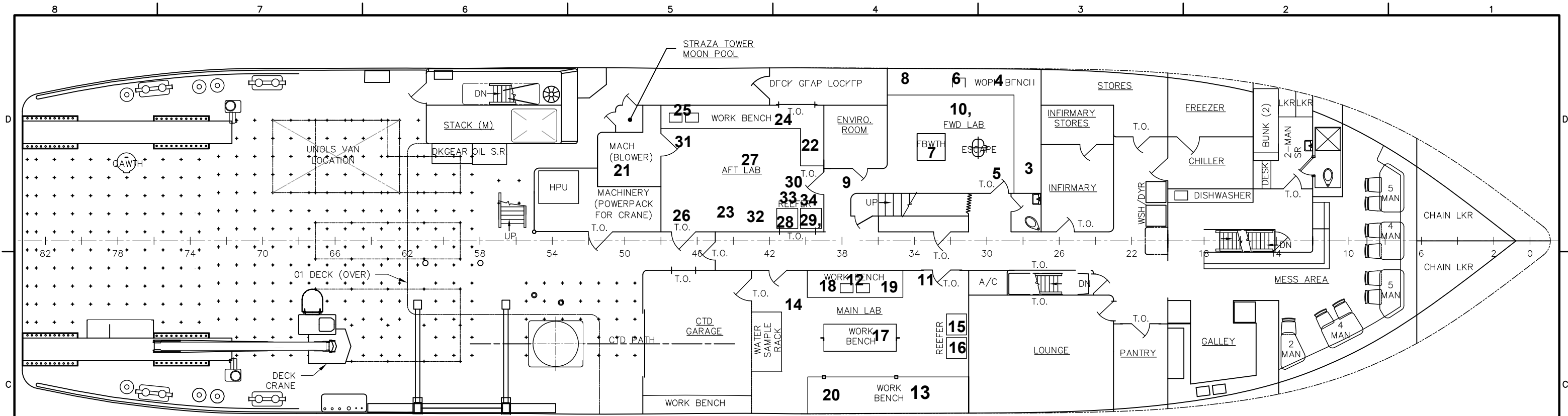


Figure 1  
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<b>BIOS</b> ST. GEORGE'S, BERMUDA			
<b>R/V ATLANTIC EXPLORER</b> GENERAL ARRANGEMENT HOLD LEVEL AND MAIN DECK PLANS			
<b>THE GLOSTEN ASSOCIATES</b> <i>Consulting Engineers Serving the Marine Community</i>		1201 Western Avenue, Suite 200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

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Figure 2  
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