

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory
27 December 2019

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SWAB REPORT # 971

SWAB DATE: 22 December 2019

R/V Atlantic Explorer

Dr. James D. Happell
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Distribution:
SWAB Committee
Quentin Lewis
Rod Johnson

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 # 971

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

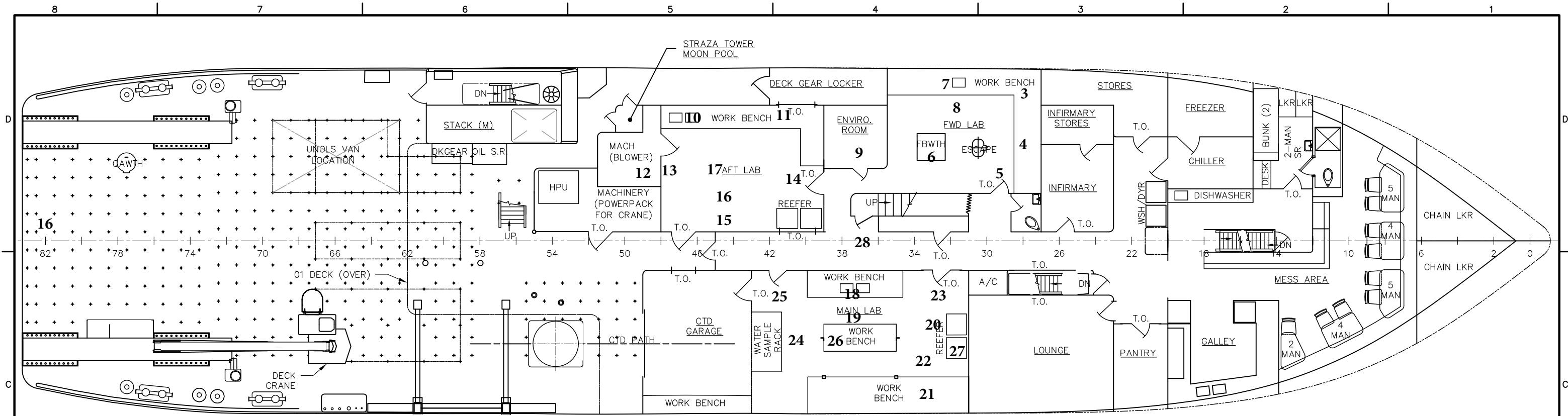
DATE: 22 December 2019
TECHNICIAN: Yudy Mendoza

Sample # Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
	activity	error	activity	error
1 1st Vial Bkgnd	0	± 0	0	± 0
2 Initial bucket blank	-18	± 136	-22	± 72
<u>Forward Lab (Figure 1)</u>				
3 Port benchtop forward of sink	15	± 164	-23	± 76
4 Forward benchtop	1	± 6	-20	± 65
5 Deck inside starboard entrance	15	± 226	-26	± 86
6 Center benchtop	-33	± 109	-9	± 30
7 Sink area	-21	± 69	-12	± 40
8 Deck in front of sink	8	± 91	-8	± 27
9 Deck inside Enviro Room	7	± 52	-23	± 75
<u>Aft Lab (Figure 1)</u>				
10 Port sink area	28	± 93	-24	± 78
11 Benchtop forward of sink	-28	± 91	-18	± 59
12 Inside fume hood	-2	± 19	-28	± 92
13 Deck in front of fume hood	-7	± 56	-18	± 58
14 Deck inside forward entrance	11	± 80	-9	± 31
15 Inside -80 °C freezer #2	3	± 20	-27	± 88
16 Deck below -80 °C freezer #2	-14	± 107	-31	± 100
17 Center benchtop	2	± 16	-23	± 77
<u>Main Lab (Figure 1)</u>				
18 Port sink area	34	± 78	-24	± 79
19 Deck in front of sink	7	± 51	-21	± 69
20 Deck below port freezer	-1	± 9	-24	± 77
21 Inside laminar flow hood	4	± 32	-17	± 54
22 Deck in front of lamianar flow hood	-16	± 120	-24	± 78
23 Deck inside forward entrance	2	± 17	-28	± 90
24 Deck below CTD racks	1	± 5	-27	± 89
25 Deck inside aft entrance	-24	± 78	3	± 67
26 Center benchtop	-20	± 66	-2	± 8
27 Inside starboard freezer	13	± 96	-32	± 104
28 Deck at bottom of stairs to sleeping quarters	20	± 151	-48	± 156

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
	<u>01 Deck (Figure 2)</u>				
29	Deck at top of aft stairs	20	± 169	-32	± 104
30	Deck outside Rad Van door	-10	± 74	-25	± 80
	<u>02 Deck (Figure 2)</u>				
31	Top of stairs to science study	-13	± 101	-29	± 94
32	Deck inside aft entrance next to head	-27	± 90	-10	± 34
	<u>03 Deck (Figure 3)</u>				
33	Top of stairs to bridge	-27	± 87	-13	± 43
34	Intermediate bucket blank	-15	± 111	-21	± 69
	<u>Radiation Van #625.5.02 (Figure 4)</u>				
35	Sink area	7	± 56	-33	± 108
36	Benchtop adjacent to sink	164	± 62	-23	± 75
37	Benchtop adjacent to fume hood	98	± 60	-18	± 60
38	Deck between LSC and fume hood	-8	± 64	-3	± 10
39	Inside fume hood	10	± 75	-8	± 26
40	Benchtop adjacent to LSC	15	± 102	-17	± 56
41	Inside freezer	-8	± 60	-10	± 32
42	Inside refrigerator	100	± 55	-1	± 5
43	Deck in middle of van	33	± 129	-44	± 145
44	Benchtop across from sink	8	± 63	-51	± 168
45	Deck inside entrance	44	± 61	-16	± 52
50	Final bucket blank	1	± 6	-33	± 109

Comments

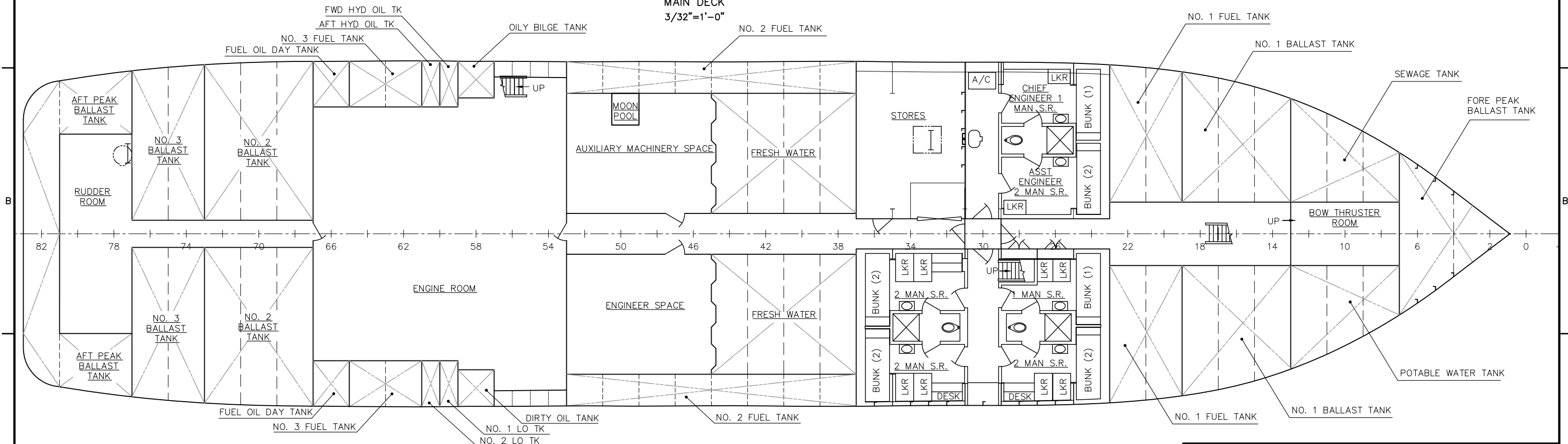
Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded 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 and van were free from isotope contamination that requires cleaning.



PLAN 2-5C

MAIN DECK

3/32"=1'-0"



PLAN 2-5A

HOLD LEVEL

3/32"=1'-0"

Figure 1
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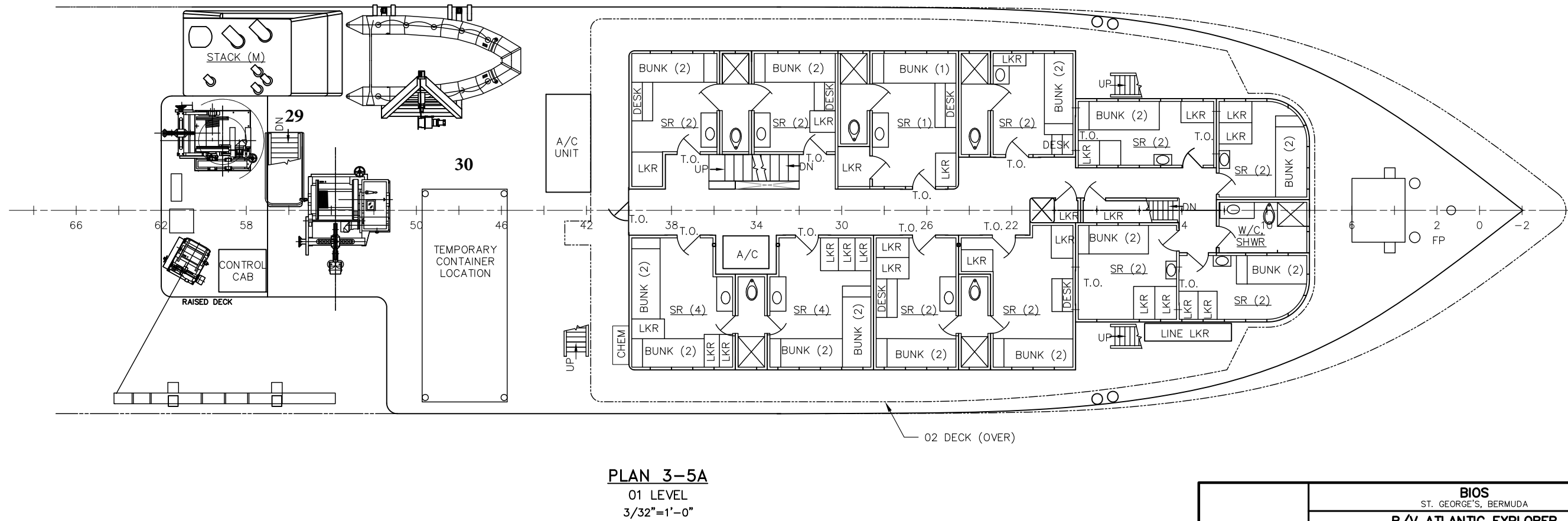
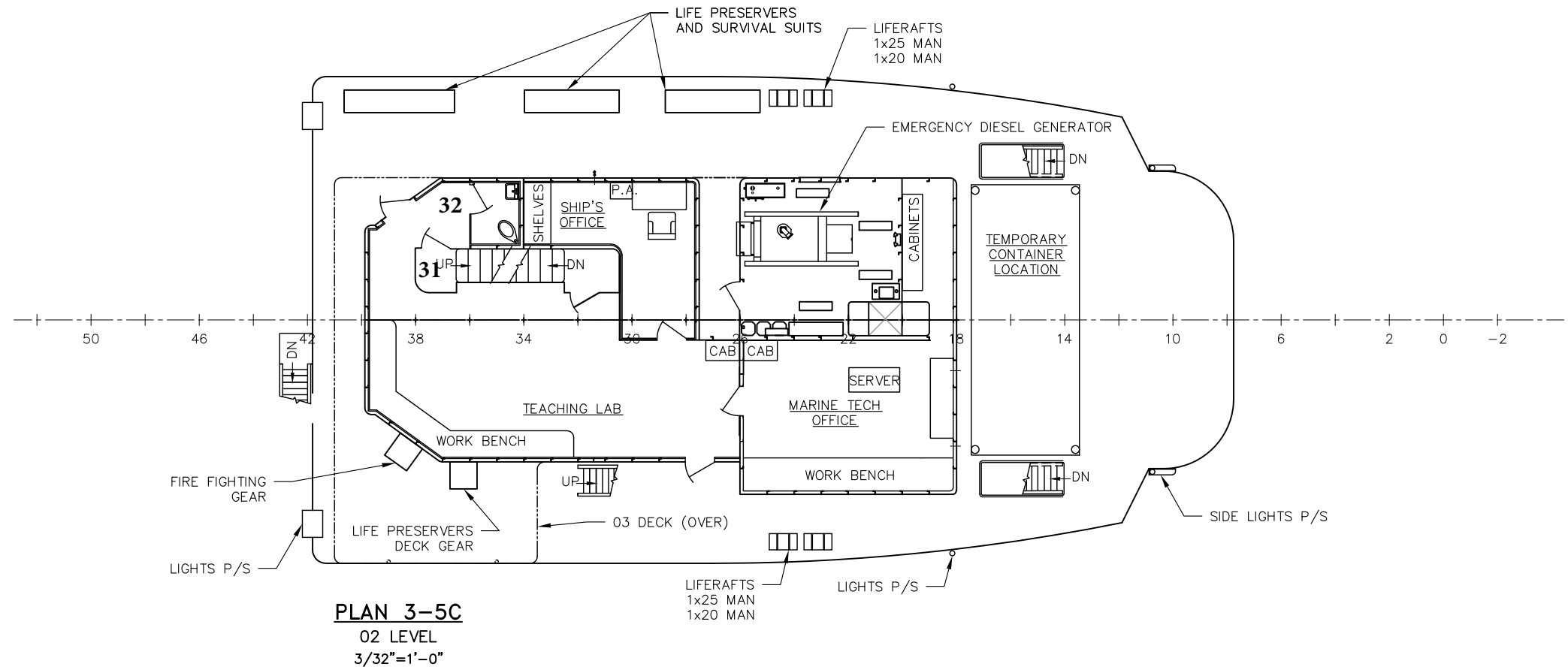
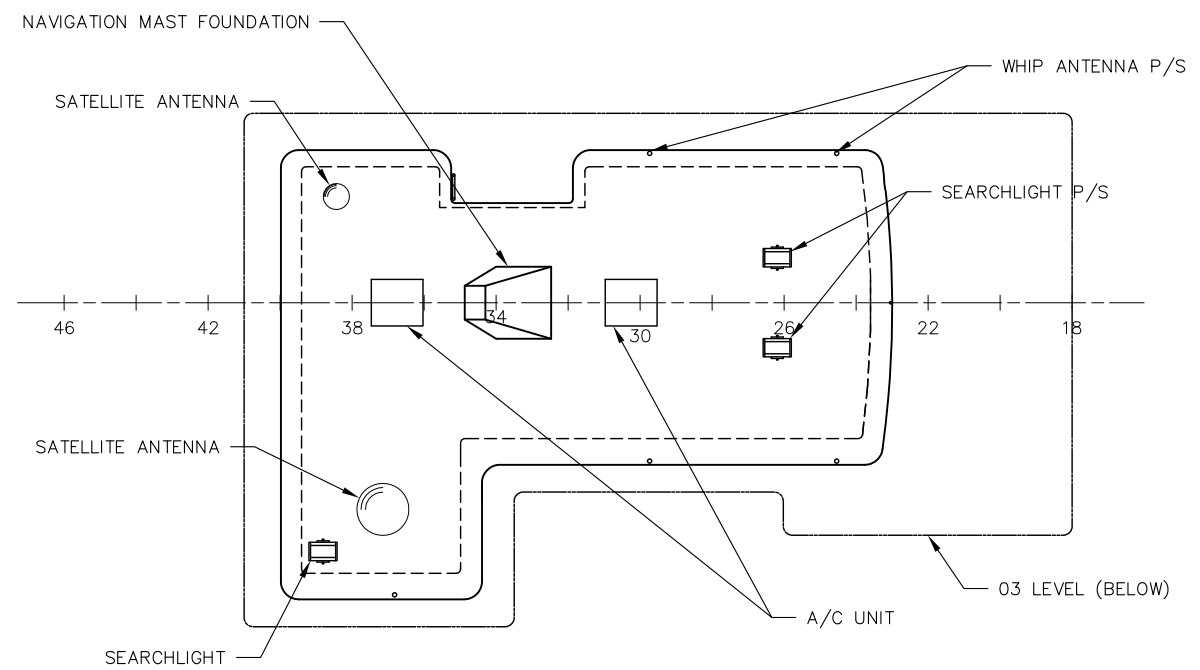
BIOS ST. GEORGE'S, BERMUDA R/V ATLANTIC EXPLORER GENERAL ARRANGEMENT HOLD LEVEL AND MAIN DECK PLANS			
 THE GLOSTÉN ASSOCIATES <i>Consulting Engineers Serving the Marine Community</i>		1201 Western Avenue, Suite 200 Seattle, Washington 98101-2953 TEL 206.624.7850 WEB www.glosten.com	
Drawn TGA	Checked CSC	Approved DHK	Date 05/30/2014
Scale AS NOTED	Drawing Number 12146-070-01	Sheet 2 of 4	Revision A

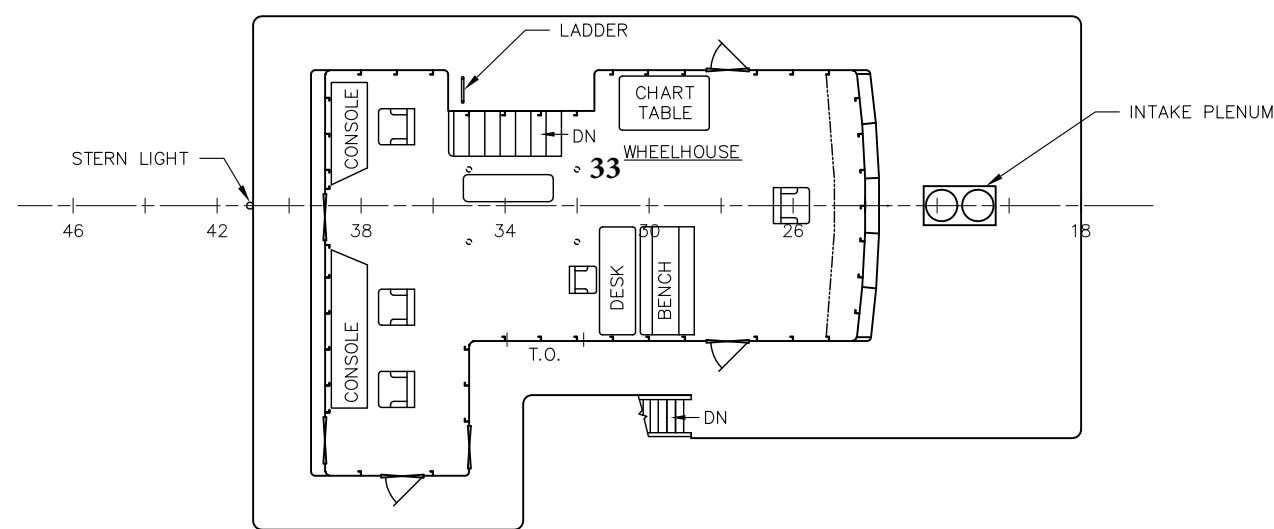
Figure 2
SWAB #971
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BIOS ST. GEORGE'S, BERMUDA			
R/V ATLANTIC EXPLORER GENERAL ARRANGEMENT 01 LEVEL AND 02 LEVEL PLANS			
THE GLOSTEN ASSOCIATES Consulting Engineers Serving the Marine Community		1201 Western Avenue, Suite 200 Seattle, Washington 98101-2953 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 3	of 4
		Revision A	



PLAN 4-5C
HOUSE TOP / 04 LEVEL
3/32"=1'-0"



PLAN 4-5A
03 LEVEL
3/32"=1'-0"

Figure 3
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BIOS ST. GEORGE'S, BERMUDA			
R/V ATLANTIC EXPLORER GENERAL ARRANGEMENT 03 LEVEL AND 04 LEVEL / HOUSE TOP PLANS			
THE GLOSTEN ASSOCIATES Consulting Engineers Serving the Marine Community		<small>1201 Western Avenue, Suite 200 Seattle, Washington 98101-2953 TEL 206.624.7850 WEB www.glosten.com</small>	
Drawn TGA	Checked CSC	Approved DHK	Date 05/30/2014
Scale AS NOTED	Drawing Number 12146-070-01	Sheet 4	of 4 Revision A

UNOLS Rad Van #625.5.02

Figure 4
SWAB #971
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