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Tritium Laboratory
19 July 2019

SWAB REPORT # 952

SWAB DATE: 13 July 2019

R/V Atlantic Explorer

James Happell

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Date: 2019.07.19 17:33:43 -04'00'

Dr. James D. Happell
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COMMENTS TO SWAB REPORTS 12 May 2014

Typical LSC instrument background values for ^{3}H 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	^{3}H (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 Proceedure

Wearing ordinary household rubber gloves:

^{3}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}C: Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing $^{14}CO_2$). Follow up with wash as if for ^{3}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 # 952

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

DATE: 13 July 2019
TECHNICIAN: Yudy Mendoza

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	-34	±	45	4	±	76
	Forward Lab (Figure 1)						
3	Port benchtop forward of sink	17	±	75	-11	±	38
4	Sink area	-8	±	19	-8	±	43
5	Deck in front of sink	4	±	35	-27	±	52
6	Forward benchtop	3	±	43	-13	±	47
7	Deck inside starboard entrance	-4	±	72	-11	±	35
8	Center benchtop	-14	±	31	11	±	41
9	Deck inside Enviro Room	12	±	48	-25	±	19
	Aft Lab (Figure 1)						
10	Port sink area	41	±	73	-24	±	42
11	Benchtop forward of sink	5	±	26	-29	±	28
12	Inside fume hood	-1	±	34	-3	±	15
13	Deck in front of fume hood	20	±	101	-20	±	63
14	Deck inside forward entrance	58	±	65	-20	±	39
15	Inside aft entrance	9	±	153	-12	±	71
16	Deck below -80 °C freezer	-14	±	37	5	±	44
17	Center benchtop	7	±	44	-29	±	37
	Main Lab (Figure 1)						
18	Port sink area	4	±	19	-14	±	93
19	Deck in front of sink	-1	±	22	-4	±	82
20	Benchtop aft of sink	7	±	96	-5	±	53
21	Inside laminar flow hood	4	±	36	-16	±	46
22	Deck in front of laminar flow hood	-7	±	28	6	±	41
23	Deck inside forward entrance	-28	±	39	1	±	18
24	Deck below CTD racks	24	±	51	3	±	28
25	Deck inside aft entrance	-2	±	70	-22	±	46
26	Center benchtop	-36	±	99	-5	±	37
	Aft Deck (Figure 1)						
27	Deck at bottom of stairs to 01 Deck	-4	±	32	-20	±	34

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
	01 Deck (Figure 2)						
28	Deck outside aft entrance from sleeping quarters	-21	±	39	3	±	62
29	Deck at top of aft stairs	-37	±	46	5	±	65
30	Deck outside Rad Van door	40	±	92	-21	±	25
	02 Deck (Figure 2)						
31	Top of stairs to science study	24	±	67	-11	±	43
32	Deck inside aft entrance next to head	4	±	51	-20	±	37
	03 Deck (Figure 3)						
33	Top of stairs to bridge	-5	±	90	-4	±	26
34	Intermediate bucket blank	13	±	107	-14	±	30
	Radiation Van #625.5.02 (Figure 4)						
35	Sink area	205	±	66	8	±	17
36	Benchtop adjacent to sink	247	±	63	11	±	17
37	Benchtop adjacent to fume hood	3	±	17	12	±	38
38	Deck between LSC and fume hood	134	±	61	-7	±	23
39	Top of LSC	271	±	65	40	±	29
40	Benchtop adjacent to LSC	113	±	54	30	±	33
41	Inside freezer	110	±	61	-9	±	28
42	Inside refrigerator	81	±	27	213*	±	44
43	Deck in middle of van	207	±	65	-3	±	13
44	Benchtop across from sink	12	±	55	-2	±	29
45	Deck inside entrance	79	±	55	4	±	18
50	Final bucket blank	-3	±	32	-17	±	51

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, The refrigerator in the Rad Van had some minor ^{14}C contamination. No action is necessary in the van.

STRAZA TOWER MOON POOL
DECK GEAR LOCKER
WORK BENCH
STACK (M)
DKGEAR OIL S.R
UNOLS VAN LOCATION
QAWTH
MACH (BLOWER)
HPU
MACHINERY (POWERPACK FOR CRANE)
AFT LAB
ENVIRO. ROOM
FWD LAB
FBWTH
ESCAPE
STORES
INFIRMARY STORES
INFIRMARY
FREEZER
CHILLER
BUNK (2)
LKR
2-MAN SR
DESK
WSH/DYR
DISHWASHER
5 MAN
4 MAN
CHAIN LKR
MESS AREA
01 DECK (OVER)
DECK CRANE
CTD GARAGE
CTD PATH
WATER SAMPLE RACK
MAIN LAB
WORK BENCH
REEFER
A/C
LOUNGE
PANTRY
GALLEY
2 MAN
4 MAN
UP
DN
T.O.

PLAN 2–5C
MAIN DECK
3/32"=1'–0"

FWD HYD OIL TK
AFT HYD OIL TK
NO. 3 FUEL TANK
FUEL OIL DAY TANK
OILY BILGE TANK
NO. 2 FUEL TANK
NO. 1 FUEL TANK
NO. 1 BALLAST TANK
SEWAGE TANK
FORE PEAK BALLAST TANK
AFT PEAK BALLAST TANK
NO. 3 BALLAST TANK
NO. 2 BALLAST TANK
RUDDER ROOM
MOON POOL
AUXILIARY MACHINERY SPACE
FRESH WATER
STORES
CHIEF ENGINEER 1 MAN S.R.
ASST ENGINEER 2 MAN S.R.
BUNK (1)
BUNK (2)
BOW THRUSTER ROOM
ENGINE ROOM
ENGINEER SPACE
2 MAN S.R.
1 MAN S.R.
DESK
POTABLE WATER TANK
DIRTY OIL TANK
NO. 1 LO TK
NO. 2 LO TK

PLAN 2–5A
HOLD LEVEL
3/32"=1'–0"

Figure 1
SWAB #952
13 July 2019

BIOS
ST. GEORGE'S, BERMUDA

R/V ATLANTIC EXPLORER
GENERAL ARRANGEMENT
HOLD LEVEL AND MAIN DECK PLANS

THE GLOSTEN ASSOCIATES
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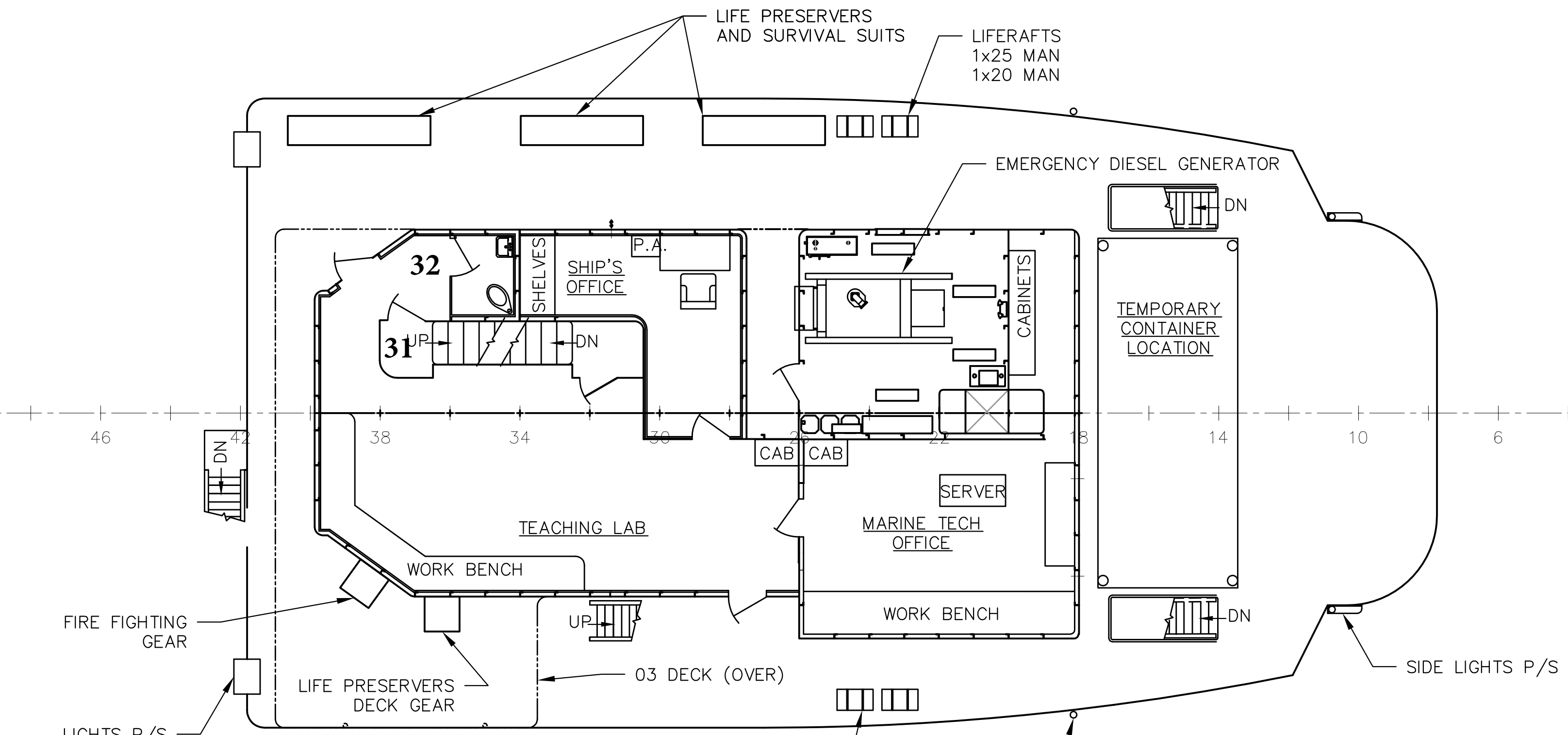
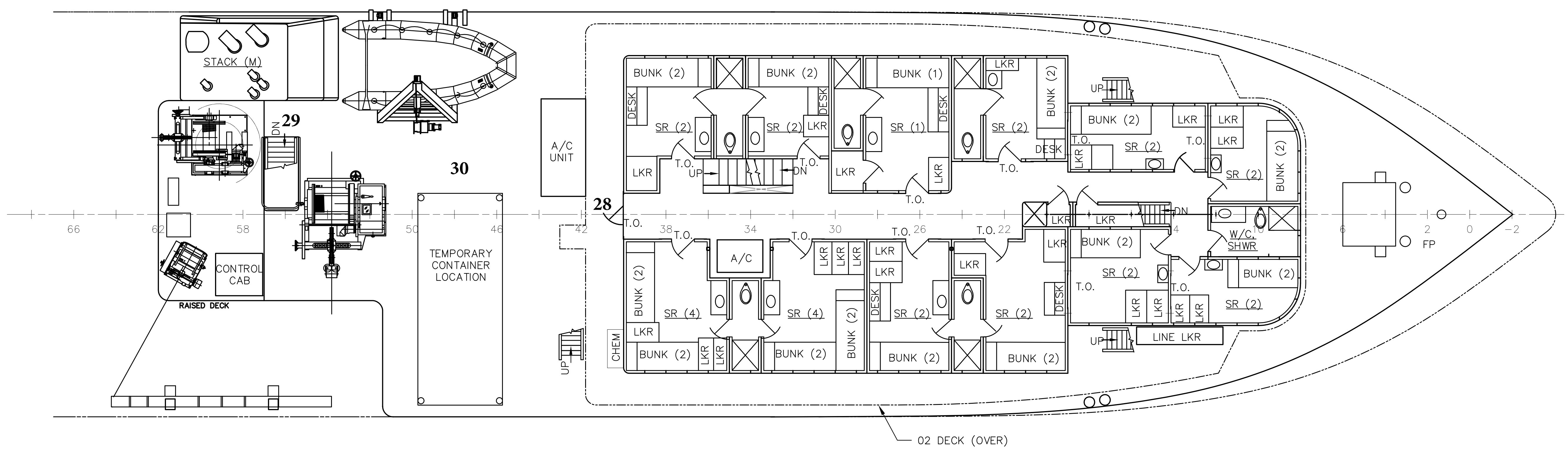
Drawn	Checked	Approved	Date
TGA	CSC	DHK	05/30/2014

Scale	Drawing Number	Sheet	of	Revision
AS NOTED	12146-070-01	2	4	A

Figure 2
SWAB #952
13 July 2019



PLAN 3–5C
02 LEVEL
3/32"=1'–0"



PLAN 3–5A
01 LEVEL
3/32"=1'–0"

BIOS
ST. GEORGE'S, BERMUDA

R/V ATLANTIC EXPLORER
GENERAL ARRANGEMENT
01 LEVEL AND 02 LEVEL PLANS

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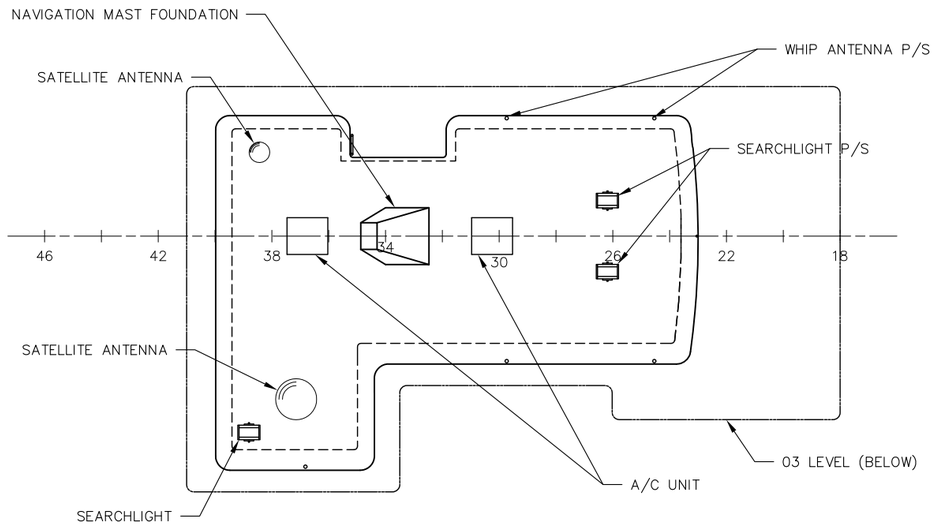
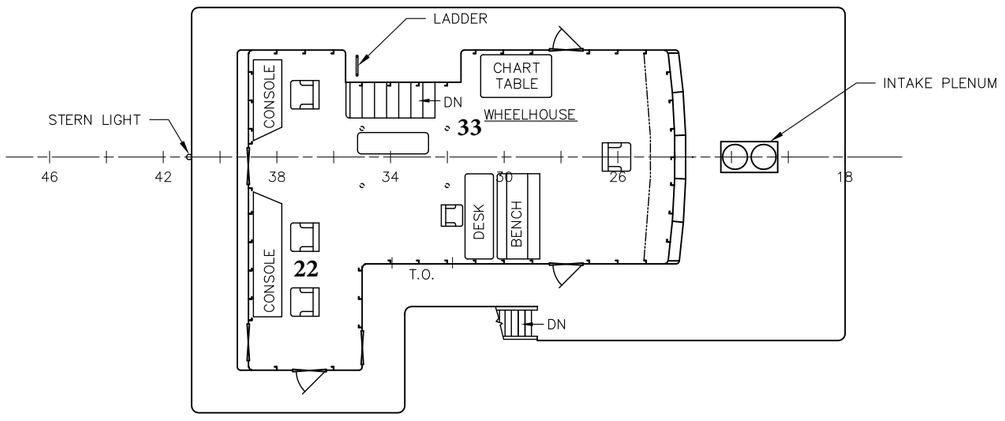


PLAN 4–5C

HOUSE TOP / 04 LEVEL

3/32"=1'–0"



PLAN 4–5A

03 LEVEL

3/32"=1'–0"

Figure 3
SWAB #952
13 July 2019

BIOS
ST. GEORGE'S, BERMUDA

R/V ATLANTIC EXPLORER
GENERAL ARRANGEMENT
03 LEVEL AND 04 LEVEL / HOUSE TOP PLANS

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East Coast Van Pool Van #625.5.02

Figure 4
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