

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

18 July 2016

Tritium Laboratory
4600 Rickenbacker Causeway
Miami, Florida 33149-1031

Ph: 305-421-4100
Fax: 305-421-4112
E-mail: Tritium@rsmas.miami.edu

SWAB REPORT # 822

SWAB DATE: 8 July 2016

R/V Blue Heron

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Doug Ricketts

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 institution promptly by phone or email.

REPORT FOR SWAB # 822

LOCATION: Duluth, MN
VESSEL: R/V Blue Heron

DATE: 8 July 2016
TECHNICIAN: Yudy Mendoza

Sample #	Sample Identification	^3H dpm/m ²			^{14}C dpm/m ²		
		activity	error		activity	error	
1	1st Vial Bkgnd	0	±	248	0	±	0
2	Initial bucket blank	4	±	68	0	±	0
	<u>Dry Lab (Figure 1)</u>						
3	Deck in front of freezer	21	±	68	0	±	0
4	Inside chest freezer	0	±	0	22	±	39
5	Starboard benchtop	0	±	0	4	±	43
6	Center benchtop	15	±	47	0	±	0
7	Benchtop adjacent to sink	0	±	0	0	±	0
8	Deck in front of sink	0	±	0	0	±	0
9	Inside fume hood	0	±	0	0	±	0
10	Port benchtop	0	±	0	0	±	0
11	Deck in front of stairs to main deck	0	±	0	14	±	42
	<u>Wet Lab & Galley/ Mess Deck (Figure2)</u>						
12	Inside freezer	1	±	2	0	±	0
13	Inside refrigerator	57	±	53	0	±	0
14	Deck in front of stairs to dry lab	0	±	0	0	±	0
15	Deck in front of aft door	0	±	0	13	±	41
16	Benchtop aft of port sink	11	±	46	0	±	5
17	Benchtop forward of starboard sink	5	±	17	0	±	0
18	Forward benchtop	23	±	57	0	±	0
19	Deck in galley	14	±	399	0	±	0
20	Deck under table	21	±	68	0	±	0
21	Galley/Mess deck by aft door	21	±	71	0	±	0
	<u>Whaleback Deck (Figure 3)</u>						
22	Deck inside pilot house	7	±	36	6	±	35
	<u>Main Deck (Figure 2)</u>						
23	Deck near door to lab	0	±	0	0	±	0
24	Intermediate bucket blank	14	±	53	0	±	0

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
	<u>UMN Radioisotope Van (Figure 4)</u>				
25	Inside fume hood	12	± 97	0	± 0
26	Benchtop adjacent to LSC	271	± 64	0	± 0
27	Sink area	24	± 59	0	± 0
28	Inside refrigerator near single door	40	± 66	0	± 0
29	Inside refrigerator next to LSC	127	± 56	0	± 0
30	Deck in front of LSC	57	± 51	0	± 0
31	Deck inside single door entrance	31	± 45	5	± 28
32	Final bucket blank	32	± 43	8	± 30

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 in the rad van were free from any isotope contamination that requires cleaning.

R/V Blue Heron Lower Deck

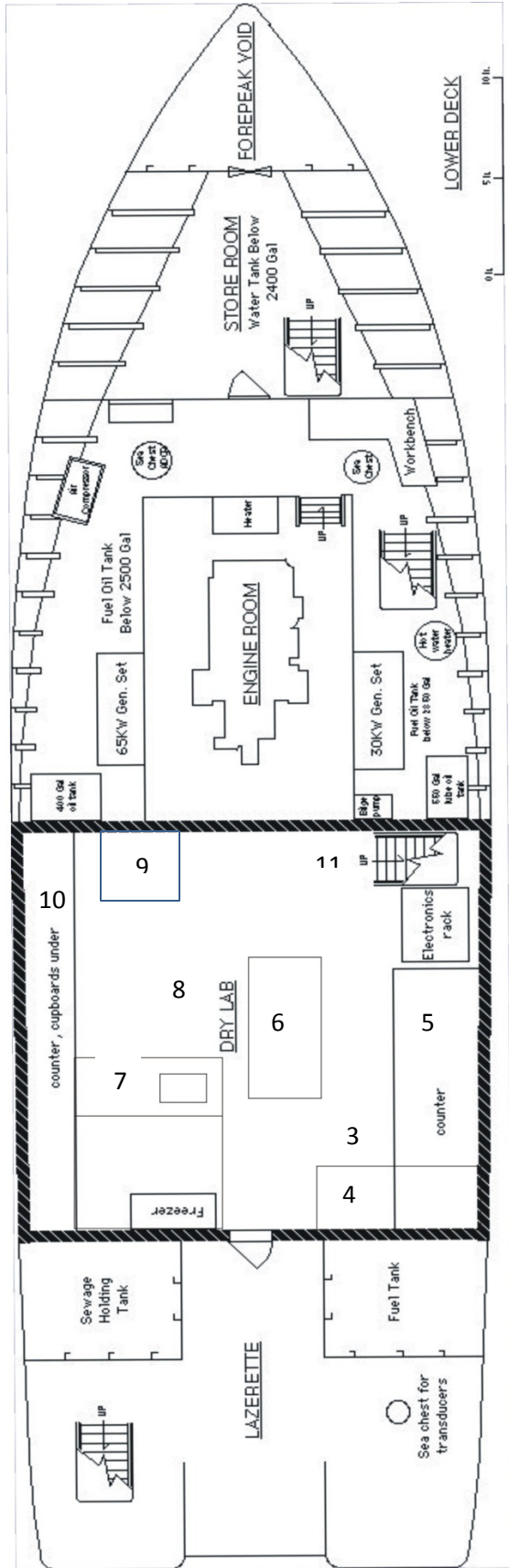


Figure 1
 SWAB # 822
 8 July 2016

R/V Blue Heron Main Deck

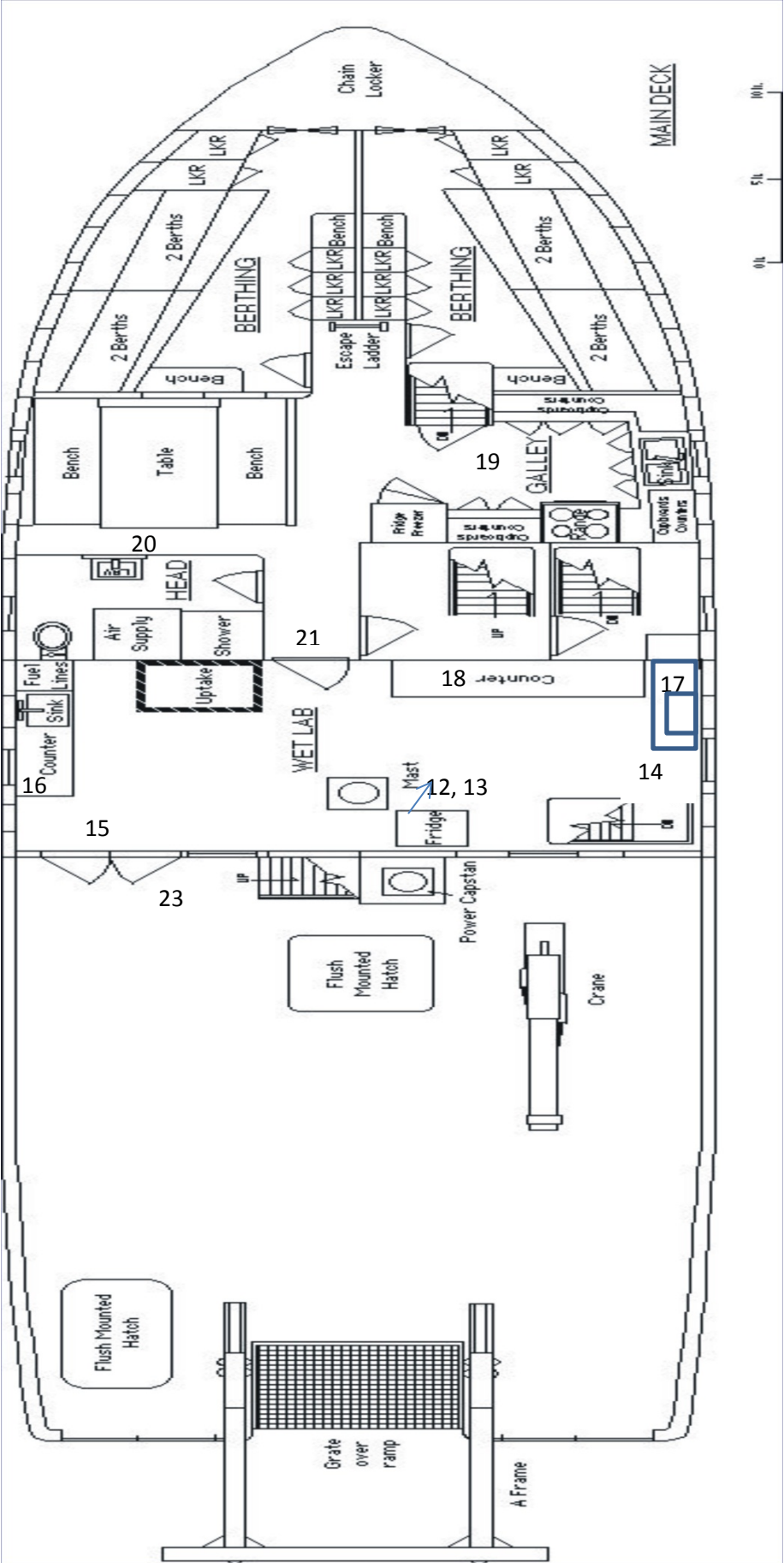


Figure 2
SWAB # 822
8 July 2016

R/V Blue Heron Whaleback Deck

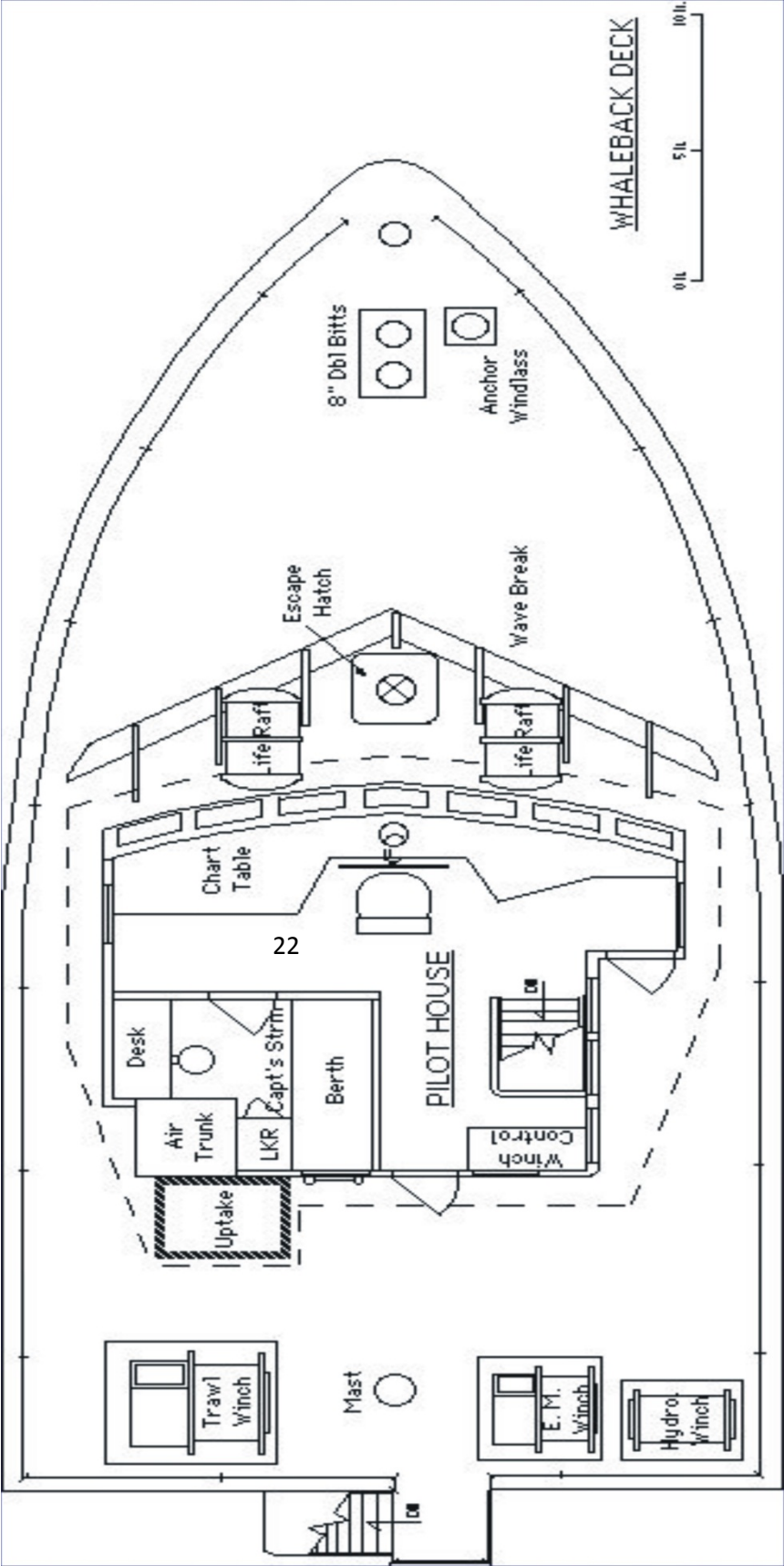


Figure 3
SWAB # 822
8 July 2016

Figure 4
SWAB # 822
8 July 2016

U. of MN. Radioisotope Van

