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SWAB REPORT # 826

SWAB DATE: 12 August 2016

R/V Blue Heron

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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 # 826

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

DATE: 12 August 2016
TECHNICIAN: Jim Happell

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	24	± 59	-8	± 21
	<u>Dry Lab (Figure 1)</u>				
3	Deck in front of freezer	14	± 584	-29	± 71
4	Inside chest freezer	-16	± 40	-25	± 62
5	Starboard benchtop	10	± 24	-28	± 68
6	Center benchtop	16	± 697	-32	± 79
7	Benchtop adjacent to sink	-11	± 26	-32	± 78
8	Deck in front of sink	-25	± 61	-30	± 75
9	Inside fume hood	-44	± 108	-9	± 21
10	Port benchtop	26	± 104	-30	± 73
11	Deck in front of stairs to main deck	-12	± 28	-8	± 20
	<u>Wet Lab & Galley/ Mess Deck (Figure2)</u>				
12	Inside freezer	20	± 116	-27	± 66
13	Inside refrigerator	35	± 58	1	± 11
14	Deck in front of stairs to dry lab	-11	± 27	-18	± 43
15	Deck in front of aft door	-11	± 28	-36	± 89
16	Benchtop aft of port sink	-23	± 55	-5	± 13
17	Benchtop forward of starboard sink	11	± 26	-35	± 85
18	Forward benchtop	-6	± 15	-25	± 61
19	Deck in galley	-4	± 10	-27	± 66
20	Deck under table	25	± 83	-22	± 54
21	Galley/ Mess deck by aft door	15	± 101	-17	± 42
	<u>Whaleback Deck (Figure 3)</u>				
22	Deck inside pilot house	-9	± 21	-30	± 75

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
	<u>Main Deck (Figure 2)</u>				
23	Deck near door to lab	-2	± 6	-10	± 26
24	Deck under A-frame	-31	± 75	17	± 42
	<u>UMN Radioisotope Van (Figure 4)</u>				
25	Inside fume hood	-19	± 45	-7	± 17
26	Benchtop adjacent to LSC	219	± 61	25	± 26
27	Sink area	-15	± 36	-6	± 16
28	Inside refrigerator near single door	-7	± 16	-2	± 6
29	Inside refrigerator next to LSC	56	± 59	-15	± 36
30	Deck in front of LSC	37	± 52	1	± 16
31	Deck inside single door entrance	62	± 46	32	± 35
32	Final bucket blank	17	± 421	-34	± 85

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

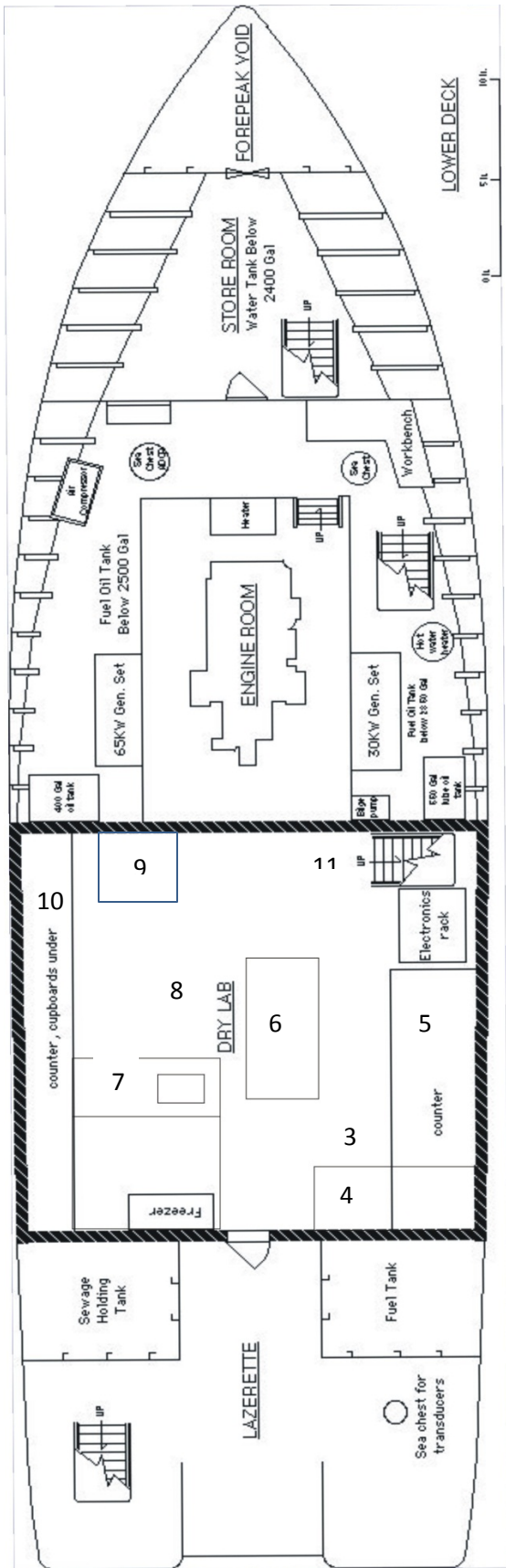


Figure 1
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R/V Blue Heron Whaleback Deck

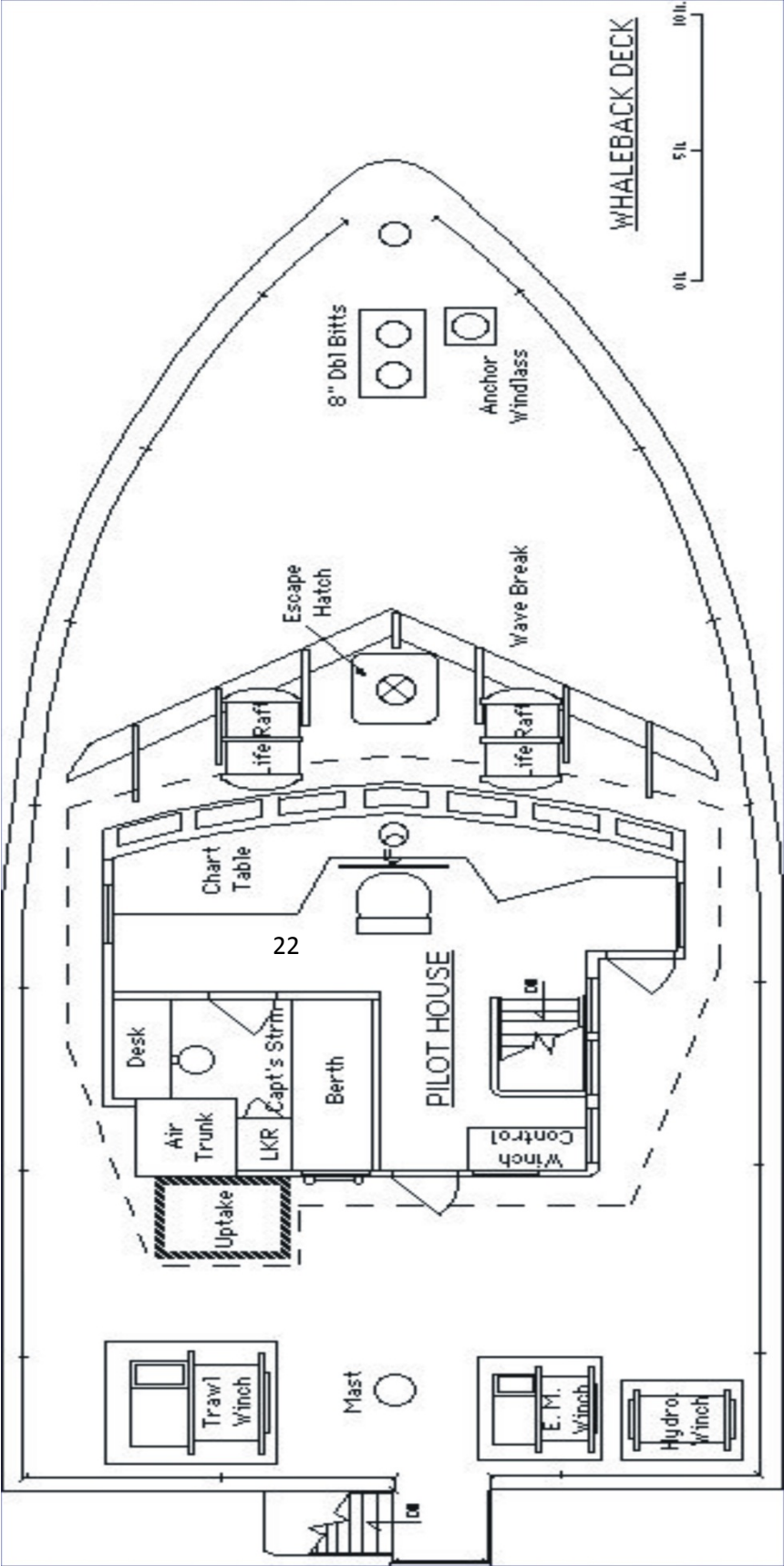


Figure 3
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Figure 4
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U. of MN. Radioisotope Van

