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24 April 2012

SWAB REPORT # 623

SWAB DATE: 13 April 2012

R/V Blue Heron

James Happell

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Date: 2012.04.25 13:56:44 -04'00'

James D. Happell

Distribution:
SWAB Committee
Doug Ricketts

COMMENTS TO SWAB REPORTS 23 November 2010

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/m2 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 dispose in radiation waste system.

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

REPORT FOR SWAB # 623

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

DATE: 13 April 2012
TECHNICIAN: Cecilia Roig

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	24	±	49	0	±	0
	Dry Lab (Figure 1)						
3	Deck in front of passage to lazarette	0	±	0	28	±	36
4	Inside chest freezer	8	±	48	0	±	0
5	Stbd. bench top	0	±	0	0	±	0
6	Center bench top	22	±	39	10	±	31
7	Bench adjacent to sink	5	±	73	0	±	0
8	Deck in front of sink	17	±	54	0	±	0
9	Deck in front of stairs to Main Deck	16	±	41	5	±	30
	Wet Lab (Figure 2)						
10	Inside freezer	0	±	0	0	±	0
11	Insisde refrigerator	44	±	47	3	±	19
12	Deck in front of stairs to Dry Lab	1	±	22	4	±	34
13	Deck in front of aft door	5	±	0	0	±	0
14	Galley/Mess deck by aft door	0	±	0	25	±	36
15	Deck in Galley	0	±	0	14	±	40
16	Deck under table	26	±	60	0	±	0
17	Bench top fwd of stbd. sink	0	±	0	0	±	0
18	Bench top aft of port sink	8	±	45	1	±	27
19	Deck center of lab	26	±	73	0	±	0
	Whaleback Deck (Figure 3)						
20	Deck inside pilot house	29	±	55	0	±	0
21	Deck in front of pilot house	25	±	54	0	±	0
22	Deck by Hydro Winch	10	±	117	0	±	0
23	Intermediate bucket blank	0	±	0	0	±	0
	U. of MN Radioisotope Van (Figure 4)						
24	Bench top adjacent to LSC	**58,516	±	620	*984	±	27
25	Inside fume hood	52	±	51	0	±	0
26	Sink area	66	±	49	0	±	1
27	Inside fridge next to single door	34	±	46	1	±	10

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
28	Inside fridge next to LSC	*2,236	±	127	47	±	11
29	Deck in front of LSC	323	±	63	21	±	19
30	Deck inside single door entrance	449	±	70	23	±	18
31	Final bucket blank	35	±	63	0	±	0

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. All areas tested on the ship were free from radioisotope contamination. In the radioisotope van, the bench top adjacent to LSC showed moderate ^{14}C and ^{3}H contamination and needs to be cleaned before any use. The inside of the fridge next to the LSC has mild ^{3}H contamination and needs to be cleaned before any natural tracer work

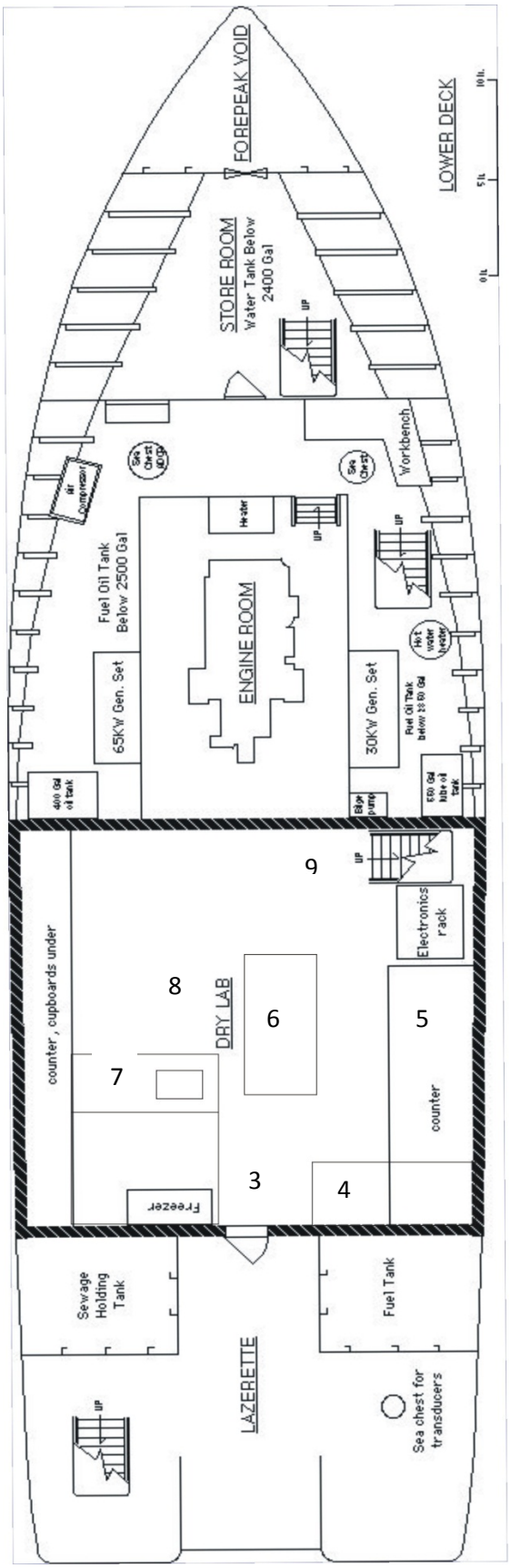

Figure 1

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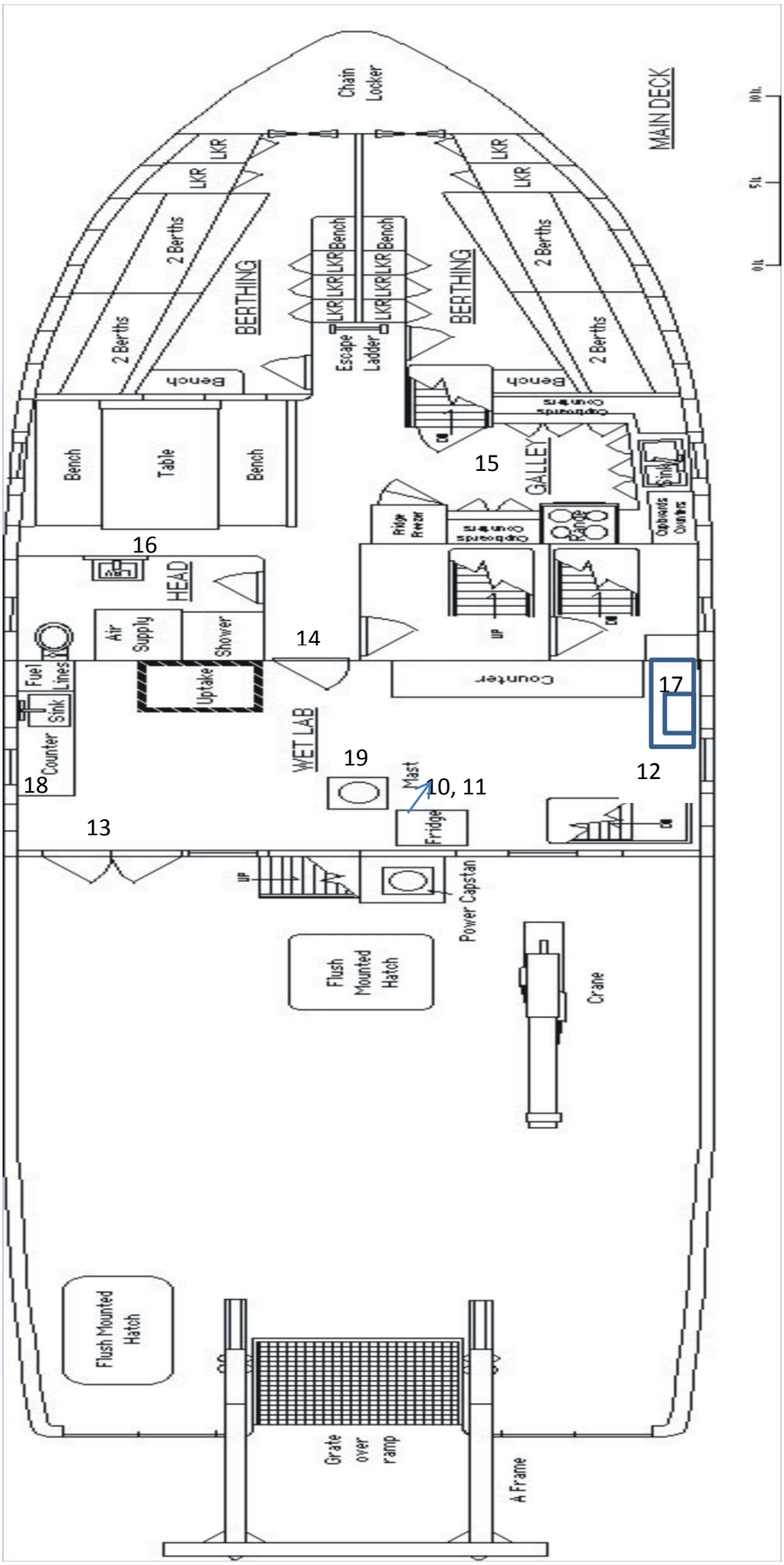

Figure 2

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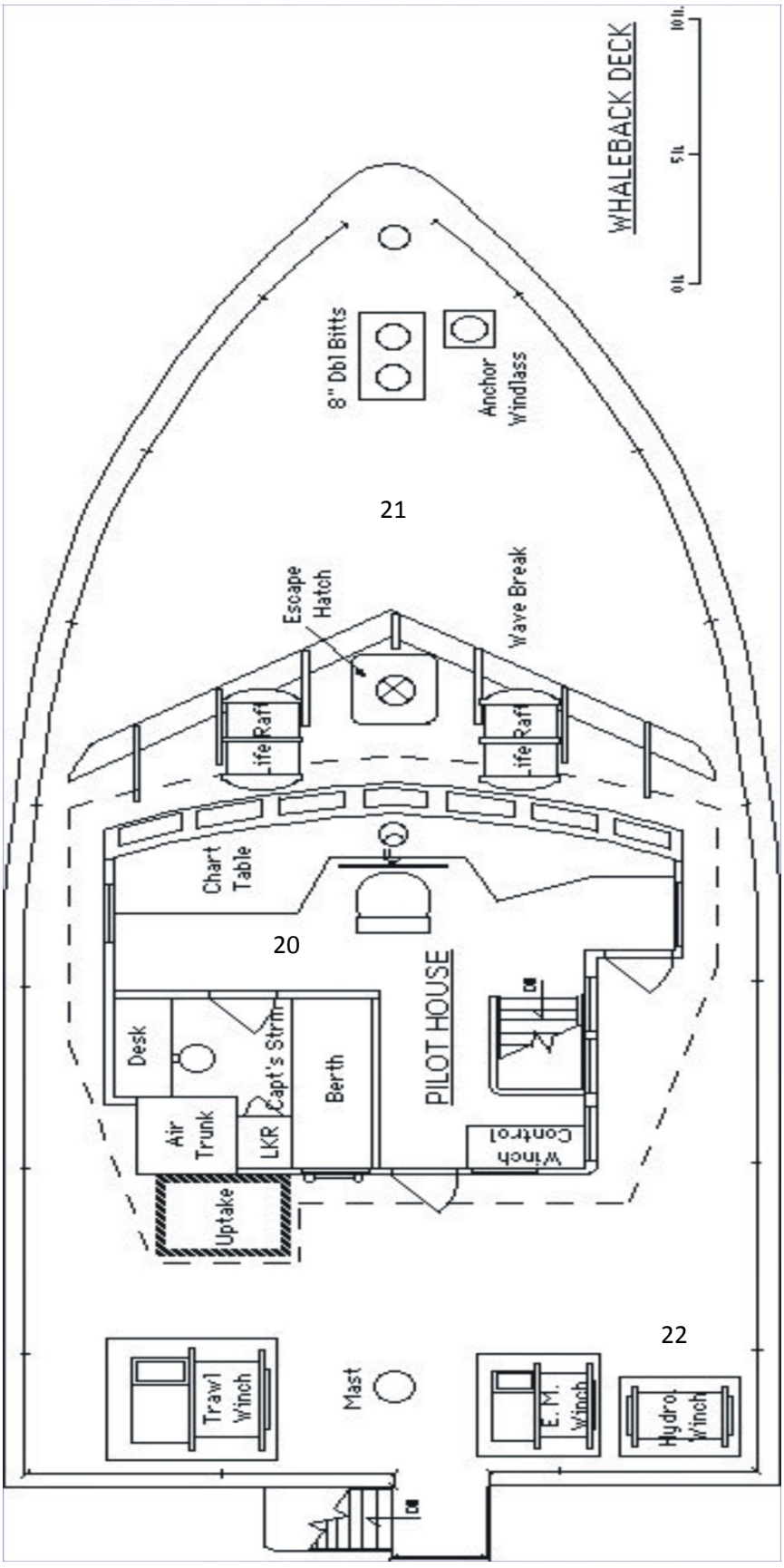

Figure 3

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Figure 4

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U. of MN. Radioisotope Van