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Tritium Laboratory
13 October 2014

SWAB REPORT #743

SWAB DATE: 6 October 2014

R/V *Blue Heron* and Radiation Van

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Distribution:
SWAB Committee
Doug Ricketts

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 offi

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

REPORT FOR SWAB # 743

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

DATE: 6 October 2014
TECHNICIAN: Jim Happell

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	16	±	58	0	±	0
	Dry Lab (Figure 1)						
3	Deck in front of passage to lazarette	0	±	0	0	±	0
4	Inside chest freezer	9	±	30	12	±	34
5	Starboard benchtop	3	±	0	0	±	0
6	Center benchtop	16	±	66	0	±	0
7	Benchtop adjacent to sink	26	±	43	7	±	30
8	Deck in front of sink	7	±	54	0	±	0
9	Deck in front of stairs to main deck	30	±	40	16	±	32
	Wet Lab & Galley/Mess deck (Figure 2)						
10	Inside freezer	2	±	26	3	±	34
11	Inside refrigerator	160	±	57	3	±	8
12	Deck in front of stairs to dry lab	32	±	60	0	±	0
13	Deck in front of aft door	5	±	25	9	±	35
14	Galley/mess deck by aft door	0	±	0	3	±	40
15	Deck in galley	16	±	178	0	±	0
16	Deck under table	26	±	61	0	±	0
17	Benchtop forward of starboard sink	10	±	52	0	±	0
18	Benchtop aft of port sink	2	±	39	1	±	32
19	Deck center of lab	10	±	62	0	±	0
20	Forward benchtop	0	±	0	20	±	37
	Whaleback Deck (Figure 3)						
21	Deck inside pilot house	0	±	0	9	±	40
22	Deck in fron of pilot house	58	±	58	0	±	0
23	Deck by hrdro winch	7	±	49	0	±	0
	Main Deck (Figure 2)						
24	Deck under A-frame	19	±	47	0	±	2
25	Deck near door to lab	18	±	49	0	±	0
26	Deck below entrance to rad van	0	±	0	6	±	44
27	Intermediate bucket blank	12	±	48	0	±	0

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
	UMN Radioisotope Van (Figure 4)						
28	Inside fume hood	116	±	55	11	±	23
29	Benchtop adjacent to LSC	*589	±	80	15	±	12
30	Sink area	25	±	50	0	±	0
31	Inside refridgerator near single door	52	±	59	0	±	0
32	Inside refrigerator next to LSC	384	±	66	22	±	18
33	Deck in front of LSC	48		54	0	±	0
34	Deck inside single door entrance	171	±	55	26	±	27
35	Final bucket blank	22	±	122	0	±	0

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error.
All areas on tested on the ship were free of radioisotope contamination that requires cleaning.
Minor ^{3}H contamination was found in the Rad Van. No action is required.

R/V Blue Heron Lower Deck

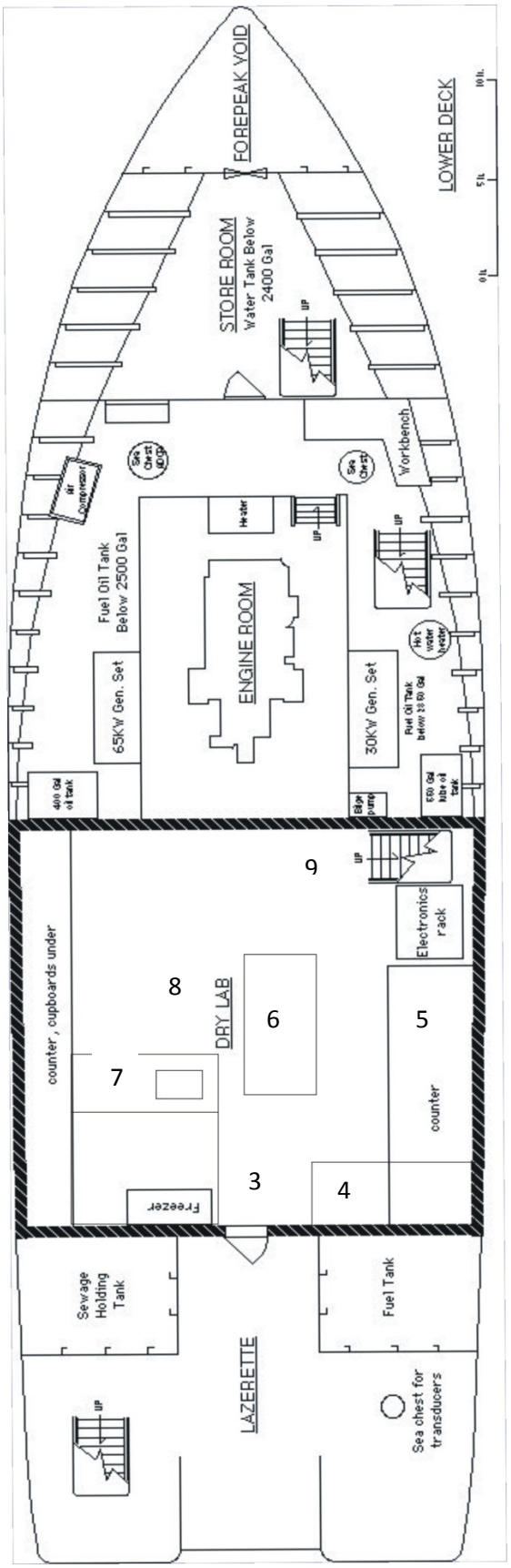

Figure 1
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R/V Blue Heron Main Deck

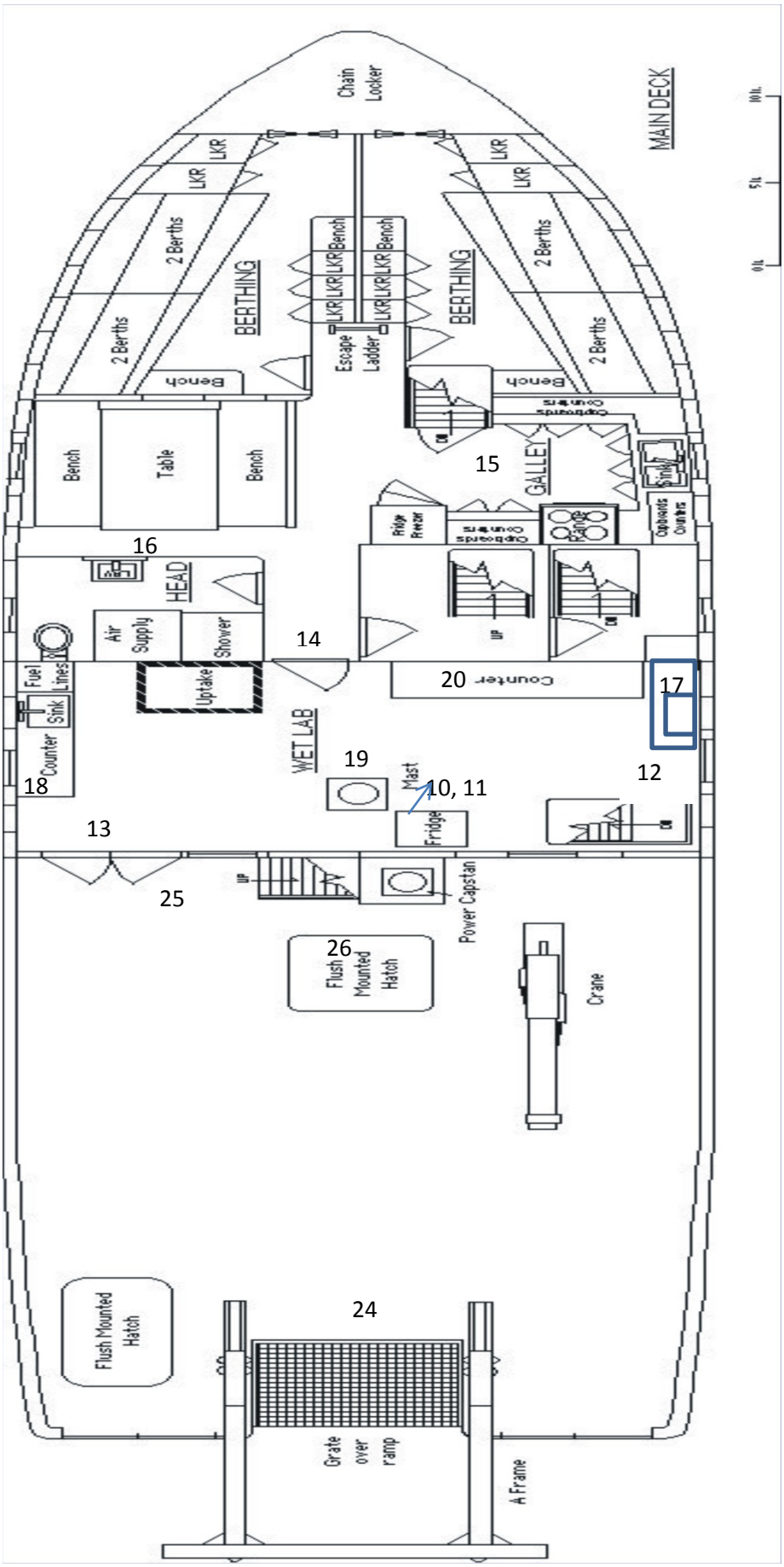

Figure 2
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R/V Blue Heron Whaleback Deck

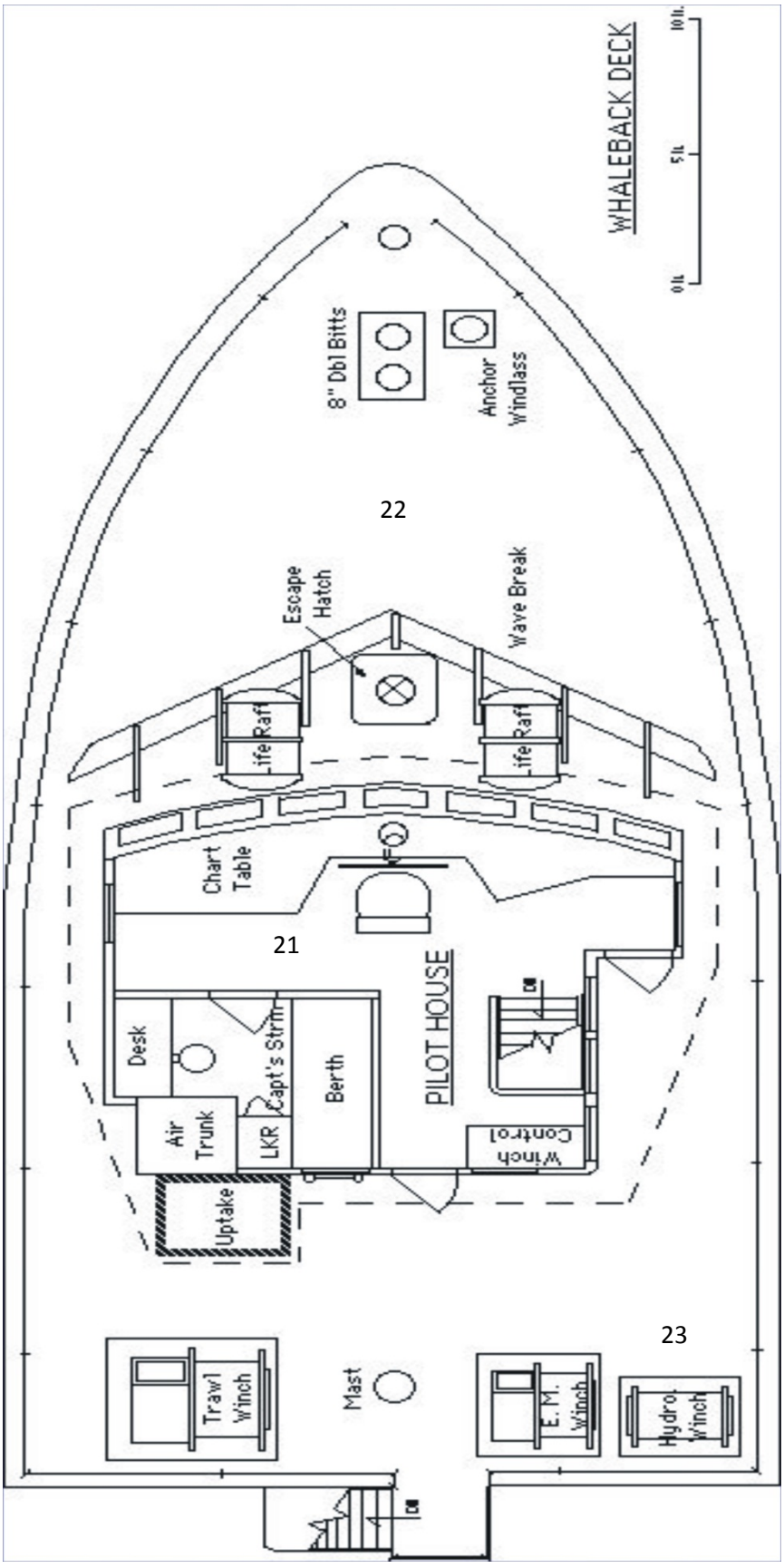

Figure 3
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Figure 4
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U. of MN. Radioisotope Van