

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

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SWAB REPORT # 947

SWAB DATE: 31 May 2019

R/V Endeavor and Rad Van #2408-02

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Distribution:
SWAB Committee
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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 insitution promptly by phone or email.

REPORT FOR SWAB # 947

LOCATION: Morehead City, NC.

DATE: 31 May 2019

VESSEL: *R/V Endeavor*

TECHNICIAN: Yudy Mendoza

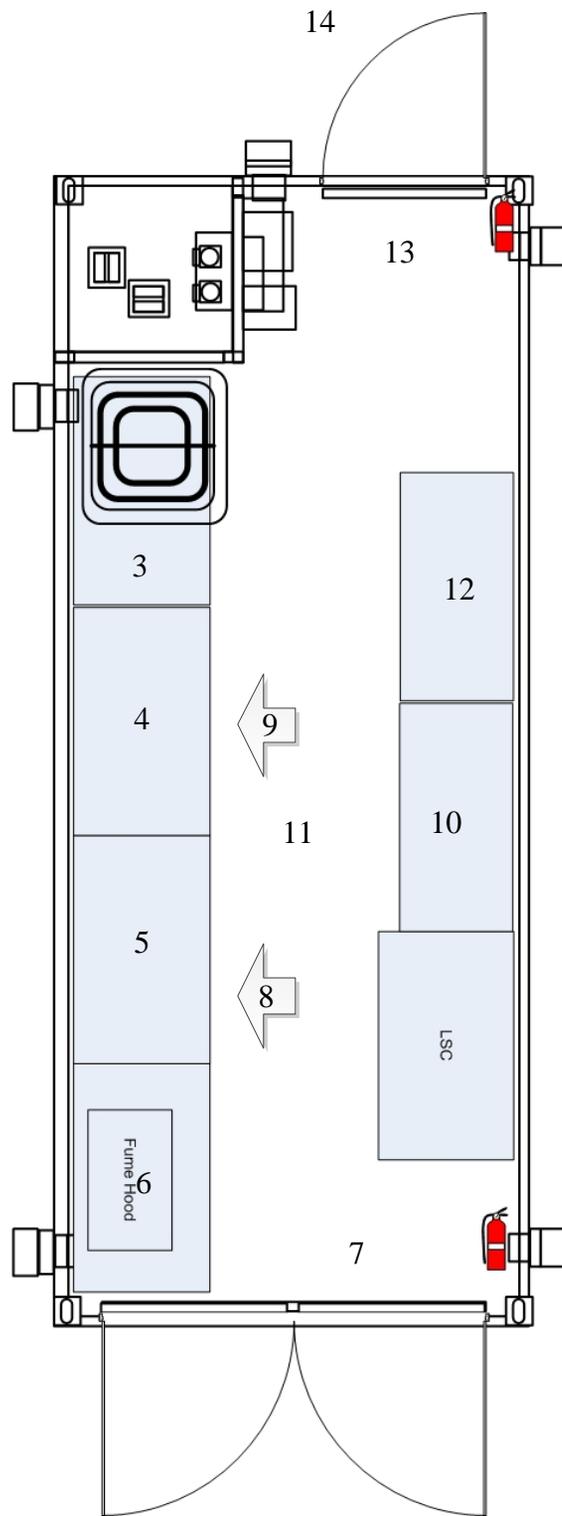
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	31	± 53	6	± 30
<u>Rad Van #2408-02 (Figure 1)</u>					
3	Sink area	20	± 60	-5	± 3
4	Benchtop adjacent to sink	168	± 64	-2	± 13
5	Benchtop adjacent to fume hood	-4	± 1	3	± 41
6	Inside fume hood	32	± 63	-8	± 16
7	Deck between LSC & fume hood	183	± 64	4	± 11
8	Inside refrigerator	33	± 64	-9	± 3
9	Inside freezer	*834	± 101	-21	± 35
10	Benchtop next to LSC	6	± 36	6	± 36
11	Deck in the middle of the van	195	± 65	10	± 19
12	Benchtop across from sink	15	± 256	-23	± 21
13	Deck at entrance	109	± 66	-13	± 14
14	Deck outside van entrance	-9	± 4	-34	± 32
15	Intermediate bucket blank	-5	± 4	-7	± 5
<u>Special Purpose Lab (Figure 2)</u>					
16	Inside fume hood	-8	± 10	1	± 0
17	Top of Kenmore freezer	14	± 88	-10	± 23
18	Benchtop opposite of Kenmore freezer	-23	± 33	-10	± 29
19	Starboard adjacent to -80°C freezer	-1	± 2	-26	± 39
20	Benchtop on top of -80°C freezer	-13	± 21	8	± 42
21	Inside Revco refrigerator	-6	± 29	-22	± 19
22	Deck in front of refrigerator	8	± 23	-24	± 17
23	Starboard sink area	10	± 72	-5	± 10
24	Deck inside entrance	-11	± 30	-4	± 12
<u>Wet Lab (Figure 2)</u>					
25	Port benchtop	23	± 92	-18	± 30
26	Deck inside aft entrance	-24	± 123	-4	± 7
27	Deck inside port entrance	3	± 11	-7	± 14
28	Sink area	12	± 60	-2	± 7
29	Inside shelf of hood/sink	-3	± 4	-10	± 22
30	Deck in front of sink	32	± 84	-23	± 15

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Main Lab (Figure 4)</u>					
31	Deck at forward entrance	-4	± 32	-17	± 16
32	Deck at top of stairs to living quarters	-13	± 11	1	± 1
33	Deck in front of refrigerator	-30	± 20	-2	± 2
34	Port benchtop	34	± 92	-26	± 41
35	Deck between middle and forward benches	-9	± 40	-21	± 52
36	Aft sink area	29	± 982	-51	± 65
37	Deck in front of aft sink	27	± 78	-12	± 11
38	Aft center benchtop	-9	± 32	-19	± 40
39	Mid center benchtop	-11	± 4	-3	± 2
40	Benchtop next to port sink	20	± 204	-28	± 16
41	Port sink area	19	± 72	-9	± 9
42	Deck in front of port sink	-49	± 48	-2	± 2
<u>01 Deck and Upper Lab (Figure 3)</u>					
43	Deck inside aft entrance	-40	± 46	-10	± 20
44	Deck at bottom of stairs to bridge	-11	± 24	-7	± 2
45	Deck inside Electronic Repair Shop	1	± 1	-2	± 2
46	Center benchtop	0	± 0	-10	± 10
47	Deck at top of stairs to Main Lab	7	± 9	-22	± 32
48	Final bucket blank	24	± 107	-24	± 15

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 of isotope contamination that requires cleaning. Minor ³H contamination was found in the Rad Van. No action is necessary

Figure 1
SWAB #947
31 May 2019



R/V Endeavor Main Deck and Labs

Scale



Deck bolt pattern is on 2 foot centers

Rev. 04 Sep 2001

Figure 2
SWAB # 947
31 May 2019

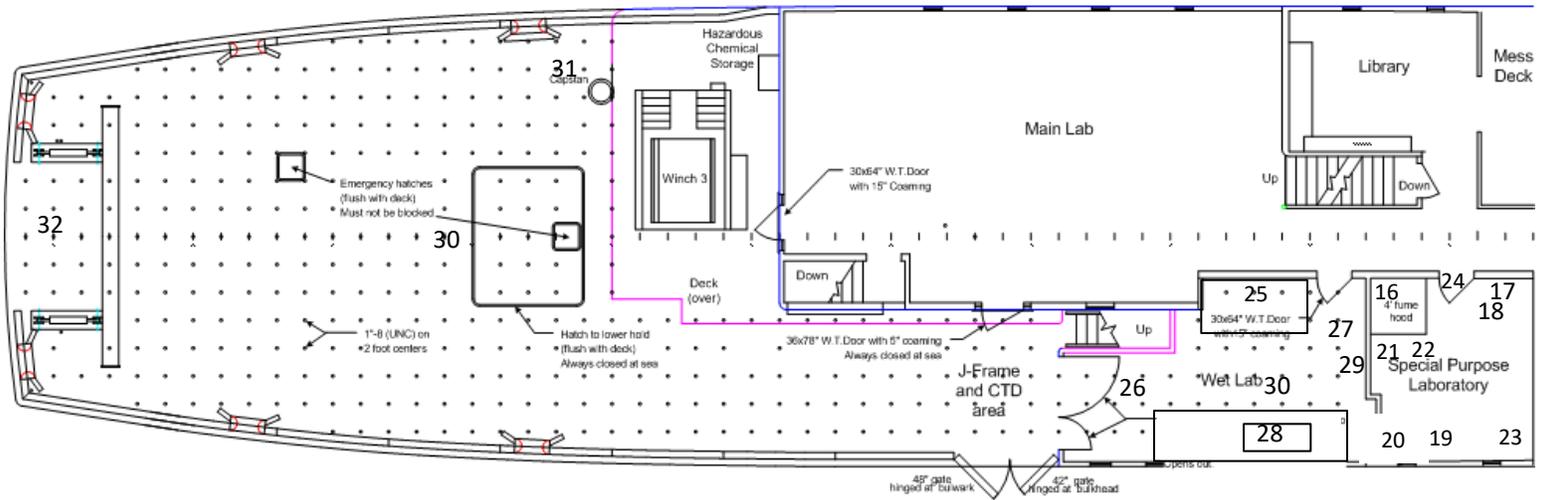


Figure 3
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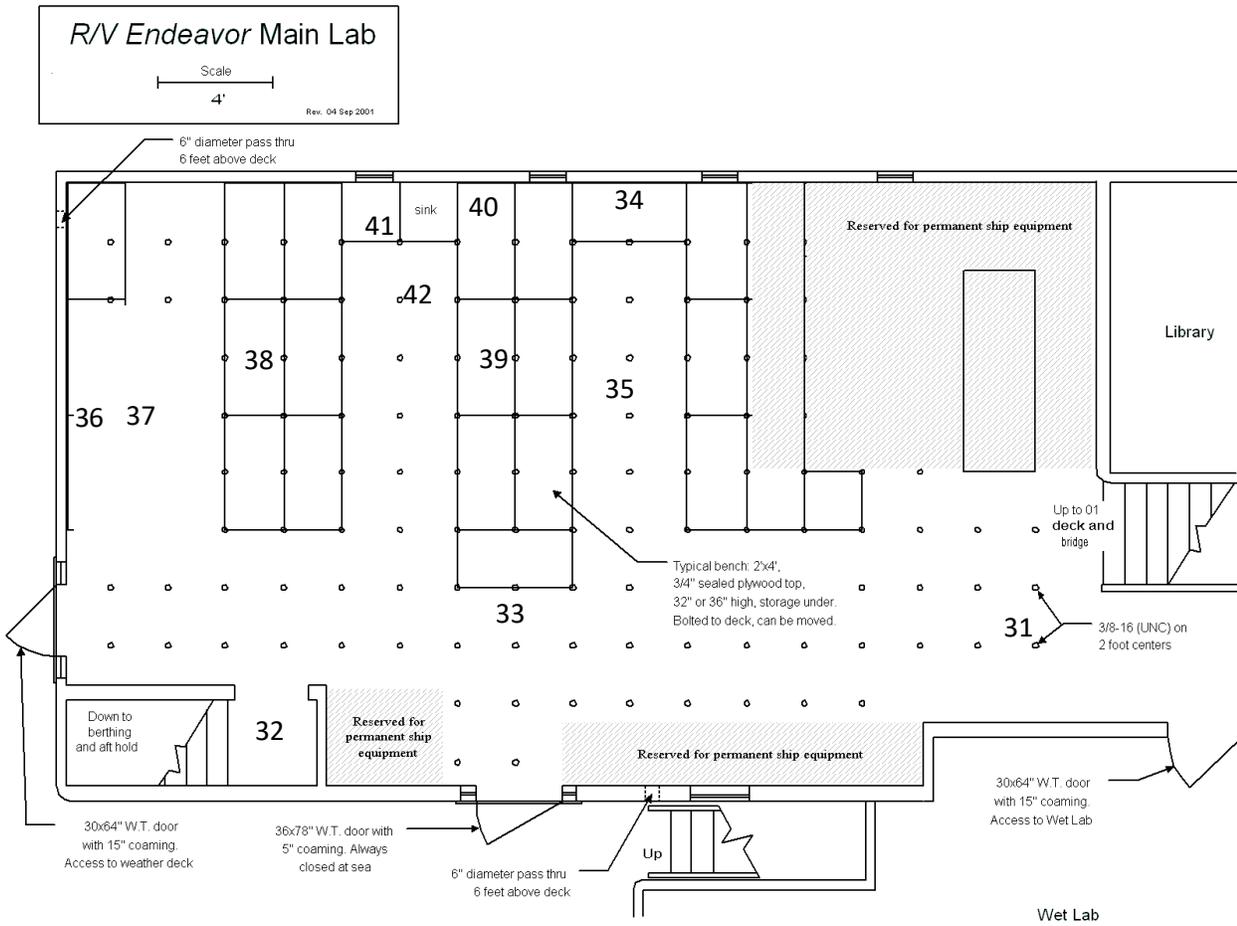
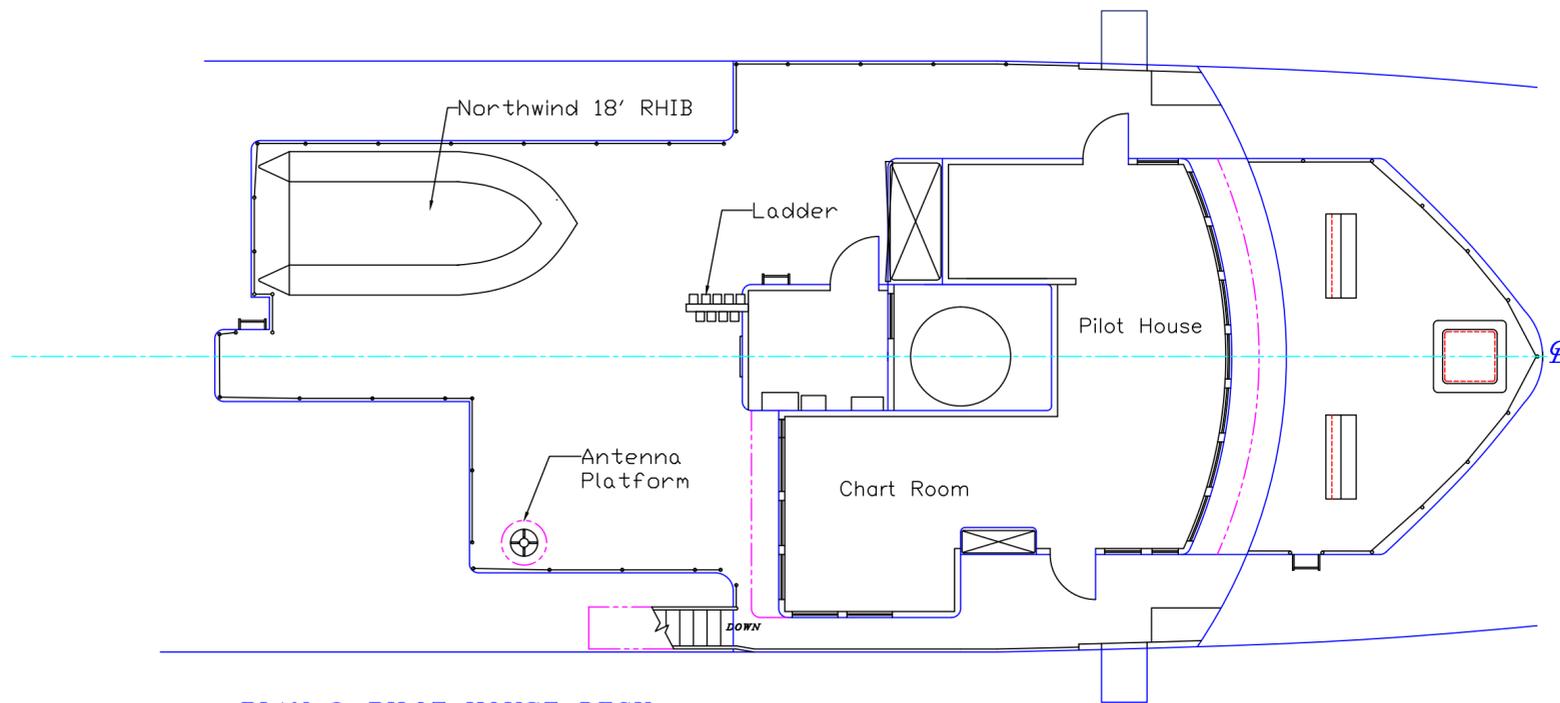
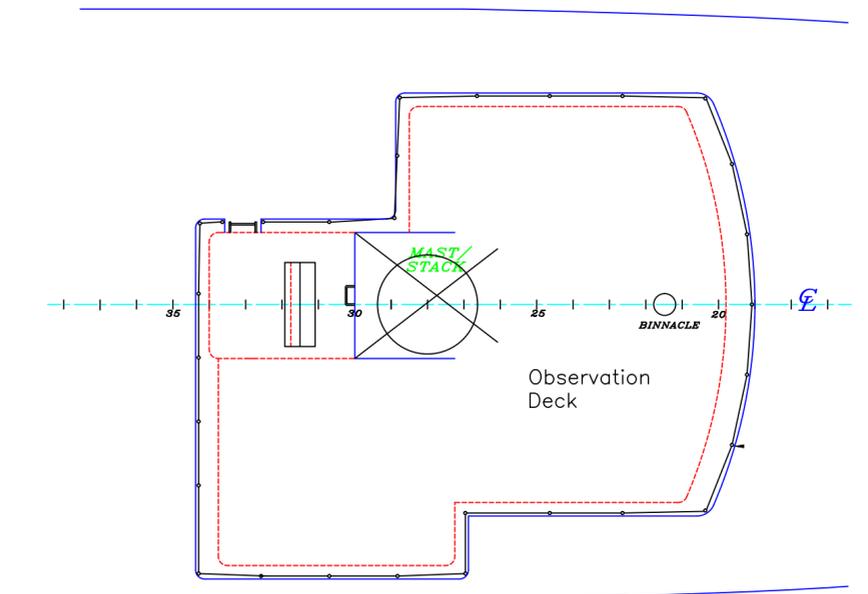


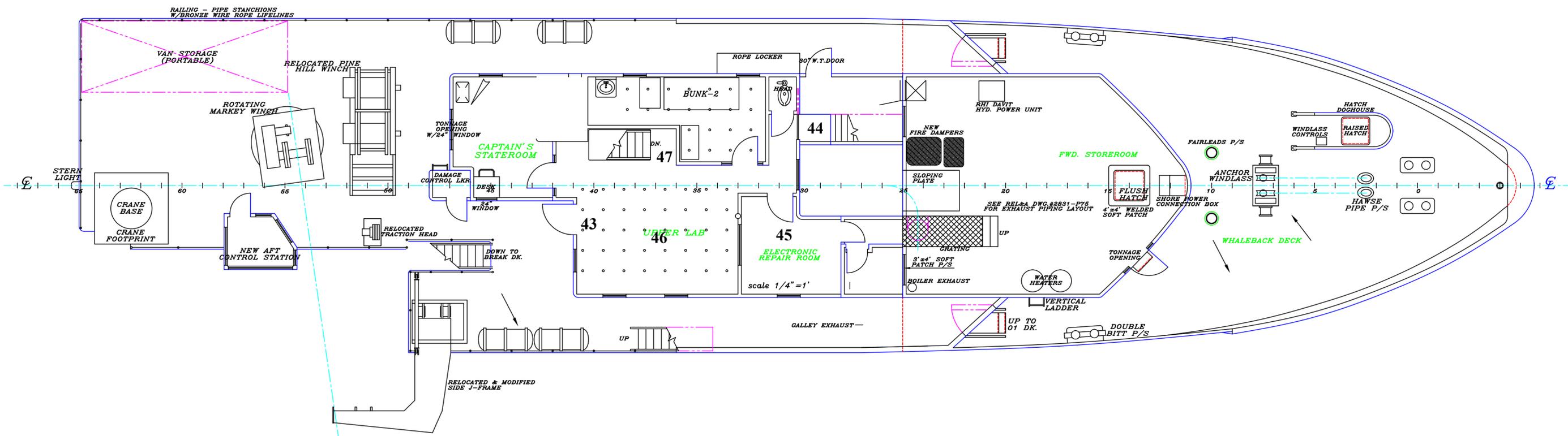
Figure 4
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PLAN @ PILOT HOUSE DECK



PLAN @ PILOT HOUSE TOP



PLAN @ 01 DECK