

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

15 July 2021

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SWAB REPORT # 1005

SWAB DATE: 7 July 2021

R/V Endeavor

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Distribution:
SWAB Committee
Bill Fanning
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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 # 1005

LOCATION: Narragansett, RI
VESSEL: *R/V Endeavor*

DATE: 7 July 2021
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	-18	±	33	28	±	37
	<u>Wet Lab (Figure 1)</u>						
3	Sink area	-15	±	43	23	±	37
4	Starboard benchtop aft of sink	-31	±	59	19	±	39
5	Inside shelf of hood/sink	4	±	24	10	±	35
6	Deck inside aft entrance	24	±	45	6	±	29
7	Port benchtop	112	±	53	19	±	27
8	Deck inside port entrance	3	±	17	12	±	35
	<u>Special Purpose Lab (Figure 1)</u>						
9	Inside fume hood	-13	±	39	18	±	37
10	Top of Kenmore freezer	2	±	8	18	±	35
11	Benchtop opposite of Kenmore freezer	315	±	67	14	±	16
12	Forward benchtop	-42	±	82	19	±	40
13	Starboard sink area	8	±	23	19	±	35
14	Starboard benchtop adjacent to -80°C freezer	13	±	36	10	±	33
15	Inside Thermo refrigerator	1	±	6	13	±	35
16	Deck between forward benchtop and refrigerator	-21	±	40	15	±	38
17	Deck inside entrance	15	±	36	14	±	34
	<u>Main Lab (Figure 2)</u>						
18	Aft center benchtop	-9	±	50	37	±	37
19	Mid center benchtop	-8	±	20	9	±	37
20	Deck at top of stairs to living quarters	7	±	19	27	±	36
21	Deck inside starboard entrance	-7	±	19	10	±	37
22	Inside Laminar Flow Hood - benchtop	0	±	3	6	±	35
23	Port benchtop	-42	±	83	42	±	39
24	Deck at forward entrance	-59	±	28	11	±	49
25	Deck between middle & forward benches	-62	±	29	13	±	47
26	Forward center benchtop	8	±	80	-6	±	37
27	Deck in front of aft sink	-32	±	63	18	±	39
28	Aft sink area	20	±	37	22	±	34
29	Port sink area	6	±	103	-6	±	38

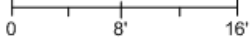
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Main Deck (Figure 1)</u>					
30	Aft deck below Van door	2	± 9	22	± 36
31	Aft deck where incubator stood	2	± 31	3	± 34
32	Aft deck under A-frame	-28	± 53	18	± 39
<u>01 Deck and Upper Lab (Figure 3)</u>					
33	Starboard aft benchtop	-21	± 40	42	± 38
34	Deck inside aft entrance	-52	± 103	34	± 40
35	Deck at bottom of stairs to bridge	-36	± 71	-5	± 32
36	Deck aft of Electronic Repair Shop	-38	± 74	7	± 49
37	Center benchtop	24	± 48	5	± 28
38	Final bucket blank	-22	± 42	14	± 39

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. However there were two areas (#7 and #11) where ³H was above background.

R/V Endeavor Main Deck and Labs

Scale



Deck bolt pattern is on 2 foot centers

Rev. 04 Sep 2001

Figure 1
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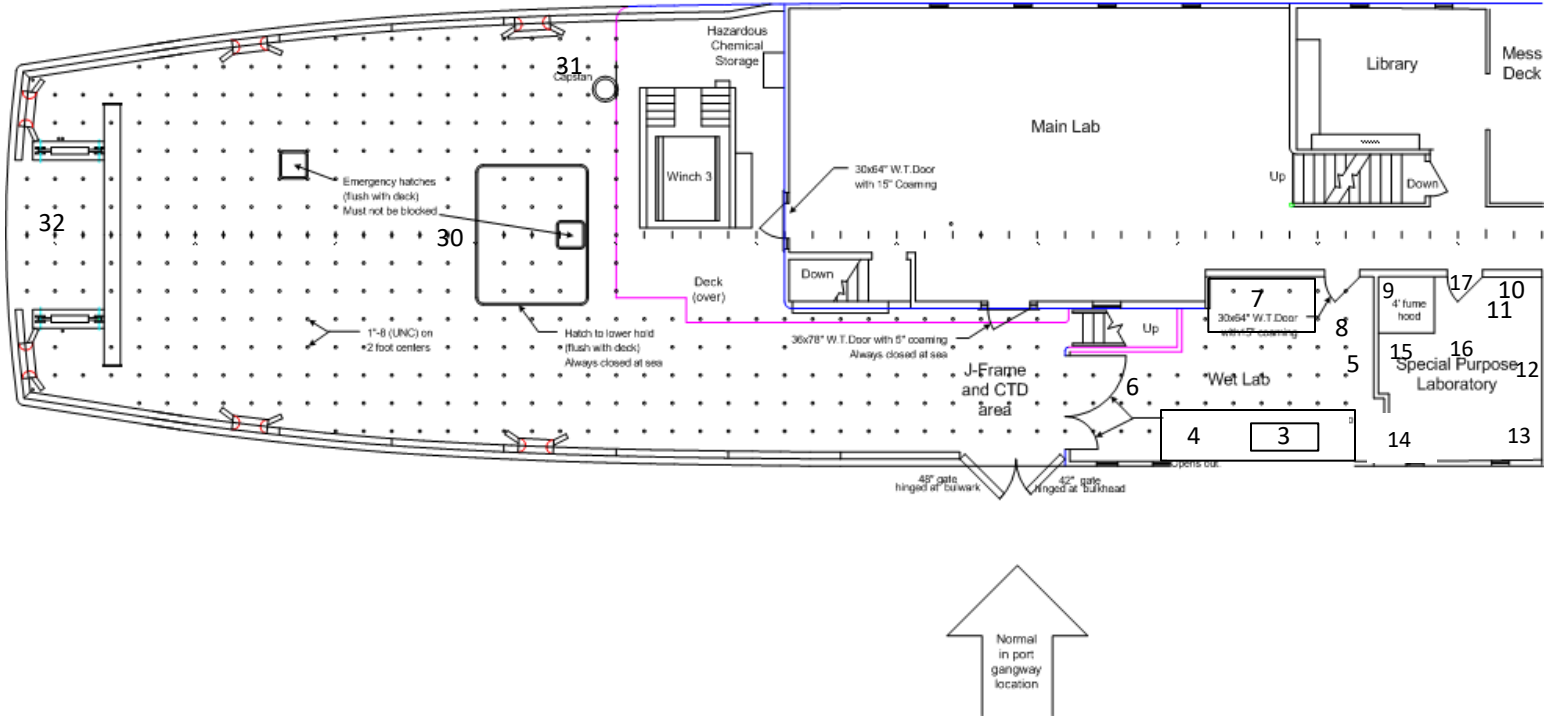


Figure 2
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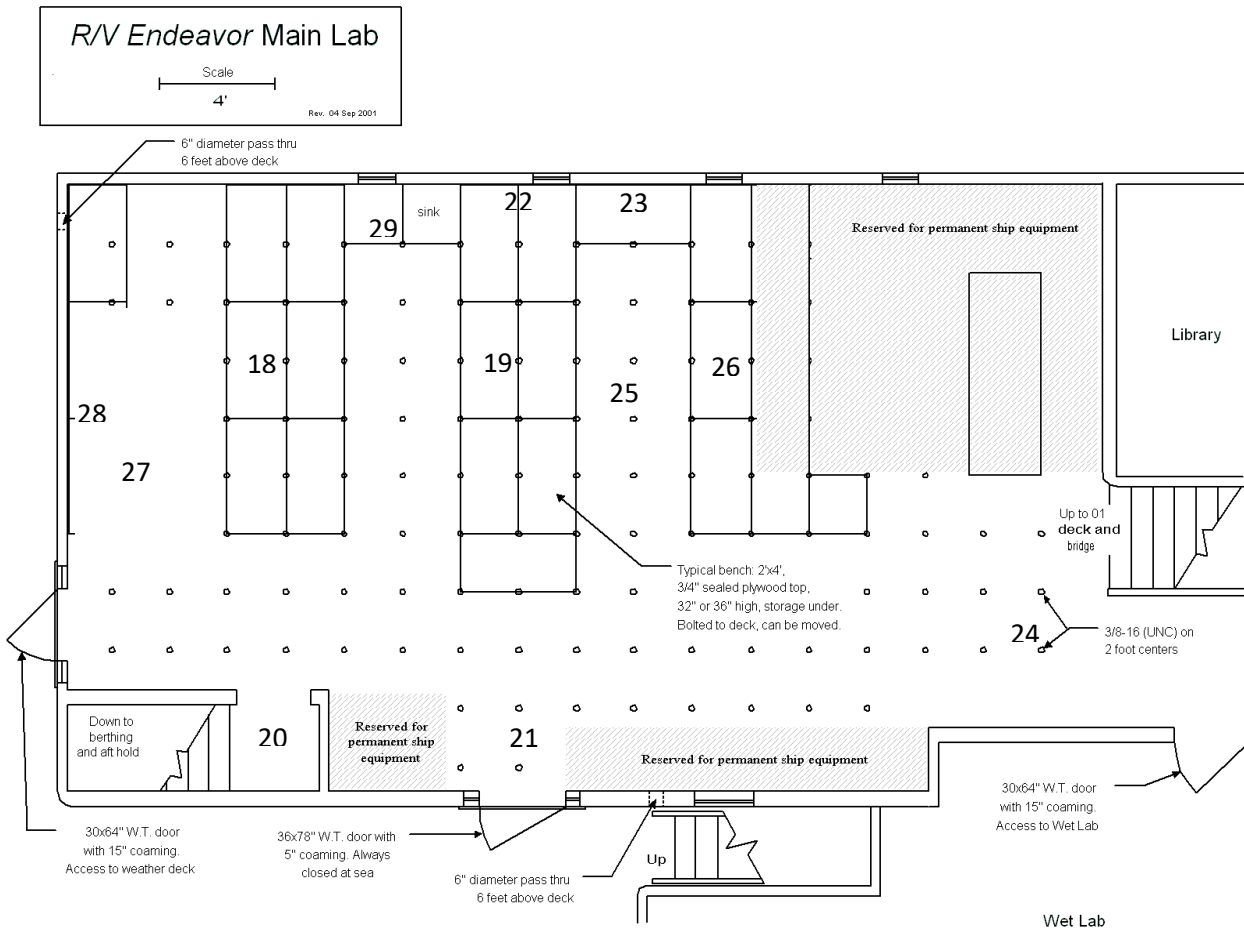
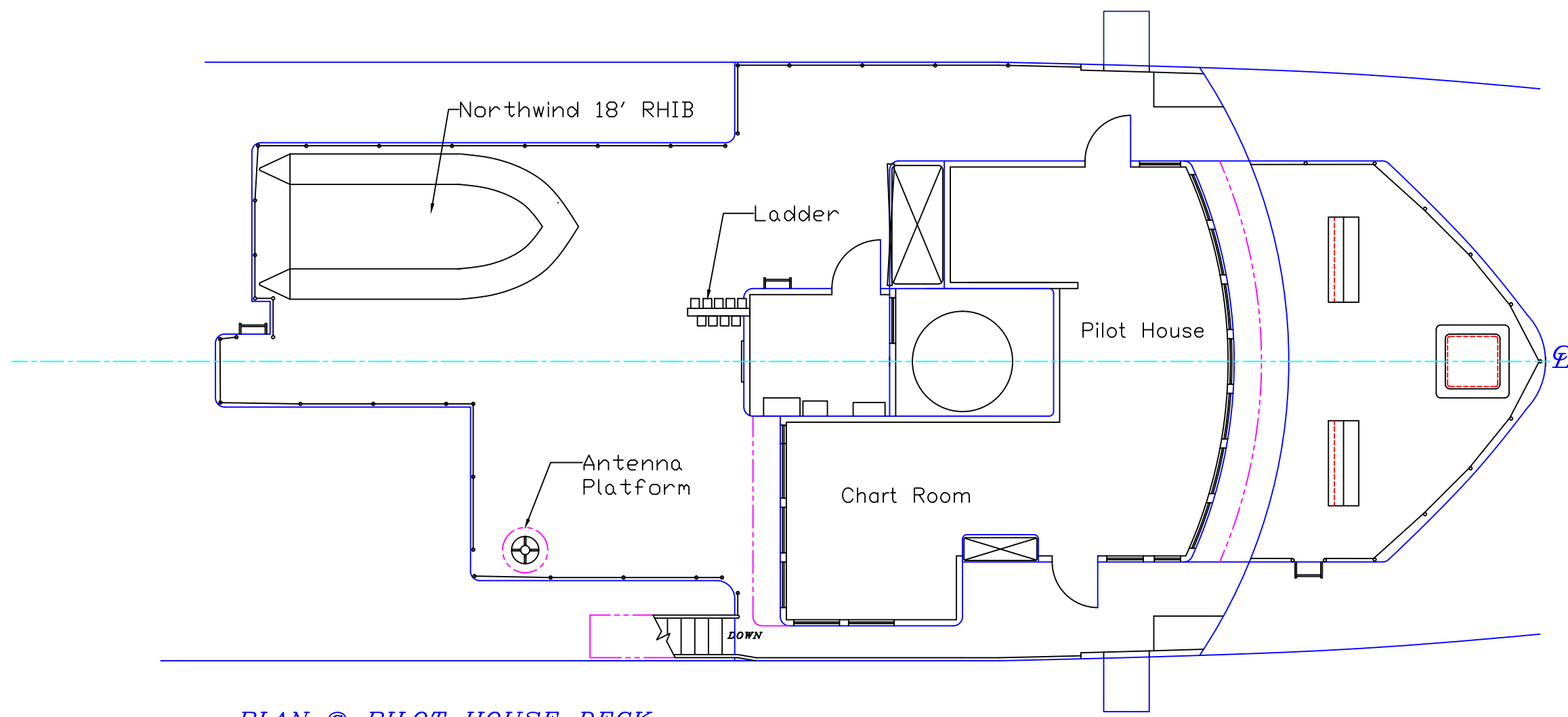
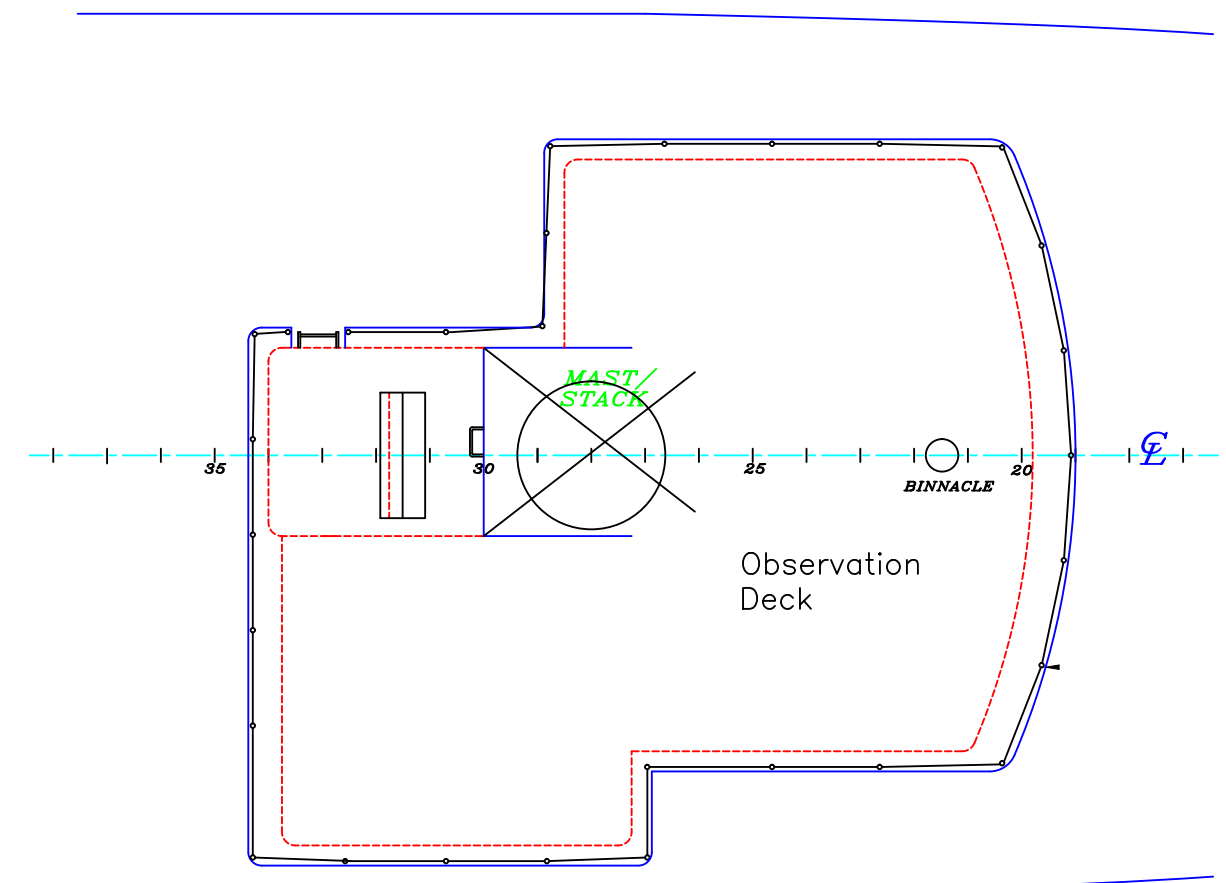


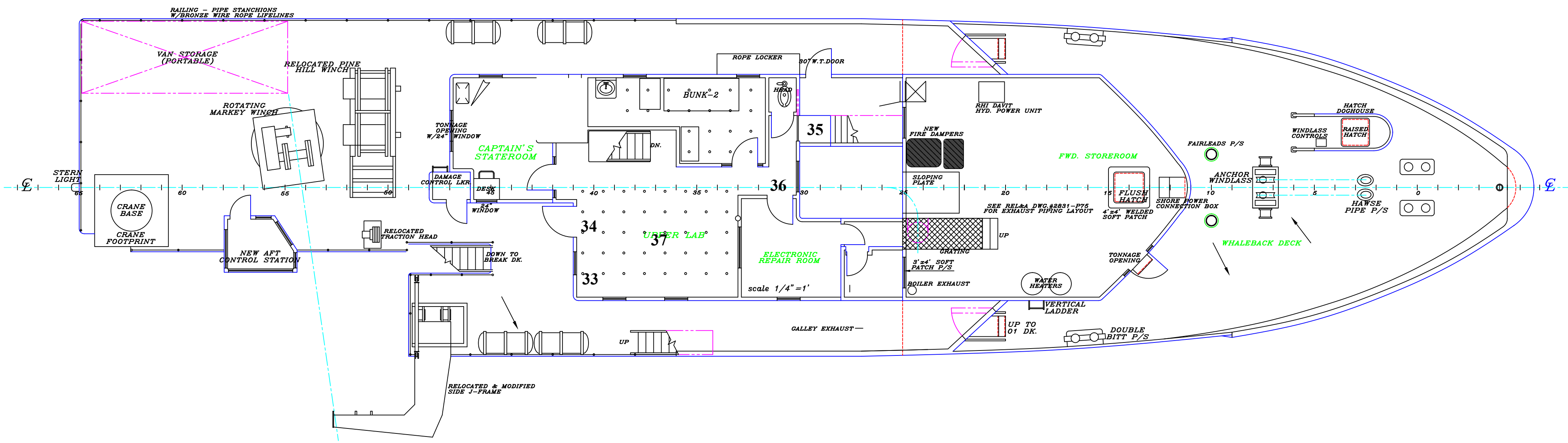
Figure 3
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PLAN @ PILOT HOUSE DECK



PLAN @ PILOT HOUSE TOP



PLAN @ 01 DECK