

UNIVERSITY OF MIAMI

ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

13 January 2025

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SWAB REPORT # 1110

SWAB DATE: 3 January 2025

R/V Endeavor

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Associate Research Professor

Distribution:
SWAB Committee
Erich Gruebel

COMMENTS TO SWAB REPORTS

15 December 2021

The LSC is now a Quantulus GCT 6220, with the SWAB counting assay having background cpm of 0.3 & 1.2 for ^3H & ^{14}C . This replaces an LSC with background cpm of 1.6 & 5.5 for ^3H & ^{14}C .

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. All activities significantly above background will be in **bold**.

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 # 1110

LOCATION: Narragansett, RI

DATE: 3 January 2025

VESSEL: *R/V Endeavor*

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	39	±	31	-41	±	98
	<u>Wet Lab (Figure 1)</u>						
3	Sink area	30	±	24	-18	±	44
4	Starboard benchtop aft of sink	28	±	20	-6	±	30
5	Deck in front of hood/sink	46	±	25	-23	±	56
6	Deck inside aft entrance	31	±	20	-5	±	22
7	Port benchtop	10	±	17	-5	±	21
8	Deck inside port entrance	27	±	19	-5	±	25
	<u>Special Purpose Lab (Figure 1)</u>						
9	Inside fume hood	30	±	22	-18	±	42
10	Top of Magic Chef freezer	24	±	22	-16	±	38
11	Benchtop opposite of freezer	18	±	19	-8	±	38
12	Forward benchtop	28	±	28	-25	±	59
13	Starboard sink area	28	±	21	-10	±	25
14	Starboard benchtop next to -80oC freezer	47	±	24	-13	±	32
15	Inside refrigerator	42	±	28	-24	±	58
16	Top of -80oC freezer	25	±	21	-12	±	28
17	Deck in center of lab	40	±	17	-17	±	41
18	Deck inside entrance	41	±	22	-6	±	28
	<u>Main Lab (Figure 2)</u>						
19	Aft center benchtop	22	±	30	-23	±	54
20	Deck at top of stairs to lower deck	14	±	21	-9	±	40
21	Deck inside aft entrance	6	±	13	-18	±	42
22	Mid center benchtop	11	±	19	-7	±	31
23	Port sink area	47	±	25	-19	±	44
24	Deck in front of port sink	15	±	14	5	±	13
25	Deck at forward entrance	8	±	16	-4	±	16
26	Port benchtop	32	±	19	2	±	7
27	Deck between middle & forward benches	24	±	20	-6	±	30
28	Deck in front of aft sink	20	±	19	-7	±	31
29	Benchtop next to aft sink	33	±	23	-16	±	39
30	Deck inside starboard entrance	28	±	25	-22	±	52

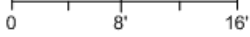
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
	<u>01 Deck (Figure 3)</u>				
31	Deck in front of van door	40	± 22	-9	± 44
32	Deck outside entrance to upper lab	32	± 22	-16	± 38
	<u>Upper Lab (Figure 3)</u>				
33	Center benchtop	23	± 22	-14	± 34
34	Deck inside aft entrance	46	± 25	-2	± 66
35	Deck at bottom of stairs to bridge	27	± 23	-16	± 39
36	Deck at top of stairs to Main Lab	14	± 18	-6	± 29
37	Top of chest freezer	38	± 23	-18	± 43
38	Final bucket blank	38	± 20	1	± 5

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. Reports may now contain values less than zero. 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. Please note that we are now using a Quantulus 6220 LSC which counts very near natural background. While the cleanup standards have not changed all values above background will now be in bold. All areas tested inside the ship had no contamination that requires cleaning.

R/V Endeavor Main Deck and Labs

Scale



Deck bolt pattern is on 2 foot centers

Rev. 04 Sep 2001

Figure 1
SWAB # 1110
3 January 2025

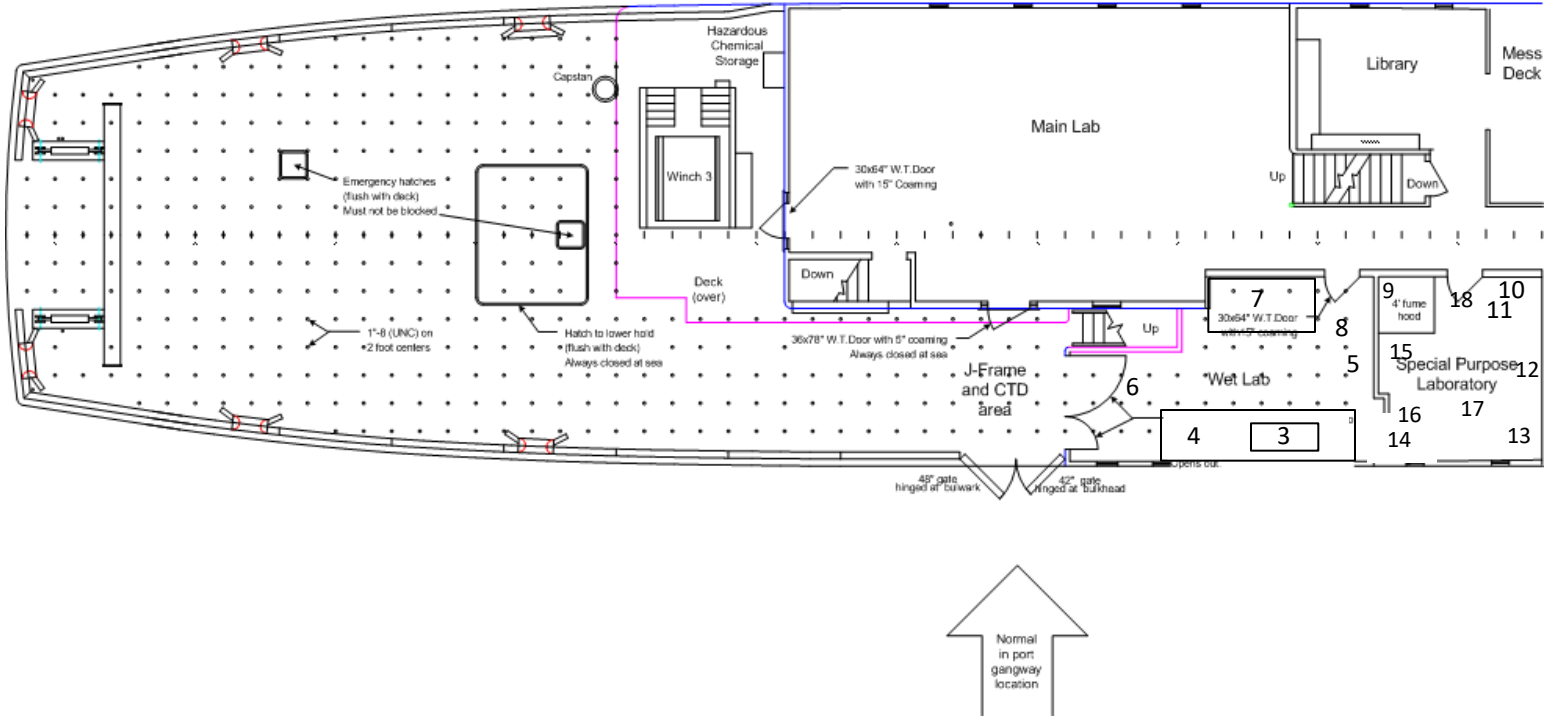


Figure 2
 SWAB #1110
 3 January 2025

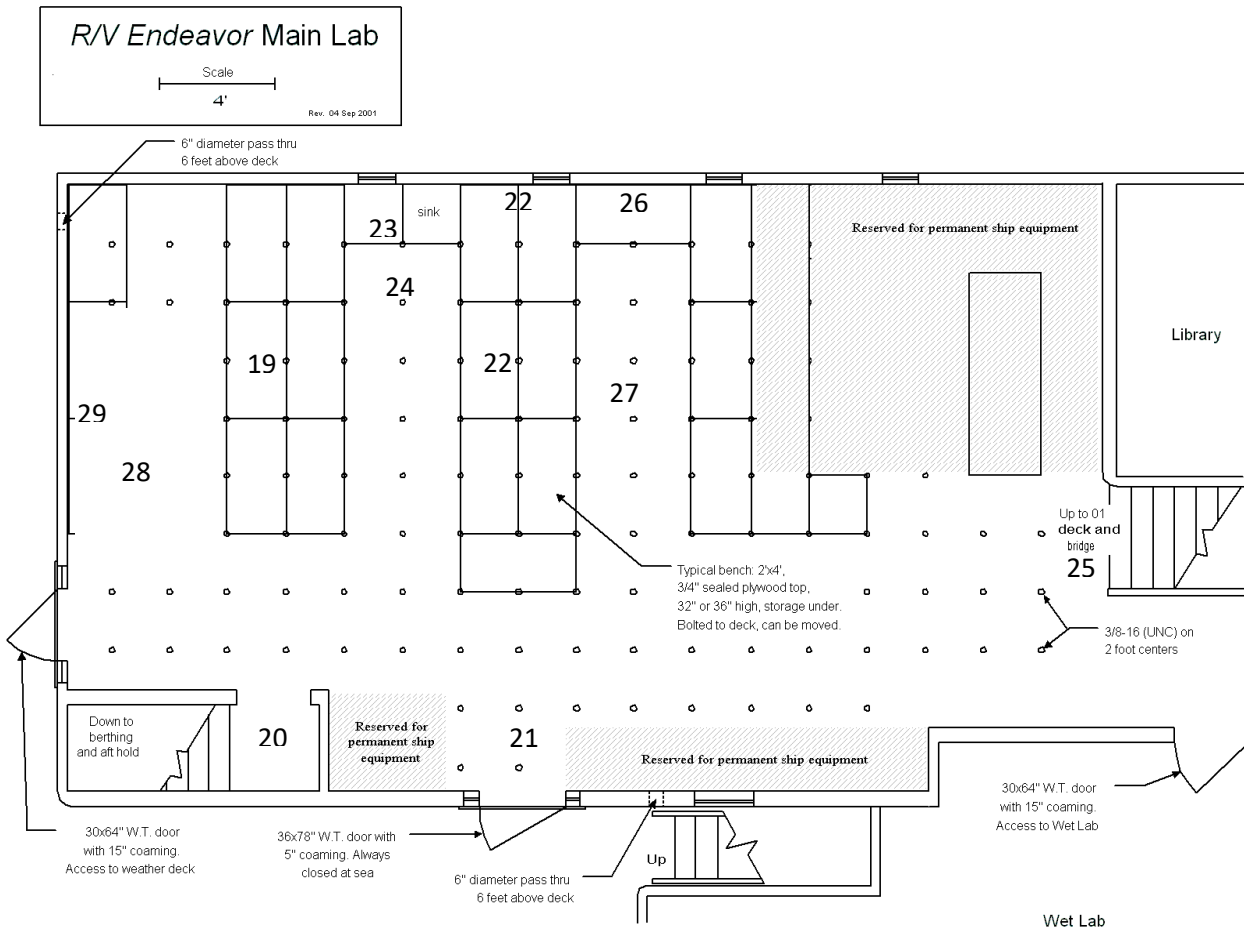
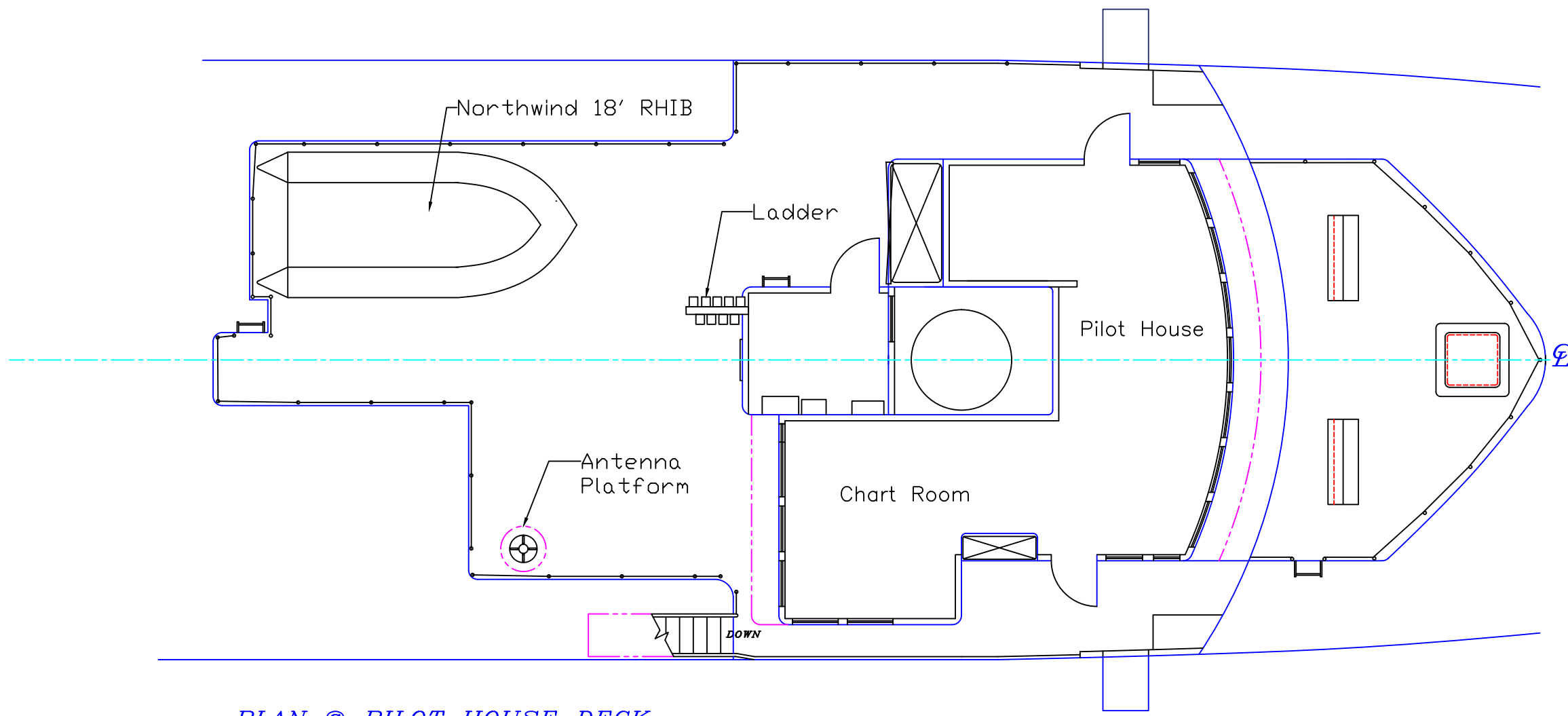
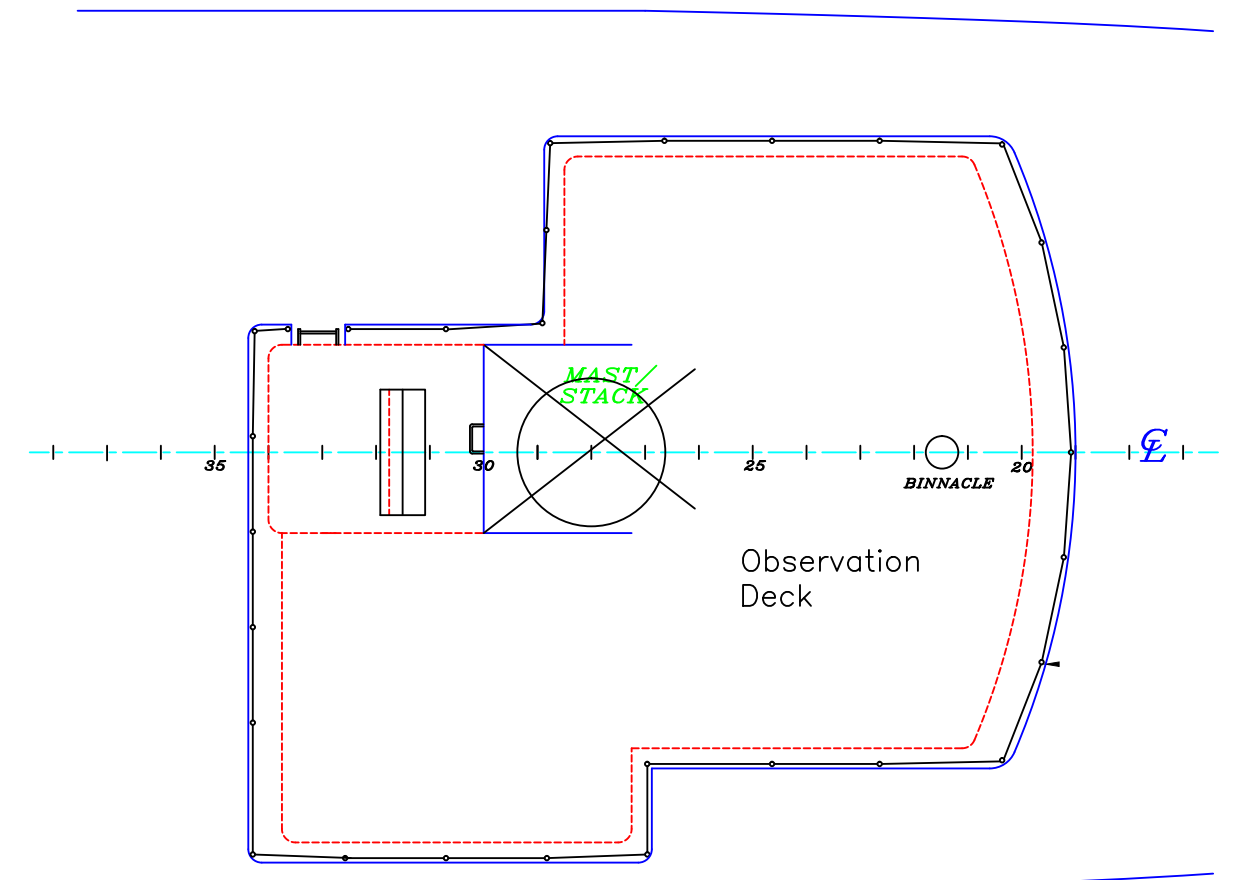


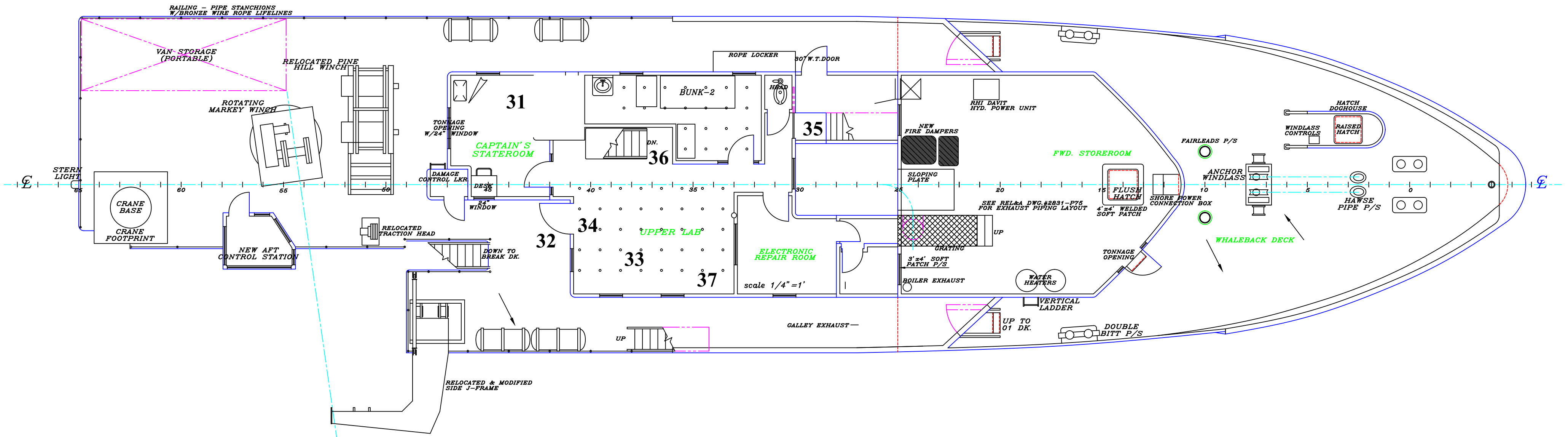
Figure 3
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PLAN @ PILOT HOUSE DECK



PLAN @ PILOT HOUSE TOP



PLAN @ 01 DECK