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ROSENSTIEL  
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28 February 2109

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SWAB REPORT # 931

SWAB DATE: 21 February 201918

*R/V Endeavor*

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## COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for  $^3\text{H}$  and  $^{14}\text{C}$  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  $\text{dpm}/\text{m}^2$ . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in  $\text{dpm}/\text{m}^2$ . An error larger than the activity indicates that the activity is not significantly different from zero.

### Criteria for SWAB Results

Category	$^3\text{H}$ ( $\text{dpm}/\text{m}^2$ )	$^{14}\text{C}$ ( $\text{dpm m}^2$ )	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:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : 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.

$^{14}\text{C}$ : 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  $^3\text{H}$ .

### 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 # 931

LOCATION: St. Georges, Bermuda  
VESSEL: R/V Endeavor

DATE: 21 February 2019  
TECHNICIAN: Jim Happell

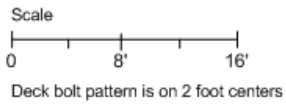
Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	0	± 0	-27	± 46
	<u>Wet Lab (Figure 1)</u>				
3	Sink area	6	± 29	-54	± 89
4	Starboard benchtop aft of sink	29	± 112	-35	± 59
5	Inside shelf of hood/sink	3	± 15	-37	± 62
6	Deck inside aft entrance	3	± 17	-38	± 63
7	Port benchtop	-6	± 31	-36	± 60
8	Deck inside port entrance	20	± 70	-13	± 22
	<u>Special Purpose Lab (Figure 1)</u>				
9	Inside fume hood	53	± 103	-59	± 98
10	Top of Kenmore freezer	50	± 136	-68	± 114
11	Benchtop opposite of Kenmore freezer	-3	± 14	-33	± 56
12	Forward benchtop	20	± 219	-34	± 57
13	Starboard sink area	33	± 731	-67	± 112
14	Starboard benchtop adjacent to -80oC freezer	22	± 36	-66	± 111
15	Inside Revco refrigerator	-10	± 17	-31	± 52
16	Deck between forward benchtop and refrigerator	11	± 17	-40	± 67
17	Deck inside entrance	5	± 24	-32	± 53
	<u>Main Lab (Figure 2)</u>				
18	Aft center benchtop	1	± 3	-39	± 66
19	Mid center benchtop	6	± 33	-38	± 63
20	Deck at top of stairs to living quarters	-10	± 49	-29	± 48
21	Deck inside starboard entrance	0	± 2	-51	± 85
22	Inside Laminar Flow Hood	23	± 36	-49	± 82
23	Port benchtop	2	± 11	-34	± 57
24	Deck at forward entrance	49	± 100	-52	± 87
25	Deck between middle & forward benches	-1	± 4	-42	± 70
26	Forward center benchtop	7	± 34	-51	± 85
27	Deck in front of aft sink	37	± 144	-47	± 78
28	Aft sink area	-1	± 7	-69	± 115
29	Port sink area	-5	± 28	-46	± 77

Sample #	Sample Identification	$^3\text{H}$ dpm/m <sup>2</sup>		$^{14}\text{C}$ dpm/m <sup>2</sup>	
		activity	error	activity	error
<u>Main Deck (Figure 1)</u>					
30	Aft deck below Van door	16	± 25	-70	± 117
31	Aft deck where incubator stood	-25	± 40	-42	± 71
32	Aft deck under A-frame	19	± 31	-46	± 77
<u>01 Deck and Upper Lab (Figure 3)</u>					
33	Starboard aft benchtop	24	± 38	-53	± 88
34	Deck inside aft entrance	23	± 36	-66	± 111
35	Deck at bottom of stairs to bridge	27	± 461	-53	± 88
36	Deck aft of Electronic Repair Shop	19	± 30	-59	± 98
37	Center benchtop	-17	± 27	-46	± 76
<u>Rad Van #625.5.02</u>					
38	Sink area	67	± 107	-27	± 45
39	Benchtop adjacent to sink	292	± 73	-67	± 111
40	Inside fume hood	28	± 141	-39	± 65
41	Benchtop adjacent to fume hood	253	± 65	-7	± 42
42	Inside refrigerator	53	± 111	-61	± 102
43	Inside freezer	486	± 76	39	± 25
44	Benchtop next to LSC	43	± 93	-43	± 72
45	Benchtop across from sink	61	± 98	-64	± 107
46	Deck between LSC & fume hood	71	± 62	-23	± 39
47	Deck at entrance	110	± 71	-48	± 81
48	Final bucket blank	19	± 31	-54	± 90

### 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 and van were free  $^3\text{H}$  contamination that requires cleaning.

# R/V Endeavor Main Deck and Labs



Rev. 04 Sep 2001

Figure 1  
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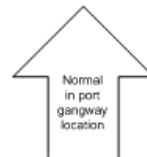
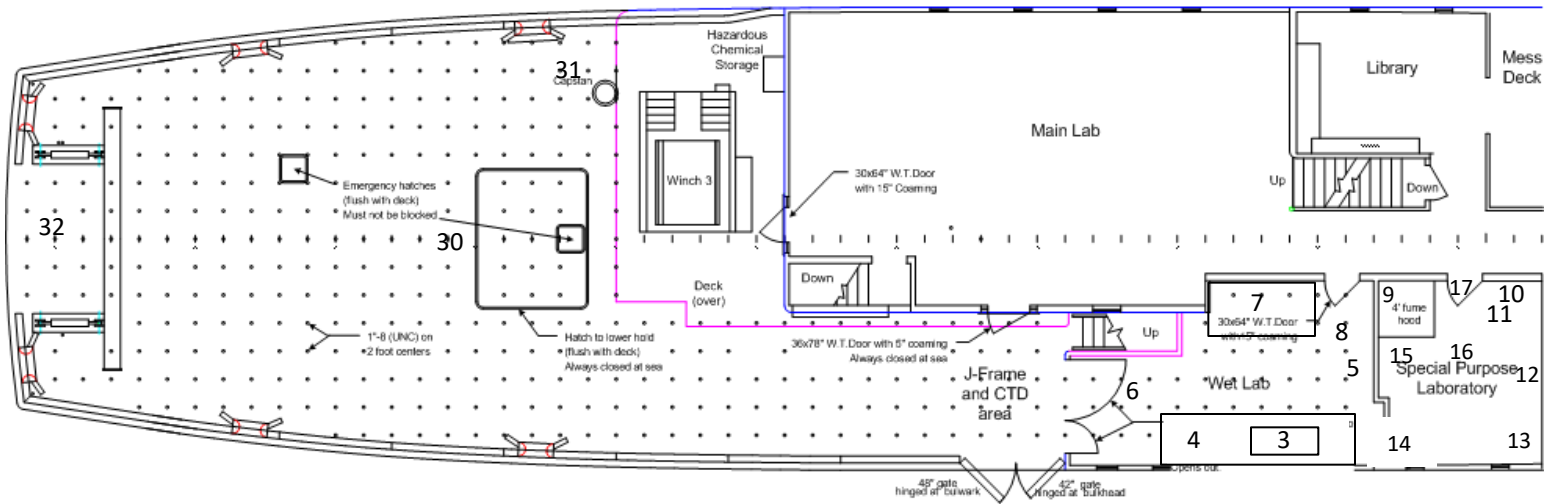


Figure 2  
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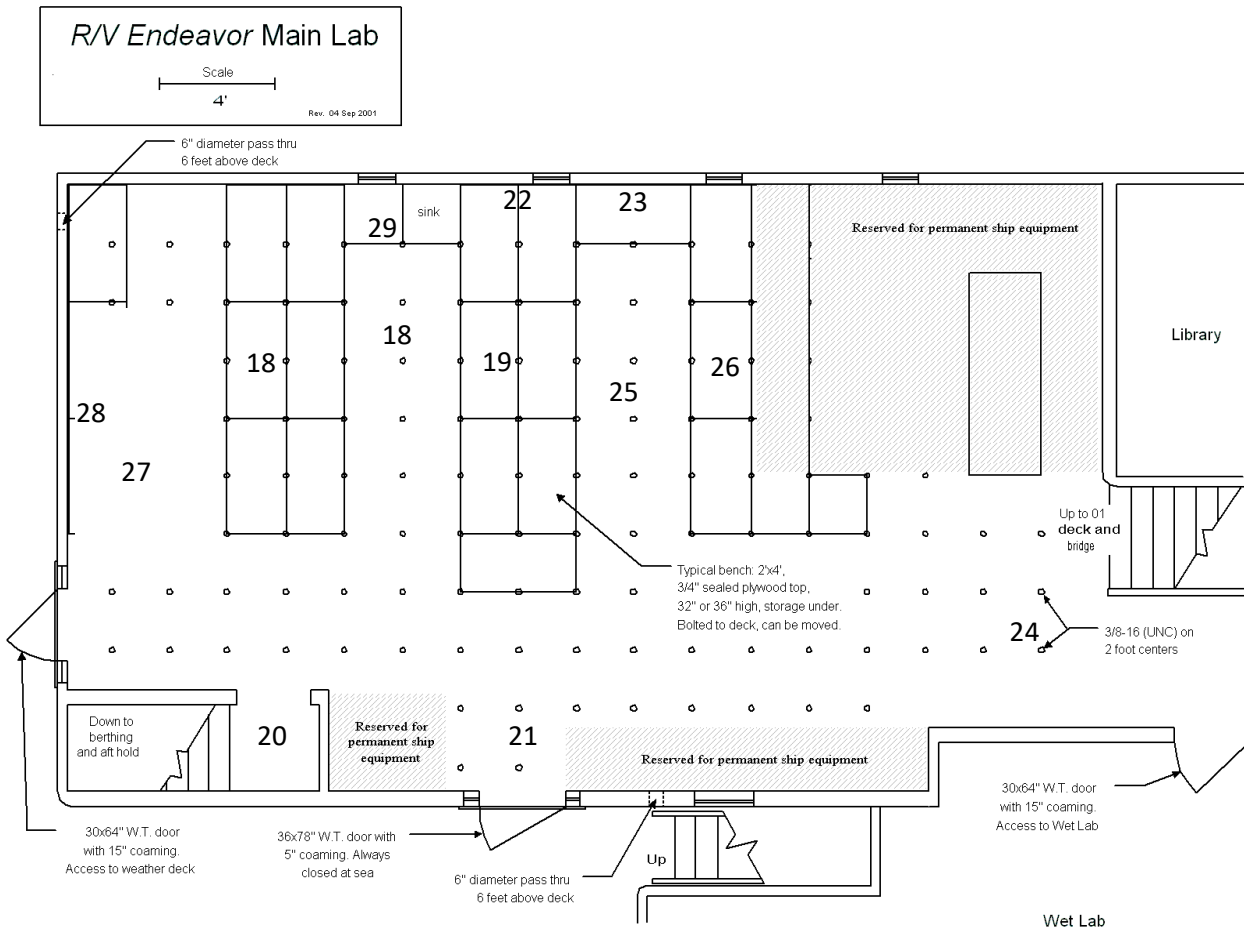
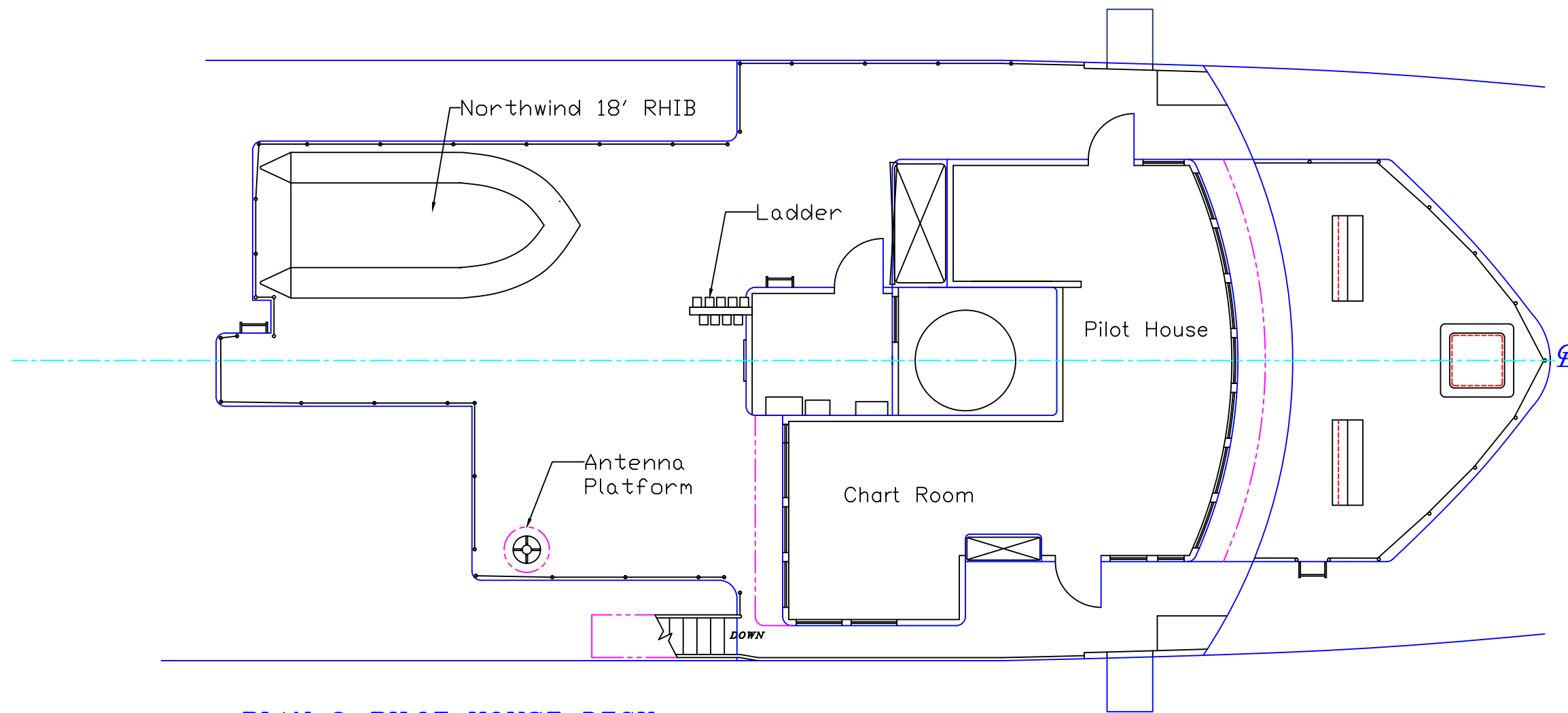
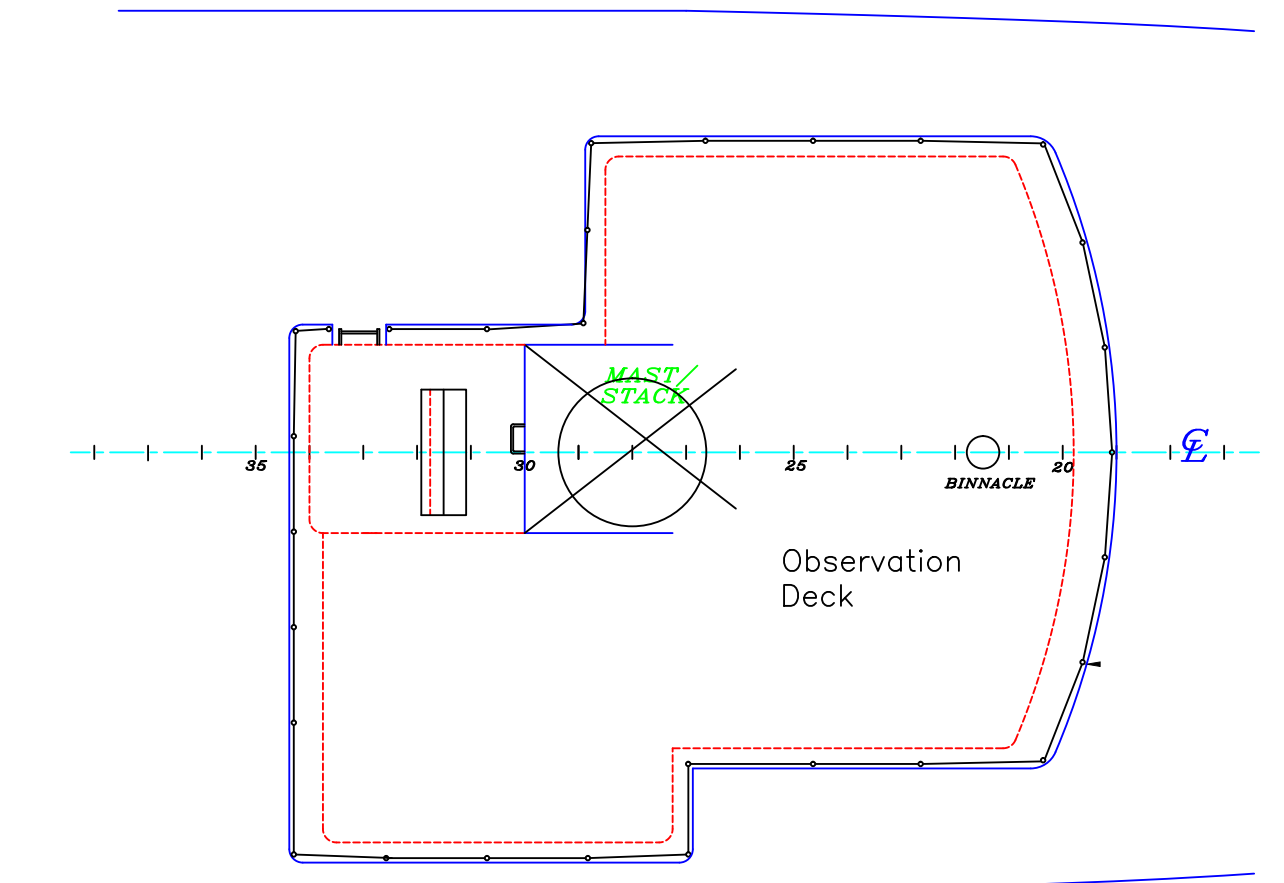


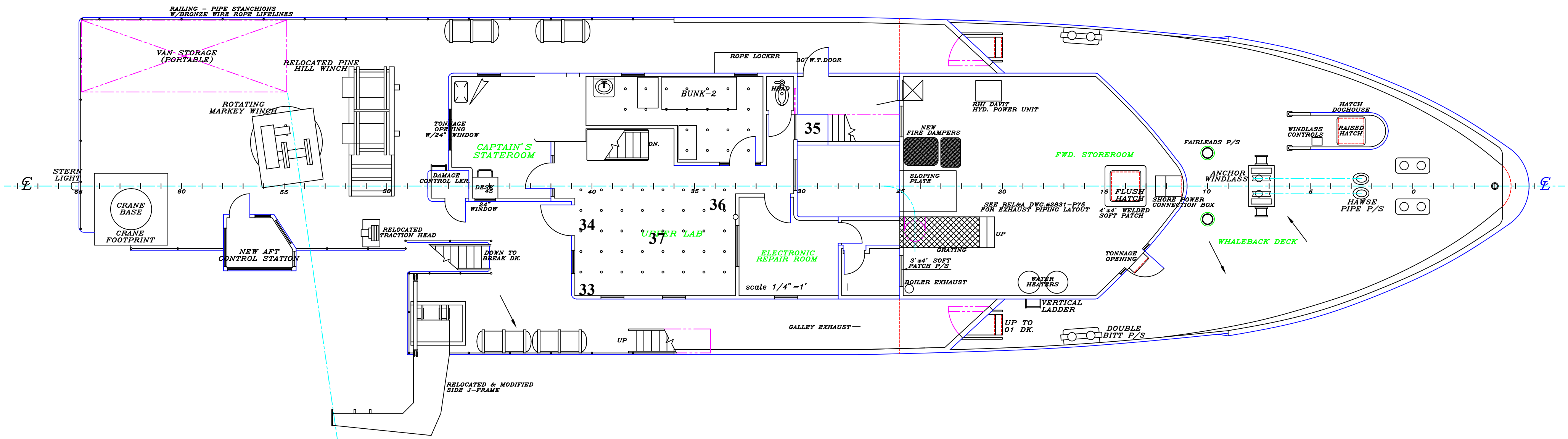
Figure 3  
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PLAN @ PILOT HOUSE DECK



PLAN @ PILOT HOUSE TOP



PLAN @ 01 DECK

East Coast Van Pool Van #625.5.02

Figure 4  
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