

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory
27 February 2017

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SWAB REPORT # 852

SWAB DATE: 20 February 2017

R/V Endeavor

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
William Fanning

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 # 852

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

DATE: 20 February 2017
TECHNICIAN: Jim Happell

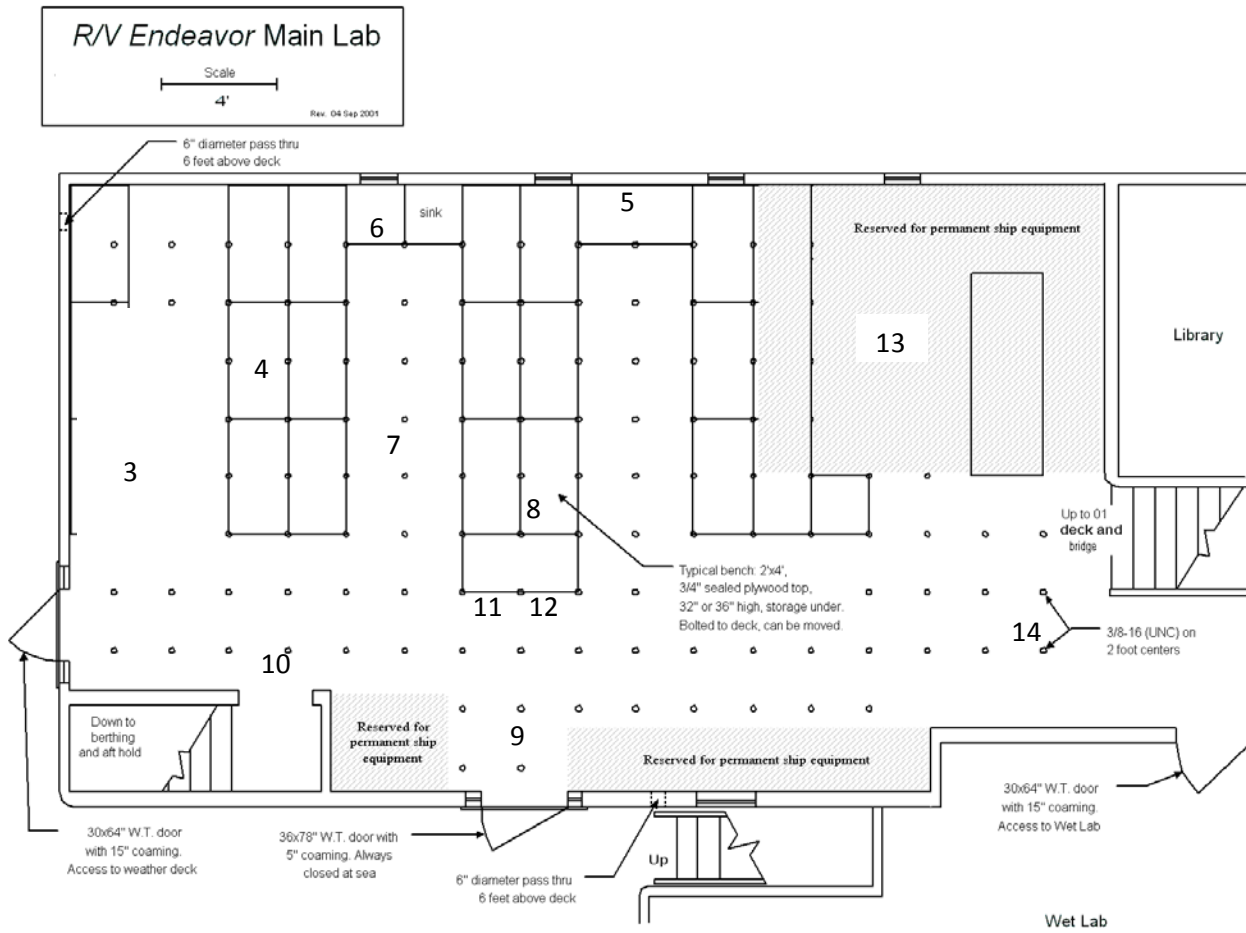
Sample # Sample Identification	³ H dpm/m ²			¹⁴ C dpm/m ²		
	activity	±	error	activity	±	error
1 1st Vial Bkgnd	0	±	0	0	±	0
2 Initial bucket blank C.O # 1	-1	±	6	-6	±	27
<u>Main Lab (see Figure 1)</u>						
3 Deck in front of aft sink	-36	±	54	33	±	43
4 Aft benchtop on port side	-5	±	56	-6	±	24
5 Port benchtop	-21	±	31	-6	±	27
6 Port sink area	-8	±	13	10	±	41
7 Deck in front of port sink	-24	±	37	5	±	52
8 Center benchtop on starboard side	-49	±	74	15	±	48
9 Deck inside starboard door	-21	±	31	3	±	62
10 Deck at top of stairs to living quarters	-15	±	23	2	±	78
11 Inside Kenmore refrigerator	-16	±	24	-8	±	32
12 Deck in front of Kenmore refrigerator	-15	±	22	-5	±	20
13 Deck in front of forward port benchtop	-12	±	18	-9	±	40
14 Deck at forward entrance to lab	-20	±	30	-7	±	29
<u>Wet Lab (Figure2)</u>						
15 Deck inside aft entrance	-40	±	60	-22	±	67
16 Benchtop across from sink	-30	±	45	-10	±	41
17 Starboard benchtop	-50	±	74	5	±	83
18 Benchtop across from sink	-1	±	16	-5	±	21
19 Deck inside port entrance	-47	±	71	10	±	53
<u>Special Purpose Lab (Figure 2)</u>						
20 Inside fume hood	-26	±	39	-11	±	48
21 Inside Revco refrigerator	-21	±	32	-18	±	75
22 Benchtop forward of sink	-19	±	29	7	±	46
23 Benchtop in front of chest freezer	-34	±	51	-2	±	10
24 Deck in front of sink	-37	±	55	-20	±	83
25 Benchtop aft of sink	3	±	39	3	±	36
26 Deck in front of fume hood	-41	±	62	5	±	69
27 Deck outside lab entrance	-1	±	13	-40	±	123
28 Deck in front of refrigerator	-51	±	77	-14	±	58

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
<u>Upper Lab and 01 Deck (Figure 3)</u>					
29	Deck at top of stairs	-47	± 70	-9	± 38
30	Deck in front of forward benchtop	-47	± 71	-12	± 52
31	Starboard aft benchtop	-19	± 29	-28	± 86
32	Deck at aft entrance exit to 01 deck	-25	± 37	-8	± 34
33	Passage outside Electronic Repair Room	-25	± 37	-13	± 55
34	Intermediate bucket blank	13	± 143	-21	± 64
<u>UNOLS Radioisotope Van 6255020 (Figure 4)</u>					
35	Benchtop adjacent to sink	41	± 42	25	± 36
36	Sink area	26	± 38	23	± 37
37	Inside refrigerator	158	± 22	*971	± 65
38	Inside freezer	-13	± 76	*51	± 41
39	Benchtop across from LSC	195	± 59	32	± 30
40	Fume hood	254	± 62	34	± 29
41	Benchtop across from sink	0	± 2	-11	± 45
42	Benchtop across from refrigerator	0	± 3	-1	± 3
43	Top of LSC	245	± 58	*86	± 36
44	Deck in front of fume hood	149	± 56	27	± 31
45	Deck in center of van	125	± 58	-1	± 3
46	Deck at entrance near sink	141	± 53	46	± 35
47	Deck outside van entrance	18	± 51	0	± 2
48	Final bucket blank	-34	± 0	-8	± 33

Comments

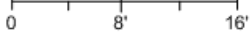
Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded 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 from any isotope contamination that requires cleaning. Minor ^{14}C contamination found in the rad van. No action is required.

Figure 1
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 20 February 2017



R/V Endeavor Main Deck and Labs

Scale



Deck bolt pattern is on 2 foot centers

Rev. 04 Sep 2001

Figure 2
SWAB # 852
20 February 2017

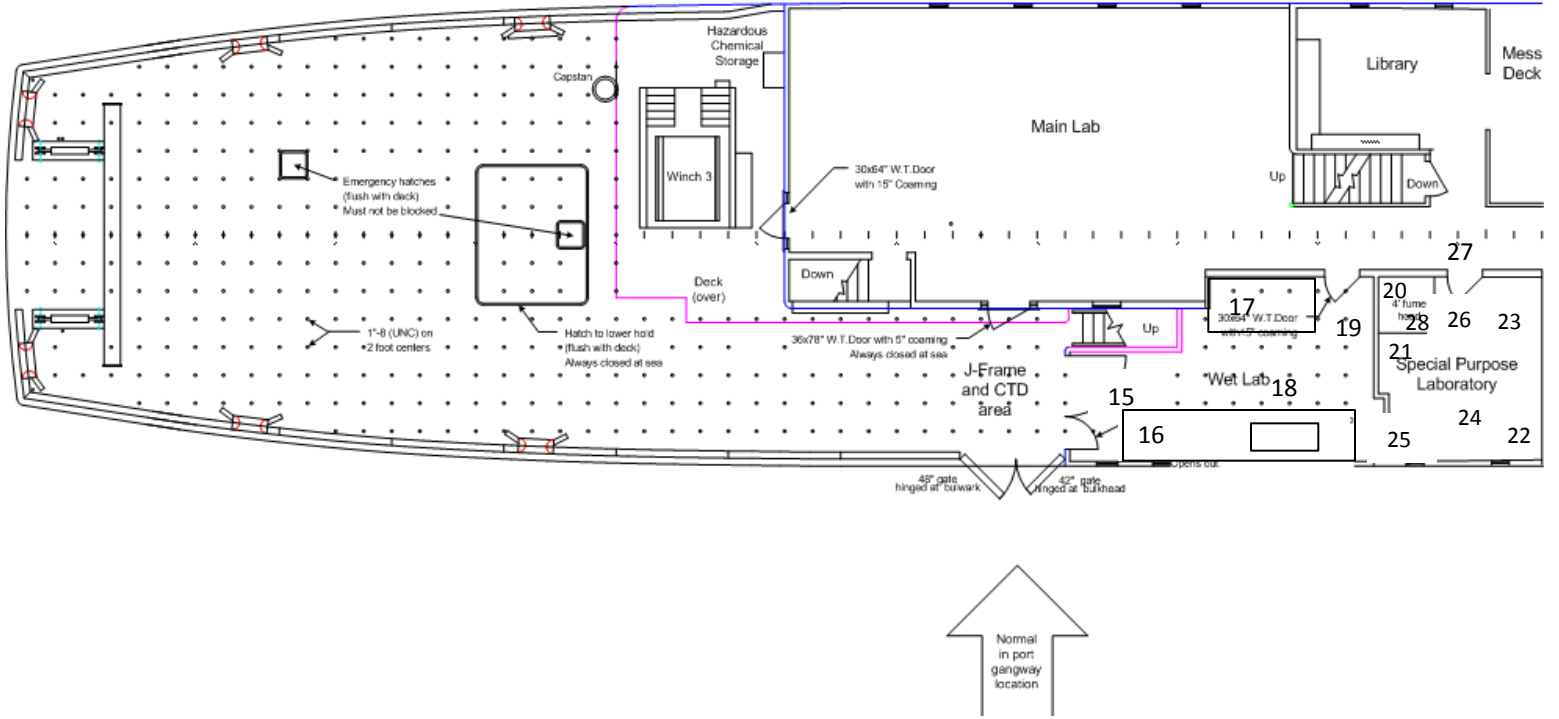
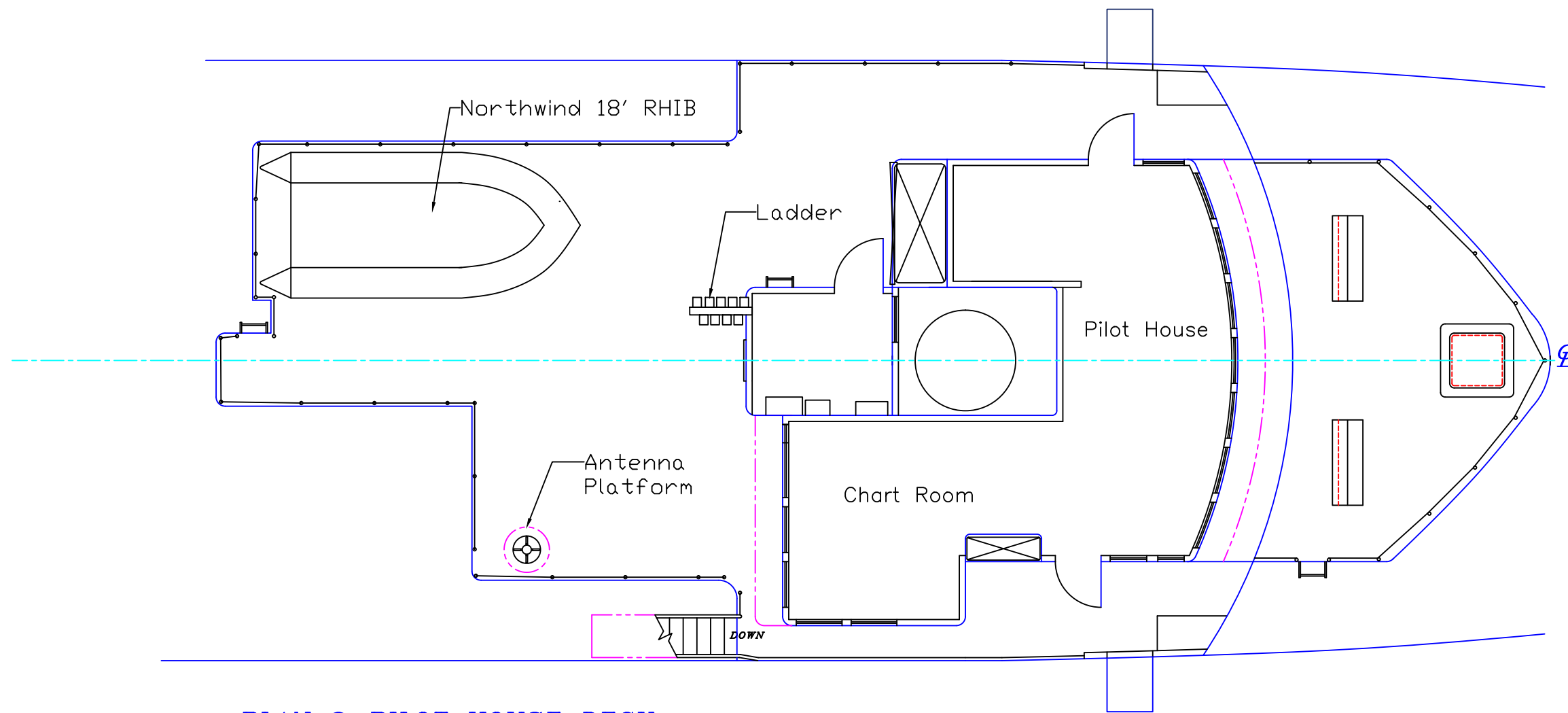
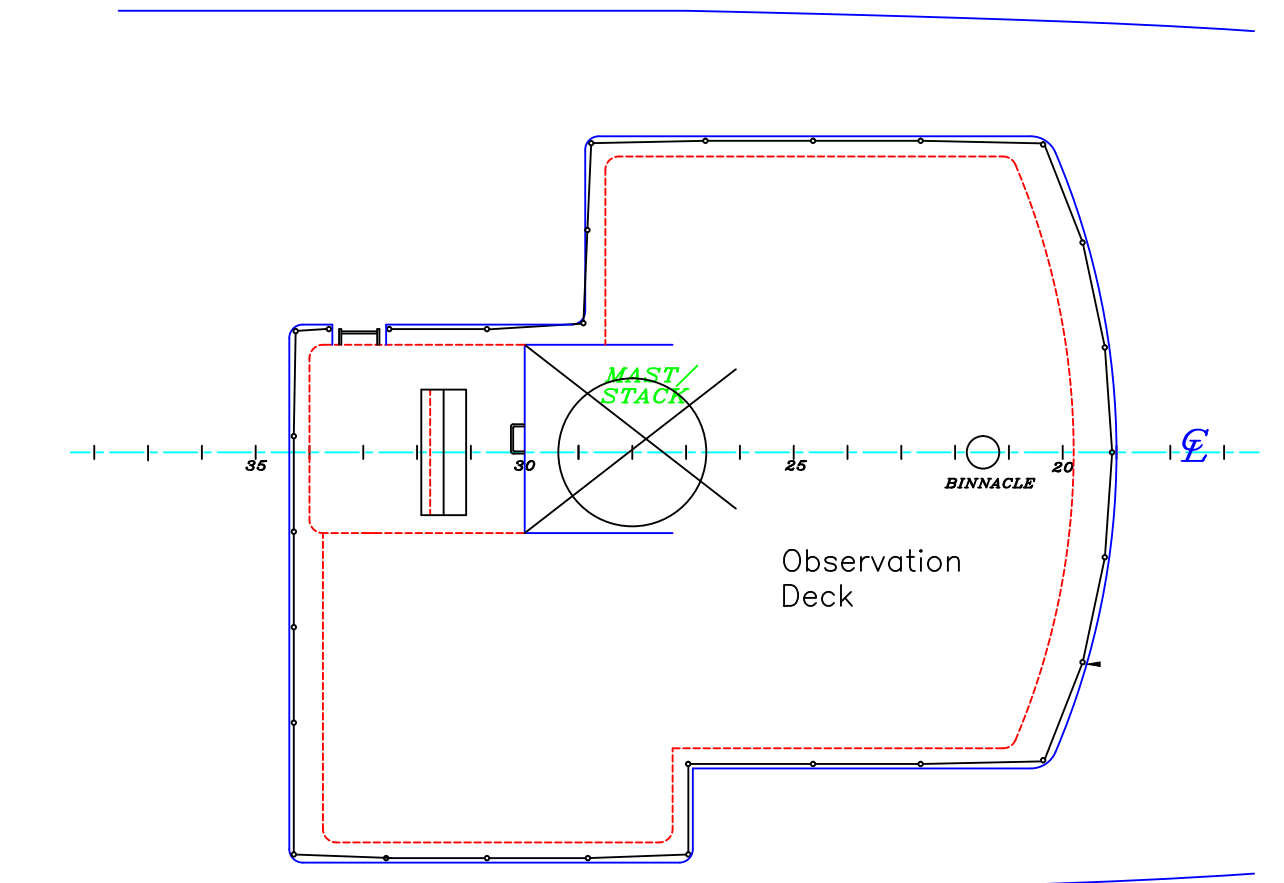


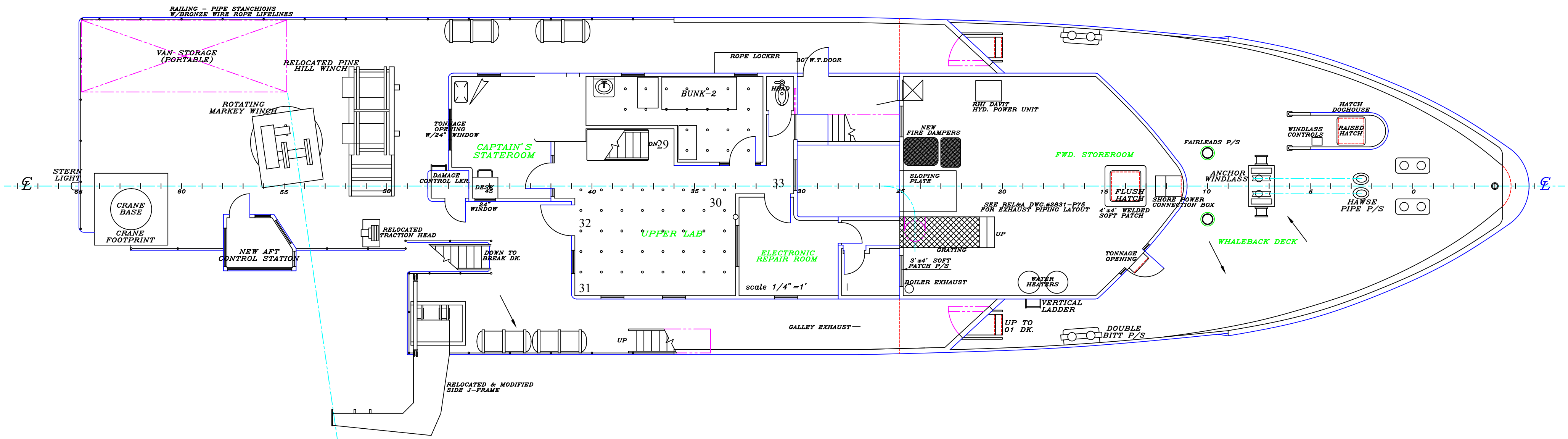
Figure 3
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PLAN @ PILOT HOUSE DECK



PLAN @ PILOT HOUSE TOP



PLAN @ 01 DECK

East Coast Van Pool Van #625.5.02

Figure 4
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