

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

27 June 2022

Tritium Laboratory
4600 Rickenbacker Causeway
Miami, Florida 33149-1031

Ph: 305-421-4100
Fax: 305-421-4112
E-mail: Tritium@rsmas.miami.edu

SWAB REPORT # 1033

SWAB DATE: 13 June 2022

R/V Endeavor

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Bill Fanning
Tom Glennon

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 dpm/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 # 1033

LOCATION: Morehead City, NC

DATE: 13 June 2022

VESSEL: *R/V Endeavor*

TECHNICIAN: Yudy Mendoza

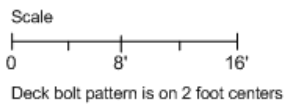
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	-29	± 37	-9	± 27
	<u>Wet Lab (Figure 1)</u>				
3	Sink area	1	± 7	-14	± 0
4	Starboard benchtop aft of sink	-25	± 33	-3	± 0
5	Deck in front of hood/sink	-6	± 30	-22	± 0
6	Deck inside aft entrance	-7	± 32	-15	± 46
7	Port benchtop	11	± 47	-10	± 31
8	Deck inside port entrance	-21	± 28	-14	± 44
	<u>Special Purpose Lab (Figure 1)</u>				
9	Inside fume hood	-134	± 172	-7	± 22
10	Top of Magic Chef freezer	2	± 8	-23	± 71
11	Benchtop opposite of Magic Chef freezer	5	± 24	-30	± 93
12	Forward benchtop	36	± 38	-19	± 58
13	Starboard sink area	-11	± 30	-13	± 39
14	Starboard benchtop adjacent to -80°C freezer	-14	± 40	-14	± 44
15	Inside refrigerator	26	± 34	-11	± 32
16	Deck between forward benchtop and refrigerator	-15	± 43	-7	± 20
17	Deck inside entrance	-1	± 3	-16	± 50
	<u>Main Lab (Figure 2)</u>				
18	Aft center benchtop	-22	± 28	-11	± 32
19	Mid center benchtop	7	± 20	-21	± 63
20	Deck at top of stairs to living quarters	-12	± 35	5	± 16
21	Deck inside aft entrance	-10	± 30	2	± 18
22	Port sink area	6	± 27	-14	± 43
23	Deck in front of port sink	-17	± 49	-16	± 49
24	Deck at forward entrance	3	± 16	-17	± 53
25	Port benchtop	20	± 94	-31	± 94
26	Deck between middle & forward benches	0	± 9	-7	± 23
27	Deck in front of aft sink	14	± 62	-17	± 51
28	Benchtop opposite of Magic Chef freezer	-21	± 27	-24	± 72
29	Deck inside starboard entrance	6	± 30	-26	± 80

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
<u>Main Deck (Figure 1)</u>					
30	Aft deck below Van door	-9	± 41	-21	± 63
31	Aft deck where incubator stood	-10	± 50	-19	± 57
32	Deck outside aft entrance to Main Lab	-23	± 29	-19	± 57
<u>01 Deck and Upper Lab (Figure 3)</u>					
33	Center benchtop	-22	± 28	-33	± 101
34	Deck inside aft entrance	10	± 48	-27	± 83
35	Deck at bottom of stairs to bridge	-17	± 49	-33	± 101
36	Deck at top of stairs to Main Lab	-18	± 50	-23	± 69
37	Intermediate bucket blank	7	± 19	-36	± 110
<u>Rad Van #2408-04 (Figure 4)</u>					
38	Sink area	*4139	± 171	*61	± 6
39	Benchtop adjacent to sink	156	± 47	-12	± 37
40	Benchtop adjacent to fume hood	56	± 37	-20	± 62
41	Inside fume hood	-19	± 25	-16	± 50
42	Inside freezer	11	± 50	-11	± 33
43	Inside refrigerator	91	± 36	-2	± 7
44	Benchtop next to LSC	-1	± 31	-7	± 20
45	Benchtop across from sink	3	± 130	-19	± 57
46	Deck between LSC & fume hood	22	± 62	-26	± 80
47	Deck in middle of van	5	± 212	-9	± 27
48	Deck at entrance	-13	± 37	-8	± 23
49	Final bucket blank	-22	± 64	-15	± 45

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. Minor ^3H and ^{14}C contamination was found in the Rad Van, but no action is needed.

R/V Endeavor Main Deck and Labs



Rev. 04 Sep 2001

Figure 1
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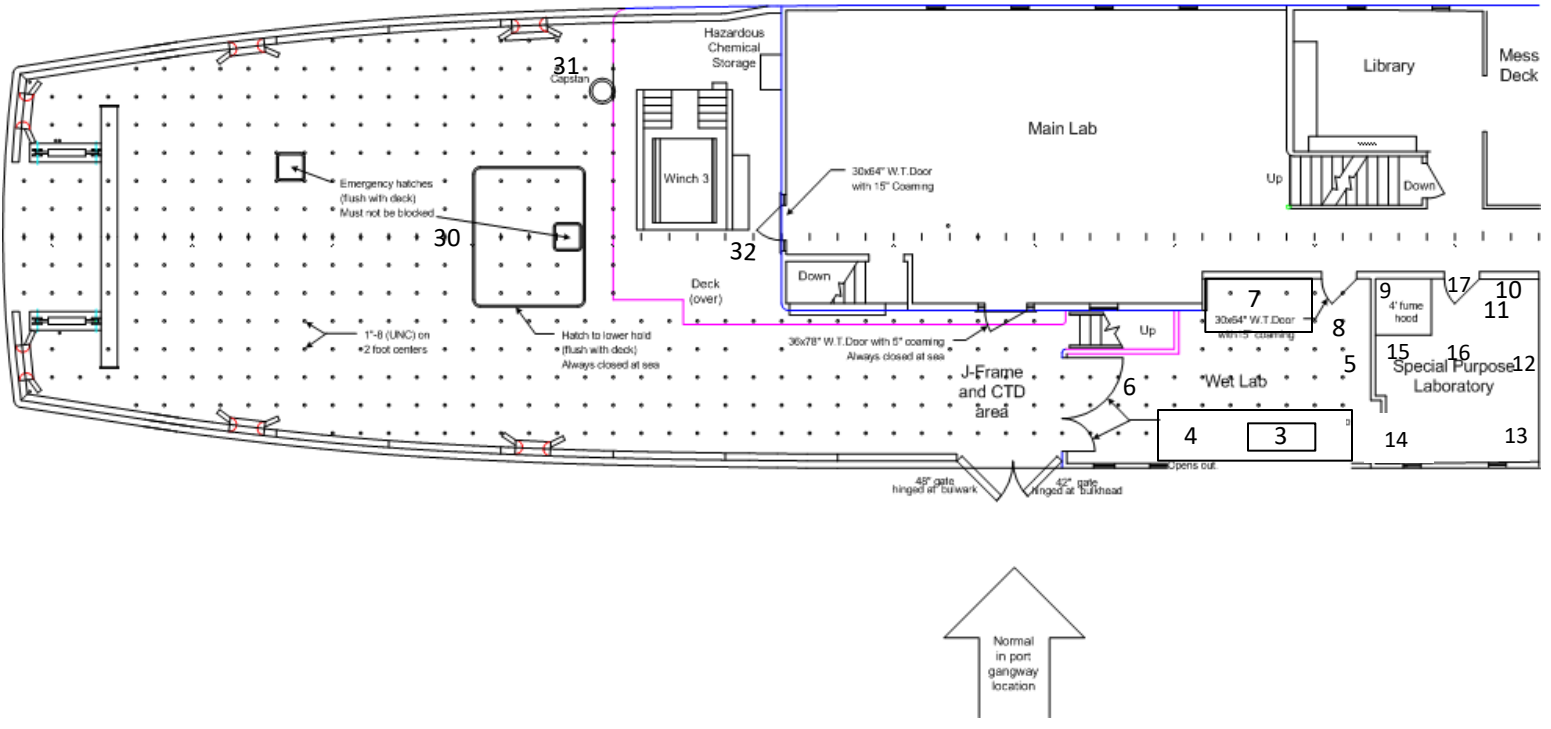


Figure 2
 SWAB #1033
 13 June 2022

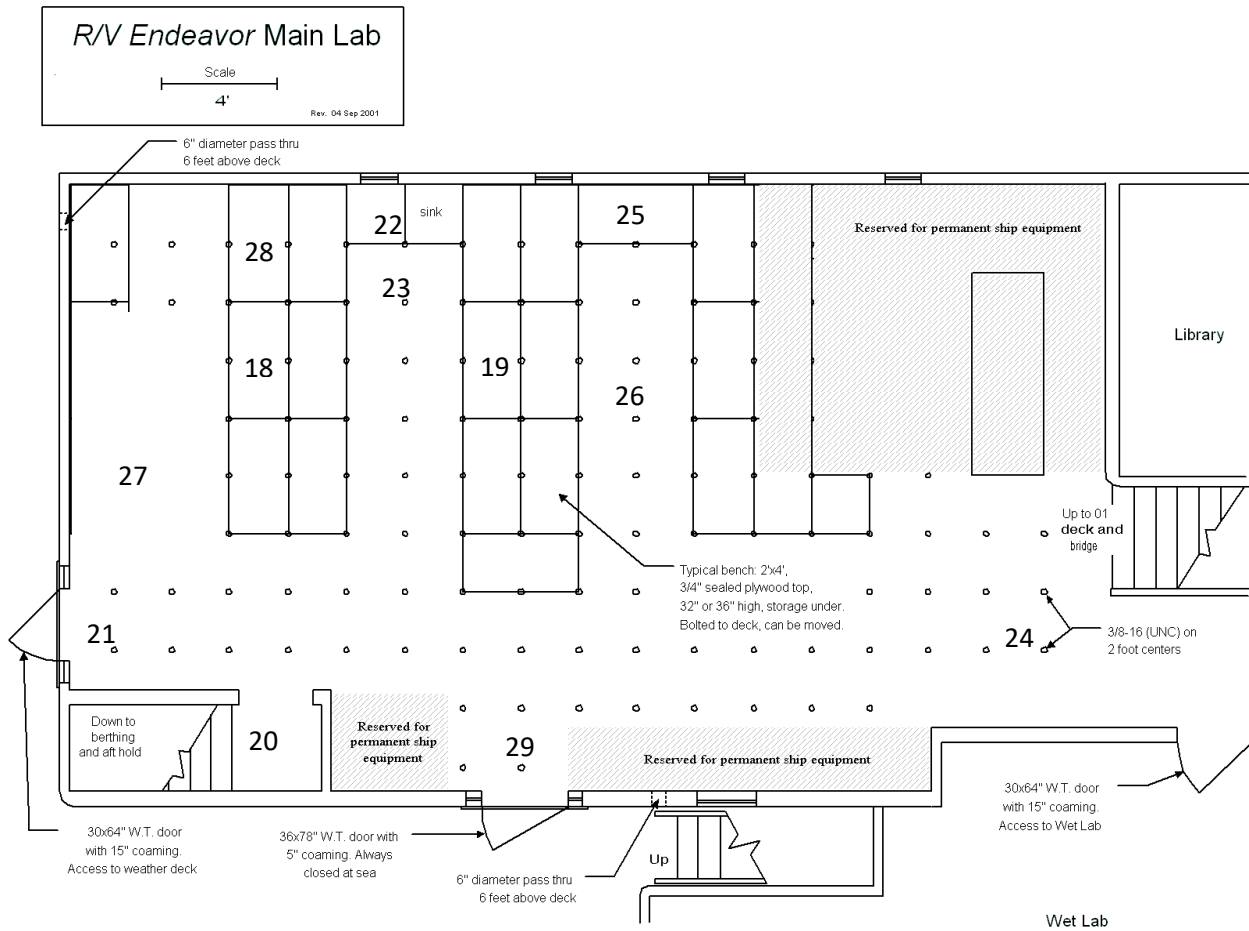
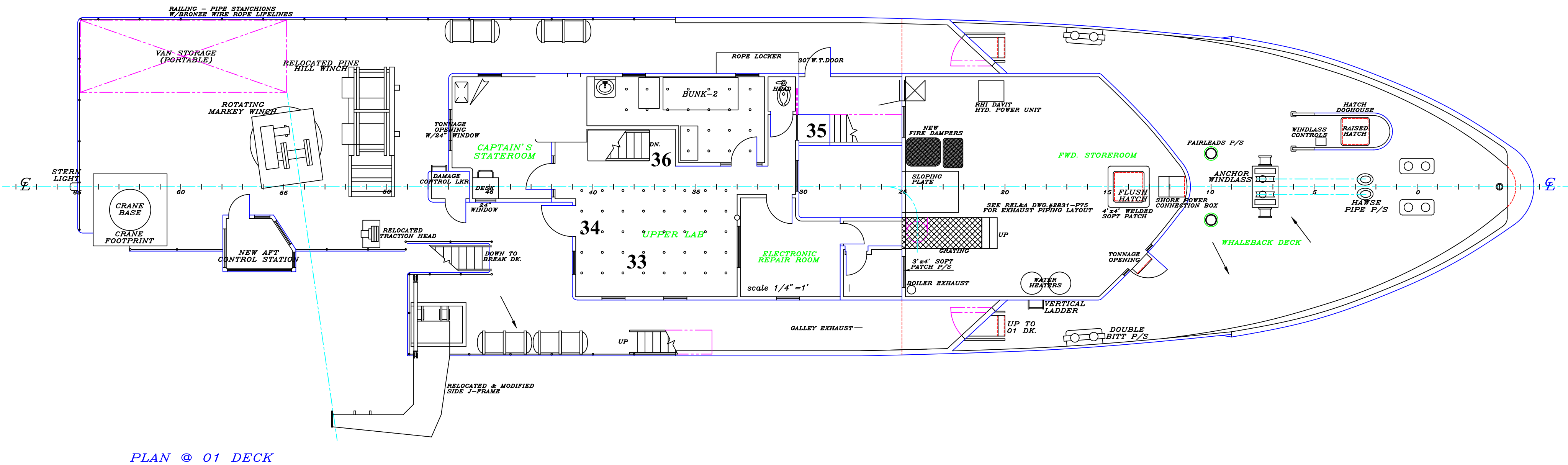
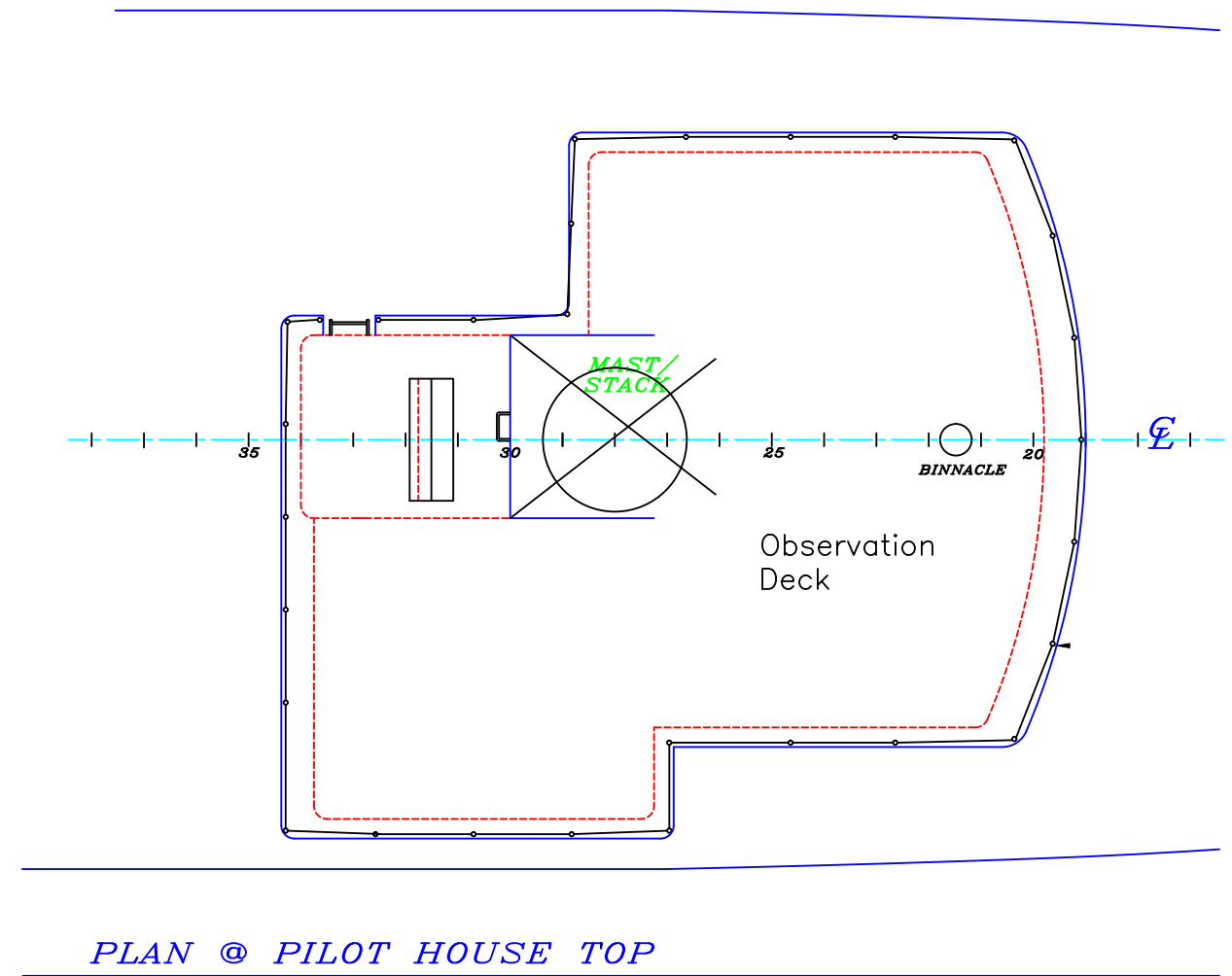
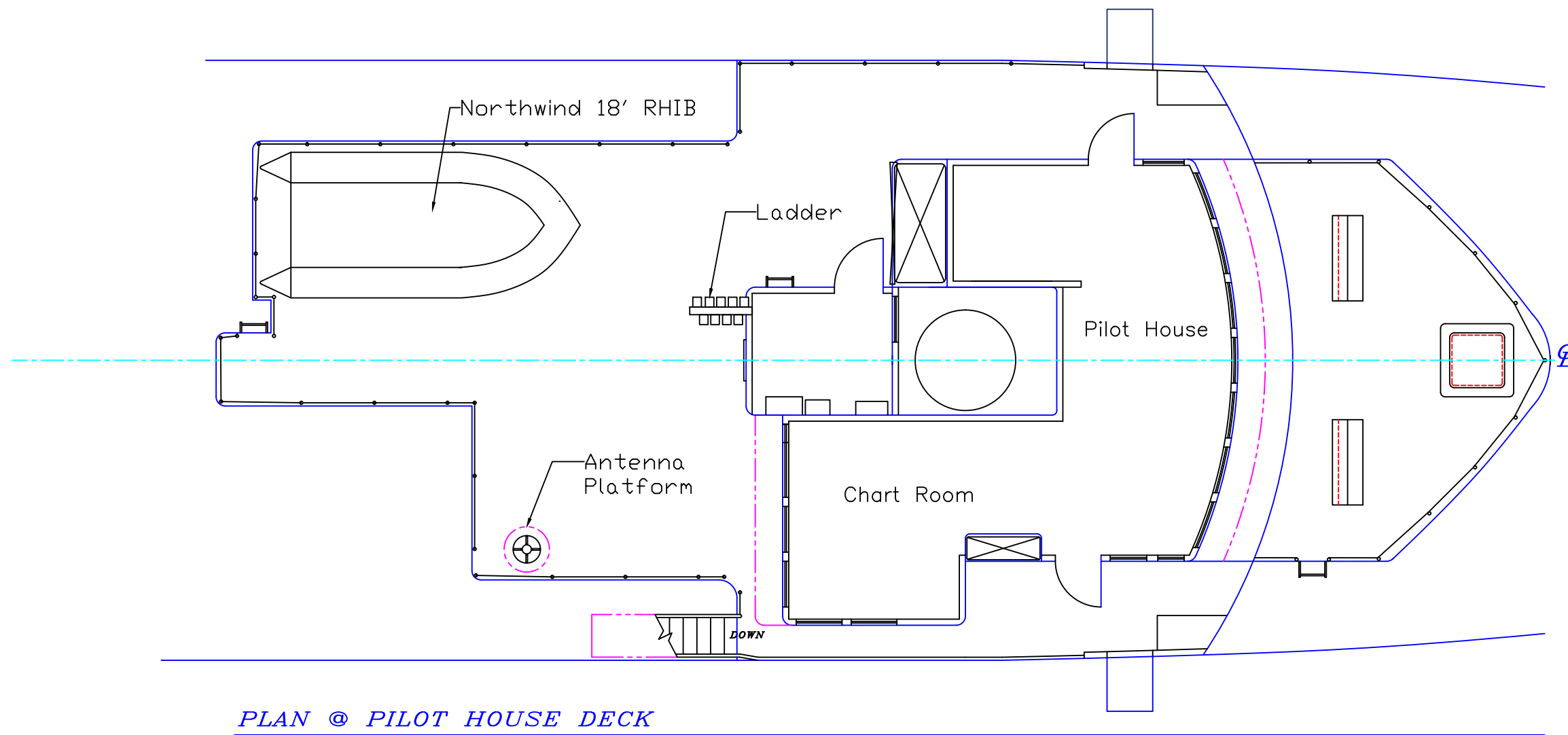


Figure 3
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Rad Van #2408-04

Figure 4
SWAB #1033
13 June 2022

