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Tritium Laboratory
20 March 2025

SWAB REPORT # 1115

SWAB DATE: 12 March 2025

R/V Thomas G. Thompson & Van #625.1.05 "R5"

James Happell Digitally signed by James Happell
Date: 2025.03.22 09:41:47 +08'00'

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Brandi Murphy
Sarah McCullagh
Joyce Chambers

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 ^{3}H & ^{14}C. This replaces an LSC with background cpm of 1.6 & 5.5 for ^{3}H & ^{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	^{3}H (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 Proceedure

Wearing ordinary household rubber gloves:

^{3}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}C: Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing $^{14}CO_2$). Follow up with wash as if for ^{3}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 #1115

LOCATION: Fremantle, Australia
DATE: 12 March 2025
VESSEL: *R/V Thomas G. Thompson*
TECHNICIAN: Jim Happell

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		^{3}H dpm/m^{2} error	^{14}C dpm/m^{2} activity		^{14}C dpm/m^{2} error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	4	±	29	-12	±	15
	Main Lab (Figure 1)						
3	Port sink area	1	±	6	-19	±	26
4	Deck in front of GE refrigerator	**47**	±	**32**	-19	±	25
5	Starboard sink area	22	±	32	-14	±	18
6	Inside fume hood	-3	±	17	12	±	15
7	Deck inside aft entrance	8	±	30	-3	±	8
8	Deck at aft port entrance	0	±	0	-17	±	23
9	Deck inside mid port entrance	-21	±	30	-6	±	17
10	Deck inside forward port entrance	12	±	138	-21	±	27
11	Inside port GE refrigerator	-7	±	26	-3	±	9
	BioAnalytical Lab (Figure 2)						
12	Benchtop adjacent to sink	-6	±	23	-9	±	27
13	Aft sink area	10	±	760	-20	±	58
14	Inside fume hood	5	±	19	-13	±	17
15	Center section of starboard benchtop	6	±	21	-17	±	22
16	Inside aft refrigerator	17	±	50	-21	±	27
17	Inside aft freezer	-11	±	41	6	±	16
18	Forward sink area	-4	±	29	-7	±	20
19	Forward benchtop adjacent to sink	2	±	12	-22	±	29
20	Forward section of center benchtop	9	±	32	-7	±	22
21	Aft section of center benchtop	-8	±	30	-3	±	9
22	Deck inside starboard entrance	18	±	65	-24	±	32
23	Deck inside aft entrance	-11	±	42	-19	±	25
24	Deck between sink and fume hood	-3	±	19	-12	±	16
	Computer Lab (Figure 3)						
25	Deck inside forward entrance	7	±	24	-14	±	19
26	Deck inside starboard entrance	20	±	35	-15	±	21
	Hydro Lab (Figure 4)						
27	Center benchtop	17	±	61	-23	±	31
28	Deck inside aft entrance	-30	±	42	2	±	72
29	Port sink area	19	±	27	-8	±	22
30	Deck inside starboard entrance	**39**	±	**26**	0	±	1
31	Deck in front of port sink	6	±	23	-19	±	55

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
	Wet Lab (Figure 5)						
32	Aft starboard benchtop	-13	±	46	-10	±	29
33	Forward benchtop	-13	±	46	-17	±	49
34	Deck in center of Lab	4	±	83	-7	±	21
35	Deck outside port entrance	18	±	22	1	±	6
	Main Deck (Figure 6)						
36	Port side of the aft deck where Rad Van stood	**48**	±	**23**	-12	±	16
37	Companionway outside aft head	17	±	28	-1	±	4
38	Deck inside Science Office	-11	±	42	-18	±	24
39	Deck outside Scientific freezer	**39**	±	**30**	-8	±	24
	Rad Van #625.1.05 "R5" (Figure 7)						
40	Sink area	**38**	±	**14**	***107**	±	**20**
41	Benchtop adjacent to sink	**82**	±	**23**	***96**	±	**19**
42	Benchtop adjacent to fume hood	**4**	±	**1**	***545**	±	**34**
43	Inside fume hood	**9**	±	**7**	**43**	±	**17**
44	Inside freezer	**103**	±	**33**	10	±	10
45	Inside refrigerator	-468	±	39	***3349**	±	**77**
46	Benchtop adjacent to LSC across from fume hood	**106**	±	**26**	***112**	±	**19**
47	Benchtop across from sink	***3453**	±	**158**	***179**	±	**15**
48	Deck between fume hood and LSC	**115**	±	**29**	***106**	±	**19**
49	Deck in front of freezer	**96**	±	**24**	***127**	±	**20**
50	Deck in front of refrigerator	***779**	±	**73**	***398**	±	**28**
51	Final bucket blank	4	±	24	-2	±	0

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 abouve background will now be in bold. All areas tested on the ship were free from isotope contamination requiring cleaning. Minor ^{3}H and ^{14}C contamination was found in the Rad Van, but no action is necessary.

Figure 1
SWAB 115
12 March 2025

Main Lab Layout

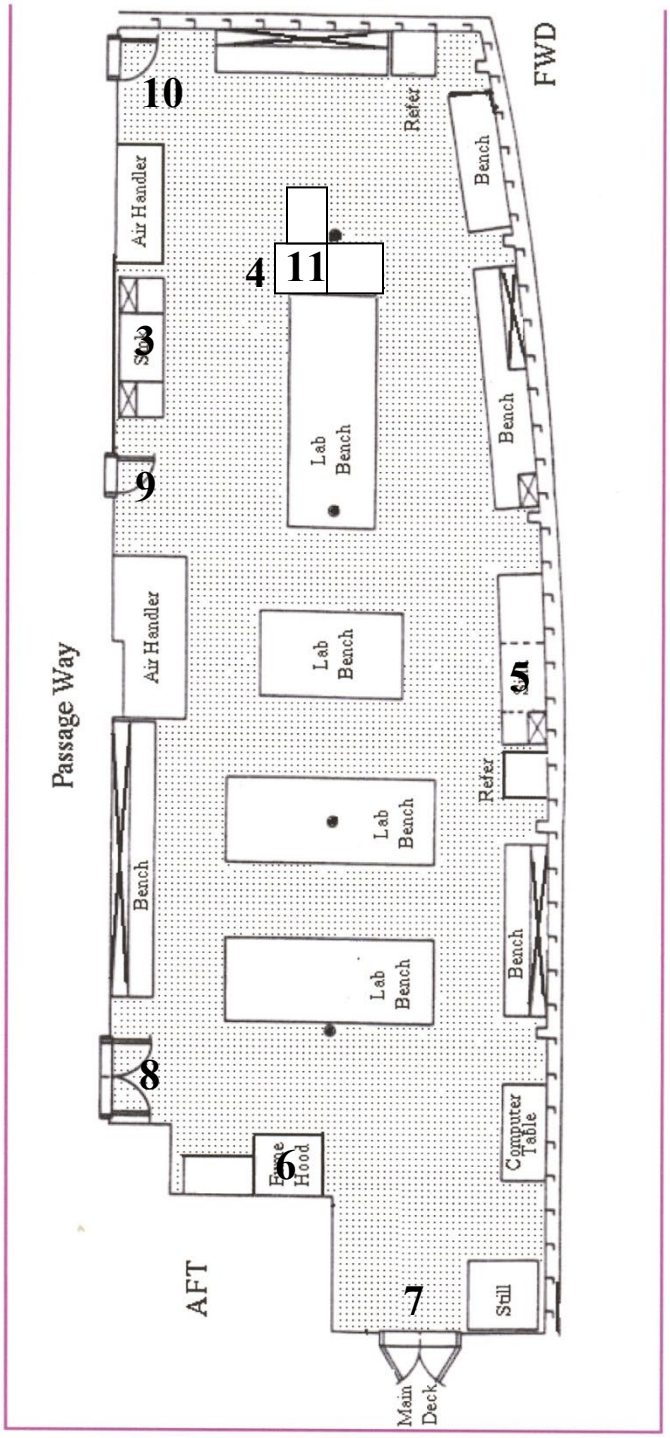

Figure 2
SWAB 1115
March 2025

BioAnalytical Lab Layout

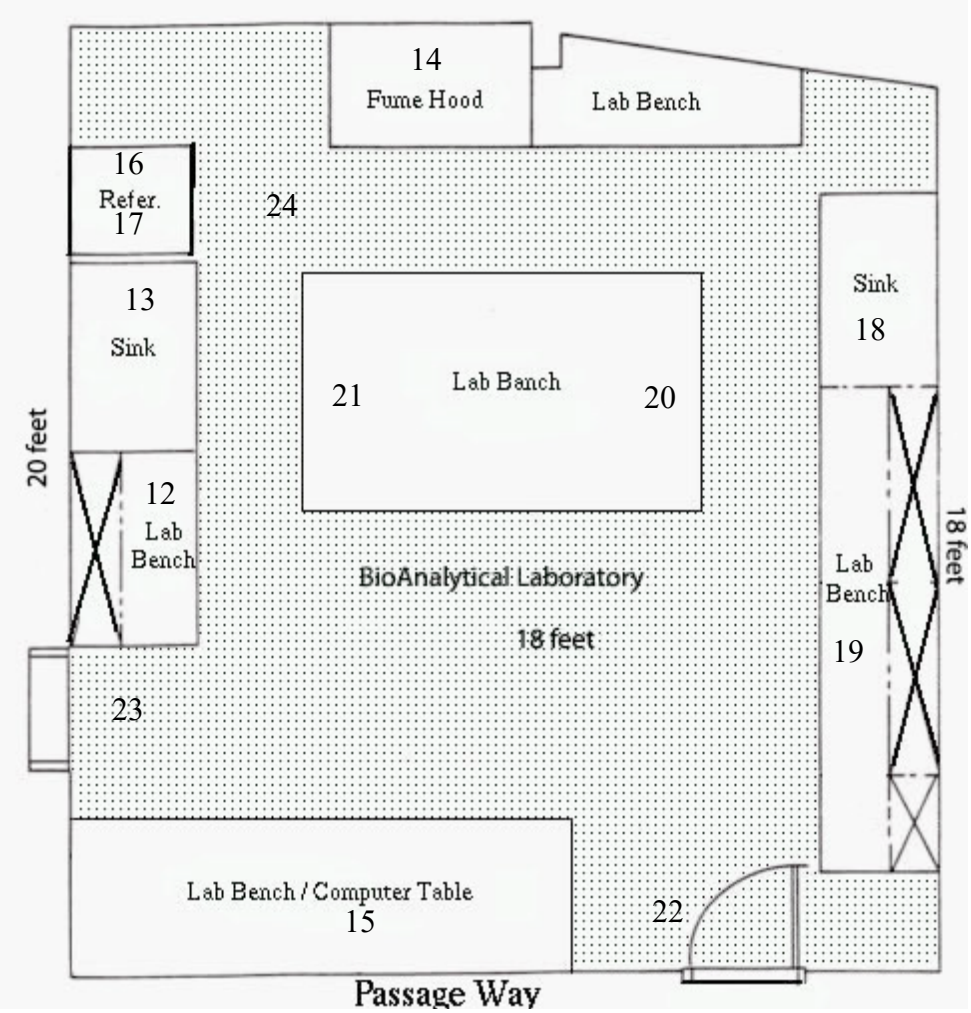

Figure 3
SWAB 1115
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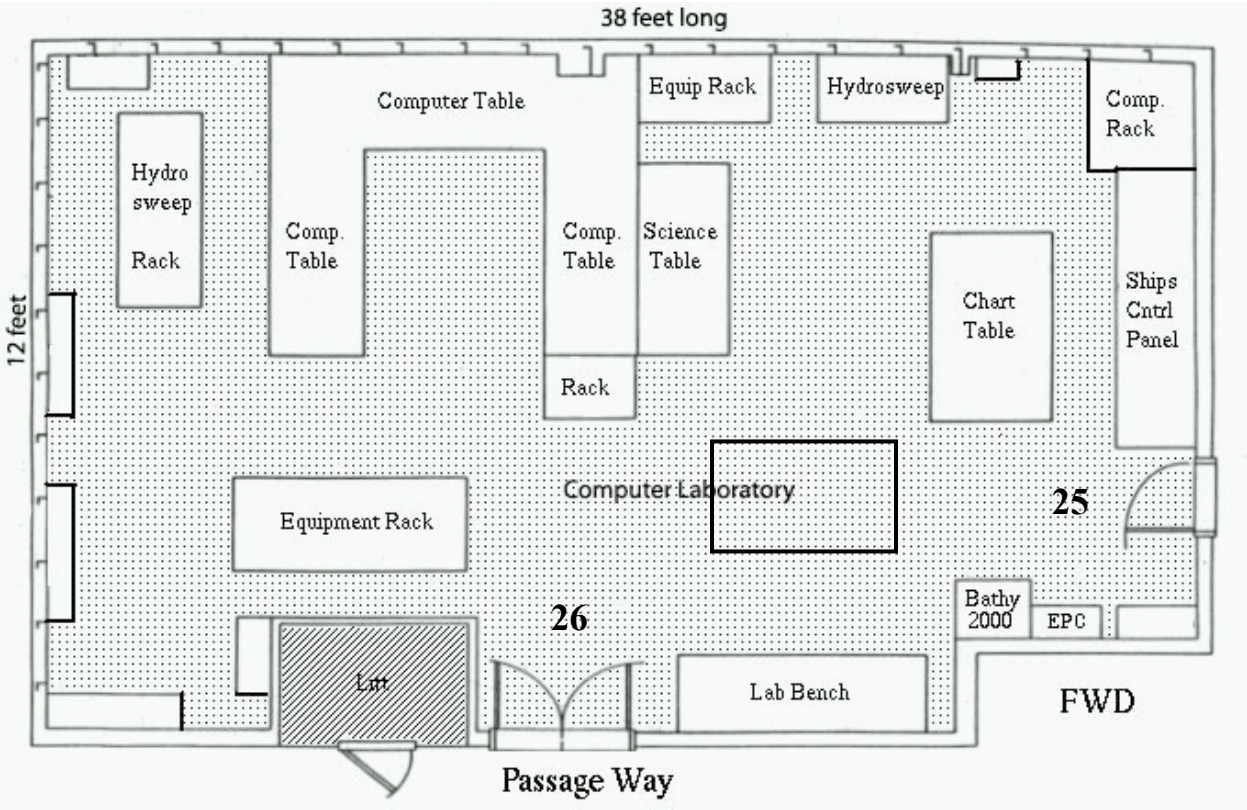
Computer Lab Layout



Note: Lab configuration has changed for this report. Computer tables and equipment racks were moved.

Figure 4
SWAB 1115
12 March 2025

Hydro Lab Layout

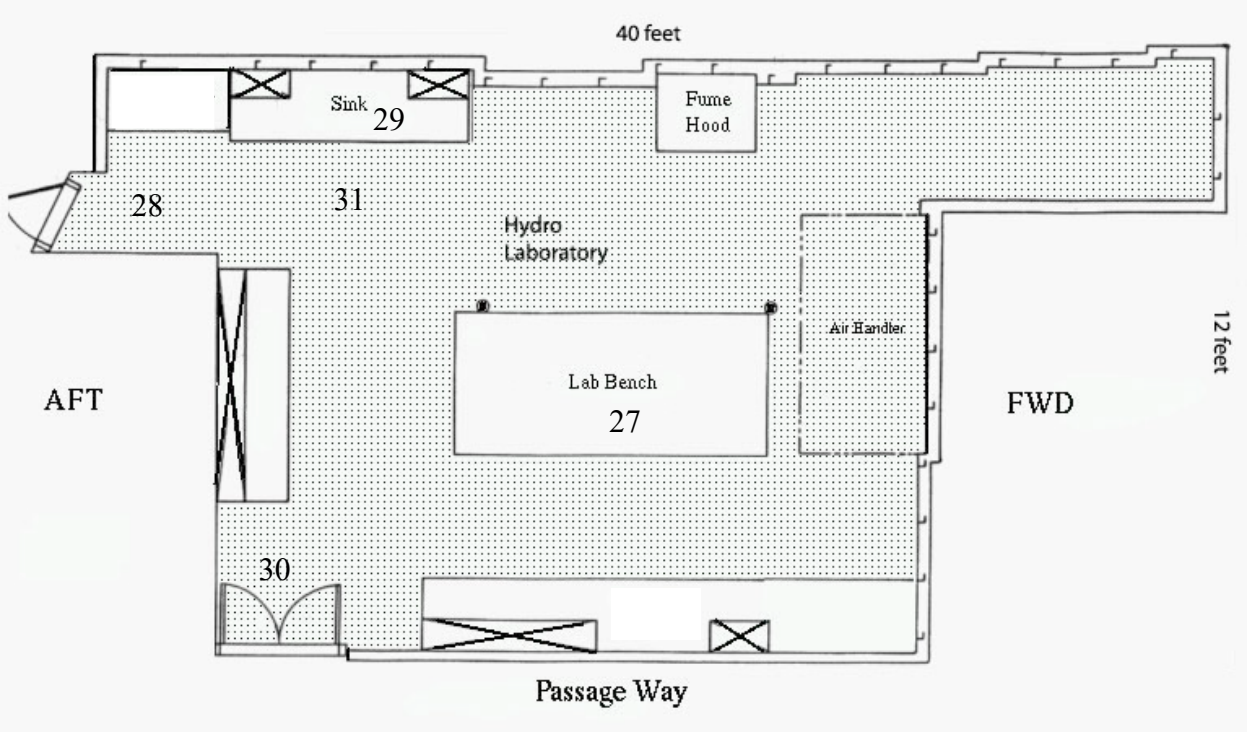


Figure 5
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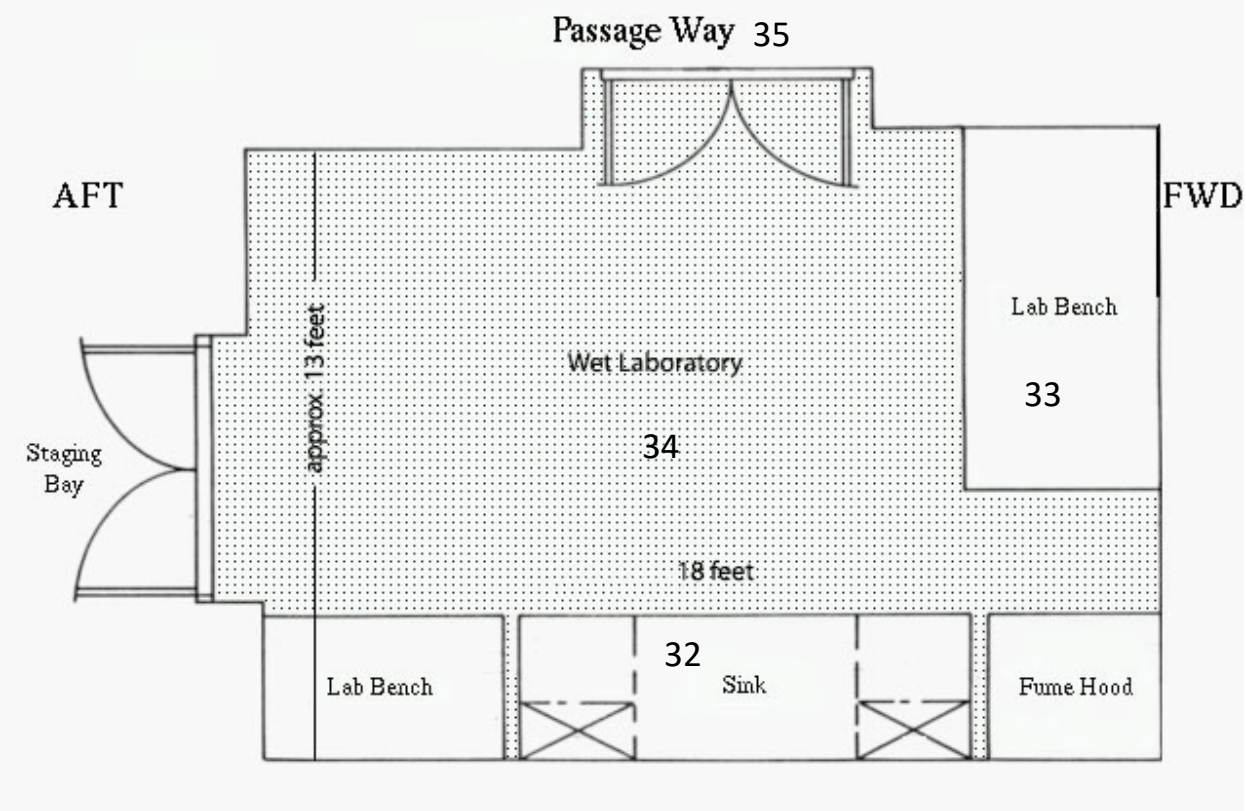

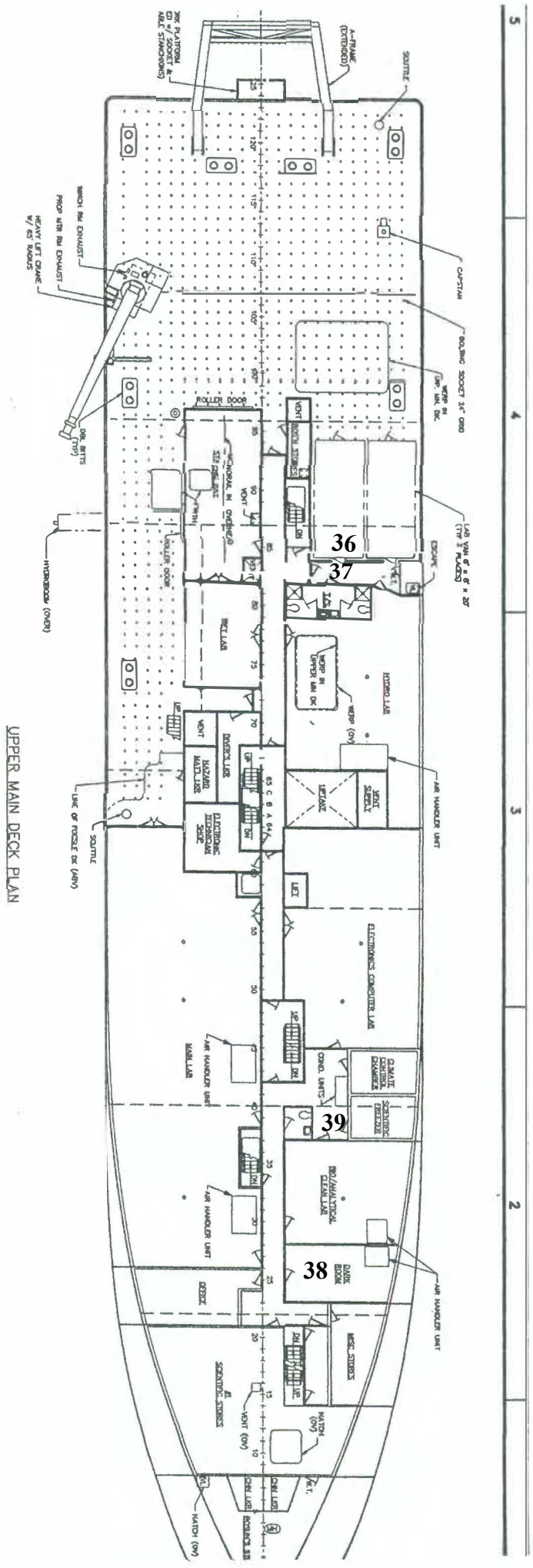

Figure 6
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Rad Van #625.1.05 “R5”

Figure 7
SWAB #1115
12 March 2025