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OF MIAMI

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Tritium Laboratory
28 July 2025

SWAB REPORT # 1120

SWAB DATE: 12 July 2025

R/V Marcus Langseth
UNOLS Cold Van #625.2.01-3 & Rad Van #625.1.01-2

James Happell Digitally signed by James Happell Date: 2025.07.28 12:03:03 -04'00'

James D. Happell

Distribution:
SWAB Committee
Jesus Gaytan
Kim Popendorf

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 # 1120

LOCATION: San Diego, CA
DATE: 12 July 2025
VESSEL: *R/V Marcus Loangseth*
TECHNICIAN: Jim Happell

Sample #	Sample Identification	^{3}H dpm/m^{2} activity	±	error	^{14}C dpm/m^{2} activity	±	error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	28	±	21	-21	±	37
	Dey Lab (Figure 1)						
3	Aft center benchtop	21	±	24	-19	±	34
4	Forward center benchtop	**22**	±	**18**	-10	±	18
5	Aft port benchtop	**24**	±	**21**	-11	±	20
6	Forward port benchtop	**32**	±	**18**	-2	±	8
7	Forward starboard benchtop	**37**	±	**21**	-14	±	25
8	Inside laminar flow hood	**21**	±	**32**	-27	±	48
9	Forward benchtop	**26**	±	**21**	-15	±	27
10	Deck at forward entrance	**45**	±	**22**	-8	±	23
11	Deck at aft entrance	7	±	10	4	±	14
12	Deck in corner near fume hood and sink	22	±	28	-25	±	44
	Wet Lab (Figure 2)						
13	Port aft benchtop	-1	±	1	-9	±	16
14	Forward center benchtop	**23**	±	**18**	-9	±	16
15	Center benchtop	**37**	±	**20**	-10	±	18
16	Aft center benchtop	**33**	±	**19**	-9	±	16
17	Sink area	**19**	±	**17**	-7	±	18
18	Top of chest freezer	**42**	±	**21**	-12	±	22
19	Deck by aft port door	**32**	±	**19**	0	±	2
20	Deck by aft starboard door	-9	±	13	9	±	16
21	Deck in front of sink	**29**	±	**18**	2	±	9
22	Deck by aft entrance	-5	±	6	6	±	16
	Port Lab (Figure 3)						
23	Port Lab Center benchtop	**45**	±	**21**	-2	±	7
24	Aft center benchtop	**52**	±	**26**	-8	±	22
25	Aft starboard benchtop	**23**	±	**19**	-8	±	21
26	Forward starboard benchtop	**35**	±	**24**	-19	±	33
27	Deck by aft entrance	**36**	±	**20**	-6	±	15
28	Deck by starboard entrance	**62**	±	**25**	-18	±	32

Sample #	Sample Identification	^{3}H dpm/m^{2} activity	error	^{14}C dpm/m^{2} activity	error
	Main Lab (Figure 4)				
29	Center benchtop	-1 ±	1	-13 ±	23
30	Deck by forward port entrance	**43 ±**	**23**	-25 ±	44
	OBS Deck (Figure 5)				
31	Deck where Rad Van door was	**44 ±**	**23**	-13 ±	24
32	Deck near incubators	**31 ±**	**20**	-12 ±	20
	Cold Van 625.2.01-3 (Figure 6)				
33	Benchtop near door	-3 ±	4	-1 ±	4
34	Benchtop across from sink	**44 ±**	**21**	-9 ±	17
35	Benchtop near air intake	**26 ±**	**22**	-21 ±	38
36	Inside fume hood	**31 ±**	**18**	-8 ±	21
37	Sink area	11 ±	15	-6 ±	15
38	Deck near sink	**40 ±**	**18**	8 ±	12
39	Center deck	**29 ±**	**18**	-9 ±	23
40	Deck near door	**19 ±**	**13**	6 ±	13
	Rad Van 625.1.01-2 (Figure 7)				
41	Inside fume hood	**92 ±**	**27**	-9 ±	17
42	Benchtop next to fume hood	**109 ±**	**20**	***212 ±**	**23**
43	Benchtop next to sink	**58 ±**	**21**	2 ±	6
44	Sink area	***549 ±**	**62**	**10 ±**	**4**
45	Benchtop next to LSC	**61 ±**	**22**	6 ±	10
46	Benchtop with LSC	**25 ±**	**14**	**8 ±**	**13**
47	Inside refrigerator	**36 ±**	**18**	3 ±	9
48	Inside freezer	**102 ±**	**27**	**14 ±**	**11**
49	Deck near fume hood	**360 ±**	**51**	5 ±	4
50	Center deck	**347 ±**	**50**	**11 ±**	**6**
51	Deck near entrance	**123 ±**	**31**	8 ±	9
52	Final bucket blank	**17 ±**	**16**	-8 ±	22

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 sampled from the ship and the cold van were free from isotope contamination requiring

cleaning. Minor ^{3}H and ^{14}C contamination was found in the Rad van. No action is necessary.

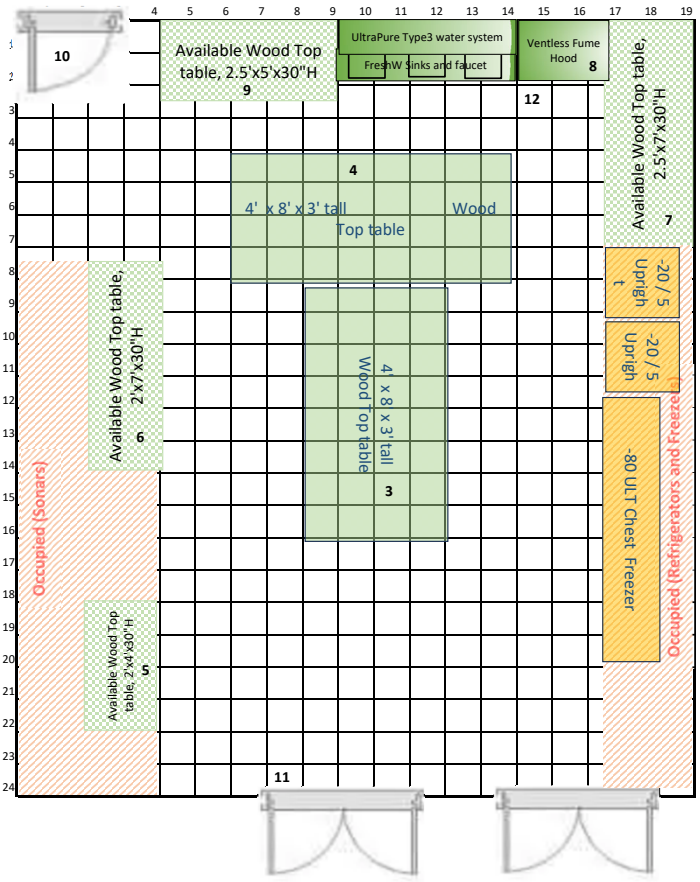
Updated 20250610

Bow

R/V Marcus G. Langseth Main Deck Dry Lab

Figure 1
SWAB #1120
12 July 2025

Drawn to Scale, Cells Grid represents 1' x 1'



Shipwide Available Tables
Qty 10: 4'x8'x3' Wood top table
Qty4: 2.5'x6'x2.5' Plastic folding table

4' x 8' x 3' tall Wood Top table

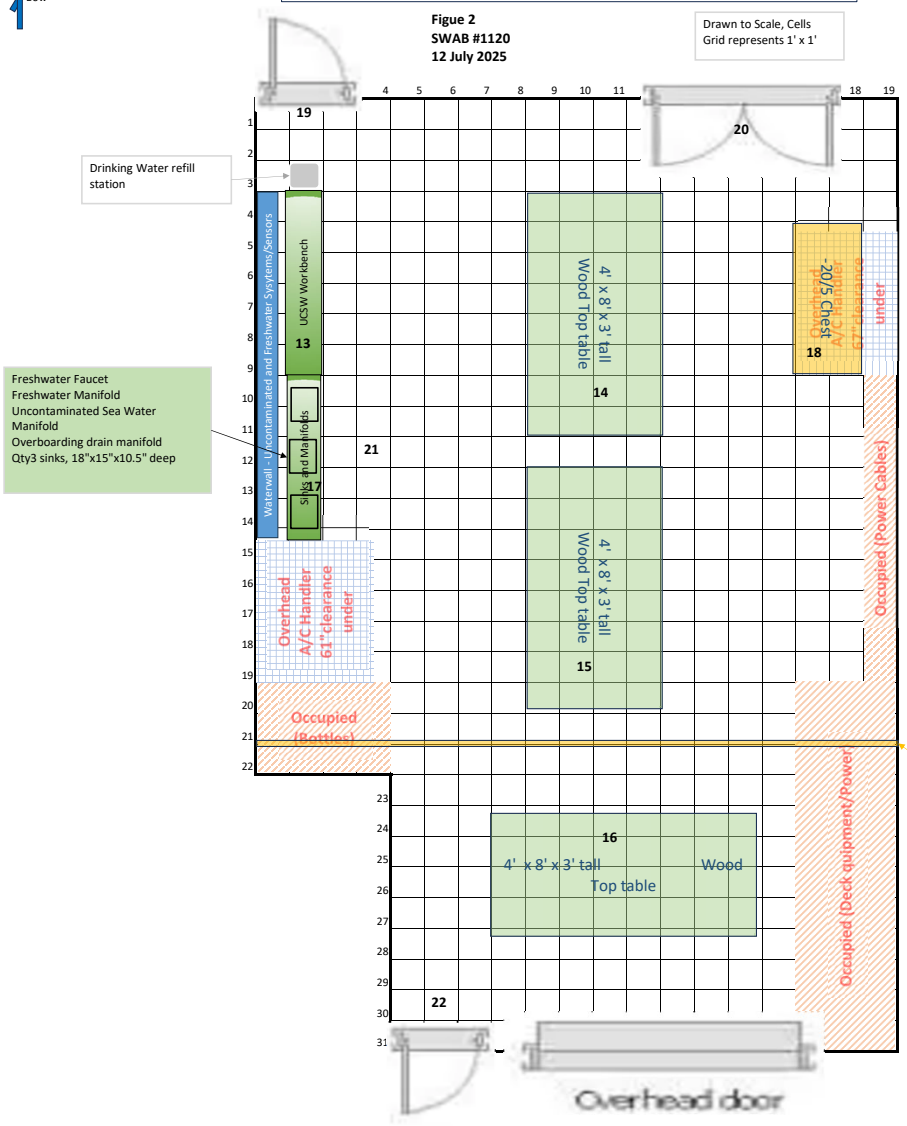
2.5' x 6' x30" tall plastic folding table

Updated 20250610

R/V Marcus G. Langseth Main Deck Wet Lab

Figue 2
SWAB #1120
12 July 2025

Drawn to Scale, Cells
Grid represents 1' x 1'



Shipwide Available Tables
Qty 10: 4'x8'x3' Wood top table
Qty4: 2.5'x6'x2.5' Plastic folding table

4' x 8' x 3' tall Wood Top table

Freshwater Faucet
Freshwater Manifold
Uncontaminated Sea Water Manifold
Overboarding drain manifold
Qty3 sinks, 18"x15"x10.5" deep

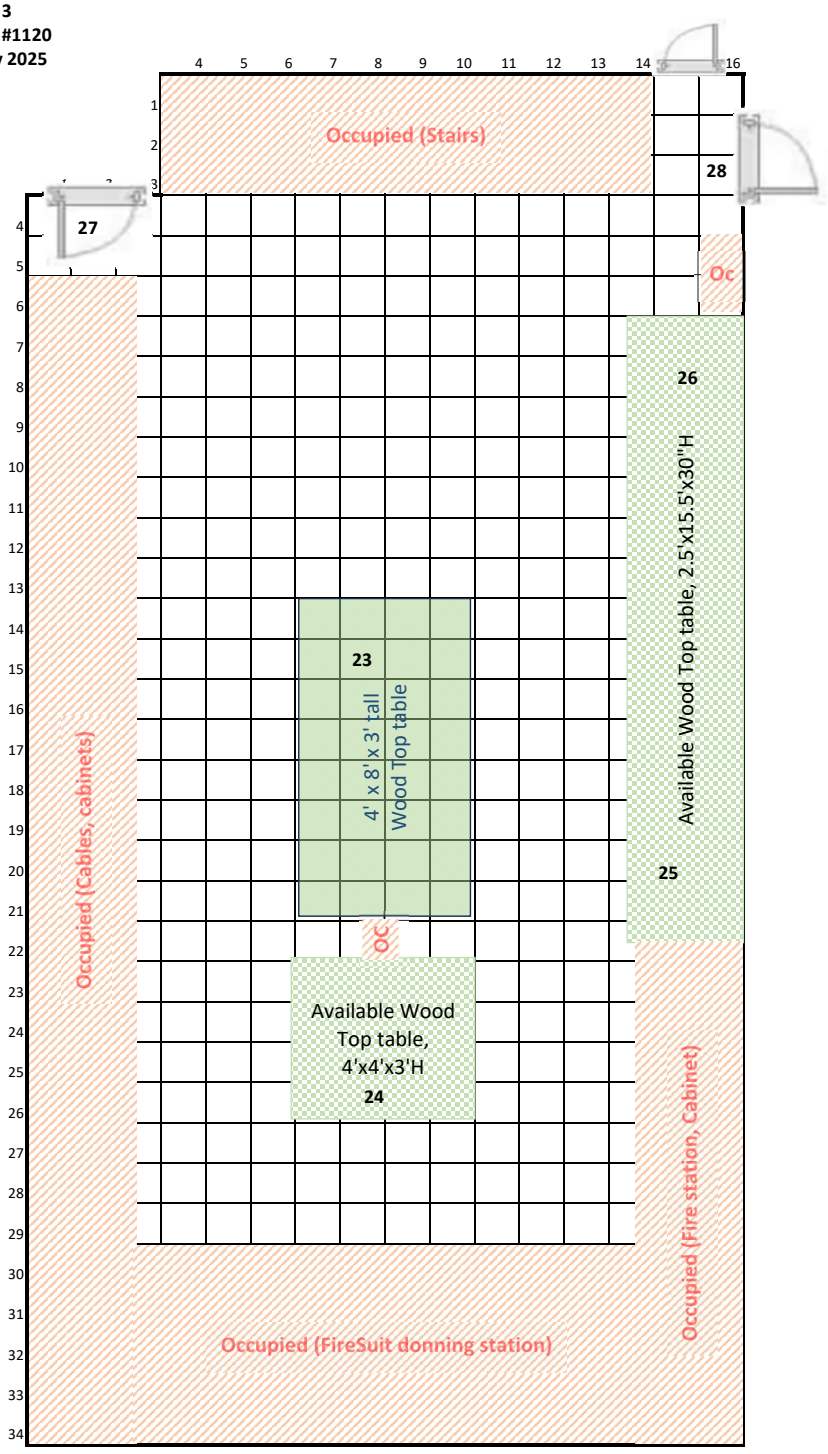
2.5' x 6' x30" tall

Plastic Strip Curtain
-Used as a soft AC boundary to segregate high bay near overhead door
-Removable depending on Wet Lab and high bay operations /temps

Updated 20250610

R/V Marcus G. Langseth Main Deck Port Lab

Figure 3
SWAB #1120
12 July 2025



Shipwide Available Tables
Qty 10: 4'x8'x3' Wood top table
Qty4: 2.5'x6'x2.5' Plastic folding table

4' x 8' x 3' tall Wood Top table

2.5' x 6' x30" tall

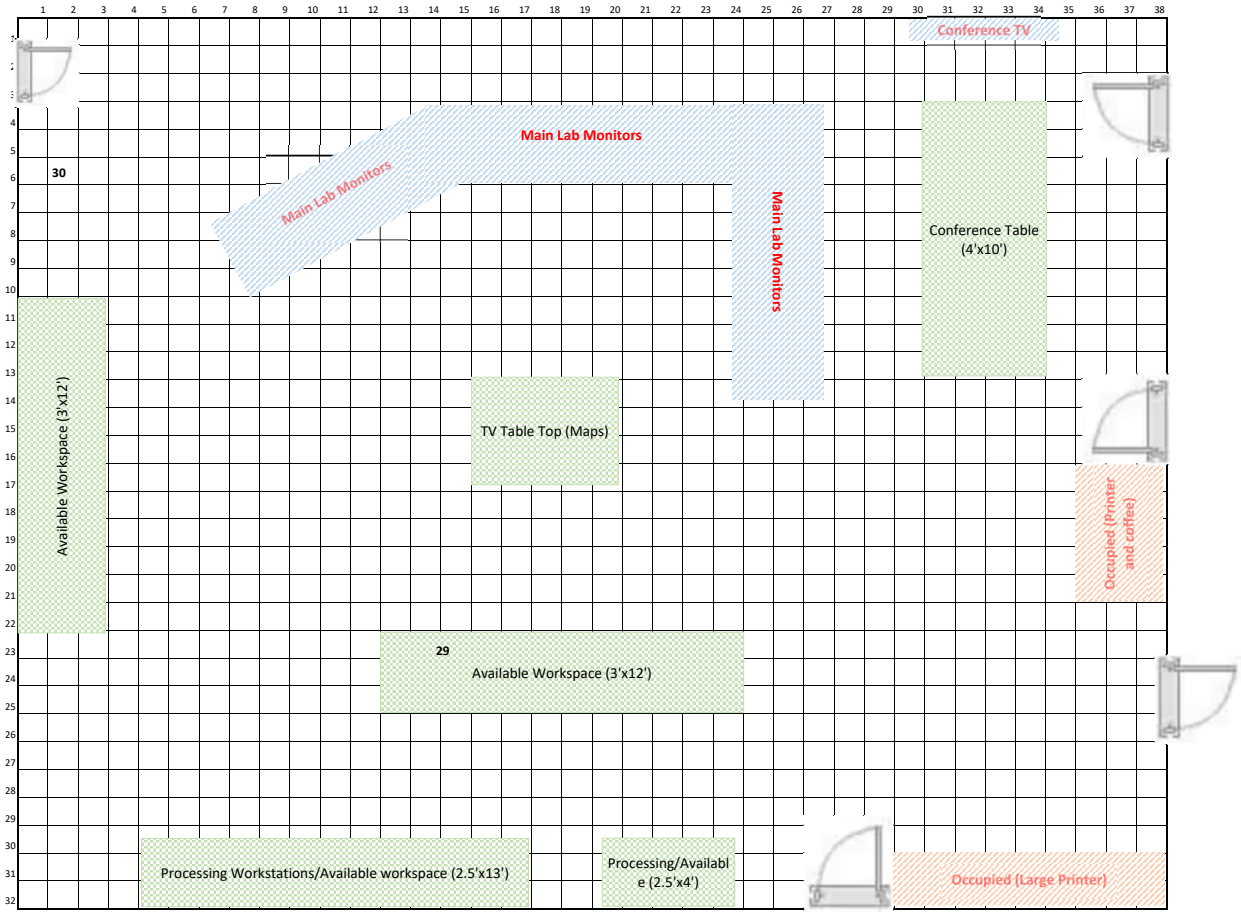
Updated 20250610

Bow

R/V Marcus G. Langseth Platform Deck Main Lab

Drawn to Scale, Cells Grid represents 1' x 1'

Figure 4
SWAB #1120
12 July 2025



Updated 20250610

Figure 5
SWAB #1120
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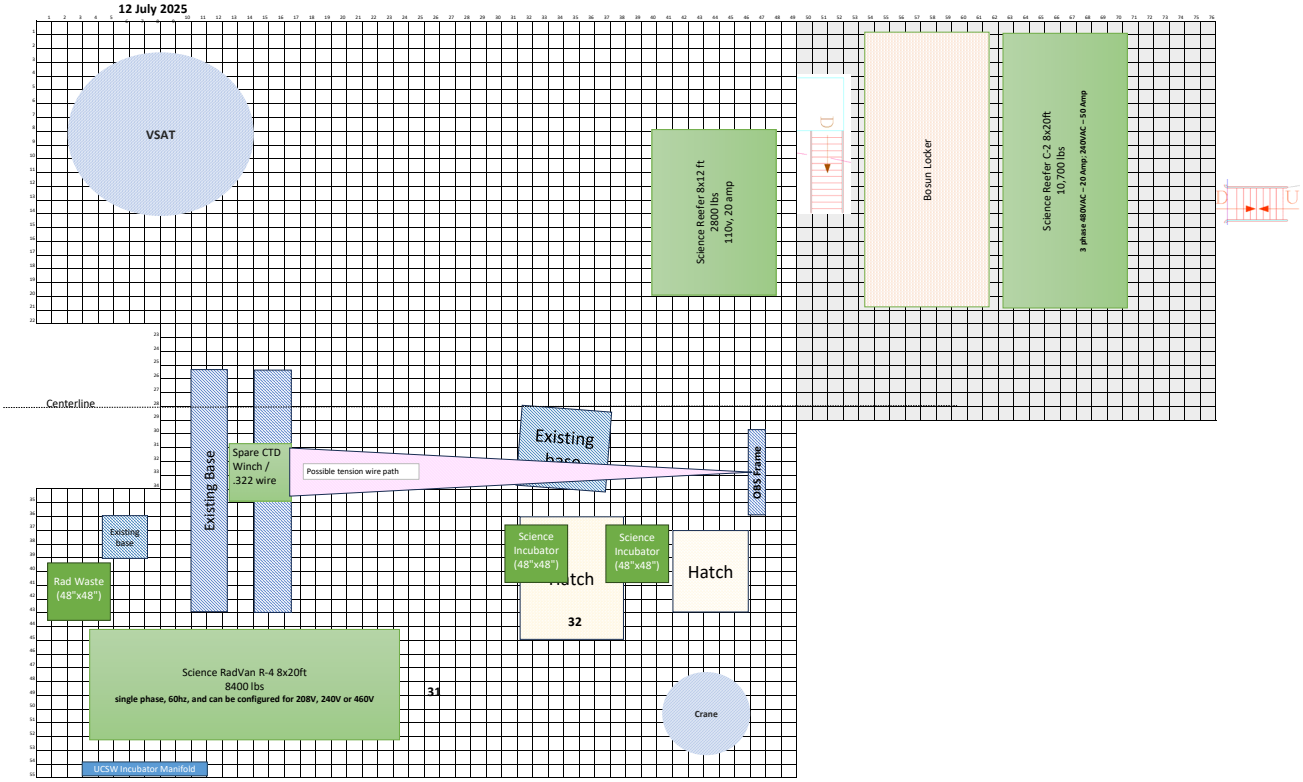
R/V Marcus G. Langseth OBS Deck

Drawn to Scale, Cells Grid represents 1' x 1'

R/V Marcus G. Langseth Paravane Deck



COLD VAN 625.2.01-3

Figure 6
SWAB #1120
12 July 2022

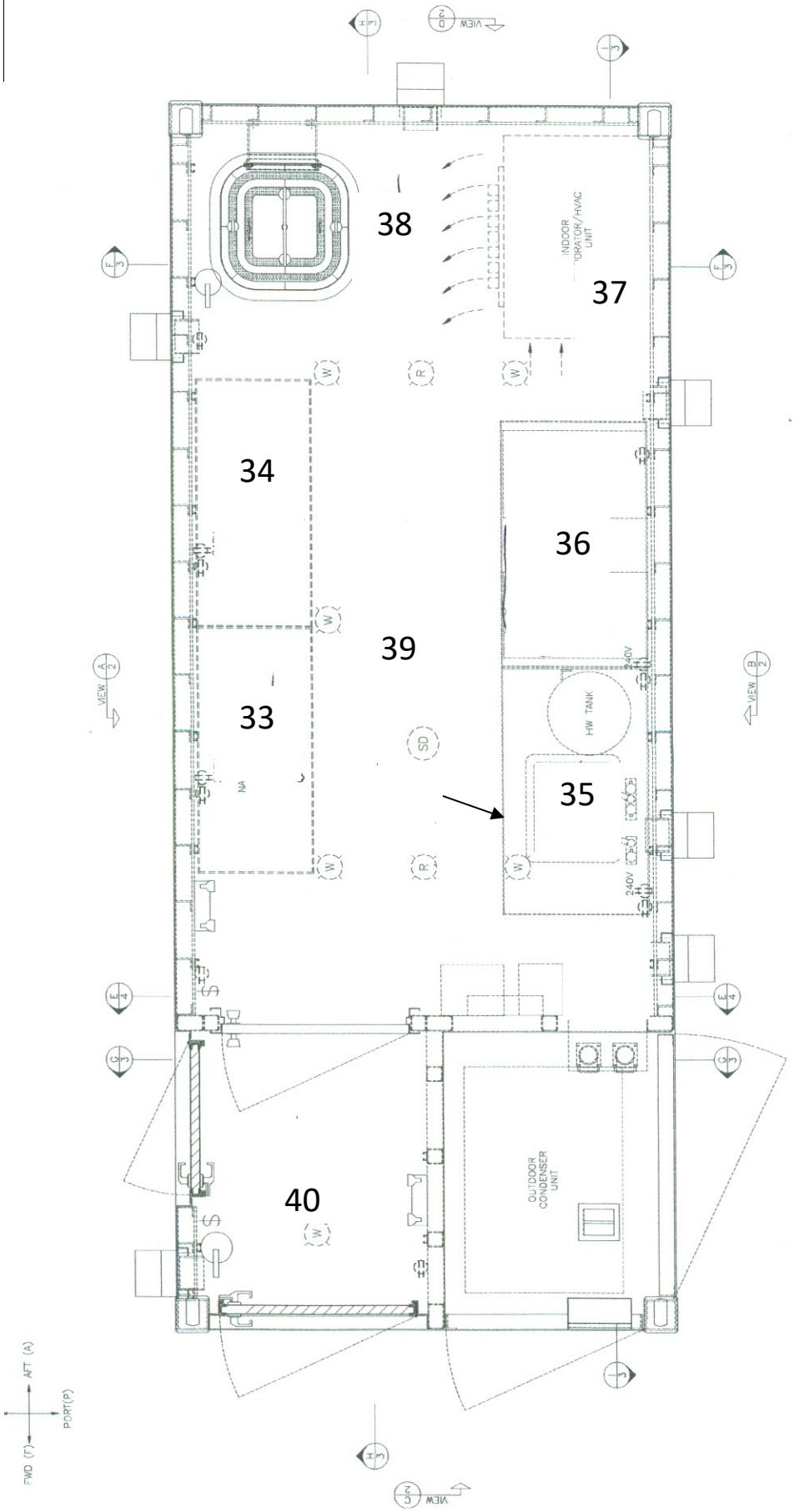


Figure 7
SWAB #1120
12 July 2025

UNOLS Rad Van #625.1.01-2