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Tritium Laboratory
27 October 2025

SWAB REPORT # 1132

SWAB DATE: 18 October 2025

R/V Nathaniel B. Palmer
USAP Radiation Vans #2 and #4

James Happell Digitally signed by James Happell
Date: 2025.10.27 15:02:07 -04'00'

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Distribution:
SWAB Committee
Jamee Johnson
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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 # 1132

LOCATION: Punta Areanas, Chile DATE: 18 October 2025

VESSEL: *R/V Nathaniel B. Palmer* 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 CO #1	-16	±	29	17	±	15
	Bio Lab (Figure 1)						
3	Forward bench between ovens	-32	±	40	**17**	**±**	**15**
4	Aft starboard benchtop next to sink	17	±	22	6	±	12
5	Inside Thermo refrigerator #0113170	15	±	33	-9	±	17
6	Forward port fume hood	-9	±	16	-3	±	5
7	Benchtop across from forward fume hood	-4	±	22	-5	±	11
8	Port sink area	-4	±	21	-11	±	13
9	Aft port fume hood	-14	±	24	-8	±	15
10	Benchtop between port sink and aft fume hood	-6	±	34	0	±	75
11	Benchtop across from port sink	-25	±	31	5	±	17
12	Deck inside Autosal room	-35	±	44	6	±	18
13	Deck in front of port sink	-10	±	17	7	±	14
14	Deck inside starboard entrance	-31	±	38	2	±	105
15	Benchtop forward of port sink	20	±	29	-5	±	11
16	Benchtop forward of forward port fume hood	2	±	19	-15	±	18
17	Deck inside forward entrance	-19	±	34	-5	±	9
18	Benchtop port of aft sink	12	±	28	-4	±	7
19	Science cooler 918 benchtop	-15	±	26	-2	±	4
20	Science cooler 920 benchtop	7	±	138	-12	±	15
	Hydro Lab (Figure 2)						
21	Starboad sink area	-13	±	23	-19	±	23
22	Forward benchtop above refrigerator	7	±	41	-6	±	12
23	Inside Thermo refrigerator #00113169	-13	±	22	-9	±	17
24	Forward benchtop	-38	±	47	-13	±	16
25	Forward section of port benchtop	2	±	36	-2	±	4
26	Port benchtop under porthole	7	±	81	-11	±	14
27	Aft section of center benchtop	-14	±	24	1	±	41
28	Forward section of center benchtop	-12	±	21	0	±	21
29	Deck inside forward entrance	-11	±	19	5	±	15
30	Deck inside aft entrance	28	±	35	-15	±	18
31	Deck in front of aft sink	-18	±	31	5	±	16

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
	Aft Dry Lab (Figure 3)						
32	Top of forward -80^{o}C chest freezer	-14	±	24	6	±	15
33	Deck where incubator was	-29	±	36	12	±	15
34	Percival incubator #0113228	3	±	19	-14	±	18
35	Forward section of starboard benchtop	-16	±	28	-2	±	3
36	Mid section of starboard benchtop	1	±	6	-2	±	5
37	Aft section of starboard benchtop	-26	±	32	7	±	16
38	Benchtop	-5	±	32	-3	±	6
39	Center starboard benchtop forward of baltic door	-4	±	23	8	±	14
40	Benchtop	-26	±	33	-4	±	8
41	Deck in front of Baltic door	-21	±	26	-1	±	2
42	Aft sink area	-17	±	30	10	±	15
43	Forward port sink area	-20	±	34	4	±	18
44	Port benchtop forward of forward entrance	12	±	64	-15	±	19
45	Port benchtop inside aft entrance	-26	±	32	-3	±	6
46	Center section of center benchtop	-12	±	22	-7	±	15
47	Deck inside forward port entrance	-25	±	31	-16	±	19
48	Deck inside forward entrance	-23	±	29	-2	±	4
49	Deck inside aft port entrance	5	±	19	2	±	12
50	Mid section of port benchtop	-22	±	27	-20	±	24
	Wet Lab (Figure 4)						
51	Forward SS sink area on starboard side	0	±	1	-13	±	16
52	Forward SS benchtop	-12	±	20	-1	±	3
53	Deck inside forward entrance	-4	±	22	-8	±	15
54	Deck inside aft port entrance	-29	±	36	-10	±	20
55	Aft SS sink area	-26	±	33	-9	±	17
	Helo Deck/Workshop (Figure 5)						
56	Sink area	-14	±	25	4	±	16
57	Benchtop under hand dryer	-19	±	34	6	±	16
58	Benchtop above rads refrigerator	***892**	**±**	**73**	***464**	**±**	**29**
59	Deck next to -20oC freezers	-26	±	32	-4	±	7
60	Deck in front of freezers	-17	±	30	-15	±	18
61	Deck where rads refrigerator was	-24	±	29	-3	±	5
62	Passageway outside of shop	-26	±	32	-28	±	34
63	Helo hanger at hanger door	8	±	23	3	±	12
64	Deck outside aft entrance to helo shop	-43	±	54	8	±	18
65	FInal bucket blank CO #1	-4	±	24	-9	±	17

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
	Radioisotope Van #2 (Figure 6)						
66	Initial buck blank CO #2	-7	±	38	6	±	14
67	Inside fume hood	**27**	±	**23**	12	±	12
68	Sink area	***1116**	±	**91**	**44**	±	**8**
69	Benchtop next to LSC	9	±	34	-6	±	12
70	Deck in front of LSC	-18	±	31	9	±	15
71	Inside Thermo refirgerator #0113237	38	±	27	1	±	5
72	Benchtop above refrigerator	**60**	±	**23**	***58**	±	**16**
73	Waste collection area	***9677**	±	**266**	***404**	±	**19**
74	Deck where water baths were located	**79**	±	**34**	-7	±	13
75	Deck in center of van	**102**	±	**34**	**14**	±	**10**
76	Deck inside entrance	**65**	±	**31**	0	±	1
77	Benchtop across from entrance	**38**	±	**24**	**13**	±	**12**
	Radioisotope Van #4 (Figure 7)						
78	Inside fume hood	**93**	±	**35**	7	±	8
79	Sink area	19	±	32	-8	±	16
80	Inside Thermo refrigerator	**385**	±	**57**	21	±	8
81	Benchtop above refigerator	-10	±	17	12	±	14
82	Waste collection area	***1762**	±	**116**	***50**	±	**7**
83	op of metal box	**87**	±	**33**	1	±	2
84	Benchtop next to LSC	-1	±	3	-4	±	9
85	Bentop next to entance	-25	±	32	2	±	32
86	Deck between LSC and fume hood	-17	±	30	13	±	15
87	Deck in center of van	-3	±	18	-4	±	7
88	Deck in front of metal box	**75**	±	**36**	-11	±	13
89	Deck inside entrance	**35**	±	**26**	1	±	5

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 on the ship were free from isotope contamination that requires cleaning.

Minor ^{3}H and ^{14}C contamination was seen on the bench top above where the Rads refrigerator was located in the Helo shop. This area shoulod be cleaned before any natural isotope work is conducted.

Minor ^{3}H and ^{14}C contamination was seen in Rad Van #2 and #4. No action is necessary in the vans.

Figure 1
SWAB #1132
18 October 2025

Bio Lab

460 sq. ft.

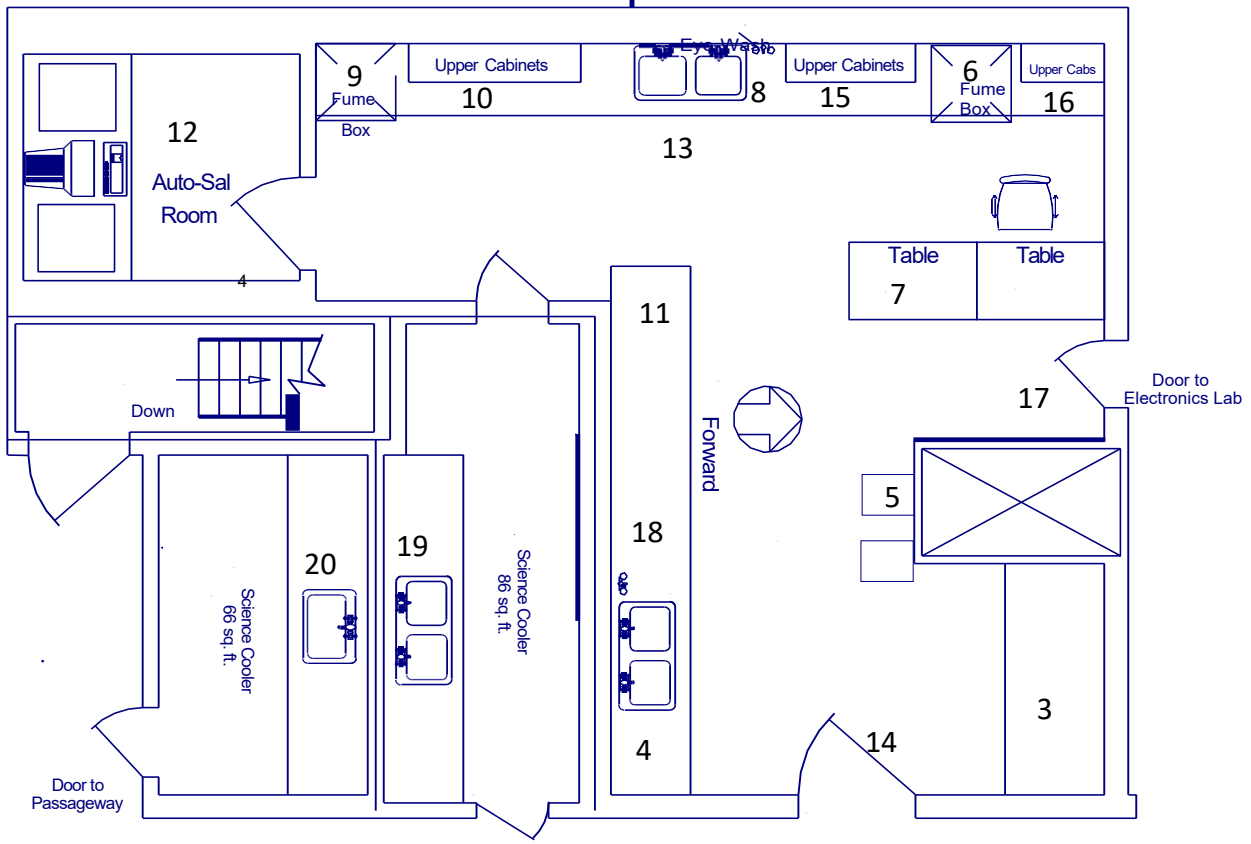

Figure 2
SWAB 1132
18 October 2025

Hydro Lab
445 sq. ft.

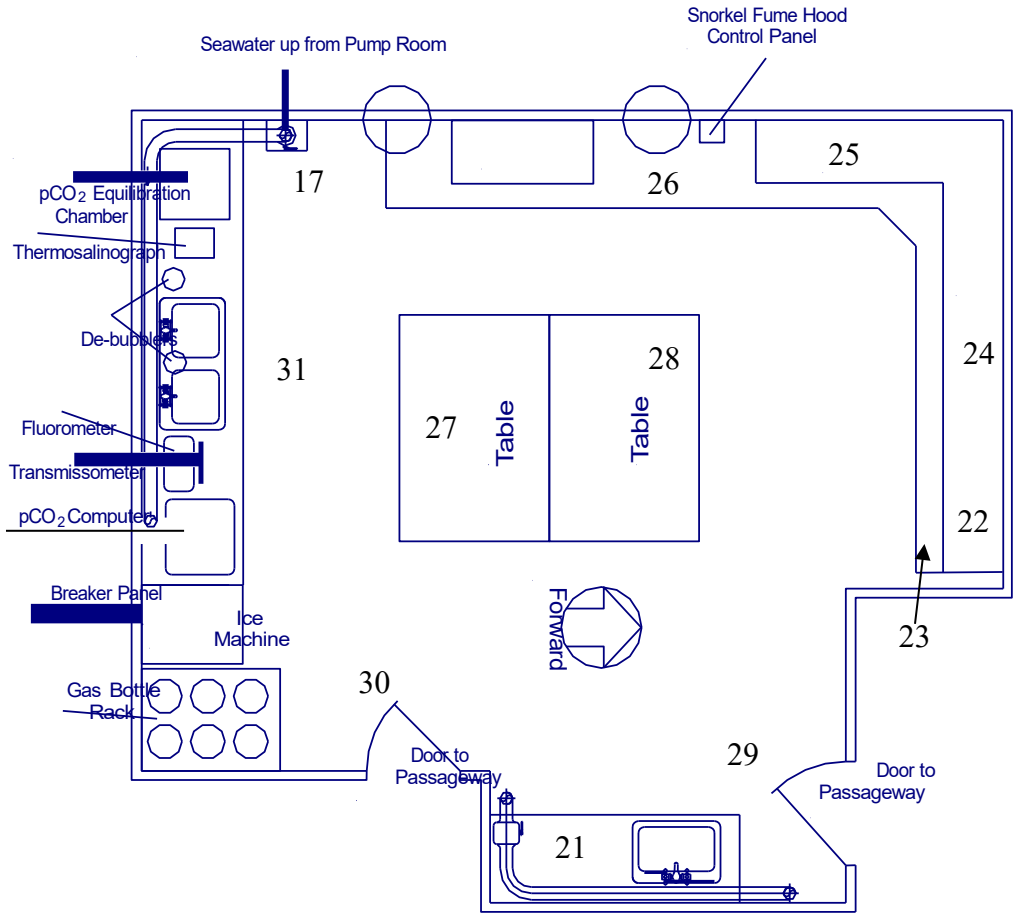

Figure 3
SWAB # 1132
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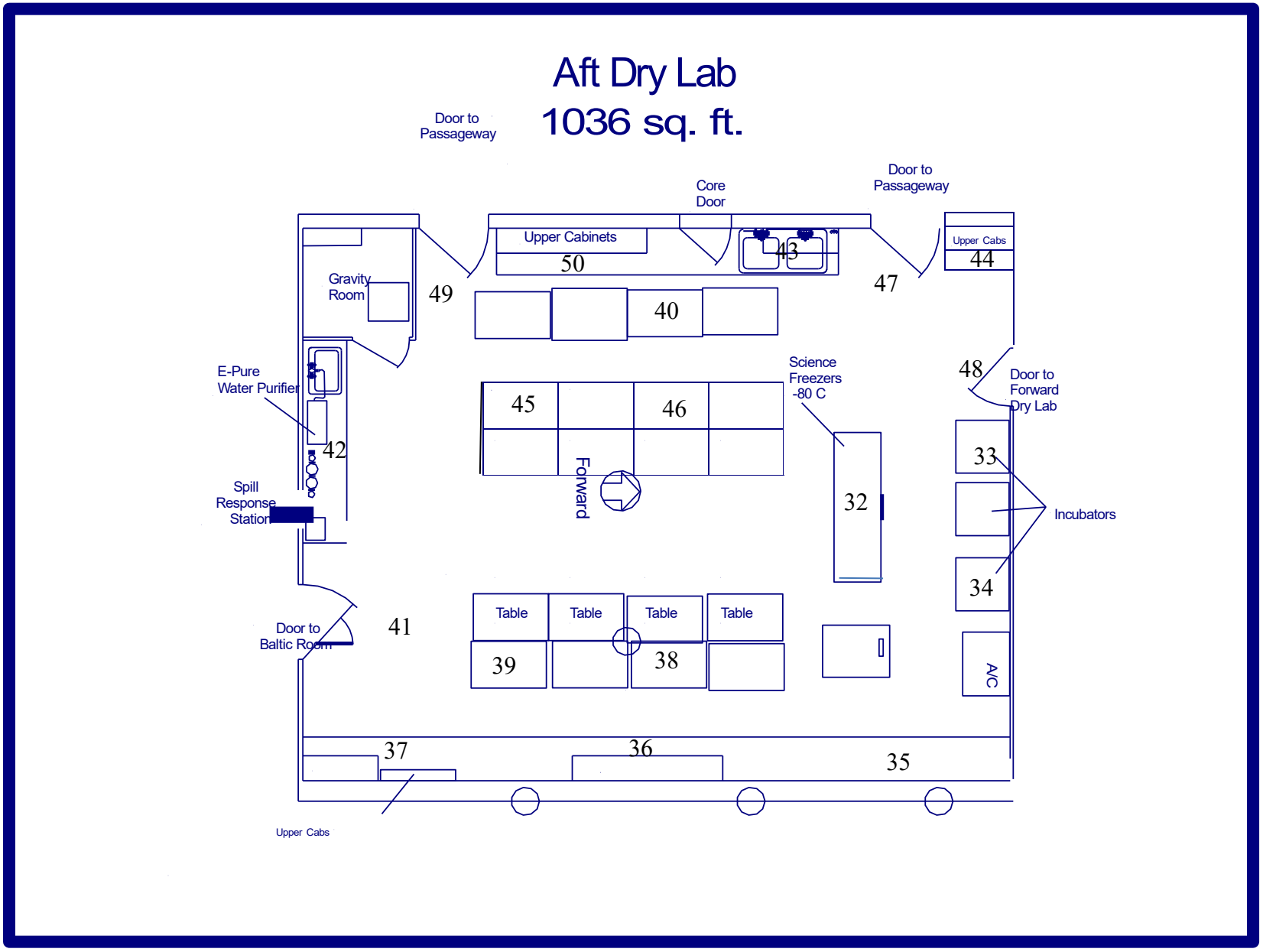

Figure 4
SWAB #1132
18 October 2025

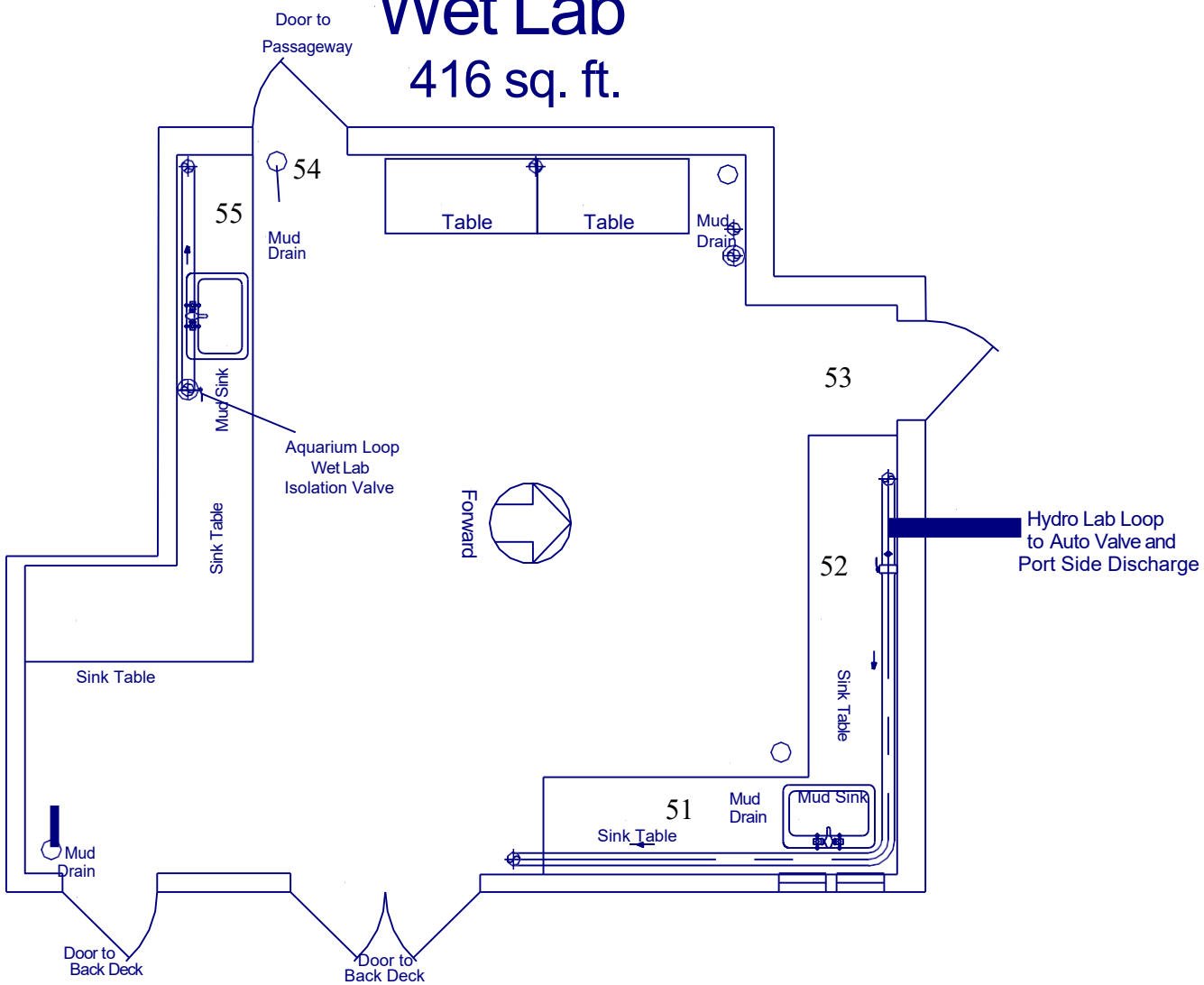

Figure 5
SWAB #1132
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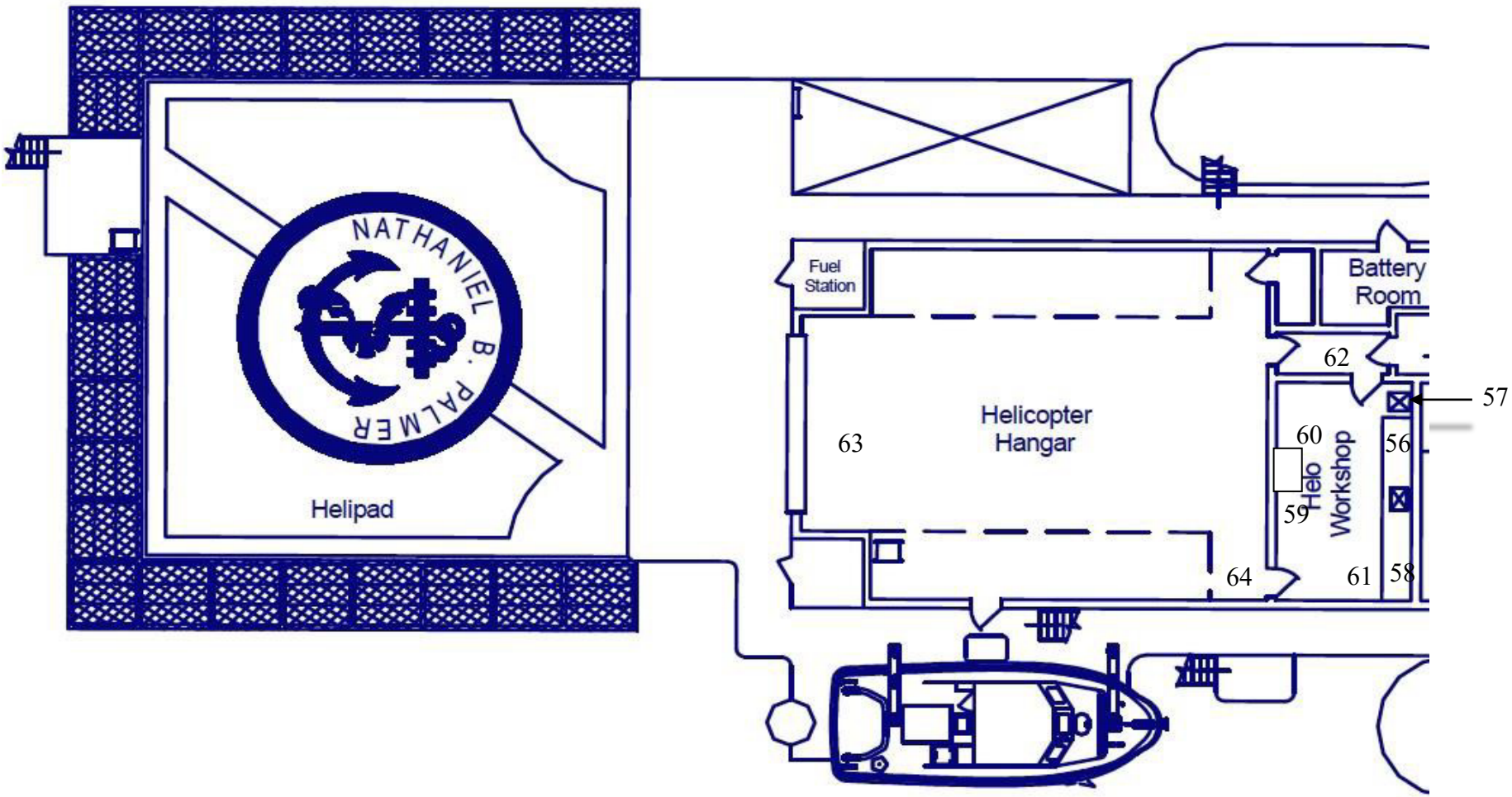

Figure 6
SWAB #1132
18 October 2025

USAP Van #2

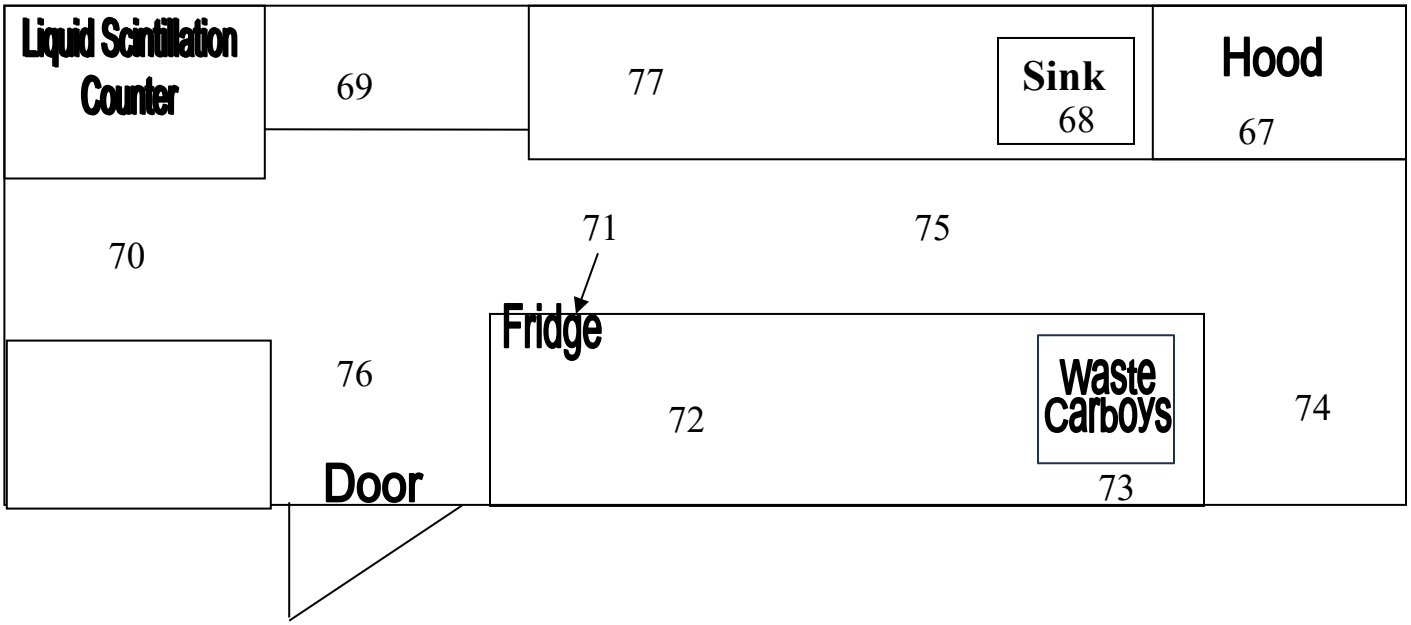

Figure 7
SWAB #1132
18 October 2025

USAP Van # 4