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Tritium Laboratory
25 October 2024

SWAB REPORT # 1105

SWAB DATE: 18 October 2024

R/V Nathaniel B. Palmer

James Happell Digitally signed by James Happell Date: 2024.10.25 16:09:07 -04'00'

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Jamee Johnson

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 # 1105

LOCATION: Punta Areanas, Chile DATE: 18 October 2024

VESSEL: *R/V Nathaniel B. Palmer* TECHNICIAN: Charlene Grall

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	1	±	4	4	±	13
	Bio Lab (Figure 1)						
3	Forward bench between ovens	**17**	**±**	**15**	**18**	**±**	**13**
4	Aft starboard benchtop next to sink	**24**	**±**	**22**	-3	±	13
5	Inside Thermo refrigerator #0113170	19	±	26	-8	±	12
6	Forward port fume hood	-21	±	29	6	±	16
7	Benchtop across from forward fume hood	-1	±	9	2	±	13
8	Port sink area	**31**	**±**	**22**	**7**	**±**	**11**
9	Aft port fume hood	19	±	29	-8	±	12
10	Benchtop between port sink and aft fume hood	15	±	21	-2	±	11
11	Benchtop across from port sink	1	±	4	11	±	13
12	Deck inside Autosal room	7	±	13	11	±	13
13	Deck in front of port sink	-4	±	9	-3	±	13
14	Deck inside starboard entrance	**24**	**±**	**22**	1	±	7
15	Benchtop forward of port sink	9	±	12	14	±	13
16	Benchtop forward of forward port fume hood	-5	±	12	-9	±	14
17	Deck inside forward entrance	**35**	**±**	**22**	**14**	**±**	**12**
18	Benchtop port of aft sink	**24**	**±**	**22**	0	±	6
19	Science cooler 918 benchtop	**28**	**±**	**26**	-7	±	10
20	Science cooler 920 benchtop	8	±	15	5	±	12
	Hydro Lab (Figure 2)						
21	Starboad sink area	1	±	4	10	±	13
22	Forward benchtop above refrigerator	9	±	14	11	±	13
23	Inside Thermo refrigerator #00113169	-18	±	25	9	±	15
24	Forward benchtop	15	±	19	6	±	12
25	Forward section of port benchtop	17	±	29	-10	±	14
26	Port benchtop under porthole	-24	±	22	**16**	**±**	**15**
27	Aft section of center benchtop	**25**	**±**	**24**	-2	±	11
28	Forward section of center benchtop	-8	±	50	**24**	**±**	**14**
29	Deck inside forward entrance	-5	±	12	0	±	0
30	Deck inside aft entrance	-26	±	26	9	±	16
31	Deck in front of aft sink	-29	±	26	15	±	15

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°C chest freezer	**31**	±	**25**	-4	±	13
33	Forward Percival incubater #0113153	10	±	14	8	±	13
34	Forward Percival incubator #0113228	31	±	22	**7**	±	**11**
35	Forward section of starboard benchtop	-3	±	15	12	±	14
36	Mid section of starboard benchtop	**33**	±	**28**	-11	±	13
37	Aft section of starboard benchtop	-19	±	21	23	±	15
38	Inside Fisher refrigeration #0113210	7	±	17	2	±	11
39	Center starboard benchtop forward of baltic door	-23	±	22	10	±	15
40	Intermediate bucket blank	1	±	2	**17**	±	**14**
41	Deck in front of Baltic door	**34**	±	**28**	-6	±	14
42	Aft sink area	-11	±	16	2	±	20
43	Forward port sink area	28	±	36	-23	±	15
44	Port benchtop forward of forward entrance	-18	±	32	2	±	27
45	Port benchtop inside aft entrance	-1	±	5	-4	±	12
46	Center section of center benchtop	1	±	2	11	±	13
47	Deck inside forward port entrance	19	±	20	5	±	11
48	Deck inside forward entrance	-22	±	21	-2	±	9
49	Deck inside aft port entrance	-28	±	24	15	±	15
50	Mid section of port benchtop	**28**	±	**25**	-11	±	14
	Wet Lab (Figure 4)						
51	Forward SS sink area on starboard side	11	±	15	11	±	13
52	Forward SS benchtop	-11	±	15	5	±	15
53	Deck inside forward entrance	9	±	16	7	±	12
54	Deck inside aft port entrance	-34	±	27	-10	±	14
55	Aft SS sink area	**32**	±	**23**	5	±	10
	Helo Deck/Workshop (Figure 5)						
56	Forward sink area	-14	±	21	-2	±	10
57	SS benchtop under hand dryer	15	±	23	1	±	6
58	Wooden benchtop above rads refrigerator	-17	±	29	6	±	15
59	Wooden table adjacent to -80°C freezers	-7	±	108	**16**	±	**14**
60	Deck in front of freezers	**7**	±	**17**	7	±	13
61	Inside rads refrgerator	**387**	±	**55**	**44**	±	**12**
62	Companionway outside shop	5	±	13	6	±	13
63	Helohanger at hanger door	**52**	±	**22**	9	±	10
64	Deck outside aft entrance to helo shop	-3	±	95	7	±	13
65	Final bucket blank	-16	±	24	**15**	±	**14**

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.

Figure 1
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Bio Lab

460 sq. ft.

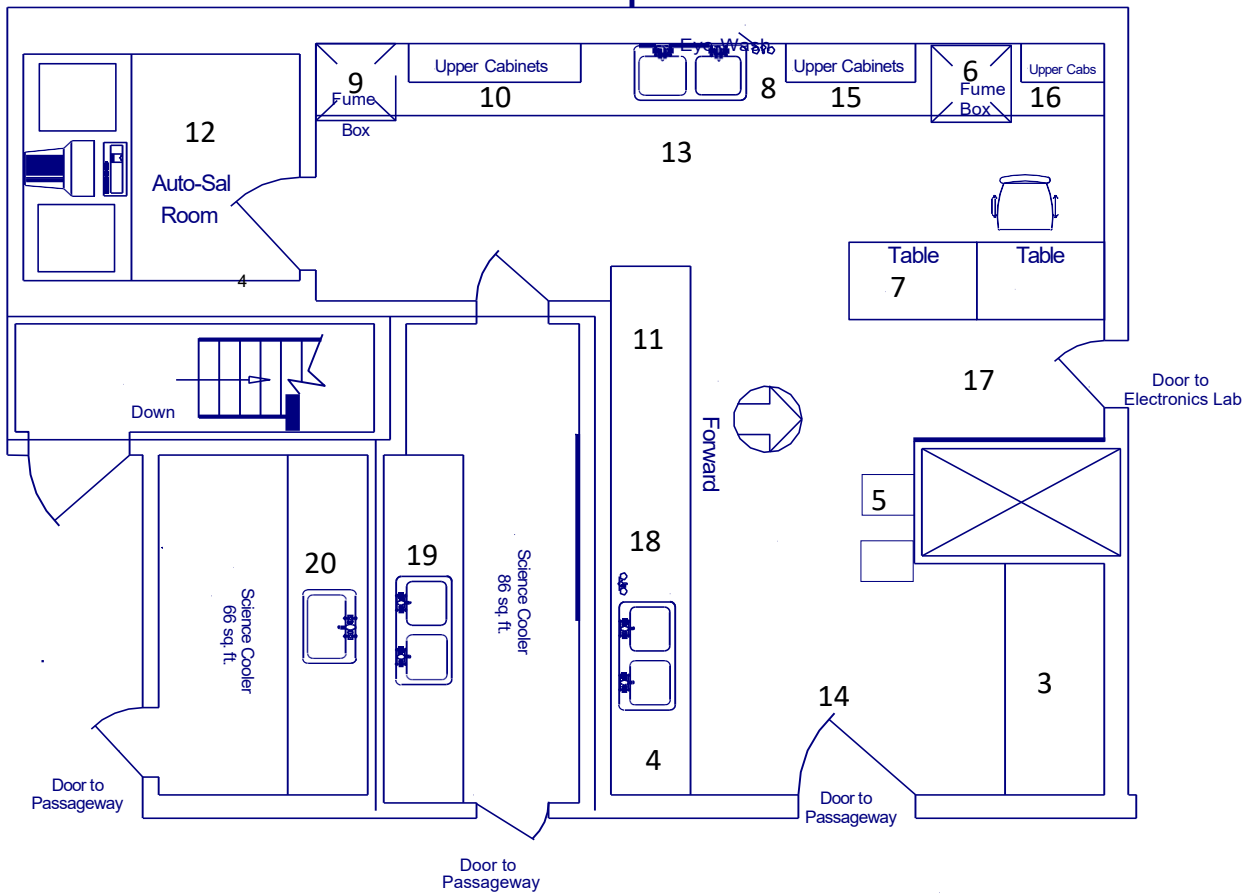

Figure 2
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Hydro Lab
445 sq. ft.

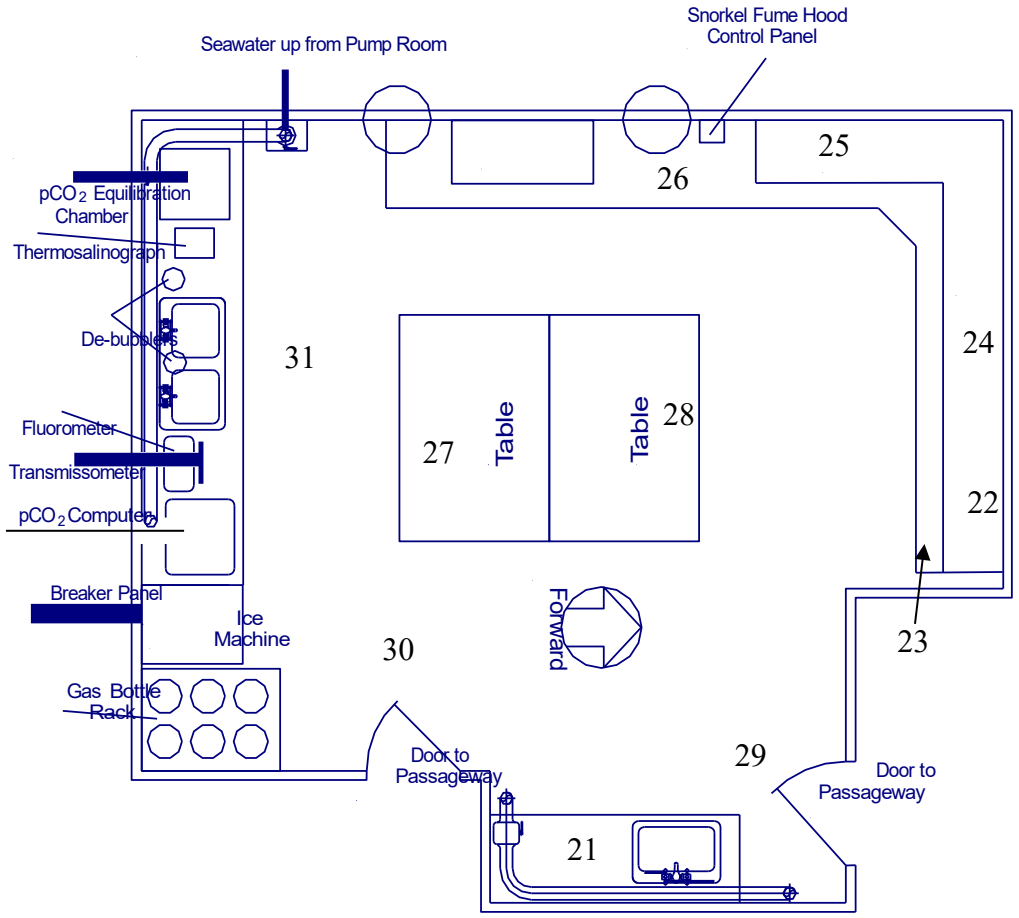

Figure 3
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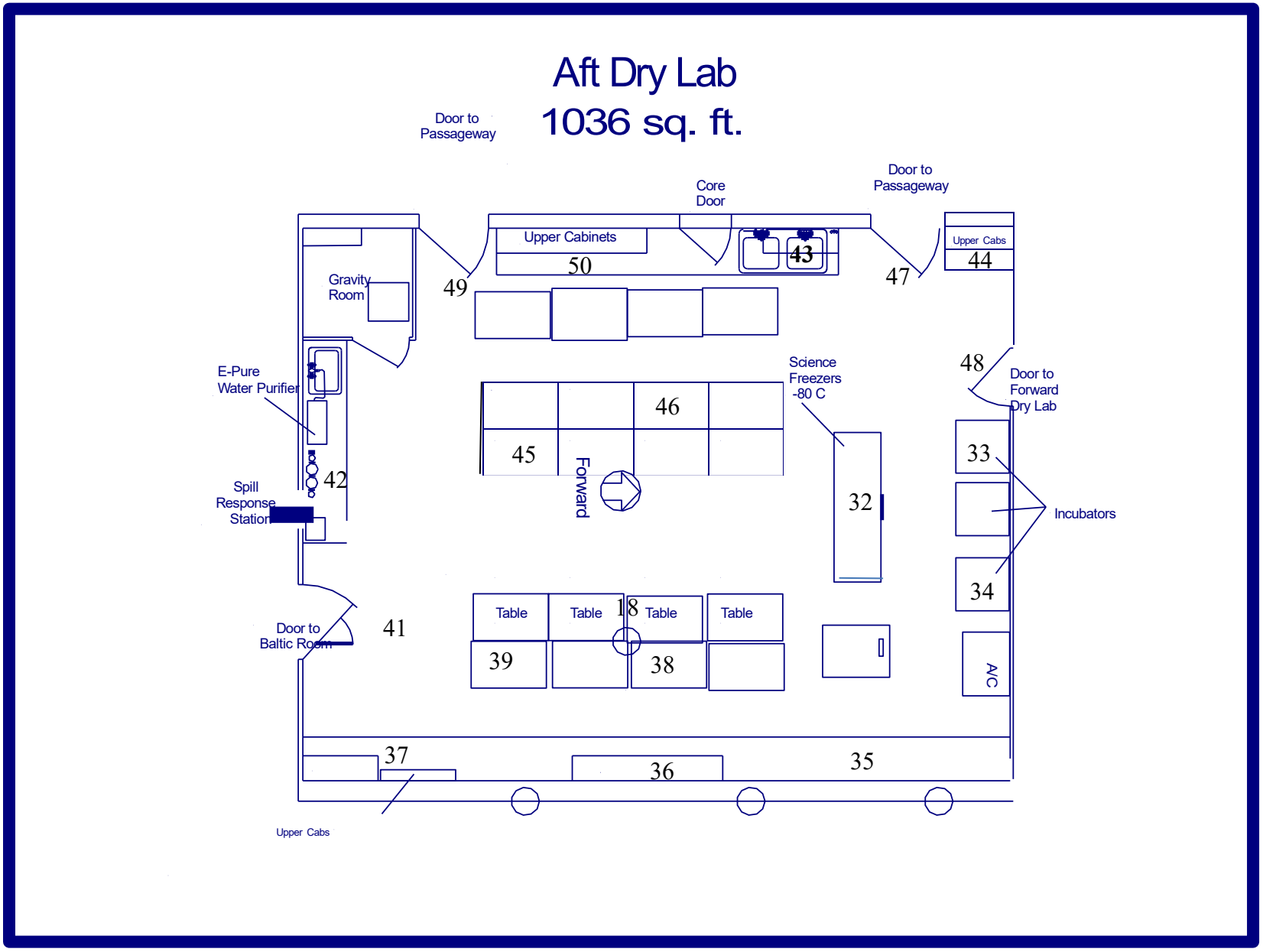

Figure 4
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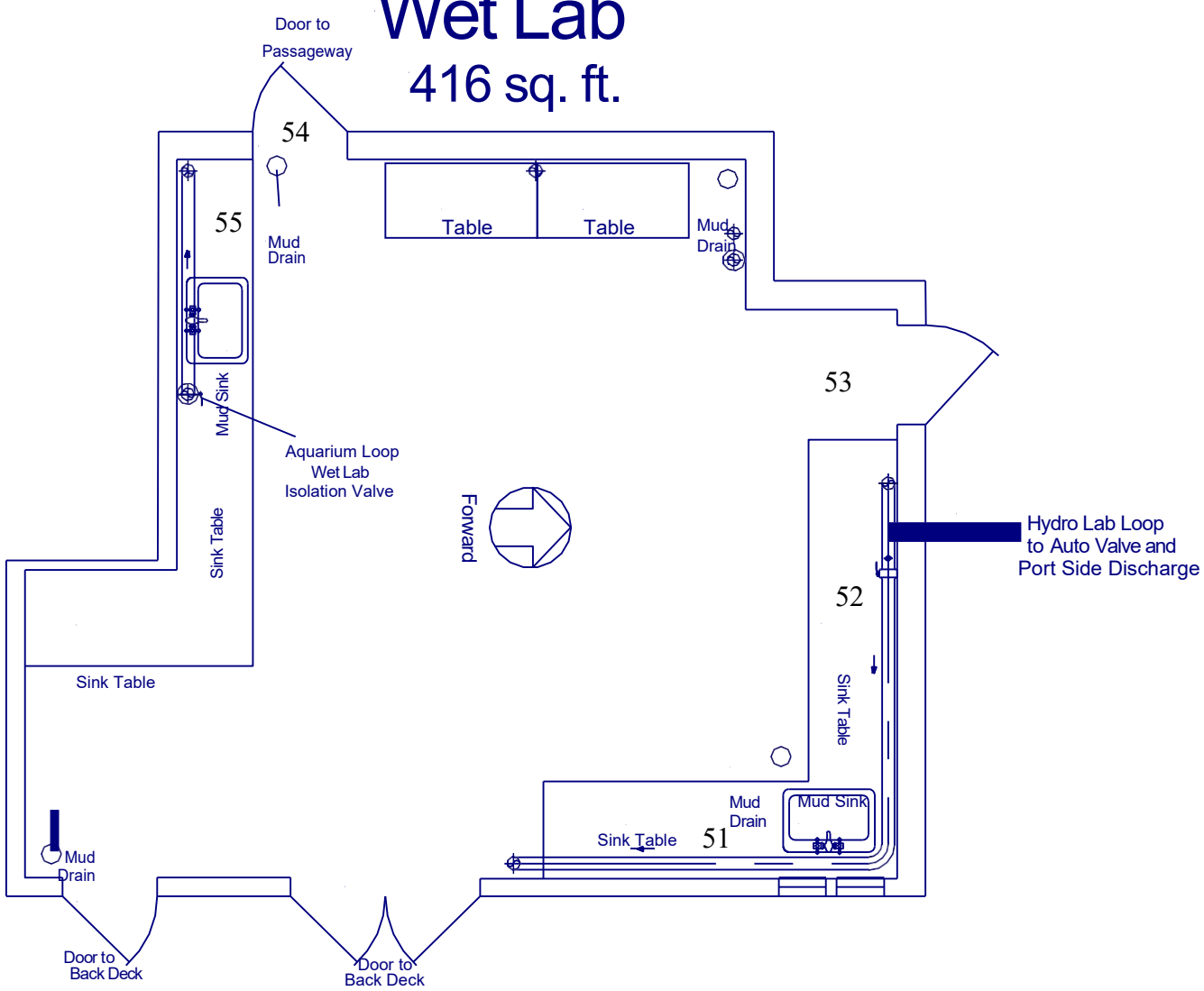

Figure 5
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