

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

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SWAB REPORT # 925

SWAB DATE: 19 December 2018

R/V Nathaniel B. Palmer

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Jamee Johnson

COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for ^3H and ^{14}C are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

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.

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 $1000 \text{ dpm}/\text{m}^2$ 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 institution promptly by phone or email.

REPORT FOR SWAB # 925

LOCATION: Punta Arenas, Chile
VESSEL: R/V Nathaniel B. Palmer

DATE: 19 December 2018
TECHNICIAN: Charlene Grall

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	-34	± 97	-43	± 122
<u>Aft Dry Lab (Figure 1)</u>				
3 Inside Thermo -80°C freezer	6	± 17	-39	± 112
4 Inside Percival incubator 0013153	6	± 17	-39	± 109
5 Inside Powers incubator 021700	-20	± 56	-37	± 106
6 Deck between Thermo freezer & incubators	-10	± 29	-28	± 79
7 Inside Isotemo incubator 00113139	-6	± 17	-30	± 85
8 Inside Revco -80°C freezer	-23	± 65	-25	± 71
9 Center starboard benchtop	-22	± 62	-18	± 51
10 Starboard benchtop aft	-25	± 70	-16	± 46
11 Starboard bnchtop forward	-16	± 46	-35	± 98
12 Deck between starboard and middle bench	12	± 34	-33	± 94
13 Inside isotemp -80°C freezer 00010623	-7	± 19	-37	± 105
14 Port aft benchtop	-12	± 34	-16	± 44
15 Port sink area	-27	± 76	-30	± 84
16 Deck in front of aft baltic doors	-4	± 12	-37	± 104
17 Deck inside aft port entrance	6	± 17	-26	± 74
18 Deck between port and center bench	-23	± 64	-30	± 86
19 Deck inside forward entrance	-14	± 41	-31	± 87
<u>Forward Dry Lab (Figure 2)</u>				
20 Deck in front of port entrance	-38	± 107	-13	± 36
21 Deck in front of starboard bench	-46	± 131	0	± 1
<u>Bio Lab (Figure 3)</u>				
22 Forward benchtop next to fume hood	-19	± 55	-31	± 87
23 Benchtop opposite of forward fume hood	-21	± 60	-37	± 105
24 Sink area aft of starboard entrance	-26	± 73	-7	± 19
25 Deck inside starboard entrance	-45	± 127	-40	± 114
26 Inside forward fume hood	-48	± 136	-16	± 45
27 Port sink area	-63	± 177	-8	± 22
28 Inside aft fume hood	-61	± 174	0	± 1

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
29	Benchtop aft of port sink	-24	± 69	-30	± 86
30	Deck outside entrance to science cooler	-24	± 69	-25	± 71
31	Aft benchtop opposite of port sink	-47	± 135	-8	± 22
32	Inside Fisher refridgerator 00011986	-18	± 50	-14	± 40
33	Inside Fisher refrigerator 00011985	-38	± 107	-34	± 96
34	Deck in center of lab between benches	-41	± 117	-14	± 39
35	Benchtop inside forward science cooler	-39	± 111	-32	± 90
36	Bechtop inside aft science cooler	-13	± 37	-45	± 127
<u>Hydro Lab (Figure 4)</u>					
37	Forward benchtop	-41	± 116	-9	± 27
38	Aft sink area	-52	± 148	-24	± 68
39	Center section of port benchtop	-22	± 63	-24	± 67
40	Starboard sink area	-39	± 112	-32	± 91
41	Inside Thermo refrigerator	-52	± 147	-29	± 81
42	Deck inside forward entrance	7	± 20	-30	± 85
43	Deck in front of aft sink	-23	± 65	-11	± 32
44	Final bucket blank C.O. #1	-28	± 80	-31	± 86
45	Initial bucket blank C. O. #2	-37	± 103	-41	± 115
46	Center benchtop port section	-29	± 83	-23	± 64
47	Center benchtop starboard section	135	± 63	7	± 19
48	Deck in passage outside starboard entran	-32	± 91	-15	± 43
<u>Wet Lab (Figure 5)</u>					
49	Aft mud sink area	-10	± 27	-42	± 120
50	Forward sink area	-24	± 67	-44	± 124
51	Starboard mub table	-51	± 145	0	± 1
52	Forward stainless steel bench	-33	± 92	-42	± 119
53	Deck inside forward entrance	-13	± 36	-24	± 68
54	Deck at aft starboard entrance	-39	± 111	-33	± 94
55	Aft benchtop next to mud sink	-52	± 147	-13	± 36
56	Deck in passage at stairs to 01 deck	-38	± 107	-55	± 155

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
	<u>Helodeck (Figure 6)</u>				
57	Sink area	-36	± 103	-32	± 92
58	Hanger deck outside aft entrance	-62	± 175	-16	± 45
59	Hanger deck just inside metal door	-49	± 140	-22	± 61
60	Port aft benchtop	-12	± 33	-22	± 64
61	Starboard aft benchtop	-44	± 124	-24	± 69
62	Helicopter hanger deck between shop & co	-31	± 89	2	± 124
63	Deck of shop between refrigerator and si	-30	± 86	-8	± 23
64	Inside isotope storage refrigerator	-26	± 73	-21	± 59
65	Final bucket blank C.O. #2	-18	± 52	-58	± 163

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When 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. All areas tested on the ship were free from any isotope contamination that requires cleaning.

Figure 1
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Aft Dry Lab 1036 sq. ft.

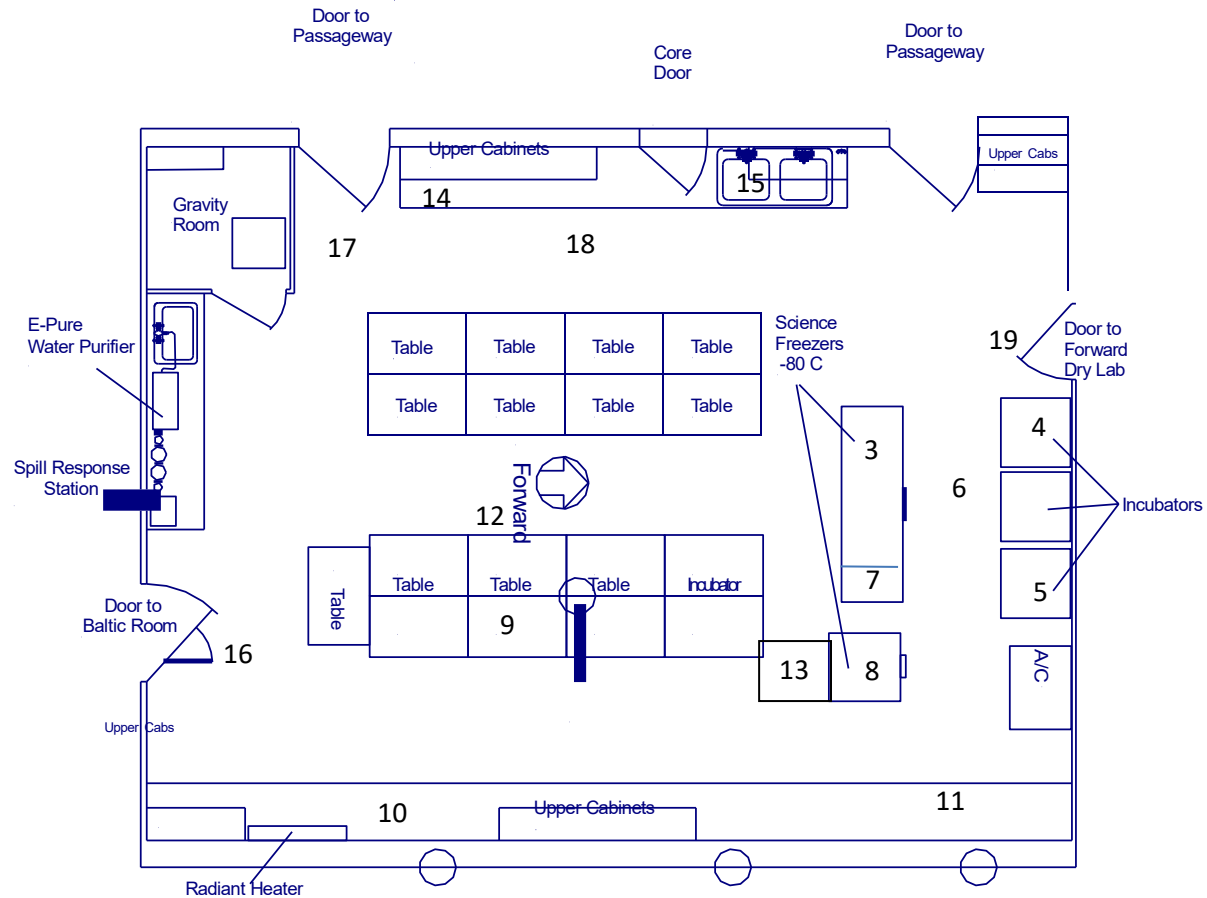
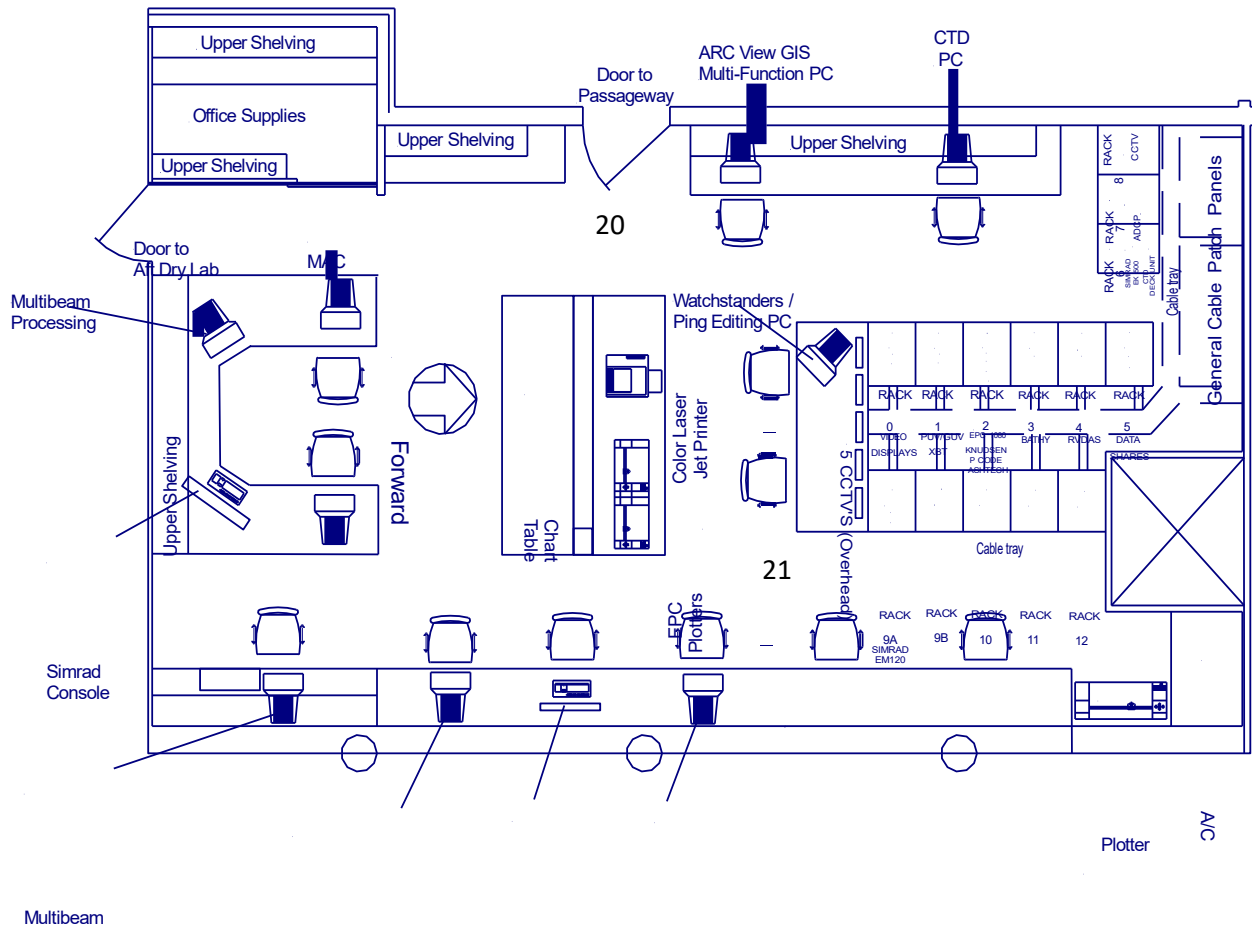


Figure 2
SWAB #925
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Forward Dry Lab

1150 sq. ft.



Multibeam

Multi-Purpose
UNIX Work Station

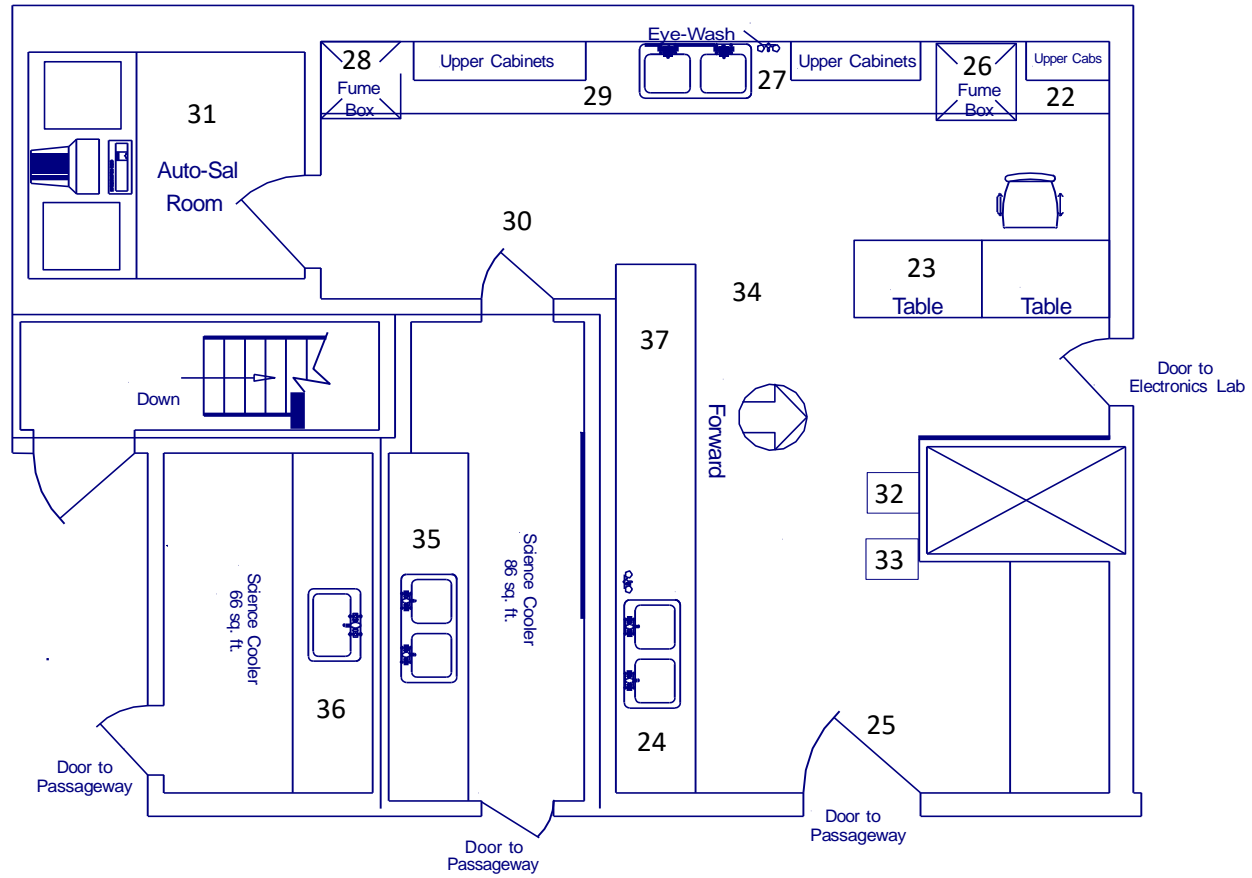
MAC

PC

Figure 3
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Bio Lab

460 sq. ft.



Hydro Lab

445 sq. ft.

Figure 4
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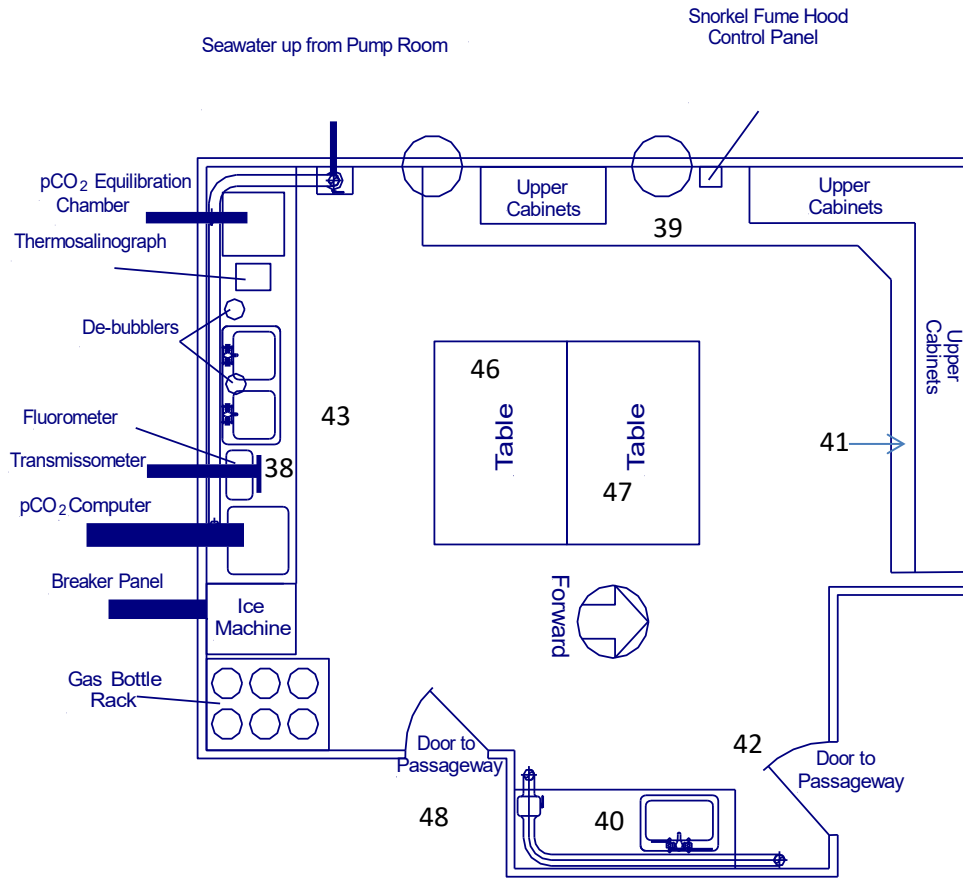


Figure 5
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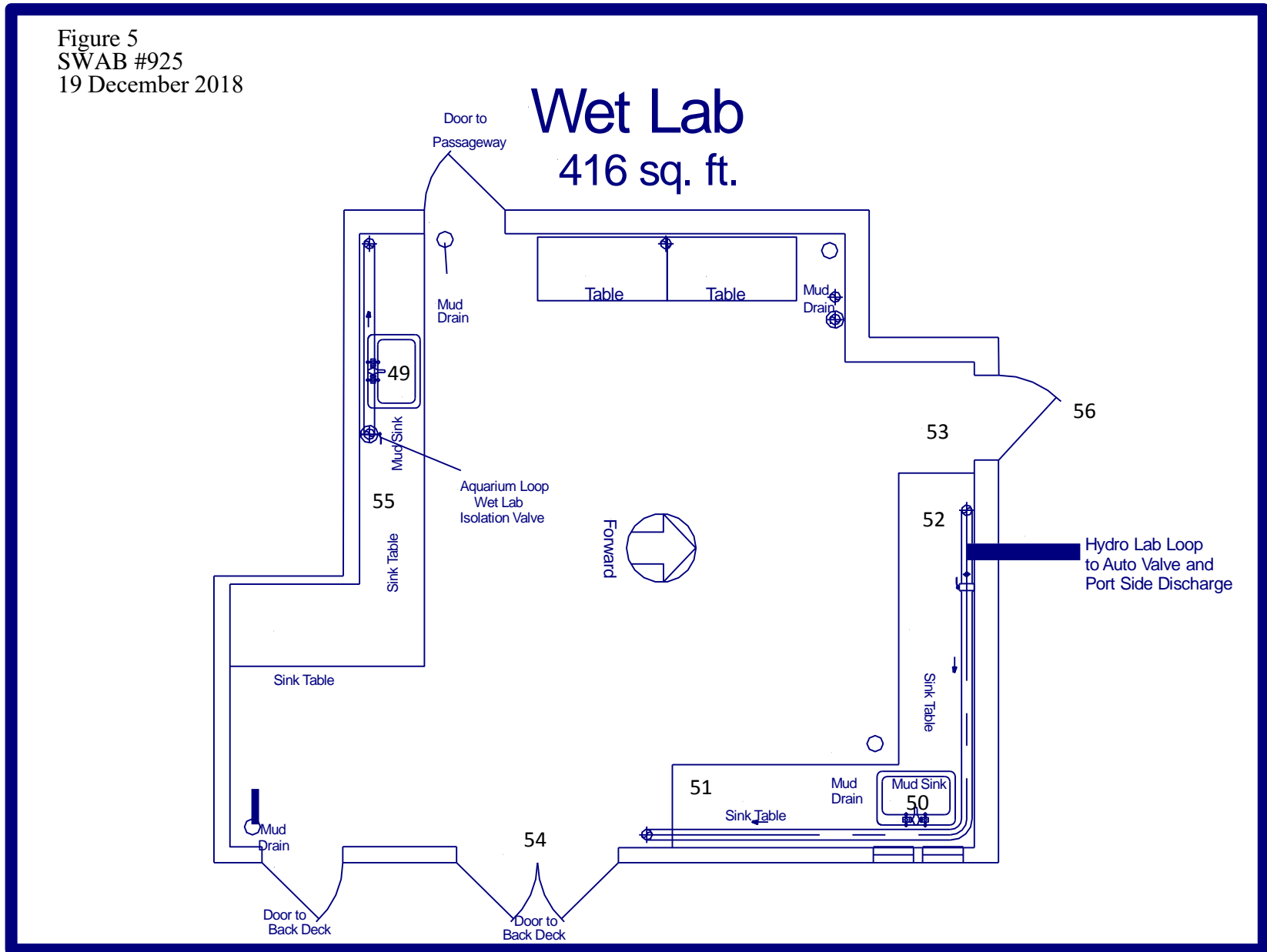


Figure 6
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