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Tritium Laboratory
5 January 2015

SWAB REPORT #755

SWAB DATE: 26 November 2014

R/V Nathaniel B. Palmer

James Happell

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James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Jamee Johnson
Tim McGovern

COMMENTS TO SWAB REPORTS 12 May 2014

Typical LSC instrument background values for ^{3}H 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	^{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 offi

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

REPORT FOR SWAB # 755

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

DATE: 26 November 2014
TECHNICIAN: Jamee Johnson

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 C. O. # 1	0	±	0	3	±	41
	<u>Aft Dry Lab (Figure 1)</u>						
3	Top of Thermo chest freezer	0	±	0	16	±	34
4	Inside Percival incubator 00011175	0	±	0	33	±	34
5	Inside Percival incubator 00011176	28	±	40	8	±	27
6	Deck below -80 Revco freezer 12063	0	±	0	11	±	35
7	Deck below Fisher freezer 00010623	0	±	0	0	±	0
8	Aft sink area	10	±	34	7	±	30
9	Stbd benchtop above flammable storage	0	±	0	27	±	34
10	Center starboard bench top, aft section	0	±	0	34	±	35
11	Center starboard benchtop, fwd section	0	±	0	4	±	44
12	Center benchtop, center section	0	±	0	22	±	34
13	Center port benchtop, forward section	0	±	0	7	±	36
14	Port benchtop aft section near entrance	0	±	0	32	±	34
15	Port sink area	0	±	0	31	±	34
16	Deck at aft door to Baltic Room	0	±	0	7	±	39
17	Deck inside aft entrance	0	±	0	2	±	52
18	Deck between forward entrance and Dry Lab entrance	0	±	0	0	±	0
	<u>Forward Dry Lab (Figure 2)</u>						
19	Deck inside Office supplies room	0	±	0	4	±	33
20	Deck inside port entrance	0	±	0	6	±	39
	<u>Bio Lab (Figure 3)</u>						
21	Benchtop adjacent to drying oven	0	±	0	15	±	39
22	Aft sink area	0	±	0	14	±	34
23	Deck inside starboard entrance	0	±	0	25	±	34
24	Benchtop port of aft sink	0	±	0	12	±	38
25	Benchtop across from forward fume hood	4	±	105	0	±	0
26	Deck below forward fume hood	0	±	0	17	±	34
27	Deck at forward entrance to lab	0	±	0	12	±	34
28	Benchtop aft of forward fume hood	0	±	0	16	±	33
29	Benchtop aft of port sink	5	±	32	4	±	31
30	Inside aft fume hood	17	±	29	25	±	32

Sample #	Sample Identification	^{3}H dpm/m^2			^{14}C dpm/m^2		
		activity		error	activity		error
31	Deck below port sink area	0	±	0	10	±	34
32	Deck in front of refrigerators	0	±	0	19	±	38
33	Deck in front of aft fume hood	0	±	0	3	±	34
34	Benchtop inside forward science cooler	0	±	0	25	±	37
35	Benchtop inside aft science cooler	0	±	0	4	±	58
	Hydro Lab (Figure 4)						
36	Starboard sink area	3	±	30	4	±	31
37	Aft sink area	0	±	0	44	±	36
38	Port benchtop beneath porthole	0	±	0	24	±	34
39	Forward benchtop	0	±	0	19	±	35
40	Inside Fisher refrigerator 00113124	0	±	0	24	±	36
41	Inside Fisher refrigerator 00113125	0	±	0	11	±	35
42	Initial bucket blank C. O. #2	17	±	66	0	±	0
43	Deck below aft sink	0	±	0	15	±	35
44	Deck between the two refrigerators	8	±	36	6	±	30
45	Benchtop across from starboard sink	0	±	0	19	±	36
46	Deck at forward entrance to lab	0	±	0	18	±	37
	Wet Lab (Figure 5)						
47	Aft benchtop	0	±	0	27	±	34
48	Forward benchtop	0	±	0	31	±	35
49	Deck at forward entrance	8	±	31	9	±	31
50	Aft sink area	0	±	0	17	±	34
51	Forward sink area	0	±	0	28	±	35
52	Deck at port entrance	0	±	0	21	±	38
53	Deck in center of lab	0	±	-31	28	±	34
54	Deck at starboard entrance to aft deck	0	±	0	37	±	36
	Aquarium (Figure 6)						
55	Deck outside aft entrance	17	±	44	2	±	23
	Helo Workshop and 02 Deck (Figure 7)						
57	Inside Baxter refrigerator 00011923	0	±	0	39	±	34
58	Deck outside starboard aft door	0	±	0	11	±	36
59	Deck near aft rail where incubator sat	0	±	0	15	±	35
60	Deck where door to Rad Van opened	0	±	0	*319	±	44
61	Deck where Rad waste was stored	0	±	0	24	±	35

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
	Miscellaneous areas (no Figure)						
56	MLT Office deck inside entrance	0	±	0	10	±	36
62	MPC Science Office deck inside entrance	6	±	29	7	±	31
63	Final bucket sample CO#2	0	±	0	23	±	35
	Radiation Van #4 (Figure 8)						
64	Initial bucket blank C.O. #3	0	±	0	13	±	36
65	Inside fume hood	374	±	48	*552	±	50
66	Benchtop next to LSC	31	±	23	*76	±	35
67	Sink area	15	±	15	*70	±	35
68	Wooden benchtop next to sink	47	±	18	*211	±	40
69	Waste benchtop across from entrance	*2098	±	44	**31912	±	303
70	Inside refrigerator next to sink	*562	±	25	*6996	±	144
71	Inside refrigerator next to waste bench	*568	±	74	*65	±	24
72	Deck below sink	186	±	43	*215	±	39
73	Deck under waste bench	*2116	±	36	***52053	±	385
74	Drain	*723	±	23	**14339	±	204
75	Final bucket blank C.O. #3	0	±	0	13	±	34

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. All areas on tested in the labs were free of radioisotope contamination that requires cleaning, expect for the deck in the Helo Workshop that had minor ^{14}C contamination. This areas should be cleaned before any further use. It is not a good idea to store the rad waste outside of the rad van. All radioactive material, including waste, should be kept inside the rad van. Rad Van #4 had minor ^{3}H contamination and minor to possible health hazard levels of ^{14}C contamination. This van needs to to be throughly cleaned before any further use. We recommend retesting this van after it has been cleaned.

SWAB 755
Figure 1
26 November 2014

Aft Dry Lab
1036 sq. ft.

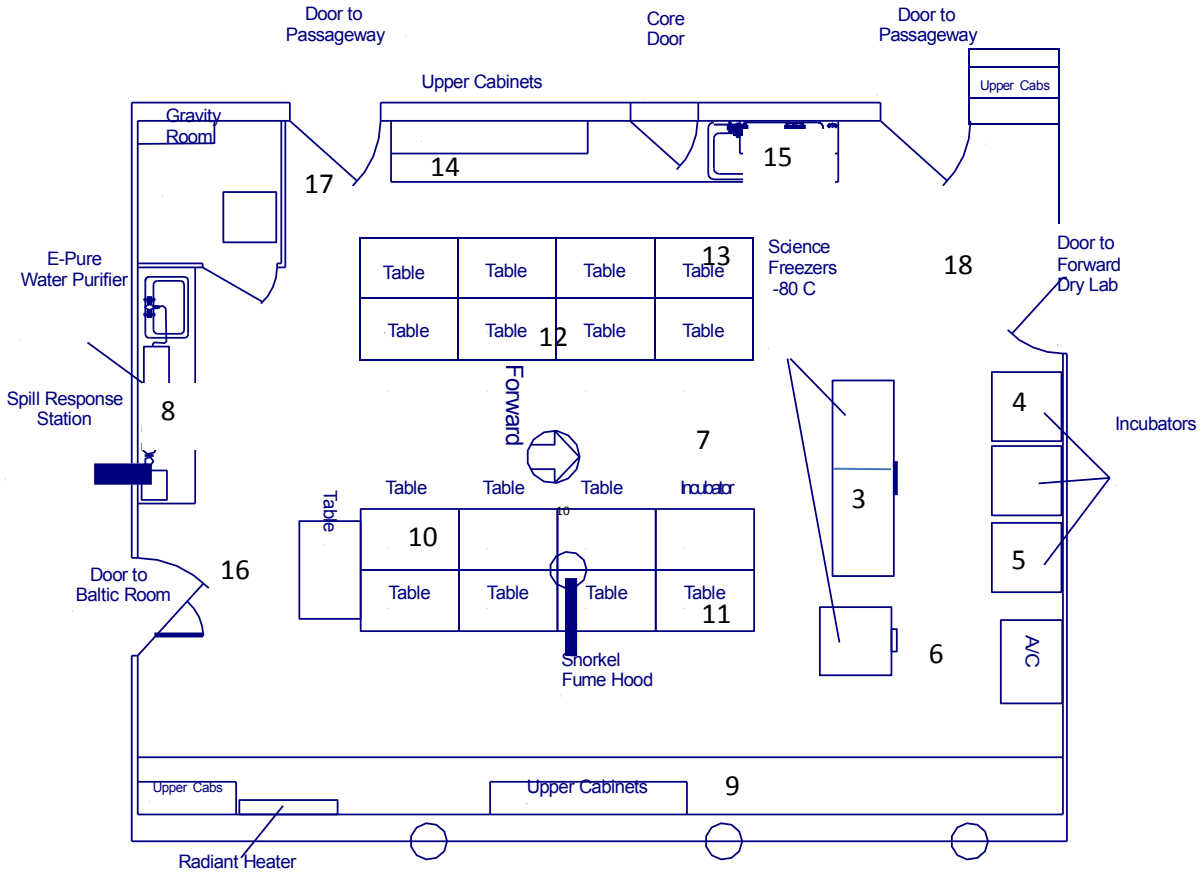

Figure 2
SWAB #755
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Forward Dry Lab

1150 sq. ft.

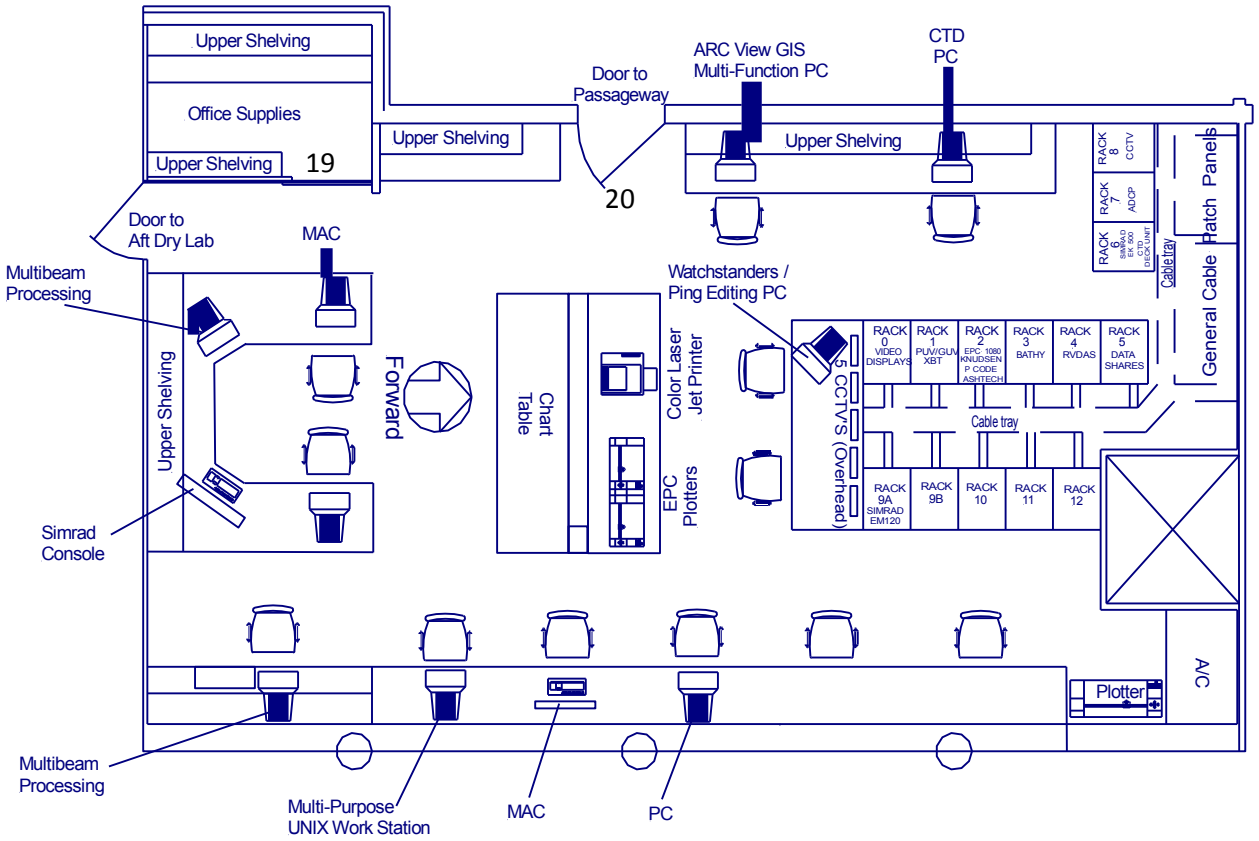

Figure 3
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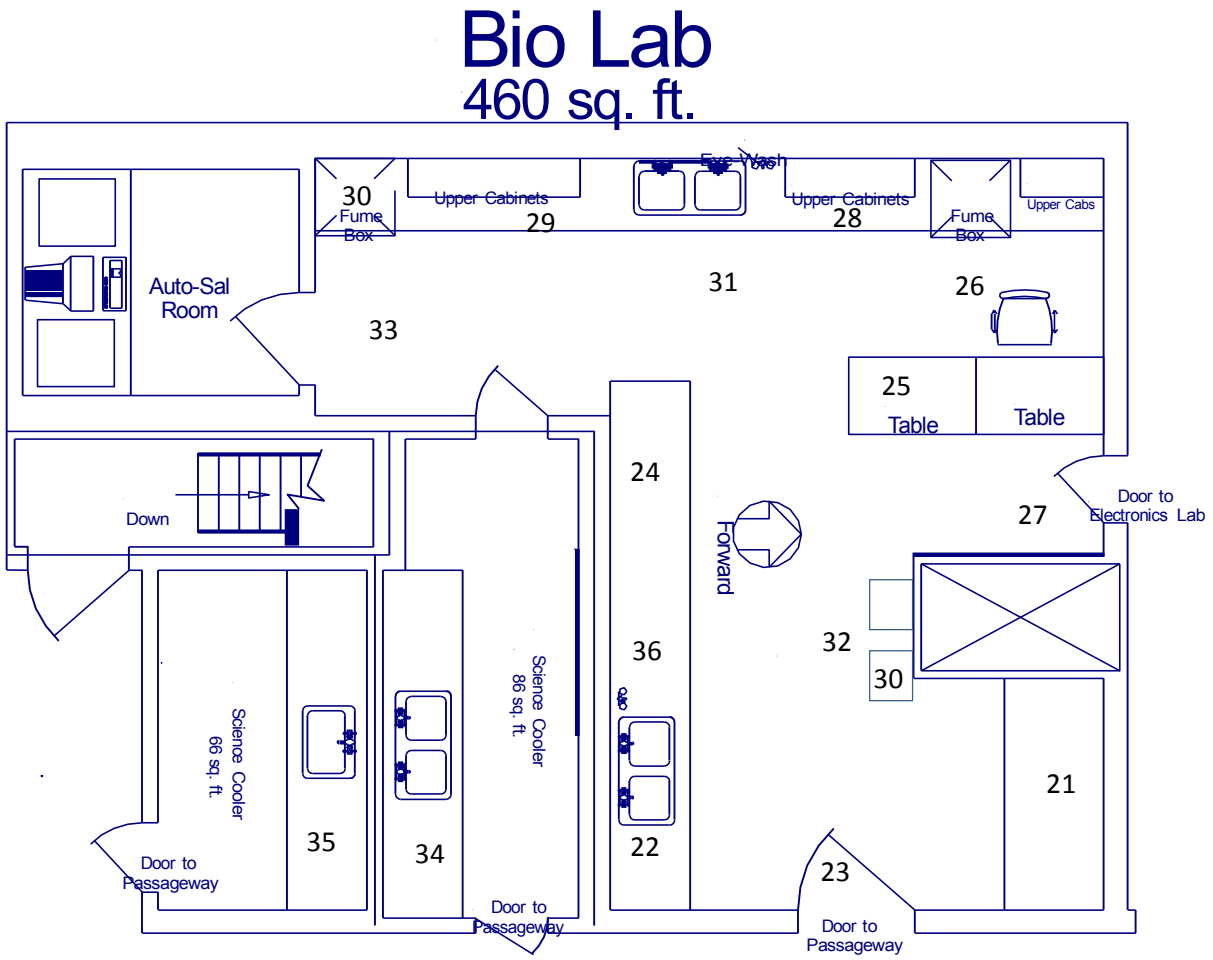

Figure 4
SWAB #755, 26 November 2014

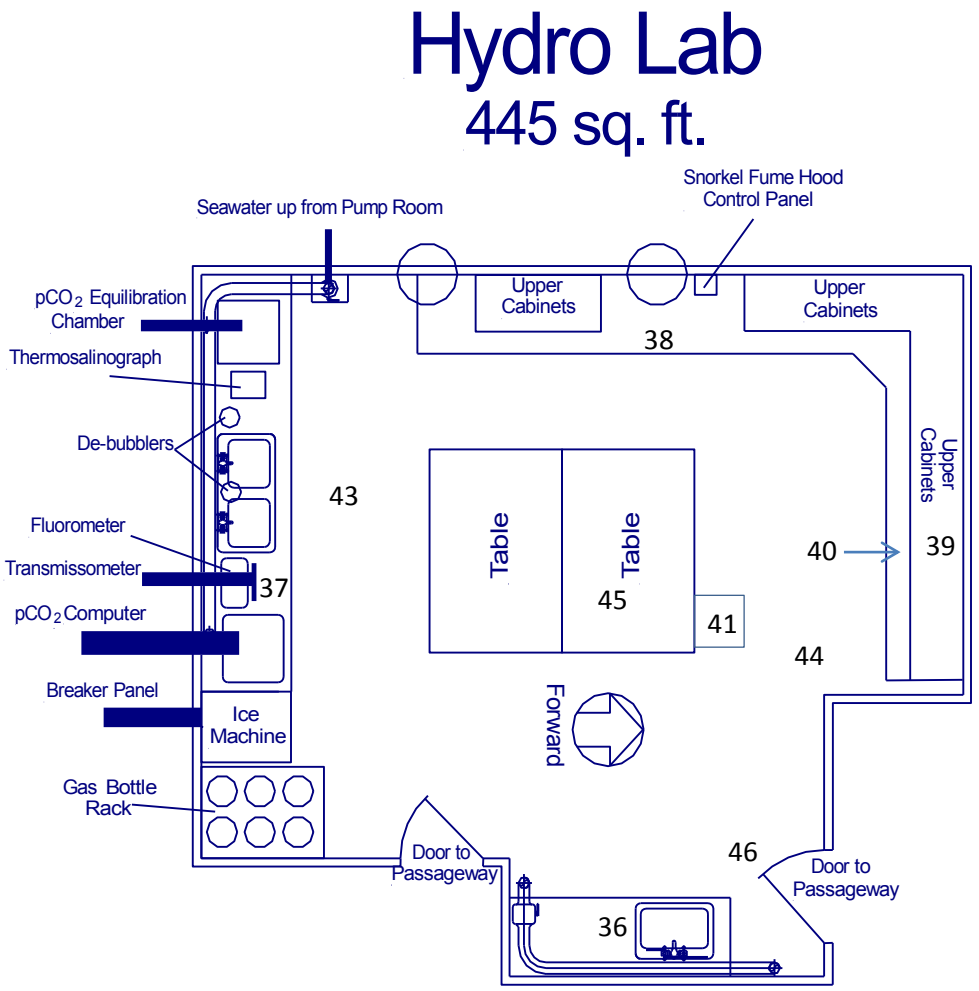

Figure 5
SWAB #755, 26 November 2014

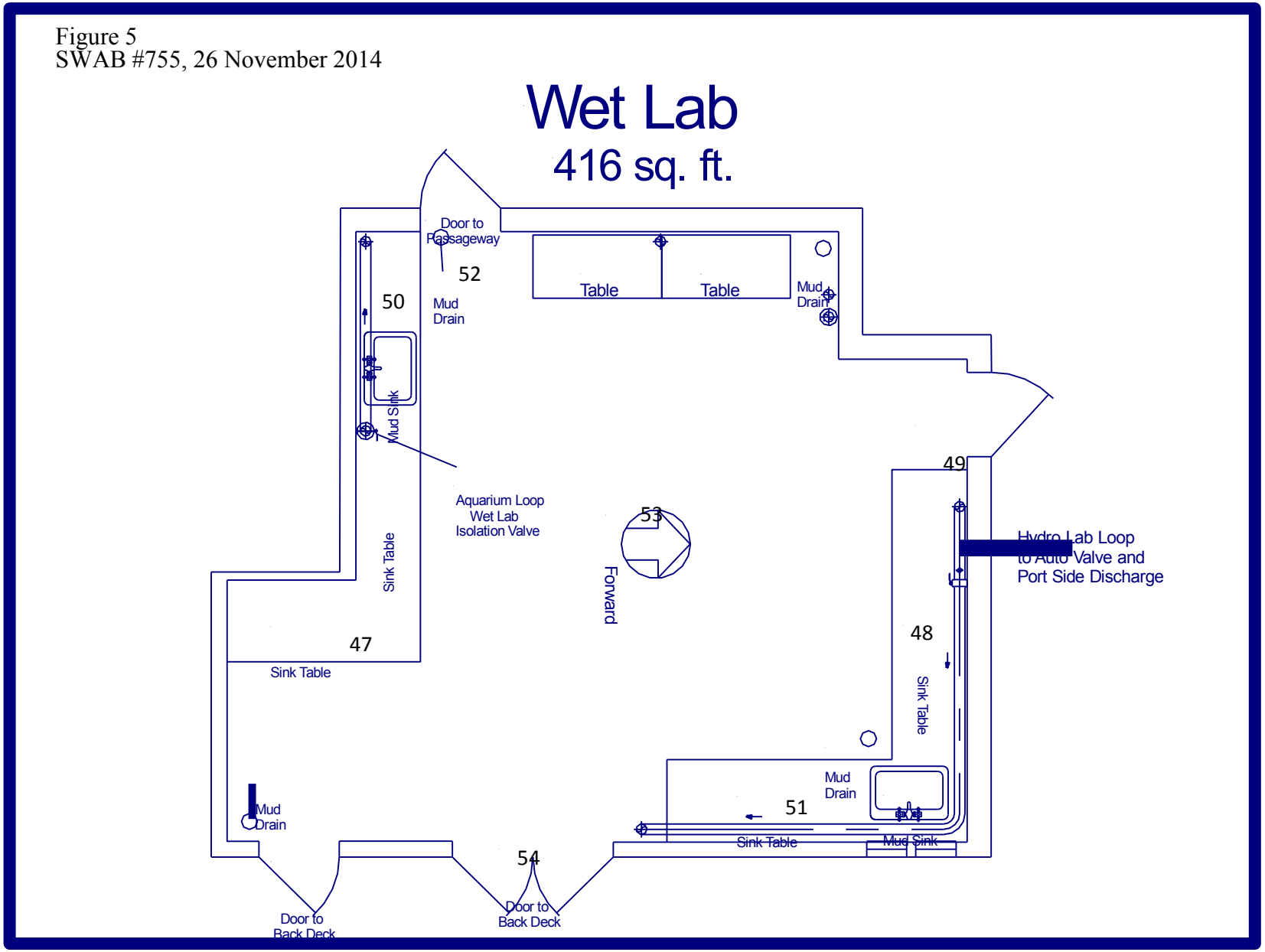

Figure 6
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Aquarium Room
298 sq. ft.

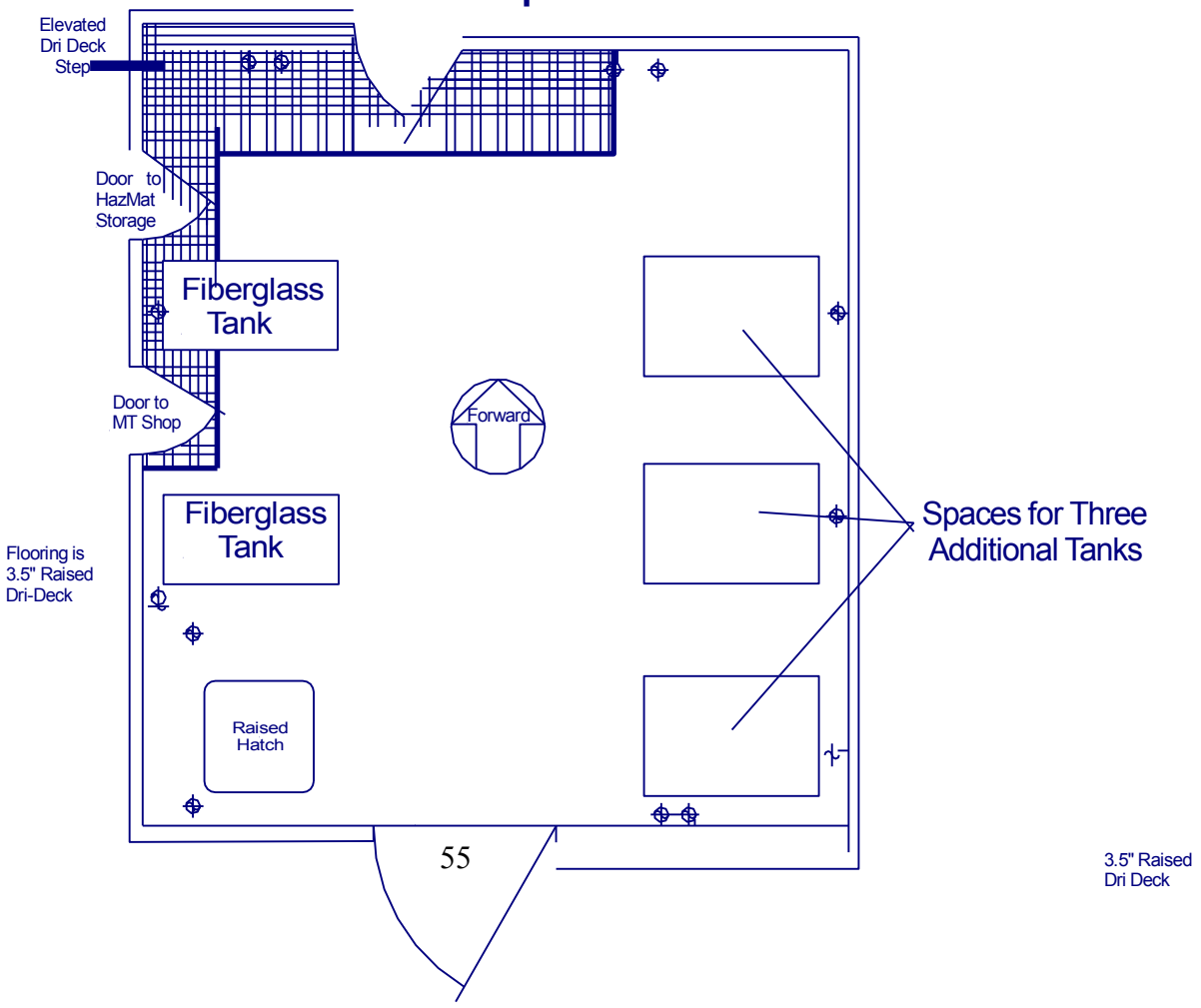

Figure 7
SWAB #755
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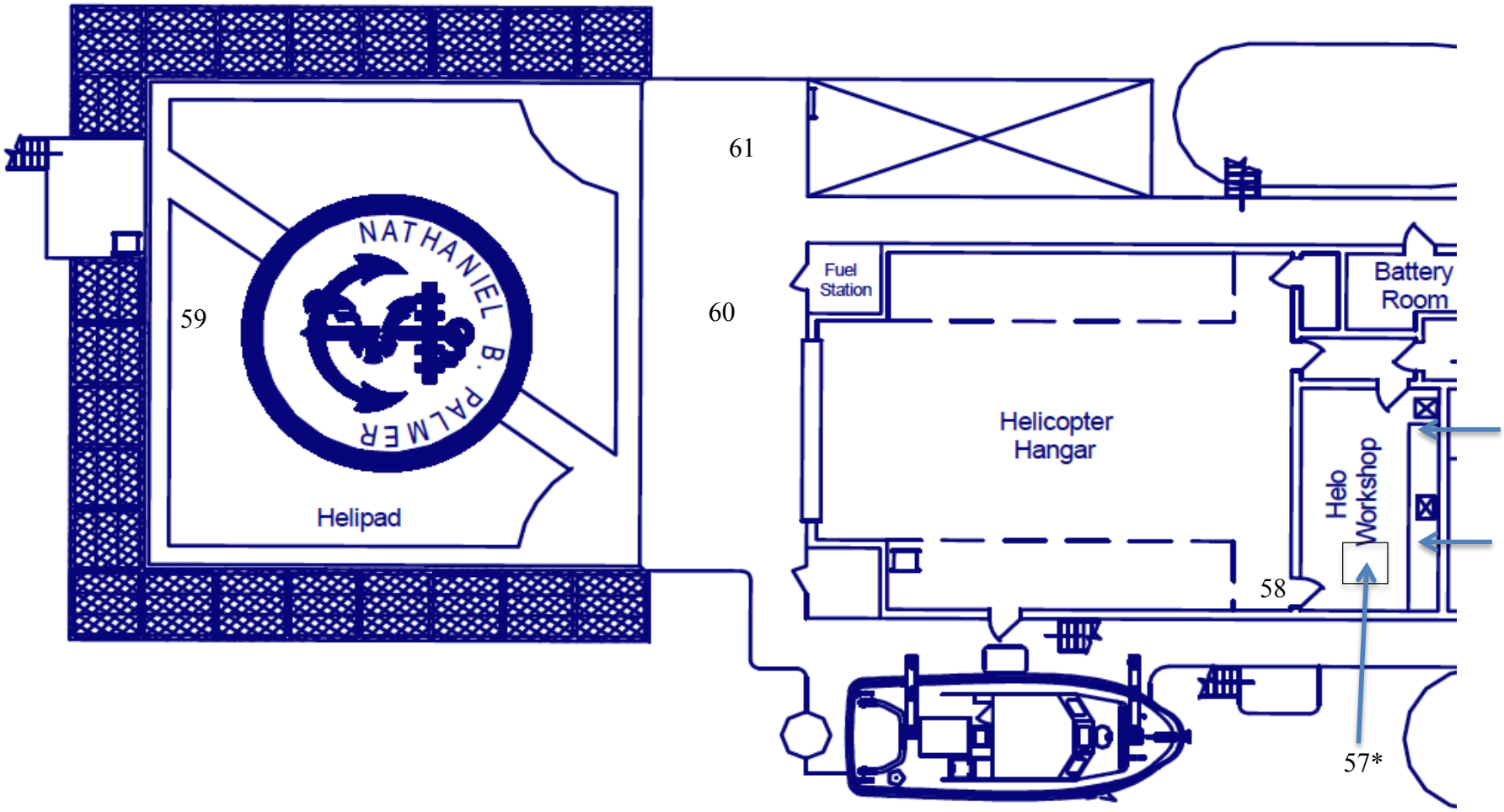

USAP Van # 4
Figure 8
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