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Tritium Laboratory
31 March 2014

SWAB REPORT #717

SWAB DATE: 8 February 2014

R/V LM Gould

James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Ethan Norris

COMMENTS TO SWAB REPORTS 23-Nov-10

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/m2. 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 14C 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 dispose in radiation waste system.

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

REPORT FOR SWAB # 717

LOCATION: Punta Arenas, Chili
VESSEL: *R/V LM Gould*

DATE: 8 February 2014
TECHNICIAN: L. Loughry

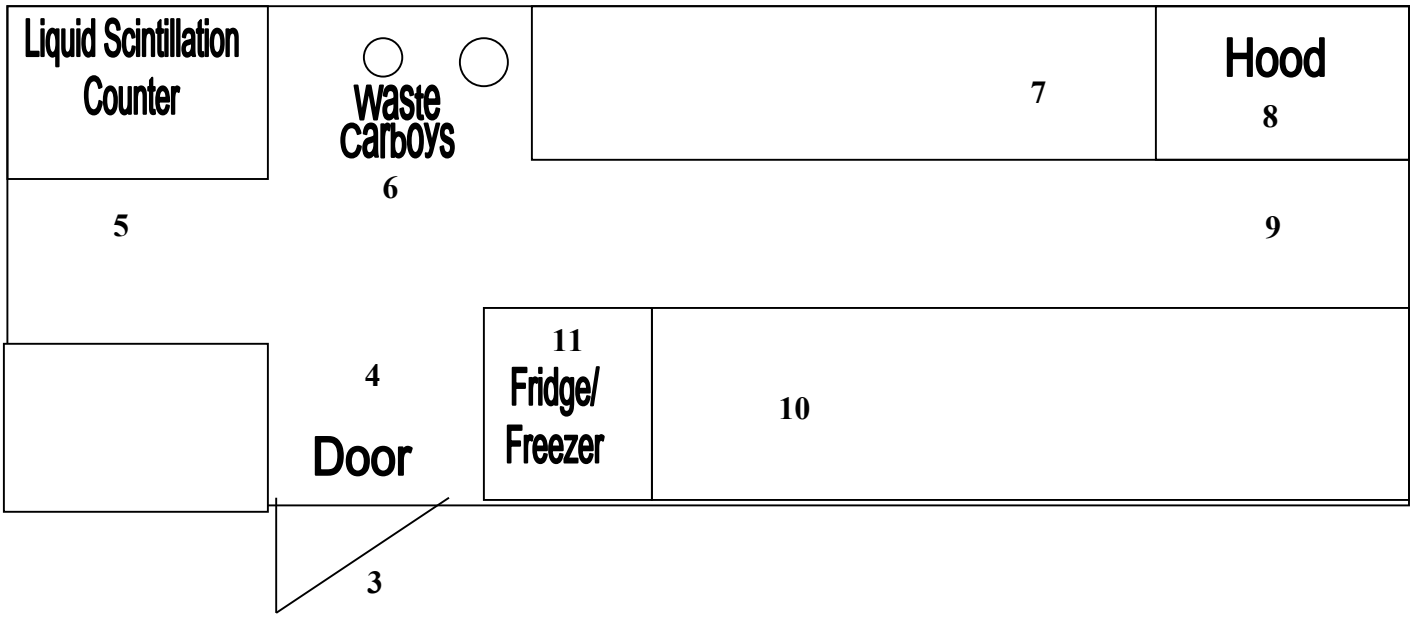
Sample #	Sample Identification	^{3}H dpm/m^{2} activity		^{3}H dpm/m^{2} error	^{14}C dpm/m^{2} activity		^{14}C dpm/m^{2} error
1	1st Vial Bkgnd	0		0	0		0
2	Initial bucket blank	0	±	0	16	±	37
	Van #2 (Figure 1)						
3	Outside door on deck	0	±	0	13	±	37
4	Inside door on floor	125	±	36	*139	±	38
5	Deck in front of LSC	29	±	22	*94	±	38
6	Deck in front of waste collection	190	±	41	*159	±	38
7	Benchtop adjacent to hood	0	±	0	13	±	38
8	Inside fume hood	11	±	17	*52	±	36
9	Deck in front of hood	90	±	37	*100	±	37
10	Benchtop next to refrigerator	0	±	0	44	±	36
11	Inside refrigerator	*567	±	78	47	±	23
	Van #1 (Figure 2)						
12	Outside of door on deck	0	±	0	0	±	0
13	Inside of door on deck	484	±	76	32	±	21
14	Deck by LSC	*559	±	80	16	±	13
15	Deck in front of sink	*968		97	*50	±	19
16	Benchtop between hood and sink	*935	±	95	35	±	16
17	Inside fume hood	*1157	±	103	37	±	14
18	Deck in front of fume hood	*1105	±	102	21	±	10
19	Benchtop across from fume hood	*603	±	82	15	±	12
20	Benchtop next to refrigerator	*738	±	88	2	±	1
21	Inside refrigerator	*1325	±	108	39	±	14
	Dry Lab (Figure 3)						
22	Deck outside door to passageway	0	±	0	0	±	0
23	Deck inside door to passageway	19	±	126	0	±	0
24	Deck inside door to E-Lab	0	±	0	0	±	0
25	Deck in front of refrigerator	0	±	0	13	±	35
26	Benchtop adjacent to sink	0	±	0	0	±	0
27	Benchtop adjacent to CCTV	0	±	0	0	±	0
28	Forward tabletop	0	±	0	0	±	0
29	Aft tabletop	1	±	0	0	±	0

Sample #	Sample Identification	^{3}H dpm/m^{2} activity	error	^{14}C dpm/m^{2} activity	error
	Hydro Lab (Figure 4)				
30	Deck outside to passageway	0 ±	0	0 ±	0
31	Deck inside door to passageway	0 ±	0	6 ±	36
32	Deck by Thorium table	7 ±	33	8 ±	33
33	Thorium table countertop	0 ±	0	0 ±	0
34	Inside fume hood	19 ±	102	0 ±	0
35	Benchtop next to Safety Shower	13 ±	65	0 ±	0
36	Deck near Safety Shower	0 ±	0	6 ±	37
37	Benchtop in corner across from Safety Sh	0 ±	0	6 ±	58
	Wet Lab (Figure 5)				
38	Deck outside door to back deck	0 ±	0	13 ±	37
39	Deck inside door to back deck	36 ±	43	6 ±	26
40	Deck inside door to passageway	0 ±	0	9 ±	38
41	Deck outside door to passageway	0 ±	0	0 ±	0
42	Benchtop across from aft sink	1 ±	76	0 ±	0
43	Deck in front of center sink	0 ±	0	21 ±	39
44	Benchtop adjacent to center sink	0 ±	0	0 ±	0
45	Benchtop adjacent to forward sink	0 ±	0	0 ±	0
	Environmental Room (Figure 6)				
46	Benchtop	0 ±	0	18 ±	37
47	Deck	0 ±	0	3 ±	52
	01 Deck (Figure 7)				
48	Deck by waste collection	0 ±	0	20 ±	40
49	Final bucket blank	0	0	0	0

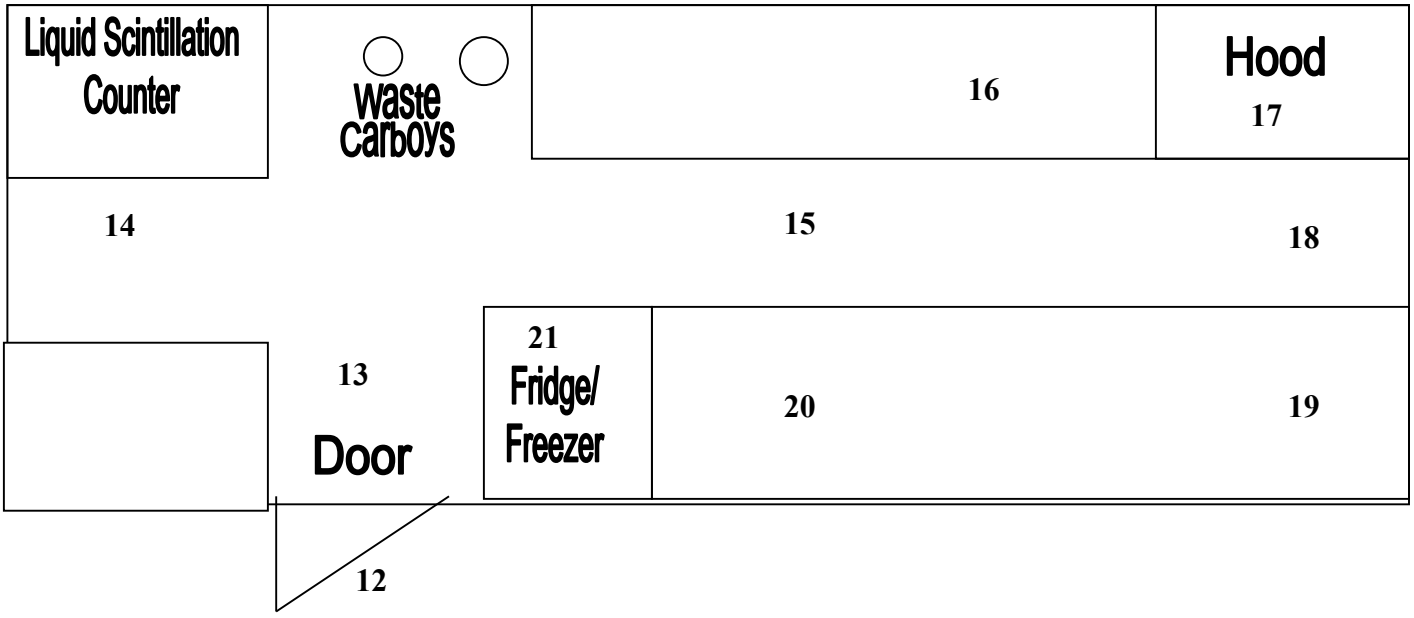
Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. All areas in the ship that were tested were free from ^{3}H or ^{14}C contamination that requires cleaning. Minor ^{3}H and ^{14}C contamination was found in Van #1 and Van #2. No action is required, however we recommend cleaning of the decks to prevent tracking conatmiantion into the ship.

SWAB #717
USAP Van #2
8 February 2014
Figure 1



SWAB #717
Polar Programs Van #1
8 February 2014
Figure 2



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8 February 2014
Figure 3

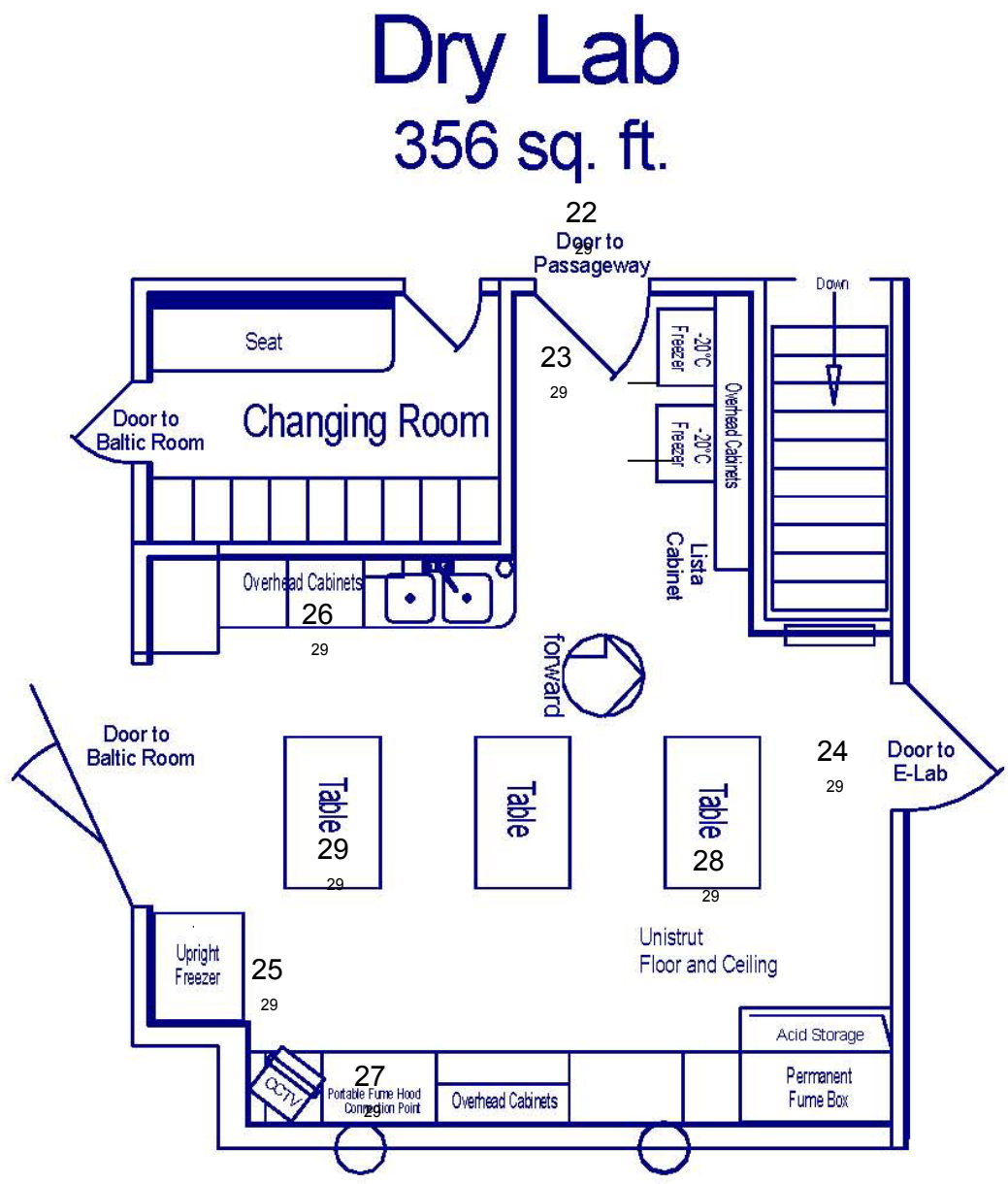

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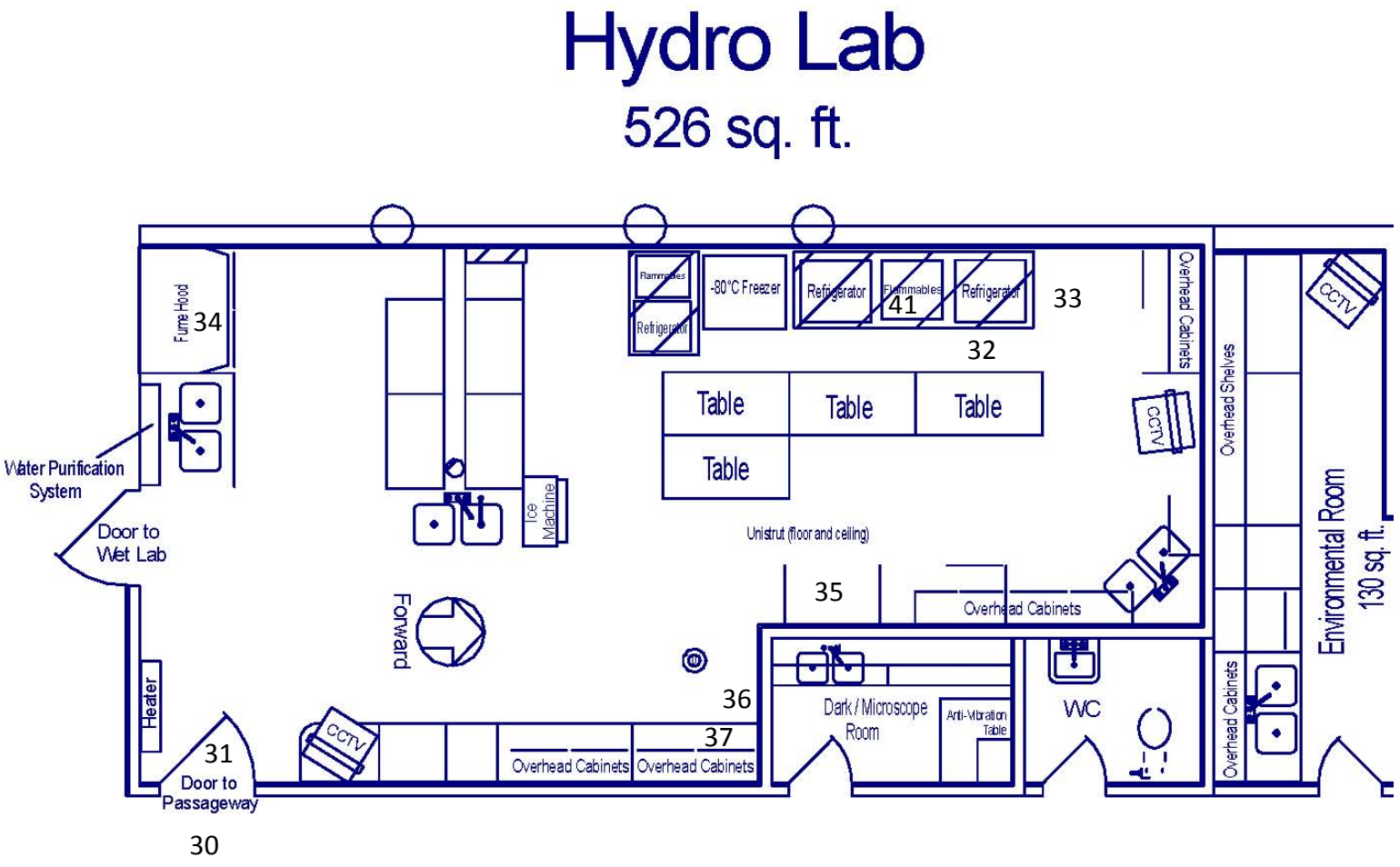
Figure 4



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8 February 2014
Figure 5

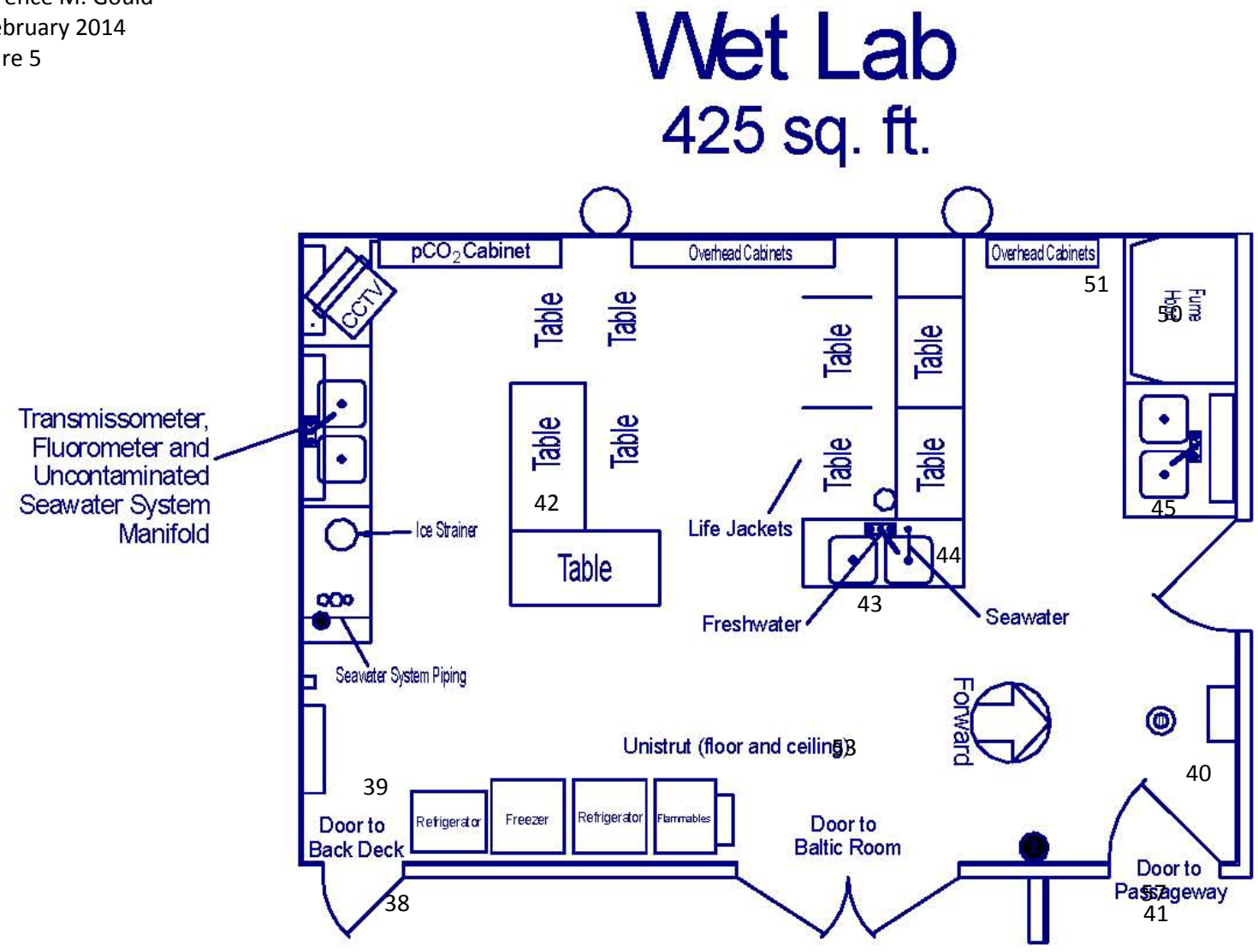

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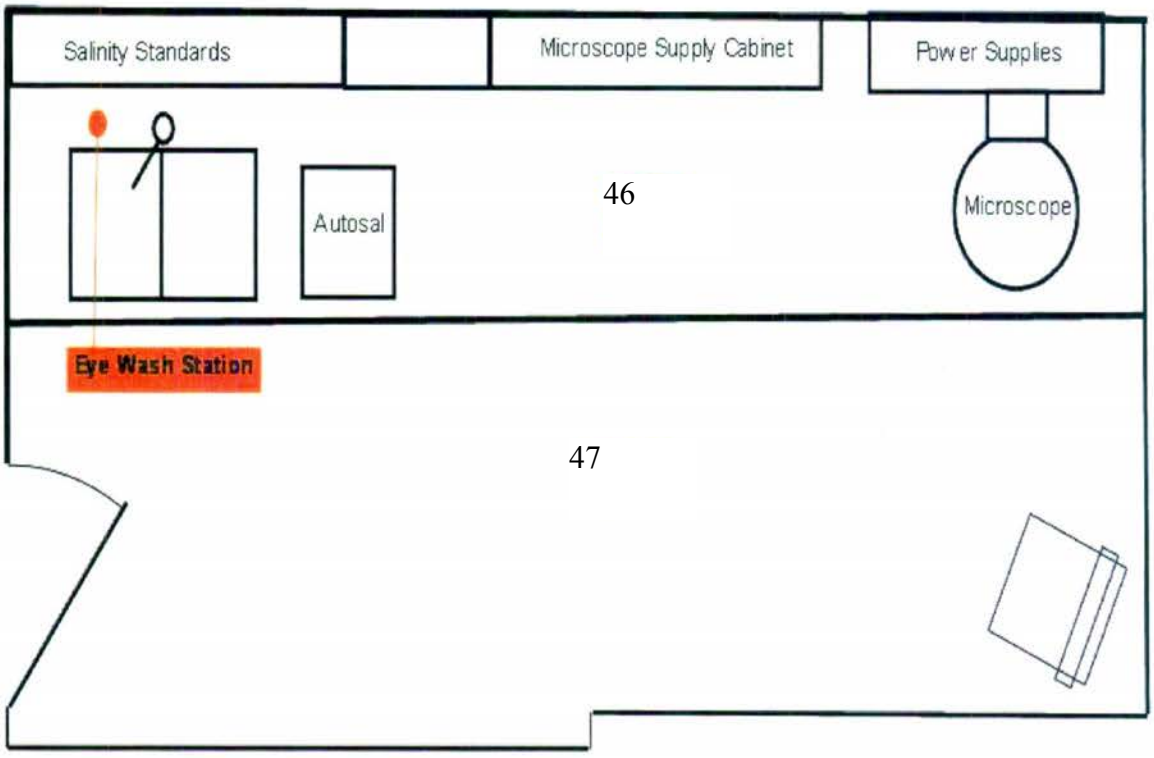
Figure 6



ENVIRONMENTAL ROOM

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Figure 7