

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

14 May 2013

Tritium Laboratory
4600 Rickenbacker Causeway
Miami, Florida 33149-1031

Ph: 305-421-4100
Fax: 305-421-4112
E-mail: Tritium@rsmas.miami.edu

SWAB REPORT # 680

SWAB DATE: 29th April 2013

R/V L. M. Gould
and USAP Van #s 1 and 2

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Phil Spindler

COMMENTS TO SWAB REPORTS

23 November 2010

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 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 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 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 # 680

LOCATION: Punta Arenas, Chile
VESSEL: R/V L. M. Gould

DATE: 7 February 2013
TECHNICIAN: L. Loughry

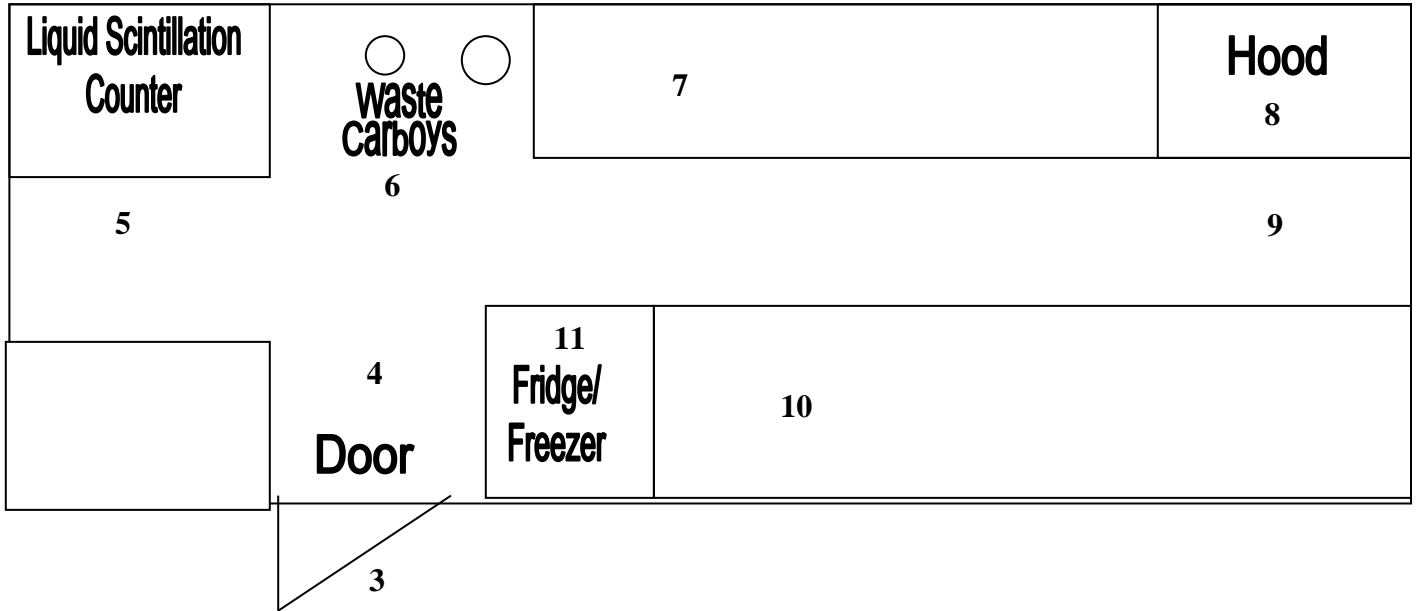
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank C.O. #1	3	± 0	0	± 0
	<u>Van # 2 (Figure 1)</u>				
3	Outside of door on deck	0	± 0	0	± 0
4	Inside door-floor	124	± 29	*106	± 33
5	Floor in front of LSC	7	± 2	*624	± 53
6	Floor in front of waste collection	0	± 0	*78	± 38
7	Counter top next to waste station	0	± 0	24	± 36
8	Inside hood	0	± 0	*84	± 36
9	Floor in front of hood	151	± 32	*99	± 33
10	Counter top next to fridge	0	± 0	0	± 0
11	Inside fridge	4	± 1	0	± 0
	<u>Van # 1 (Figure 2)</u>				
12	Outside of door on deck	0	± 0	1	± 0
13	Floor inside door	238	± 50	22	± 21
14	Floor in front of LSC	197	± 58	27	± 24
15	Floor in front of sink	*583	± 62	12	± 9
16	Counter top right of sink	*1,317	± 93	*58	± 16
17	Inside hood	479	± 69	0	± 1
18	Floor in front of hood	*2,329	± 117	*76	± 15
19	Counter top across from hood	*754	± 78	22	± 12
20	Counter top across from sink	*1,840	± 110	*79	± 17
21	Inside fridge	*1,353	± 98	0	± 0
22	Floor in front of fridge	*1,309	± 87	*59	± 16
	<u>Dry Lab (Figure 3)</u>				
23	Inside door-floor	3	± 62	0	± 0
24	Inside door to E-Lab	0	± 0	0	± 0
25	Table top - fwd.	0	± 0	0	± 0
26	Table top - center	0	± 0	0	± 0
27	Table top - aft	0	± 0	0	± 0
28	Counter top near sink	0	± 0	0	± 0
29	Counter top by hood	0	± 0	0	± 0

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
30	Counter top by freezer	0	± 0	0	± 0
31	Inside fridge	0	± 0	0	± 0
32	Floor in front of fridge	5	± 0	0	± 0
33	Floor outboard of aft table	2	± 75	0	± 0
34	Floor between center and fwd. table	0	± 0	0	± 0
<u>Hydro Lab (Figure 4)</u>					
35	Floor inside door	0	± 0	0	± 0
36	Floor outside door in passage way	0	± 0	0	± 0
37	Floor under safety shower	9	± 27	8	± 30
38	Table top fwd.	0	± 0	42	± 37
39	Floor next to fwd. table	14	± 30	24	± 33
40	Floor outboard of fwd. table	0	± 0	21	± 35
41	Counter top outboard fwd.	0	± 0	*59	± 37
42	Counter top next to ice machine	0	± 0	37	± 36
43	Inside hood	0	± 0	35	± 35
44	Floor in front of hood	4	± 10	36	± 34
45	Floor in Dark Room	15	± 29	30	± 33
<u>Wet Lab (Figure 5)</u>					
46	Deck outside door	83	± 41	37	± 30
47	Floor inside deck door	66	± 41	40	± 31
48	Floor in front of aft sink	0	± 0	*65	± 36
49	Counter top across from aft sink	0	± 0	16	± 36
50	Inside hood	0	± 0	39	± 35
51	Floor in front of hood	0	± 0	22	± 36
52	Counter top across from hood	0	± 0	26	± 37
53	Floor near Baltic Room door	0	± 0	26	± 34
54	Floor center	0	± 0	*56	± 37
55	Counter top center	6	± 58	0	± 0
56	Floor inside door to passage way	0	± 0	35	± 37
57	Floor in passage way outside door	0	± 0	38	± 35
<u>Environmental Room (Figure 6)</u>					
58	Counter top	9	± 39	8	± 31
59	Floor	0	± 0	32	± 35
<u>01 Deck (Figure 7)</u>					
60	Waste collection area	108	± 40	*77	± 33
61	Final bucket blank	14	± 41	9	± 31

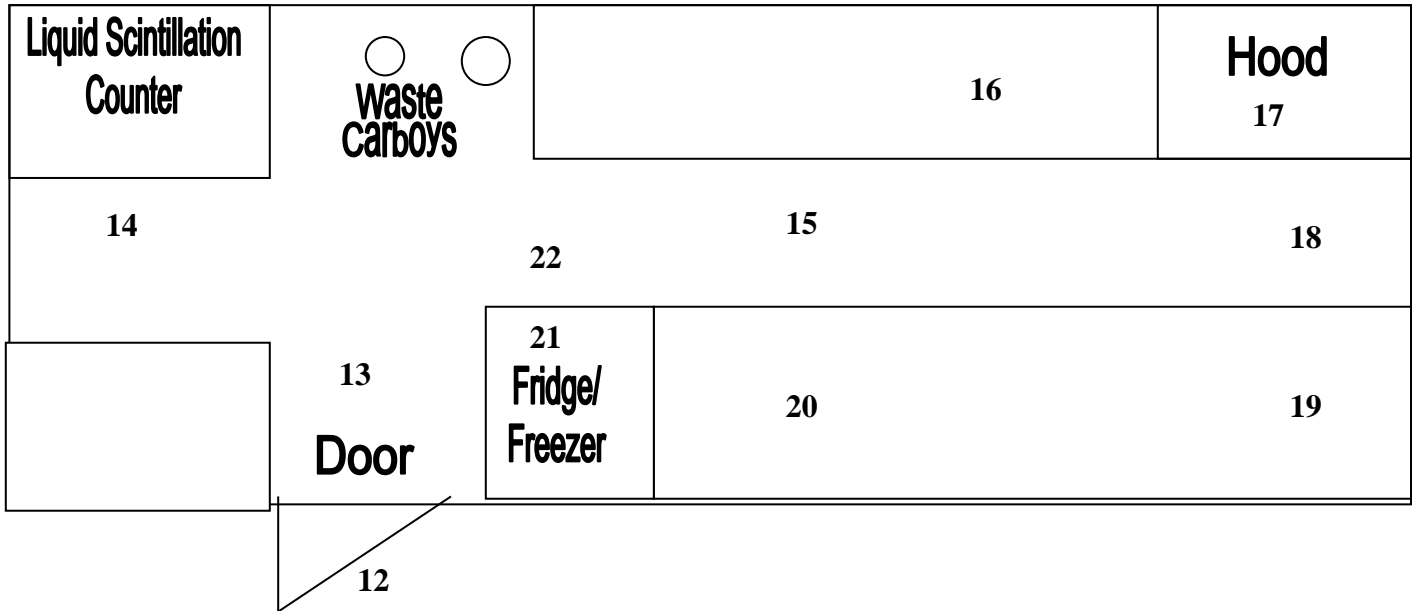
Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. Samples collected in Van #2 showed minor ^{14}C contamination, no action required on this van. Samples collected in Van #1 showed minor ^3H and ^{14}C contamination. Cleaning of Van # 1 deck required. Most areas tested on the ship were free of isotope contamination. Four samples collected in the ship showed minor ^{14}C contamination. These four areas requires cleaning before any natural tracer work.

SWAB #680
USAP Van #2
29 April 2013
Figure 1



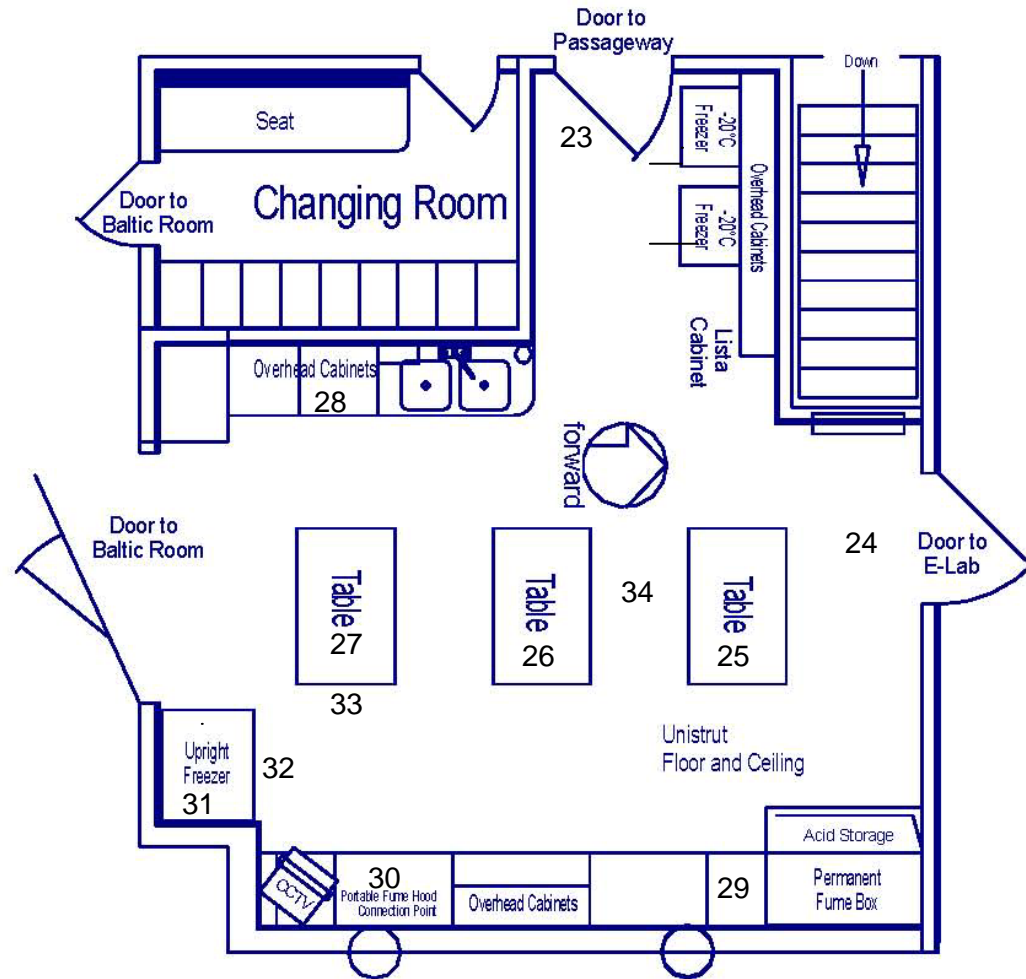
SWAB #680
Polar Programs Van #1
29 April 2013
Figure 2



SWAB# 680
Laurence M. Gould
29 April 2013
Figure 3

Dry Lab

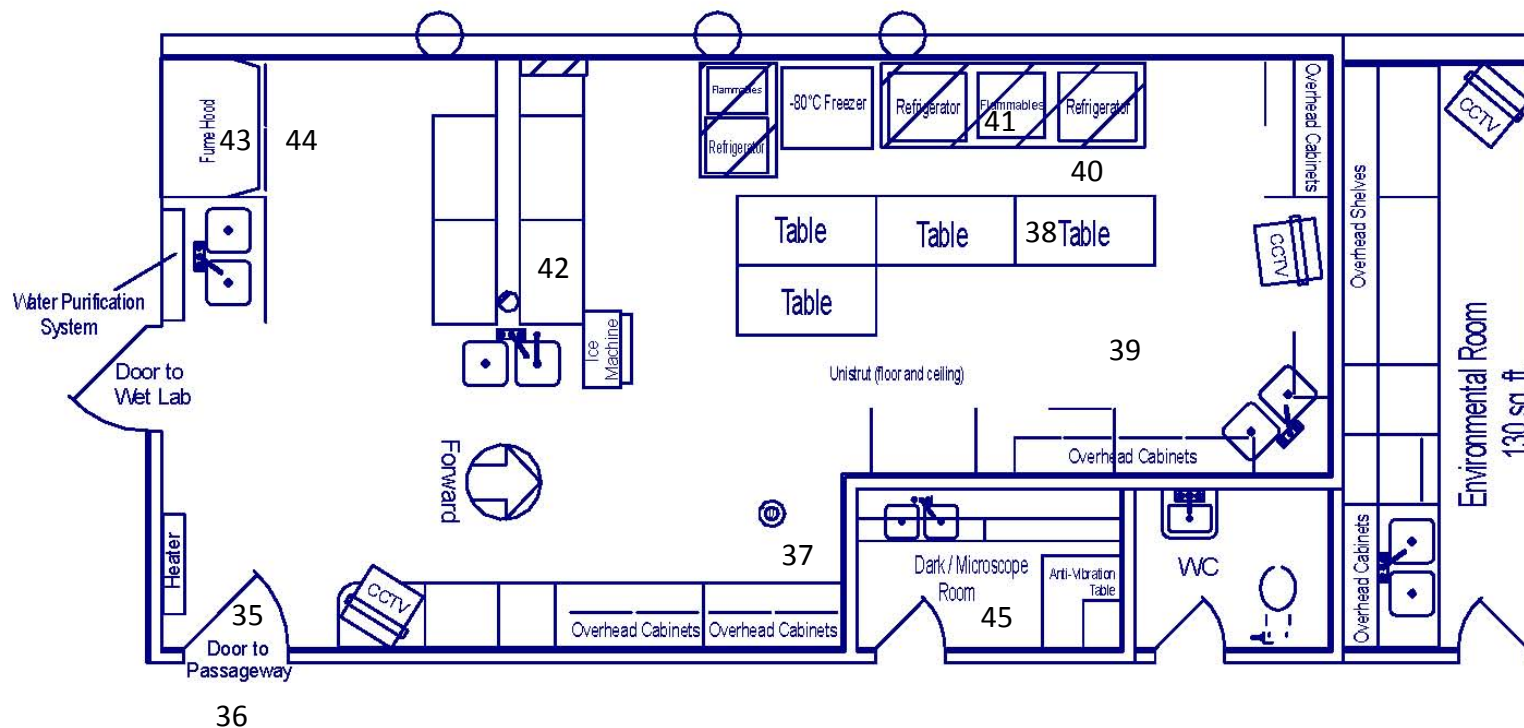
356 sq. ft.



SWAB #680
Laurence M. Gould
29 April 2013
Figure 4

Hydro Lab

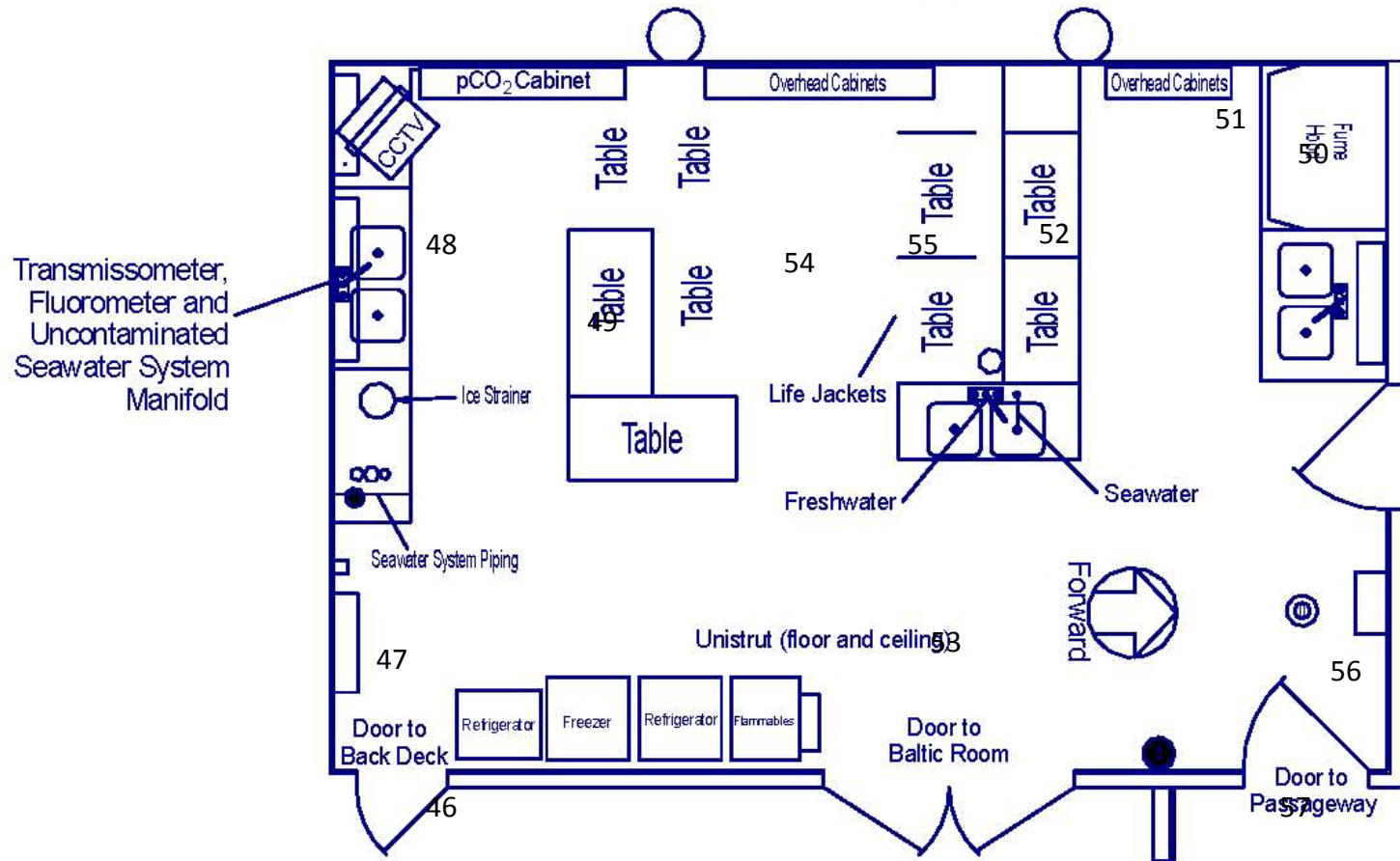
526 sq. ft.



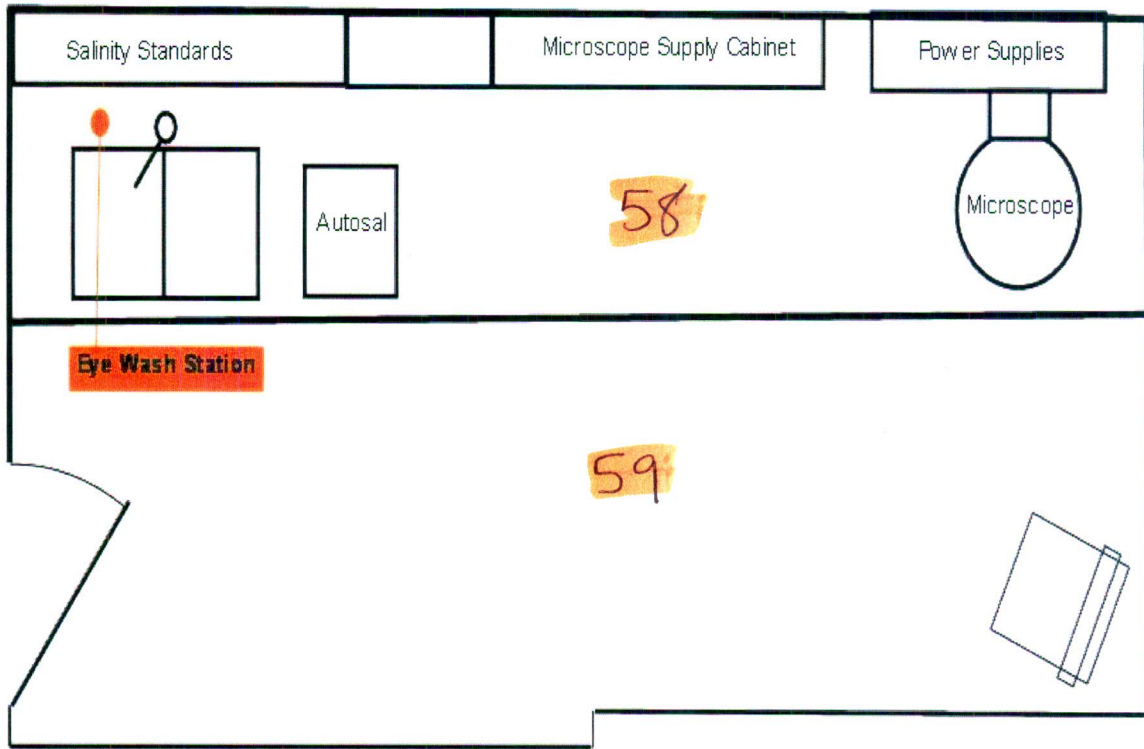
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29 April 2013
Figure 5

Wet Lab

425 sq. ft.



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Figure 6



ENVIRONMENTAL ROOM

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Figure 7

01 DECK

650 sq. ft.

