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Tritium Laboratory
8 January 2019

SWAB REPORT # 926

SWAB DATE: 20 December 2018

R/V Laurence M. Gould

James Happell
Digitally signed by James Happell
Date: 2019.01.08 11:52:38 -05'00'

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 ^{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 office.

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

REPORT FOR SWAB #926

LOCATION: Punta Arenas, Chile
VESSEL: *R/V Laurence M Gould*

DATE: 20 December 2018
TECHNICIAN: Charlene Grall

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
1	1st Vial Background	0	±	0	0	±	0
2	Initial bucket blank	7	±	51	-26	±	37
	Dry Lab (Figure 1)						
3	Deck inside port entrance	-4	±	27	-42	±	59
4	Deck below sink	46	±	85	-32	±	44
5	Port sink area & adjacent benchtop	8	±	56	-23	±	32
6	Inside fume hood	14	±	100	-14	±	19
7	Deck inside door to Electronics Lab	14	±	242	-22	±	30
8	Inside Consul freezer	97	±	62	-32	±	44
9	Inside Consul refrigerator	358	±	68	9	±	12
10	Starboard benchtop aft section	37	±	67	-21	±	30
11	Starboard benchtop forward section	36	±	108	-42	±	59
12	Deck in front of aft Baltic Room door	22	±	53	-65	±	90
13	Center benchtop	45	±	70	-30	±	42
	Electronics Lab (Figure 2)						
14	Deck inside port entrance	-2	±	12	-30	±	42
	Hydro Lab (Figure 3)						
17	Aft sink area	27	±	91	-26	±	36
18	Inside fume hood	2	±	18	-19	±	26
19	Deck between fume hood and aft bench	32	±	145	-44	±	62
20	Aft benchtop across from fume hood	11	±	83	-36	±	51
21	Center sink area and adjacent benchtop	14	±	140	-15	±	22
22	Benchtop aft of Flammable locker	56	±	72	-33	±	47
23	Port benchtop forward of -80oC Revco fre	33	±	70	-13	±	18
24	Inside port Fisher refrigerator	9	±	63	-46	±	64
25	Deck below Fisher refrigerator	-3	±	22	-21	±	30
26	Forward sink area	-37	±	89	-50	±	70
27	Deck below forward sink	66	±	73	-37	±	52
28	Benchtop adjacent to forward sink	33	±	104	-37	±	52
29	Starboard Kenmore refrigerator	60	±	64	-24	±	34
30	Deck just starboard of ice machine	42	±	76	-38	±	53
31	Forward section of center benchtop	33	±	89	-30	±	42

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
	Wet Lab (Figure 4)						
32	Aft sink area	-12	±	87	-19	±	27
33	Deck inside aft door	23	±	334	-41	±	57
34	Forward sink area	-10	±	75	-35	±	49
35	Inside fume hood	-8	±	56	-20	±	29
36	Deck between forward and starboad entrances	12	±	281	-20	±	28
37	Deck in front of fume hood	27	±	72	-18	±	26
38	Center sink area	12	±	88	-29	±	41
39	Inside small Fischer freezer	-27	±	65	-10	±	13
40	Deck between refrigerator and center sink	-3	±	23	-42	±	59
	Miscellaneous Areas (Figure 5)						
15	Deck of changing room	32	±	78	-19	±	26
16	Deck of Enviro Room	11	±	78	-31	±	43
41	Aft 01 deck where rad waste stored	76	±	39	24	±	33
42	Final bucket blank	17	±	138	-24	±	33

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 contamination that requires cleaning.

Figure 1
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20 December 2018

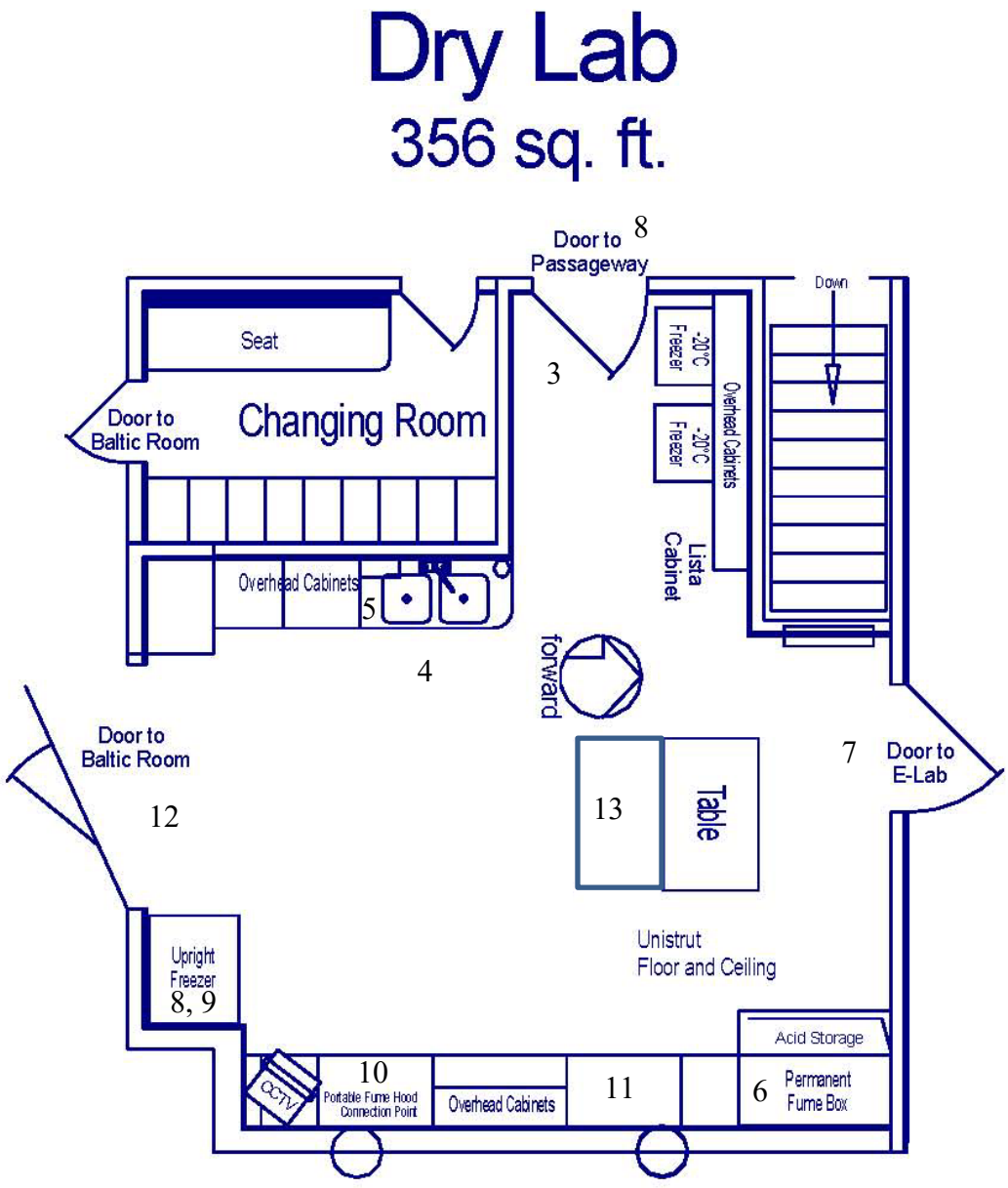

Figure 2
SWAB #926
20 December 2018

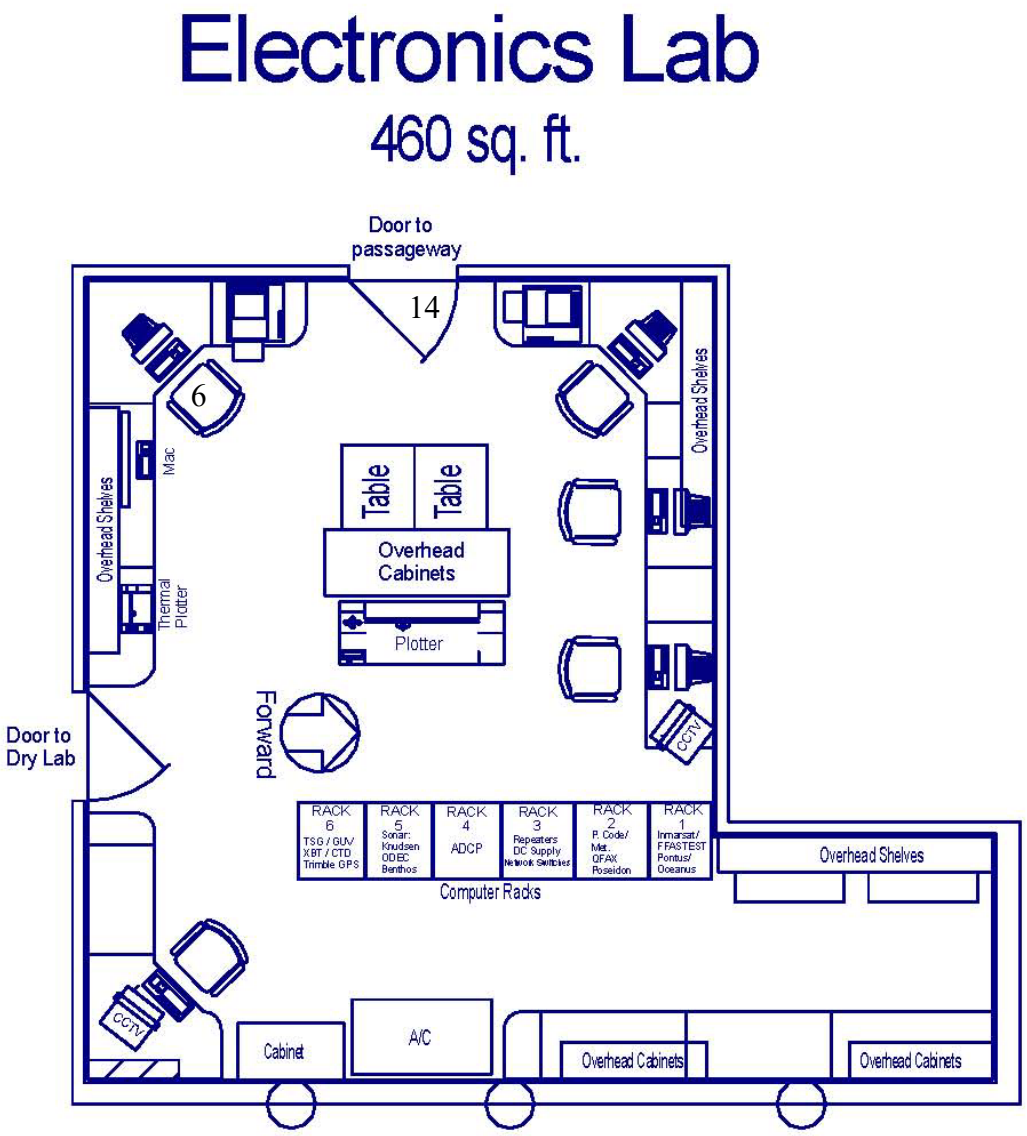

Figure 3
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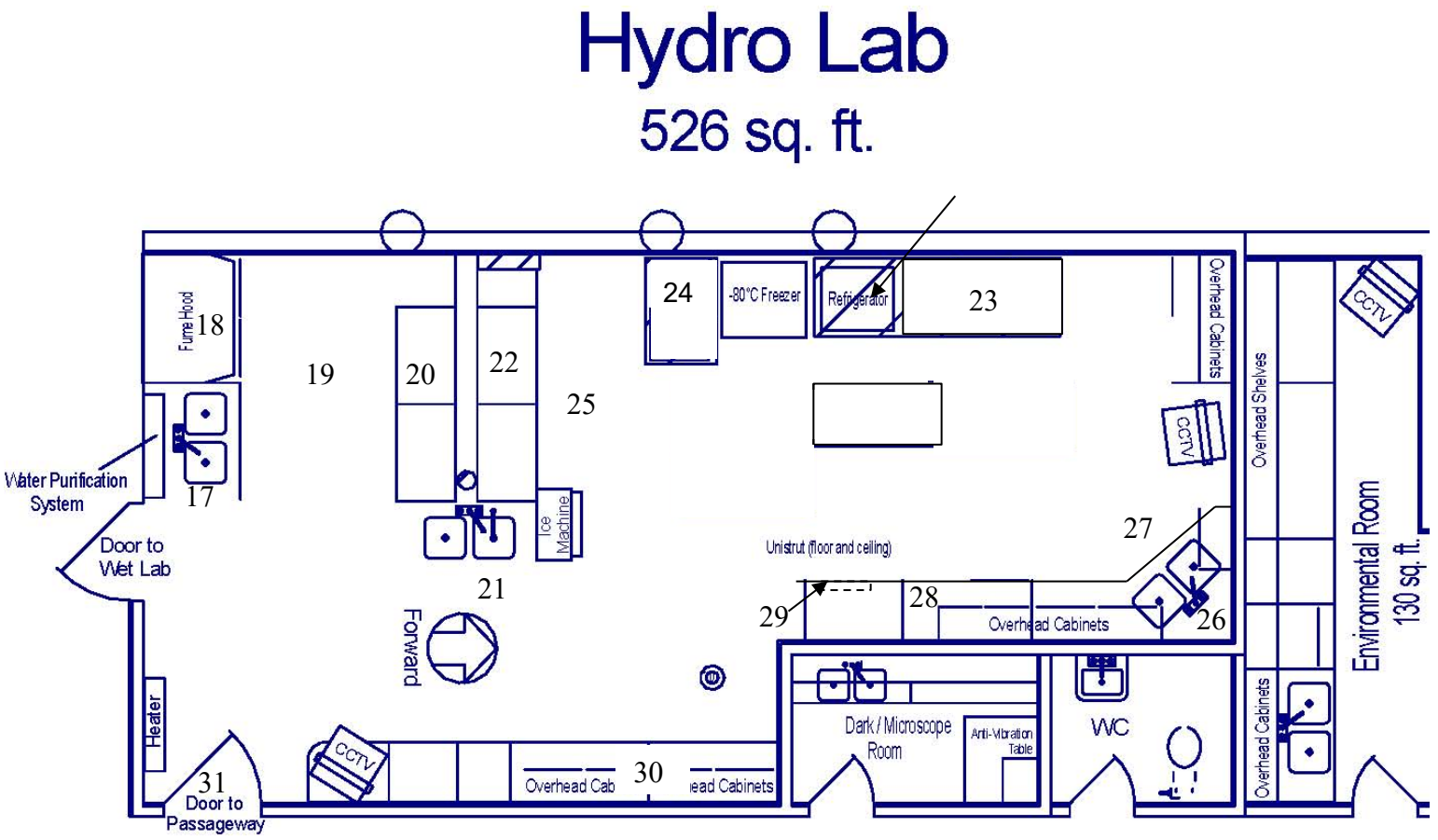

Figure 4
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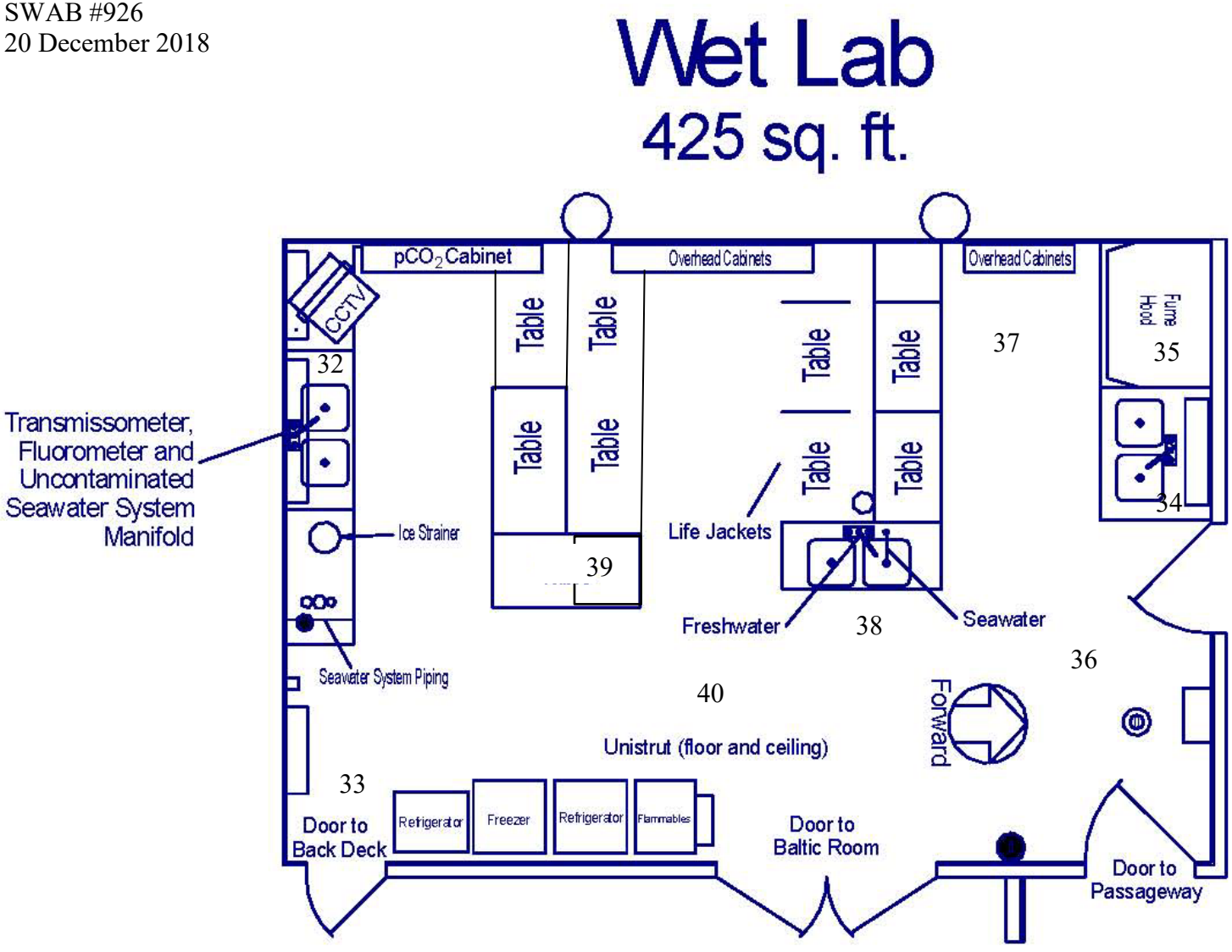

Figure 5
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