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Tritium Laboratory
29 July 2019

SWAB REPORT # 955

SWAB DATE: 23 July 2019

R/V Thomas Thompson

James Happell

Digitally signed by James Happell
Date: 2019.07.29 15:52:27 -04'00'

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Loren Tuttle

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 # 955

LOCATION: Woods Hole, MA
VESSEL: *R/V Thomas Thompson*

DATE: 23 July 2019
TECHNICIAN: Charlene Grall

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	31	±	59	-11	±	36
	Hydro lab (Figure 1)						
3	Forward starboard benchtop	58	±	59	-10	±	32
4	Starboard benchtop center section	53	±	75	-36	±	117
5	Aft section of starboard benchtop	37	±	65	-14	±	46
6	Aft benchtop	78	±	61	-25	±	82
7	Aft port benchtop	46	±	59	-9	±	29
8	Port sink area	64	±	55	-8	±	26
9	Center benchtop	30	±	59	-10	±	33
10	Deck between center & starboard benchtop	6	±	50	-1	±	2
11	Deck between center & port benchtop	47	±	54	-6	±	19
12	Deck inside starboard entrance	38	±	62	-15	±	49
	Wet Lab (Figure 2)						
13	Forward benchtop	42	±	78	-31	±	103
14	Aft starboard benchtop	24	±	55	-6	±	20
15	Sink area	34	±	49	2	±	22
16	Deck in center of lab	*1600	±	384	*112	±	72
	BioAnalytical Lab (Figure 3)						
17	Forward sink area	17	±	24	-35	±	115
18	Forward benchtop next to sink	37	±	79	-29	±	96
19	Center benctop forward section	17	±	24	-36	±	118
20	Center benchtop aft section	22	±	114	-25	±	83
21	Inside fume hood	46	±	59	-15	±	51
22	Aft sink area	35	±	114	-40	±	131
23	Inside aft refrigerator	12	±	136	-15	±	49
24	Inside aft freezer	55	±	65	-24	±	78
25	Deck between sink and fume hood	36	±	60	-13	±	42
26	Starboard benchtop aft section	54	±	65	-25	±	83
27	Deck in front of forward sink	34	±	74	-24	±	79
28	Deck inside starboard entrance	66	±	66	-31	±	101

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
	Science Reefer's						
29	Deck in forward freezer	-19	±	45	-2	±	14
30	Deck in aft climate control chamber	3	±	12	16	±	37
31	Deck outside chambers	-88	±	149	2	±	17
	Computer Lab (Figure 4)						
32	Deck at forward entrance	59	±	61	-21	±	69
33	Deck inside starboard entrance	22	±	74	-15	±	51
	Main Lab (Figure 5)						
34	Main Lab Deck inside aft entrance	40	±	61	-14	±	48
35	Inside fume hood	36	±	87	-32	±	106
36	Starboard benchtop under monitor	31	±	58	-7	±	24
37	Final bucket blank CO #1	35	±	49	-3	±	10
38	Initial bucket blank CO #2	37	±	96	-38	±	126
39	Inside Cospolich refrigerator	67	±	63	-26	±	84
40	Starboard sink area	27	±	135	-32	±	107
41	Port sink area	37	±	75	-24	±	78
42	Deck inside forward port entrance	51	±	55	-8	±	27
43	Deck inside middle port entrance	66	±	61	-21	±	68
44	Deck inside aft port entrance	31	±	83	-25	±	83
45	Deck below port sink	23	±	66	-12	±	40
46	Final bucket blank CO #2	40	±	77	-30	±	99

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 inside the ship were free from isotope conatmiantion that requires cleanin except for the deck in the Wet lab, which had minor ^{3}H and ^{14}C contamination. This deck should be cleaned ASAP.

Figure 1
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Hydro Lab Layout

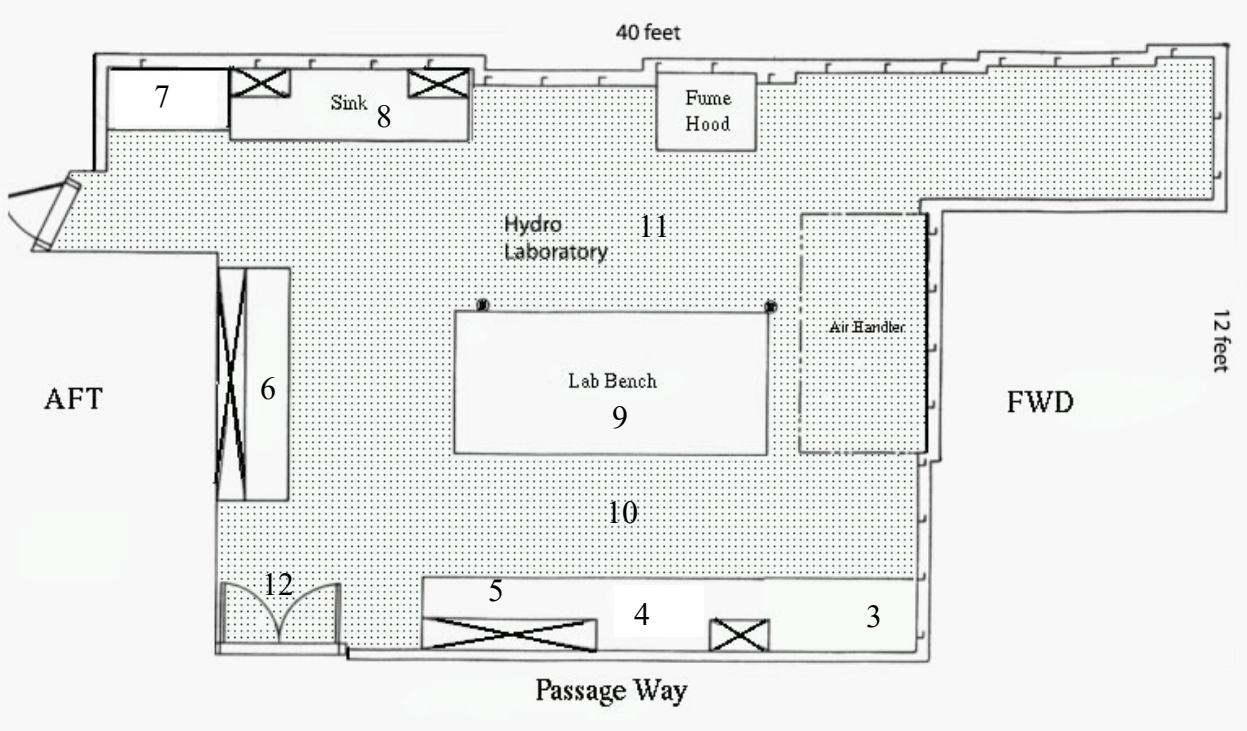

Figure 2
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Wet Lab Layout

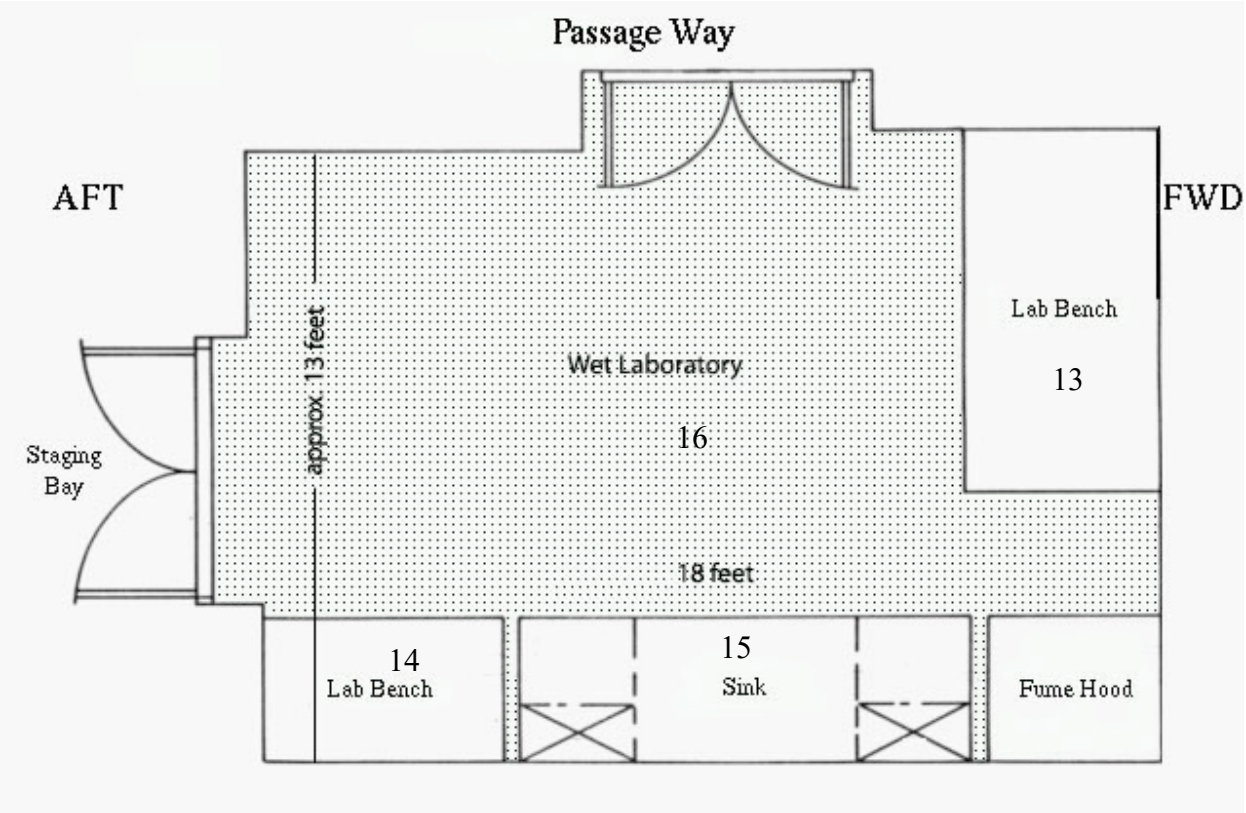

Figure 3
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BioAnalytical Lab Layout

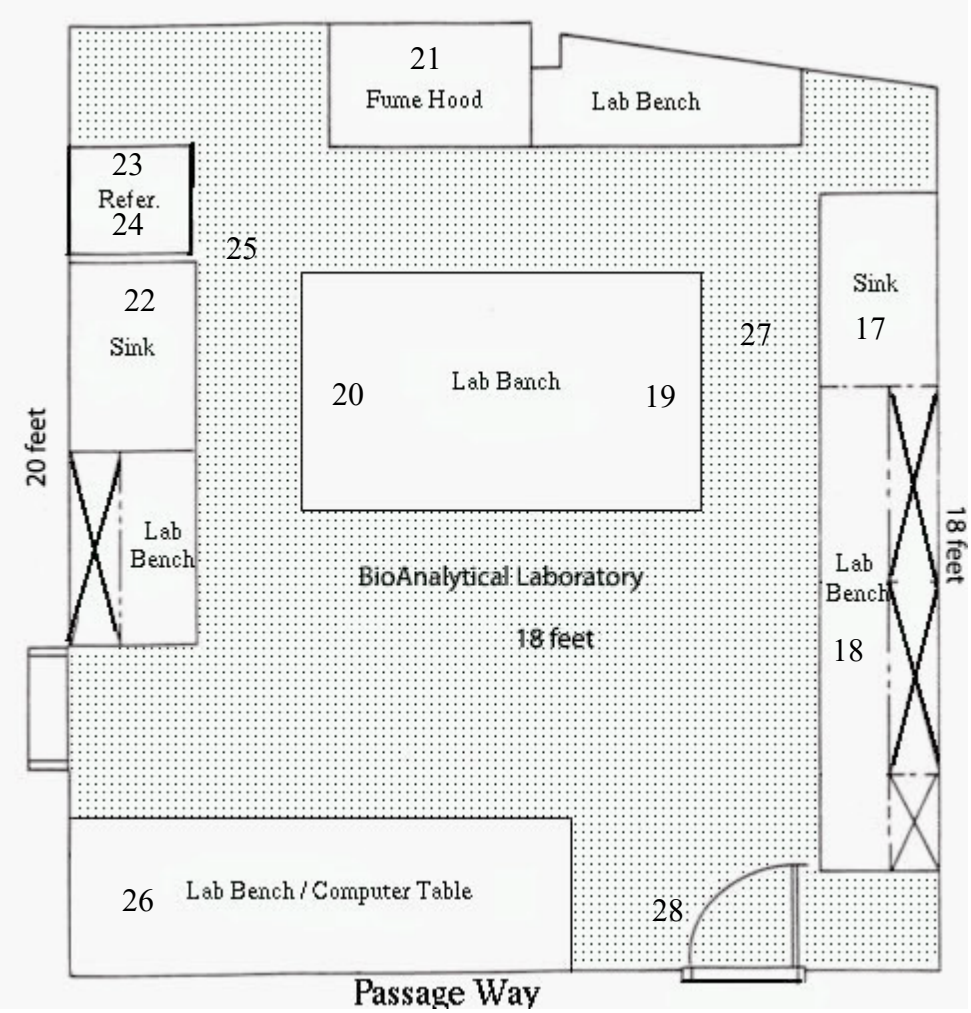

Figure 4
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Computer Lab Layout

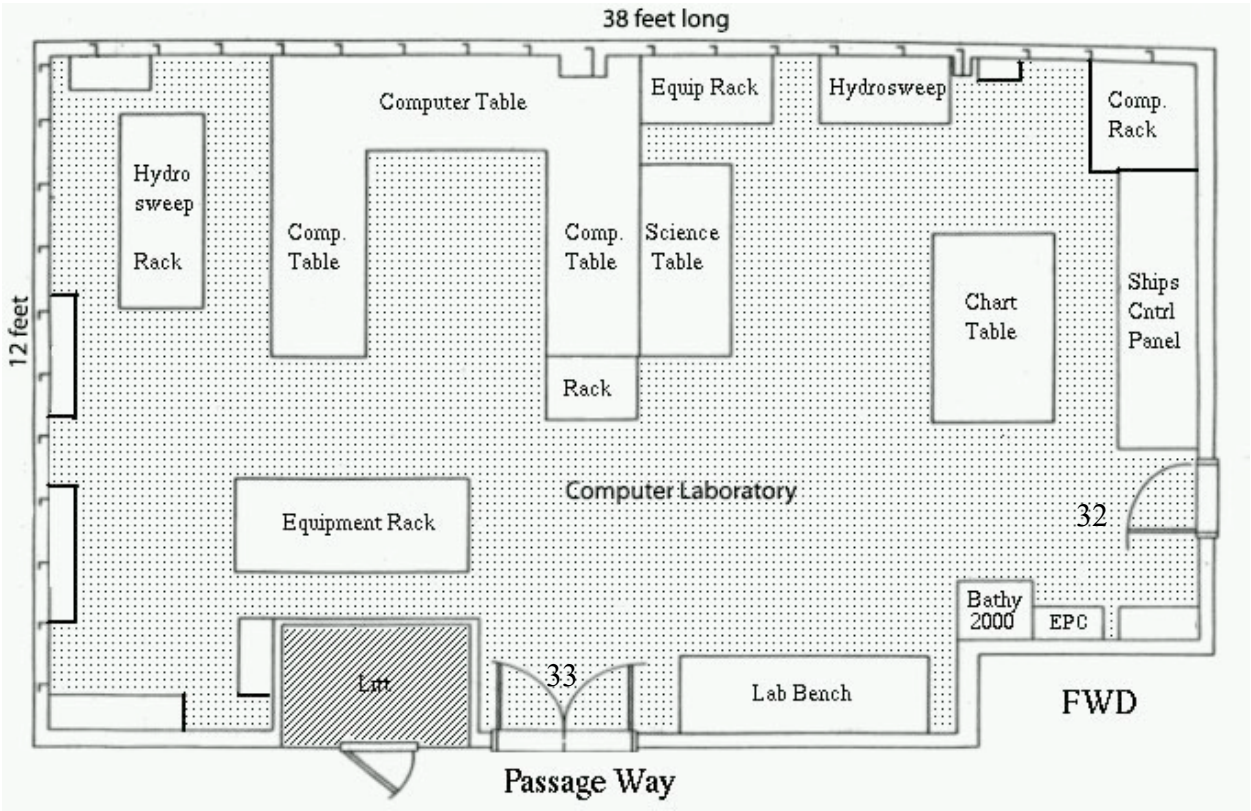

Figure 5
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