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Tritium Laboratory
9 October 2018

SWAB REPORT #917

SWAB DATE: 2 October 2018

R/V Atlantis and Rad Van #625.6.03

James Happell
Digitally signed by James Happell
Date: 2018.10.09 11:54:42 -04'00'

James D. Happell
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Distribution:
SWAB Committee
David Fisichella
Atlantis SSSG
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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 # 917

LOCATION: Sab Juan, PR
VESSEL/LAB: *R/V Atlantis and Van #625.6.03*

DATE: 2 October 2018
TECHNICIAN: Jim Happell

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 #1	26	±	61	-15	±	53
	Main Lab (Figure 1)						
3	**Starboard sink area**	1	±	7	10	±	37
4	**Starboard benchtop adjacent to icemaker**	18	±	51	-3	±	12
5	Deck by forward port entrance	44	±	48	4	±	24
6	Deck below starboard sink	12	±	39	6	±	34
7	Inside starboard refrigerator.	43	±	39	15	±	33
8	Top of -80^{o}C freezer	-10	±	52	-3	±	15
9	Deck in front of forward computer bench	40	±	48	4	±	25
10	Deck inside mid port entrance	7	±	21	18	±	37
11	Inside fume hood	47	±	48	7	±	27
12	**Center benchtop forward of fume hood**	9	±	316	-16	±	56
13	Deck inside aft port entrance	69	±	60	-21	±	74
14	**Benchtop in front of starboard sink**	9	±	46	1	±	20
15	Benchtop next to starboard sink	42	±	49	2	±	16
16	Benchtop next to port sink	19	±	86	-18	±	63
17	Deck in front of port sink	31	±	67	-16	±	59
18	**Center mid benchtop**	37	±	54	-9	±	38
19	**Starboard computer benchtop**	34	±	60	-15	±	53
20	Center forward benchtop	10	±	126	-12	±	44
	BioAnalytical Lab (Figure 2)						
21	Inside fume hood	42	±	57	-9	±	39
22	Port benchtop	-9	±	45	-21	±	45
23	Starboard benchtop	17	±	45	4	±	30
24	Deck inside aft entrance	55	±	70	-32	±	67
25	Aft siink area	55	±	52	1	±	6
26	Aft center benchtop	5	±	46	1	±	29
27	Center deck	34	±	85	-27	±	57
28	Forward benchtop next to sink	35	±	57	-10	±	36
29	Deck below fumehood	5	±	15	-21	±	44
30	Deck inside starboard entrance	20	±	60	-9	±	41

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
	Miscellaneous Areas (Figure 3)						
31	Forward cooler benchtop	-13	±	41	-13	±	48
32	Forward benchtop in aft cooler	59	±	68	-31	±	64
33	Aft benchtop in aft cooler	5	±	17	-11	±	41
34	Deck outside forward cooler	1	±	73	-1	±	3
	Computer Lab (Figure 3)						
35	Deck inside starboard entrance	-18	±	52	-12	±	43
36	Deck inside forward entrance	37	±	73	-25	±	52
37	Deck outside starboard entrance	55	±	75	-37	±	78
38	Deck below aft stair to 01 deck	-7	±	39	-19	±	67
	Hydrographic Lab (Figure 4)						
39	Deck in front of forward bench	84	±	45	40	±	35
40	Inside fume hood	14	±	74	-10	±	37
41	Center deck between port benches	24	±	83	-19	±	69
42	Deck between sink and aft entrance	11	±	52	-3	±	12
43	ALVIN benchtop aft	7	±	37	-23	±	47
44	Deck inside starboard entrance	-2	±	16	-21	±	44
45	Benchtop aft of port sink	25	±	73	-15	±	53
46	Inside freezer	8	±	134	-10	±	37
47	Inside rrefrigerator	21	±	67	-12	±	44
48	Forward port center benchtop	-12	±	61	-3	±	14
49	Forward starboard center benchtop	44	±	65	-19	±	67
50	Benchtop	9	±	48	-27	±	56
51	Starboard aft benchtop	12	±	136	-12	±	43
52	Port sink area	-33	±	66	2	±	10
53	Starboard sink area	33	±	159	-36	±	75
54	Forward port benchtop	-24	±	48	30	±	40
	Wet Lab (Figure 5)						
55	Forward sink area	39	±	51	2	±	19
56	Inside fume hood	54	±	71	-33	±	69
57	Deck at aft entrance	-30	±	59	-16	±	55
58	Deck inside port entrance	57	±	56	-8	±	36
59	Starboard aft benchtop	22	±	92	-22	±	45
60	Port aft benchtop	7	±	36	-14	±	52
61	Final bucket blank #1	3	±	24	-6	±	27

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
	WHOI isotope van 625.6.03 (Figure 6)						
62	Inital bucket blank #2	1	±	10	8	±	37
63	Deck outside Rad Van door	*528	±	78	-10	±	21
64	Inside refrigerator	*1100	±	94	*463	±	48
65	Fume hood	*1927	±	130	*70	±	18
66	Bechtop next to fume hood	*1930	±	121	*567	±	49
67	Inside refrigerator	*1431	±	116	*226	±	38
68	Sink area	*4489	±	187	*447	±	38
69	Benchtop across from refrigerator	*1829	±	125	*240	±	34
70	Benchtop across from sink	*1988	±	131	*133	±	25
71	Deck in front of fume hood	*3724	±	170	*283	±	31
72	Deck near entrance	*1614	±	117	*50	±	15
73	Inside LG refrigerator	*886	±	96	28	±	15
74	Benchtop across from hood	*2187	±	124	*1054	±	62
75	Final bucket blank #2	47	±	53	-11	±	38

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 in the ship were free from ^{3}H or ^{14}C contamination that requires cleaning except for the deck outside the Ran Van door. This area should be cleaned ASAP. Minor ^{3}H and ^{14}C contamination was found in the Rad Van. While none of the values are above the cleanup limits for Rad Vans, there is widespread amounts of both isotopes that are significantly greater than in SWAB 899. Therefore cleaning of the van is suggested, especially since some ^{3}H was tracked outside the van. Samples in **bold** in the main lab were taken on top of the plastic sheet put in place by Susan Lang's group.

Figure 1
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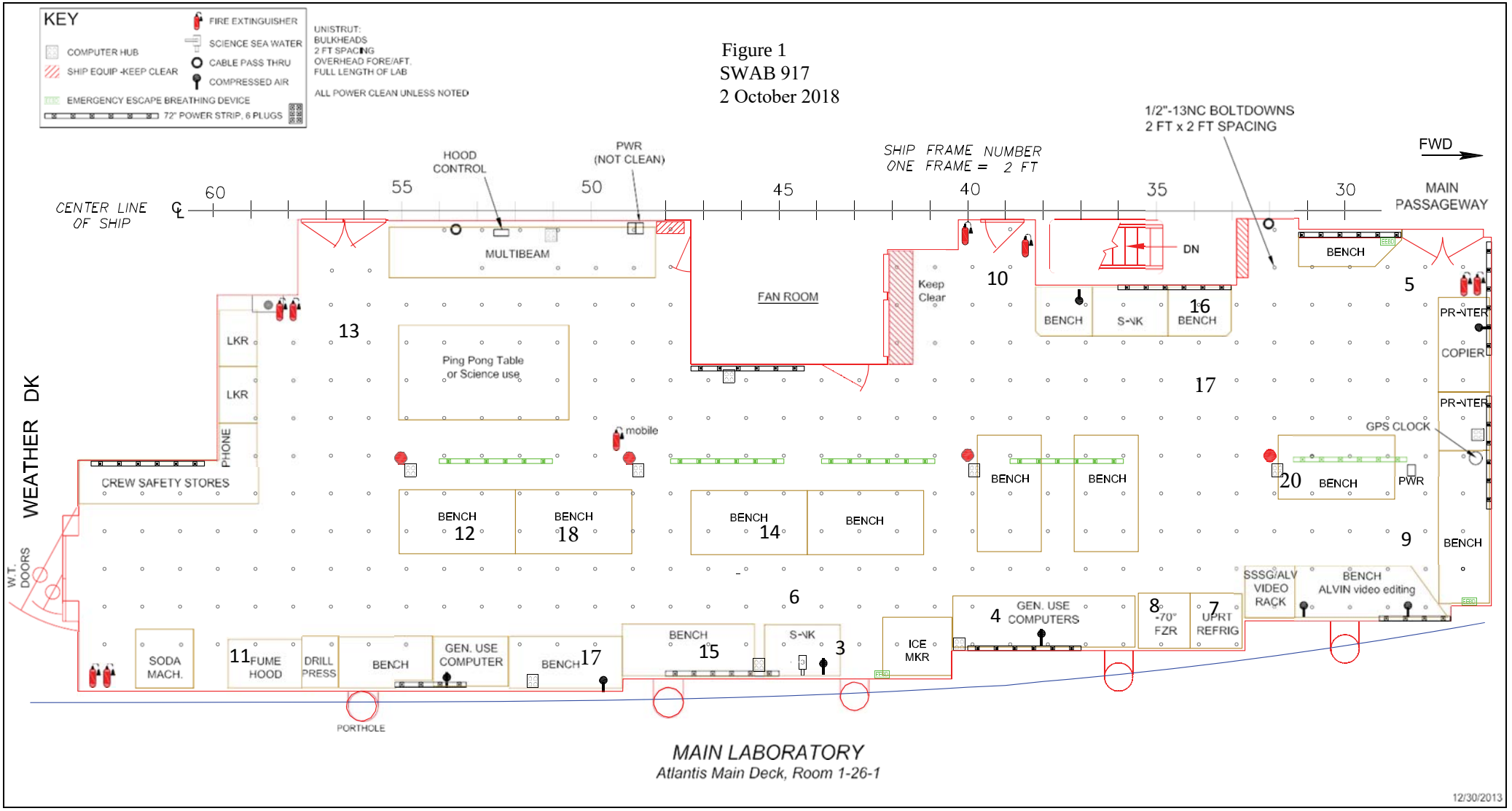

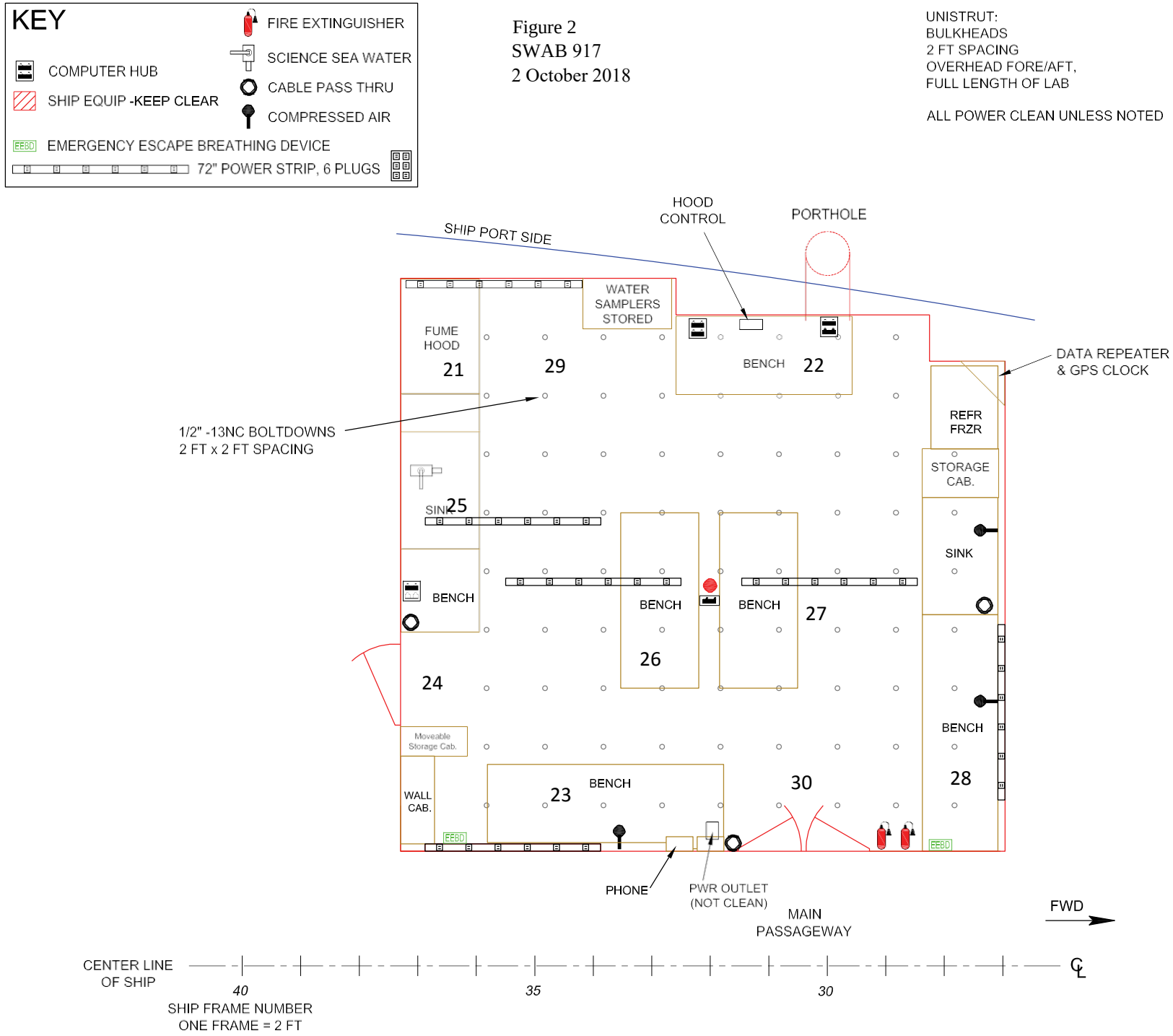

BIOLOGICAL/ANALYTICAL CLEAN LABORATORY

Atlantis Main Deck, Room 1-27-2

12/30/2013

Figure 3
SWAB 917
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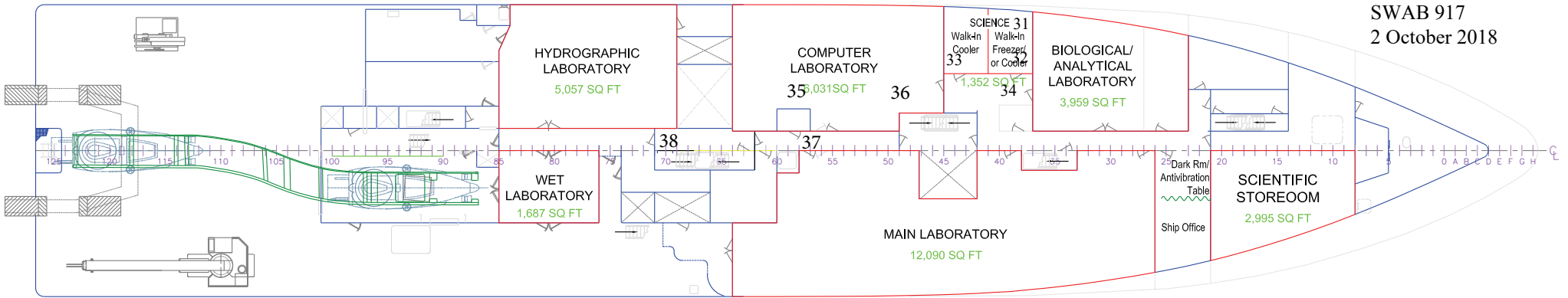
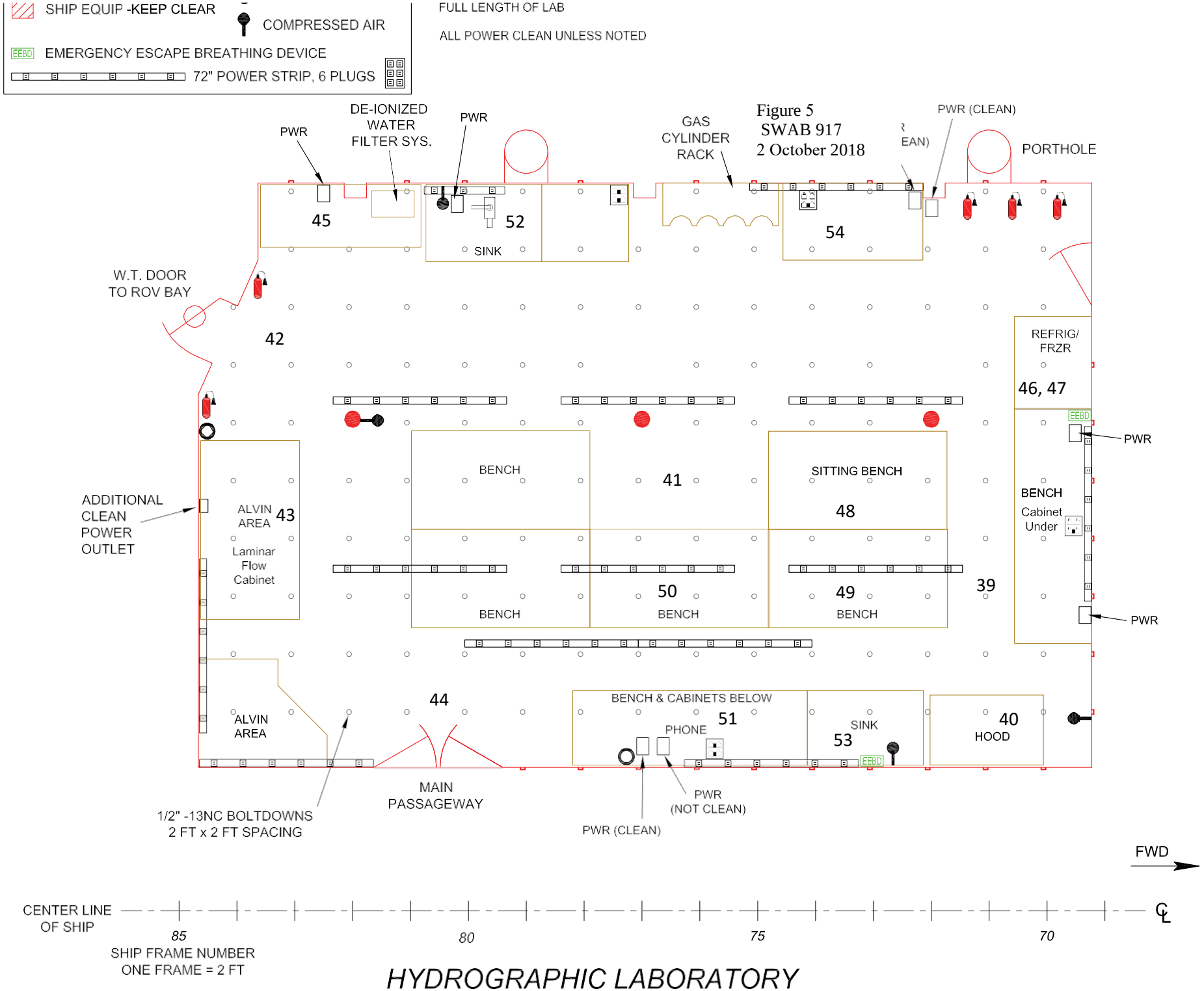


Laboratories & Scientific Storeroom General Locations

Atlantis Main Deck

Woods Hole Oceanographic Institution
Betsey Doherty 12/30/2013
ATLANTIS LABS SAT0003



HYDROGRAPHIC LABORATORY

Atlantis Main Deck, Room 1-64-2

12/30/2013

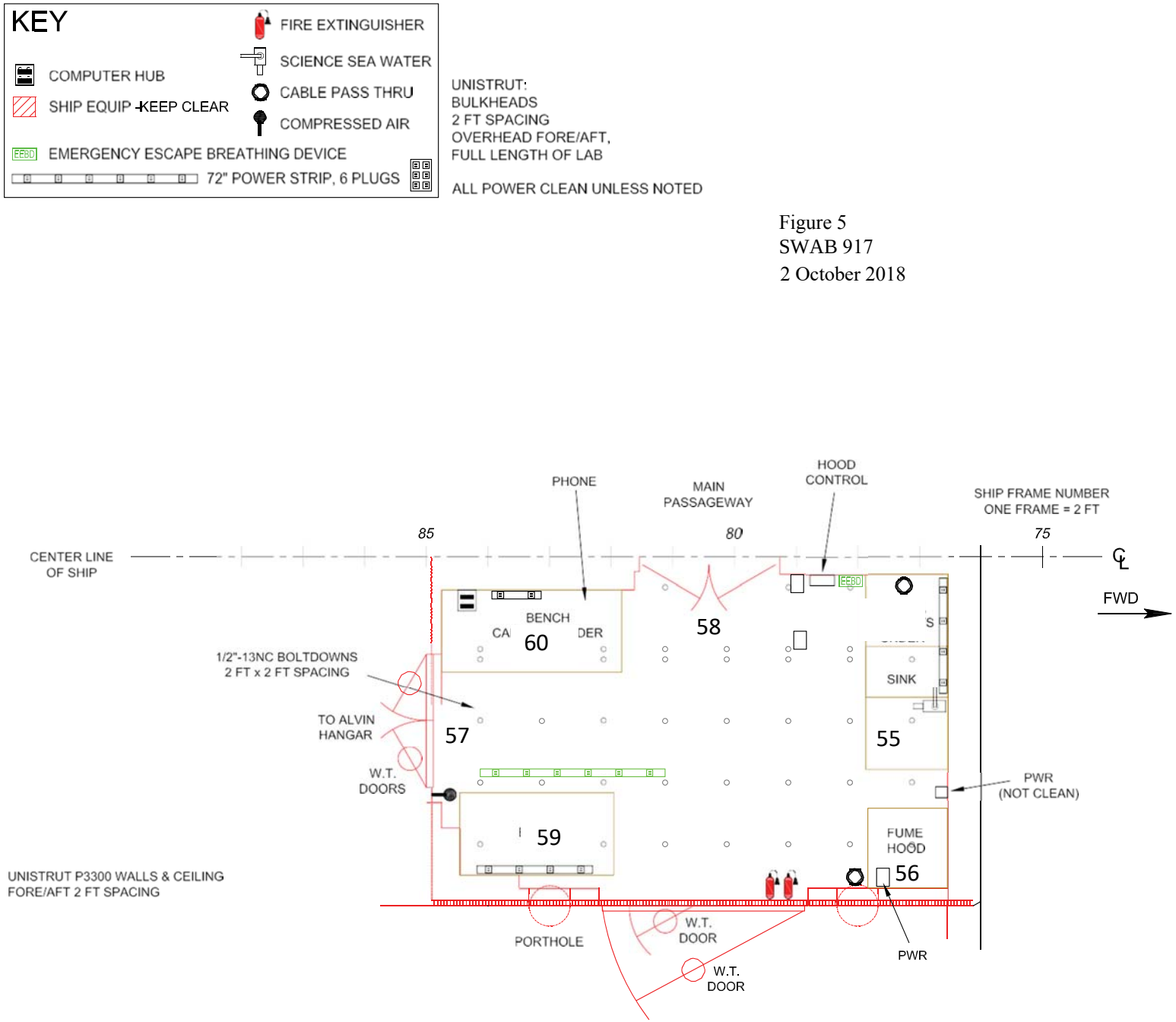


Figure 5
SWAB 917
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WET LABORATORY

Atlantis Main Deck, Rm 1-76-1

12/30/2013

Figure 6
SWAB # 917
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