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Tritium Laboratory
2 October 2017

SWAB REPORT #874

SWAB DATE: 26 September 2017

R/V Atlantis and Rad Van #625.6.03

James Happell

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Date: 2017.10.02 12:10:00 -04'00'

James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
David Fisichella

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 # 874

LOCATION: Wood Hole, MA
VESSEL/LAB: *R/V Atlantis and Van #625.6.03*

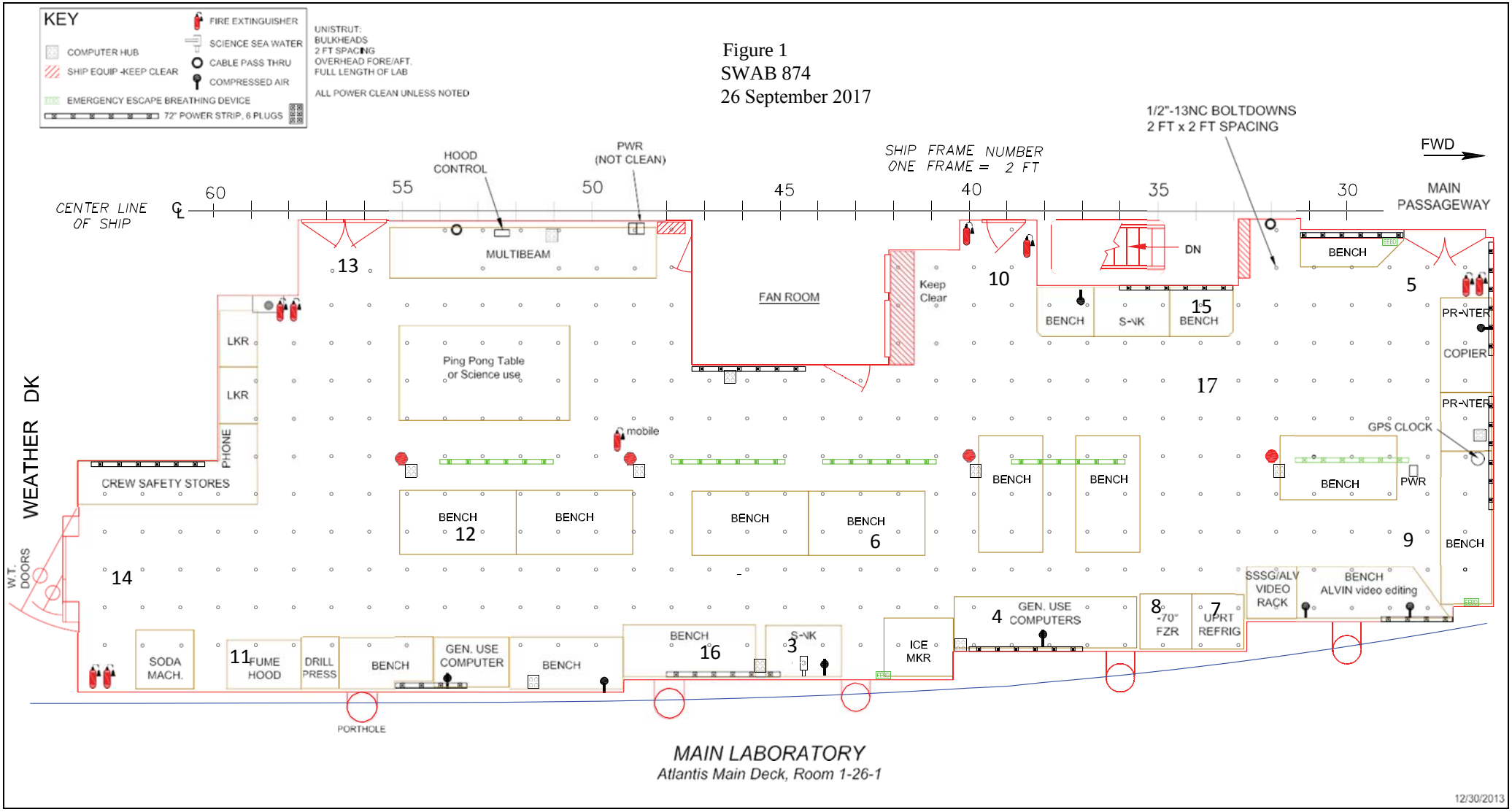
DATE: 26 September 2017
TECHNICIAN: Jim Happell

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	3	±	21	9	±	38
	<u>Main Lab (Figure 1)</u>						
3	Starboard sink area	24	±	52	-2	±	9
4	Starboard benchtop adjacent to ice maker	-9	±	71	5	±	43
5	Forward port entrance	43	±	53	-3	±	13
6	Benchtop across from starboard sink	-21	±	101	9	±	44
7	Inside starboard refrig bottom section	-20	±	98	14	±	42
8	Top of -80^{o}C freezer	-13	±	63	7	±	43
9	Deck in front of aft computer bench	-8	±	61	9	±	41
10	Deck inside mid port entrance	10	±	94	-11	±	48
11	Inside fume hood	22	±	73	-15	±	68
12	Benchtop across from and forward of fume	33	±	73	-17	±	76
13	Deck inside aft port entrance	-12	±	60	-4	±	19
14	Deck inside aft entrance	25	±	58	-8	±	36
15	Benchtops next to port sink	23	±	44	5	±	31
16	Benchtops next to starboard sink	3	±	17	-38	±	111
17	Deck between port sink and opposite benc	19	±	153	-27	±	80
	<u>BioAnalytical Lab (Figure 2)</u>						
18	Inside fume hood	-33	±	51	-8	±	34
19	Port benchtop	-9	±	43	-16	±	71
20	Starboard benchtop	-8	±	37	-9	±	40
21	Deck inside aft entrance	-3	±	21	-7	±	29
22	Aft sink area	-42	±	65	4	±	97
23	Starboard section of aft center bench	36	±	128	-43	±	125
24	Center deck	-7	±	45	-30	±	89
25	Forward benchtop adjacent to sink	-13	±	63	-22	±	65
26	Deck below fume hood	-14	±	66	5	±	45
27	Deck inside forward starboard entrance	15	±	74	-11	±	49
	<u>Miscellaneous Areas Figure 3)</u>						
28	Forward cooler benchtop	3	±	136	-5	±	20
29	Aft cooler benchtop	-14	±	70	-9	±	41
30	Deck outside forward cooler	42	±	135	-58	±	172

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
	Computer Lab (Figure 3)						
31	Deck below printer on strbr	-6	±	31	-18	±	53
32	Deck below aft starboard bench	11	±	290	-19	±	57
33	Companionway outside starboard entrance	11	±	81	-23	±	68
34	Deck below aft stair to 01 deck	13	±	130	-17	±	50
	Hydrographic Lab (Figure 4)						
35	deck in front of fwd be	47	±	62	-12	±	55
36	Inside fume hood	1	±	7	-23	±	68
37	Deck between port benches in center	36	±	102	-37	±	108
38	Deck between sink and aft entrance	-17	±	81	-13	±	55
39	ALVIN benchtop aft	7	±	52	-20	±	60
40	Deck inside starboard entrance	19	±	519	-38	±	110
41	Port sink area	9	±	95	-9	±	40
42	Port benchtop aft of port sink	27	±	48	2	±	23
43	Freezer	-22	±	107	-5	±	22
44	Deck in front of refrigerator	9	±	68	-6	±	24
45	Refrig bottom	20	±	147	-30	±	88
46	Freezer top	12	±	76	-10	±	43
	Wet Lab (Figure 5)						
47	Forward sink area	326	±	54	*246	±	44
48	Inside fume hood	53	±	53	-3	±	11
49	Deck at aft door	-3	±	20	-2	±	10
50	Deck inside port entrance	77	±	53	4	±	18
	WHOI isotope van 625.6.03 (Figure 7)						
51	Inside Refirgerator	27	±	139	-39	±	114
52	Fume hood	13	±	21	38	±	39
53	Benchtop adjacent to Fume Hood	-39	±	60	18	±	45
54	Refrigerator	*742	±	85	51	±	23
55	Sink Area	21	±	215	-32	±	95
56	Benchtop ajacent to LSC	89	±	47	*72	±	39
57	Benchtop opposite from sink	-3	±	6	*68	±	41
58	Deck in front of fume hood	33	±	51	0	±	1
59	Deck near entrance	66	±	62	-9	±	42
60	Final bucket blank	39	±	75	-29	±	87

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. Minor ^{14}C contamination was found around the forward sink area in the Wet lab. Above background ^{3}H was also present. This area should be cleaned ASAP. All other areas tested in the ship did not have contamination that requires cleaning. Minor ^{3}H and ^{14}C contamination was found in the Rad Van, but no action is necessary.


KEY
COMPUTER HUB
SHIP EQUIP -KEEP CLEAR
EMERGENCY ESCAPE BREATHING DEVICE
72" POWER STRIP, 6 PLUGS
FIRE EXTINGUISHER
SCIENCE SEA WATER
CABLE PASS THRU
COMPRESSED AIR
UNISTRUT:
BULKHEADS
2 FT SPACING
OVERHEAD FORE/AFT.
FULL LENGTH OF LAB
ALL POWER CLEAN UNLESS NOTED
Figure 1
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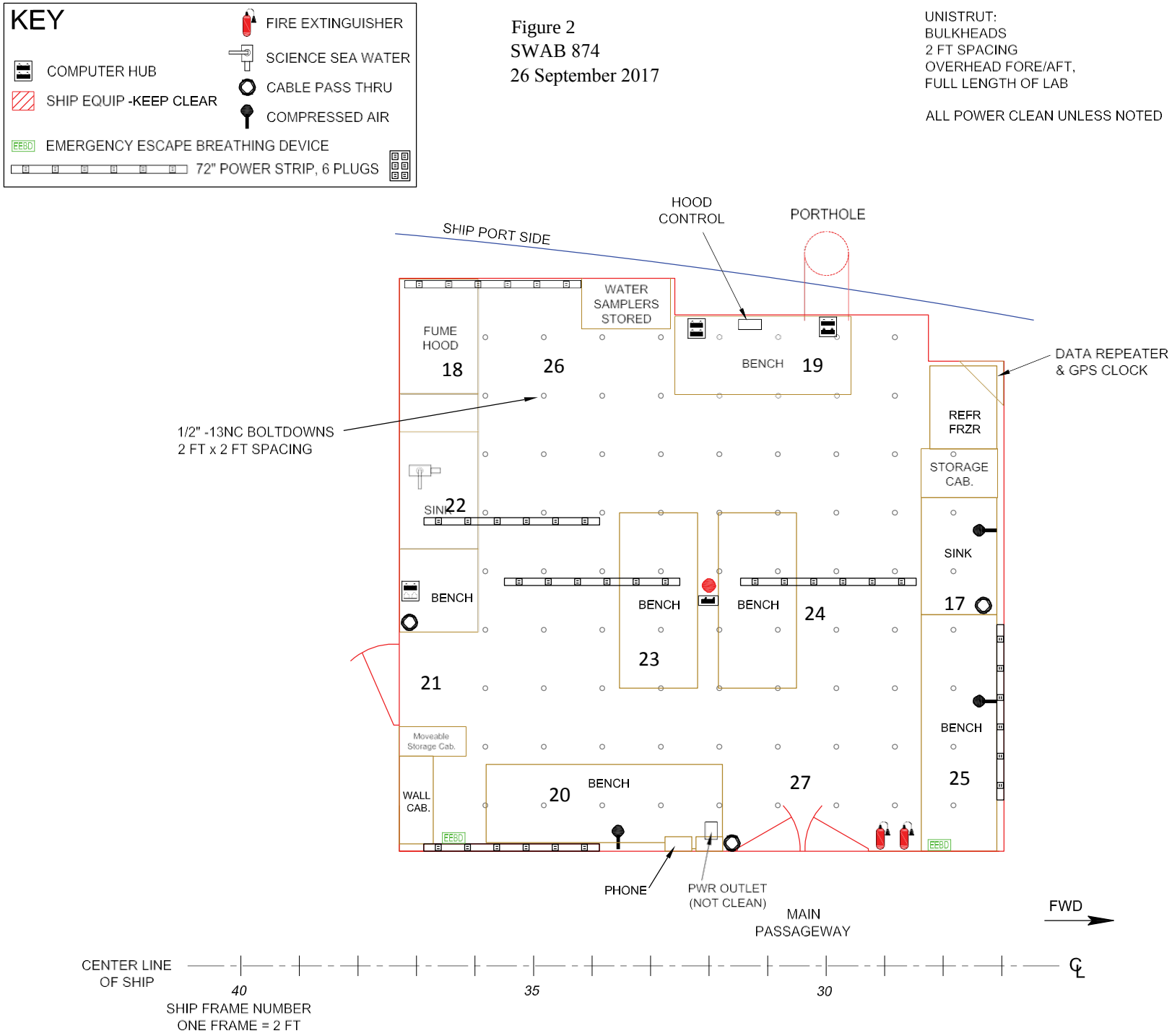
1/2"-13NC BOLTDOWNS
2 FT x 2 FT SPACING
FWD
HOOD CONTROL
PWR (NOT CLEAN)
SHIP FRAME NUMBER
ONE FRAME = 2 FT
CENTER LINE OF SHIP
60
55
50
45
40
35
30
MAIN PASSAGEWAY
WEATHER DK
W.T. DOORS
MULTIBEAM
FAN ROOM
Keep Clear
DN
BENCH
S-NK
Ping Pong Table or Science use
LKR
LKR
PHONE
CREW SAFETY STORES
mobile
PR-NTER
COPIER
GPS CLOCK
PWR
SODA MACH.
FUME HOOD
DRILL PRESS
GEN. USE COMPUTER
ICE MKR
4 GEN. USE COMPUTERS
-70° FZR
UPRT REFRIG
SSSG/ALV VIDEO RACK
ALVIN video editing
PORTHOLE
MAIN LABORATORY
Atlantis Main Deck, Room 1-26-1
12/30/2013



BIOLOGICAL/ANALYTICAL CLEAN LABORATORY

Atlantis Main Deck, Room 1-27-2

12/30/2013

Figure 3
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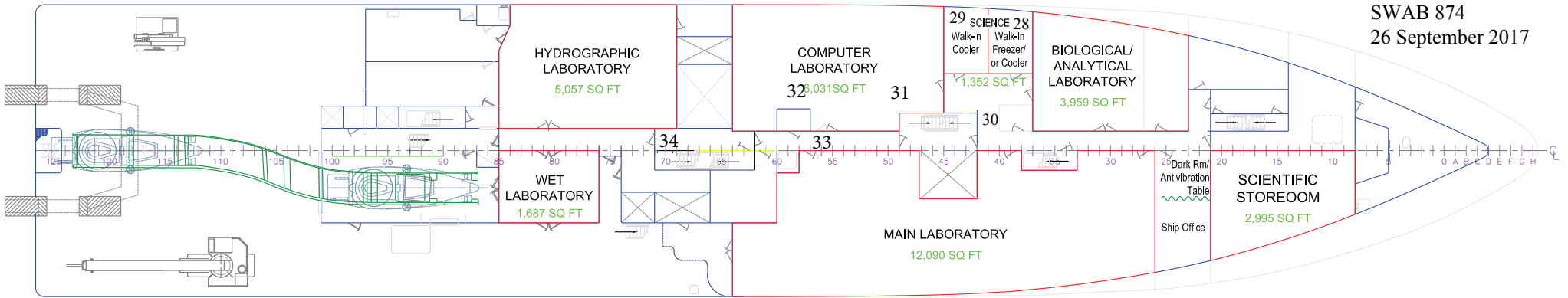

Laboratories & Scientific Storeroom General Locations

Atlantis Main Deck

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

Figure 4
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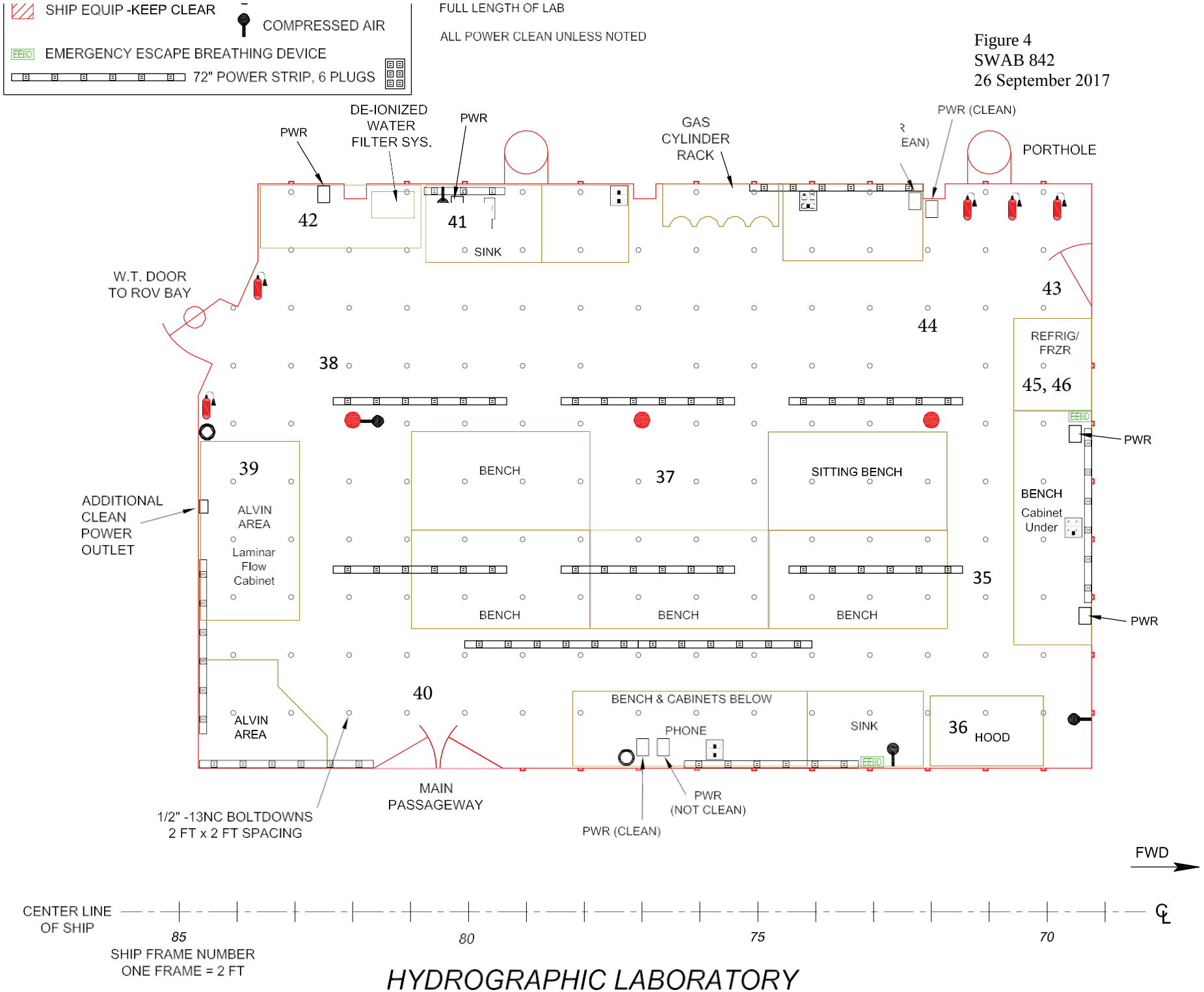

HYDROGRAPHIC LABORATORY

Atlantis Main Deck, Room 1-64-2

12/30/2013

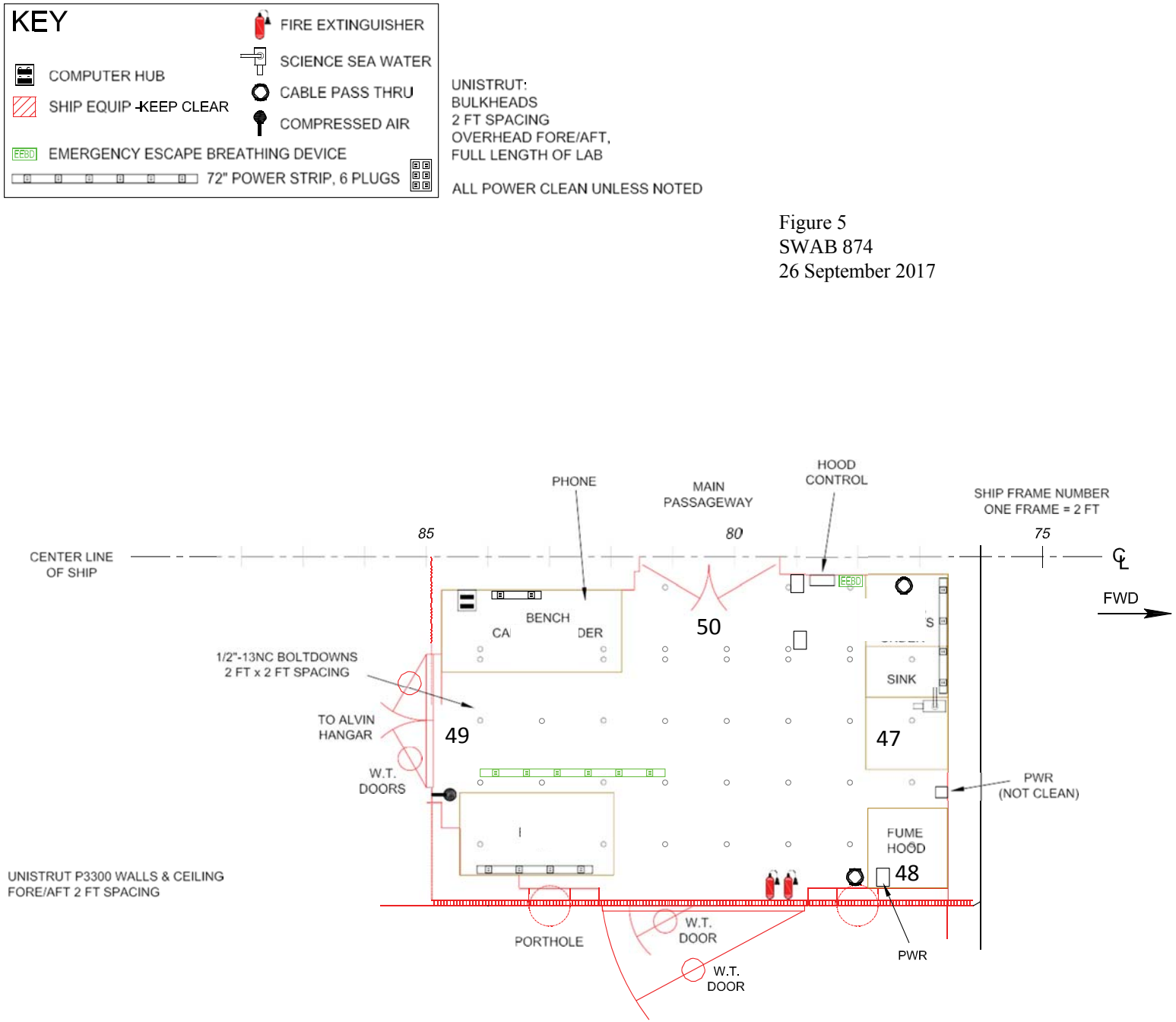

Figure 5
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WET LABORATORY

Atlantis Main Deck, Rm 1-76-1

12/30/2013

Figure 6
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