

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



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Tritium Laboratory
26 April 2018

SWAB REPORT #899

SWAB DATE: 20 April 2018

R/V Atlantis and Rad Van #625.6.03

James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
David Fisichella

COMMENTS TO SWAB REPORTS

12 May 2014

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 $1000 \text{ dpm}/\text{m}^2$ 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 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 # 899

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

DATE: 20 April 2018
TECHNICIAN: Yudy Mendoza

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	-36	± 75	-16	± 43
	<u>Main Lab (Figure 1)</u>				
3	Starboard sink area	-2	± 7	-5	± 29
4	Starboard benchtop adjacent to ice maker	20	± 97	-22	± 59
5	Forward port entrance	6	± 25	14	± 36
6	Deck below starboard sink	-9	± 32	-14	± 38
7	Inside starboard refrigerator bottom section	-39	± 81	9	± 48
8	Top of -80 freezer	-37	± 77	4	± 82
9	Deck in front of aft computer bench	-21	± 44	1	± 31
10	Deck inside mid port entrance	-7	± 24	9	± 38
11	Inside fume hood	-9	± 31	-11	± 30
12	Benchtop across from and forward of fume	-16	± 57	-13	± 35
13	Deck inside aft port entrance	25	± 53	-6	± 32
14	Benchtop in front of starboard sink	-5	± 18	-12	± 33
15	Benchtop next to port sink	-8	± 27	-6	± 30
16	Benchtop next to starboard sink	-29	± 61	8	± 46
17	Deck between port sink and opposite bench	-26	± 55	-3	± 18
	<u>BioAnalytical Lab (Figure 2)</u>				
18	Inside fume hood	-21	± 44	-13	± 33
19	Port benchtop	3	± 12	-14	± 38
20	Starboard benchtop	0	± 1	-36	± 97
21	Deck inside aft entrance	-15	± 52	-23	± 62
22	Aft sink area	-15	± 52	-7	± 34
23	Starboard section of aft center bench	11	± 72	-8	± 44
24	Center deck	-5	± 17	-24	± 64
25	Forward benchtop adjacent to sink	-7	± 25	-5	± 26
26	Deck below fume hood	-12	± 43	-16	± 42
27	Deck inside forward starboard entrance	-16	± 58	-11	± 30
	<u>Miscellaneous Areas (Figure 3)</u>				
28	Forward cooler benchtop	1	± 4	-12	± 33
29	Aft cooler benchtop	-6	± 22	-7	± 38
30	Deck outside forward cooler	-40	± 83	-16	± 41

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
	<u>Computer Lab (Figure 3)</u>				
31	Deck at after entrance	3 ±	32	3 ±	35
32	Deck at forward entrance	-13 ±	47	-13 ±	34
33	Companionway outside starboard entrance	-44 ±	91	-16 ±	42
34	Deck below aft stair to 01 Deck	-31 ±	64	-1 ±	6
	<u>Hydrographic Lab (Figure 4)</u>				
35	Deck in front of forward benchtop	13 ±	64	-8 ±	41
36	Inside fume hood	-7 ±	24	-33 ±	87
37	Deck between port benches in center	-22 ±	47	-23 ±	122
38	Deck between sink and aft entrance	-7 ±	25	-22 ±	60
39	ALVIN benchtop aft	-13 ±	48	-12 ±	33
40	Deck inside starboard entrance	7 ±	24	-26 ±	69
41	Port benchtop aft of port sink	-19 ±	67	-25 ±	68
42	Freezer	-25 ±	53	-14 ±	36
43	Refrigerator bottom	-7 ±	25	-28 ±	73
44	Deck in front of refrigerator	-52 ±	108	-7 ±	38
	<u>Wet Lab (Figure 5)</u>				
45	Forward sink area	2 ±	6	27 ±	38
46	Inside fume hood	9 ±	89	-10 ±	51
47	Deck at aft door	19 ±	52	-4 ±	21
48	Deck inside port entrance	63 ±	45	20 ±	32
	<u>WHOI isotope van 625.6.03 (Figure 6)</u>				
49	Deck where Rad Van was during the cruise	-35 ±	73	-11 ±	29
50	Intermediate bucket blank	-24 ±	51	-7 ±	37
51	Inside refrigerator	366 ±	67	15 ±	16
52	Fume hood	68 ±	50	2 ±	14
53	Benchtop adjacent to fume hood	*501 ±	76	-8 ±	14
54	Inside refrigerator	*1843 ±	118	*81 ±	19
55	Sink area	364 ±	68	-4 ±	8
56	Benchtop opposite from refrigerator	*512 ±	74	-10 ±	20
57	Benchtop opposite from sink	*646 ±	80	16 ±	12
58	Deck in front of fume hood	*1825 ±	119	18 ±	6
59	Deck near entrance	323 ±	65	23 ±	21
60	Final bucket blank	-48 ±	99	-18 ±	49

Comments

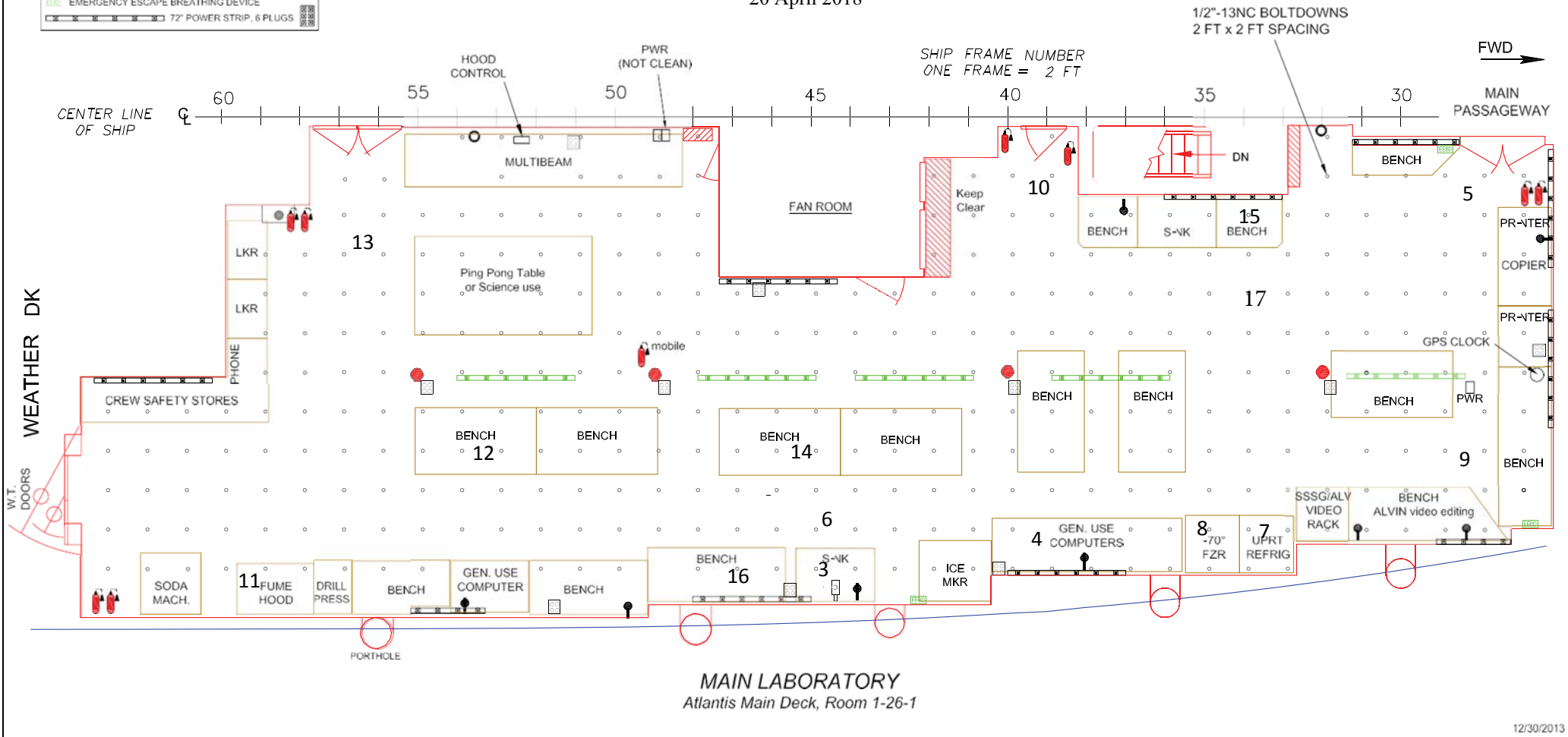
Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded 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 ^3H or ^{14}C contamination that requires cleaning. Minor ^3H and ^{14}C contamination was found in the Rad Van, but no action is necessary.

KEY

- COMPUTER HUB
- FIRE EXTINGUISHER
- SCIENCE SEA WATER
- CABLE PASS THRU
- SHIP EQUIP - KEEP CLEAR
- COMPRESSED AIR
- EMERGENCY ESCAPE BREATHING DEVICE
- 72" POWER STRIP, 6 PLUGS

UNISTRUT:
 BULKHEADS
 2 FT SPACING
 OVERHEAD FORE/AFT,
 FULL LENGTH OF LAB
 ALL POWER CLEAN UNLESS NOTED

Figure 1
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KEY









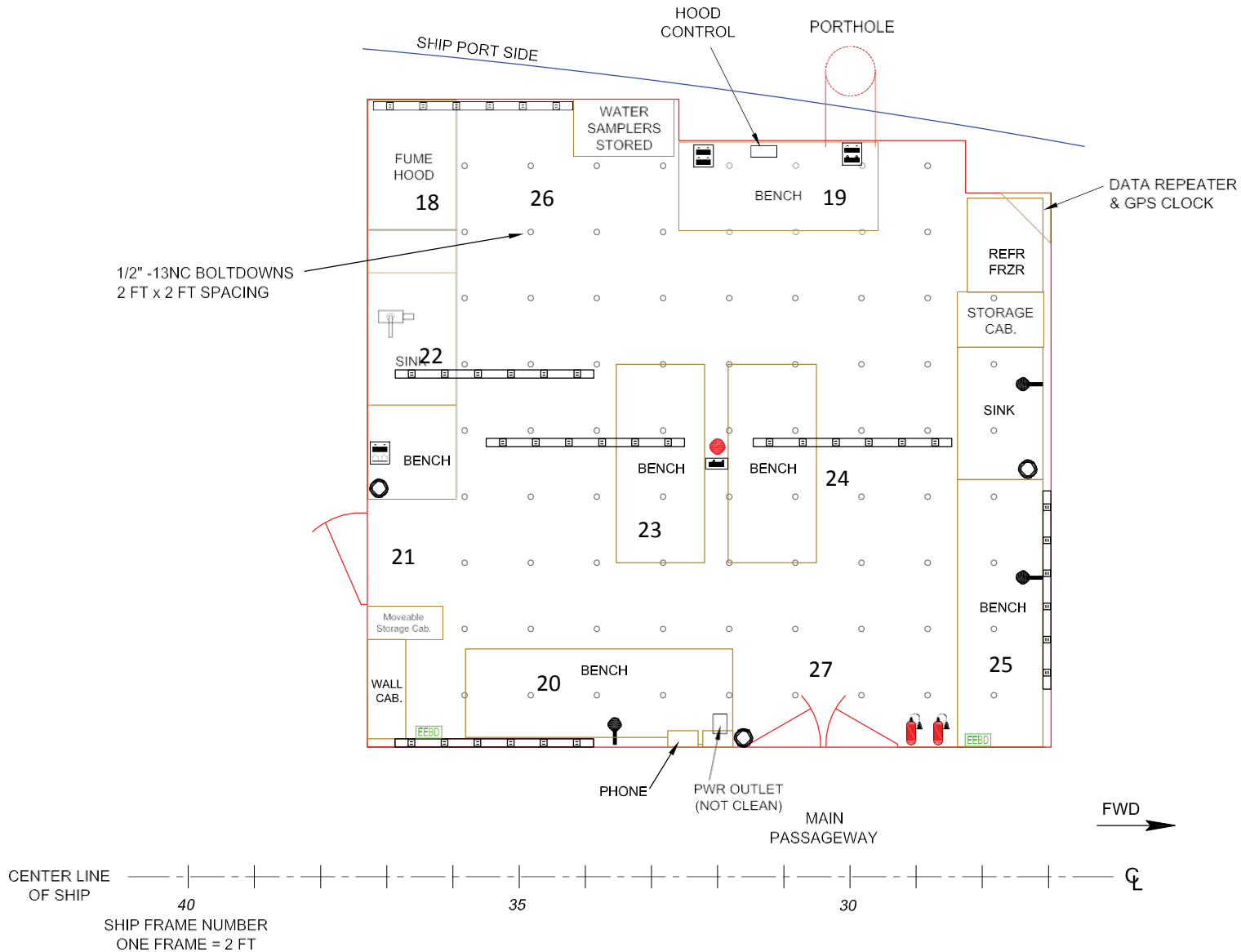
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-  FIRE EXTINGUISHER
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Figure 2
SWAB 899
20 April 2018

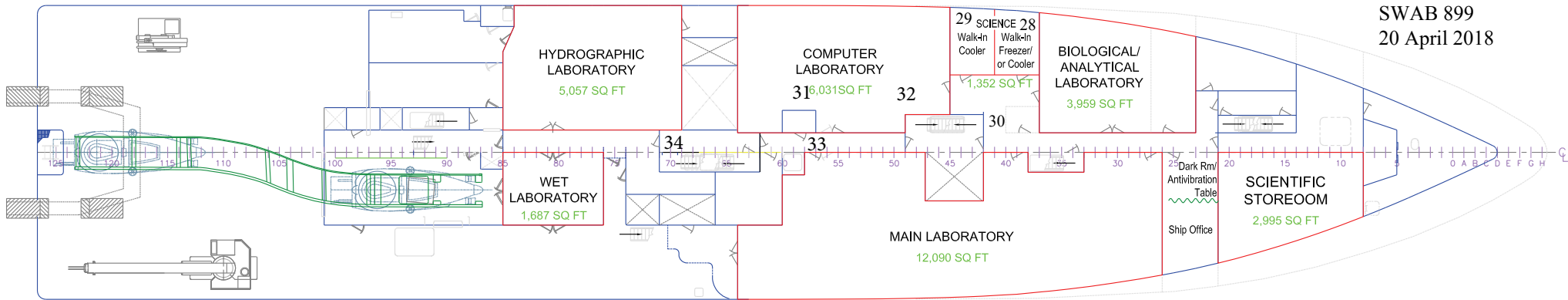
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BIOLOGICAL/ANALYTICAL CLEAN LABORATORY
Atlantis Main Deck, Room 1-27-2

Figure 3
SWAB 899
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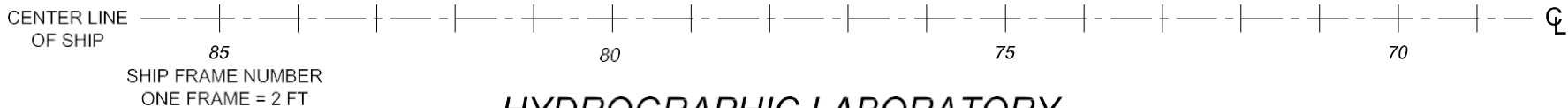
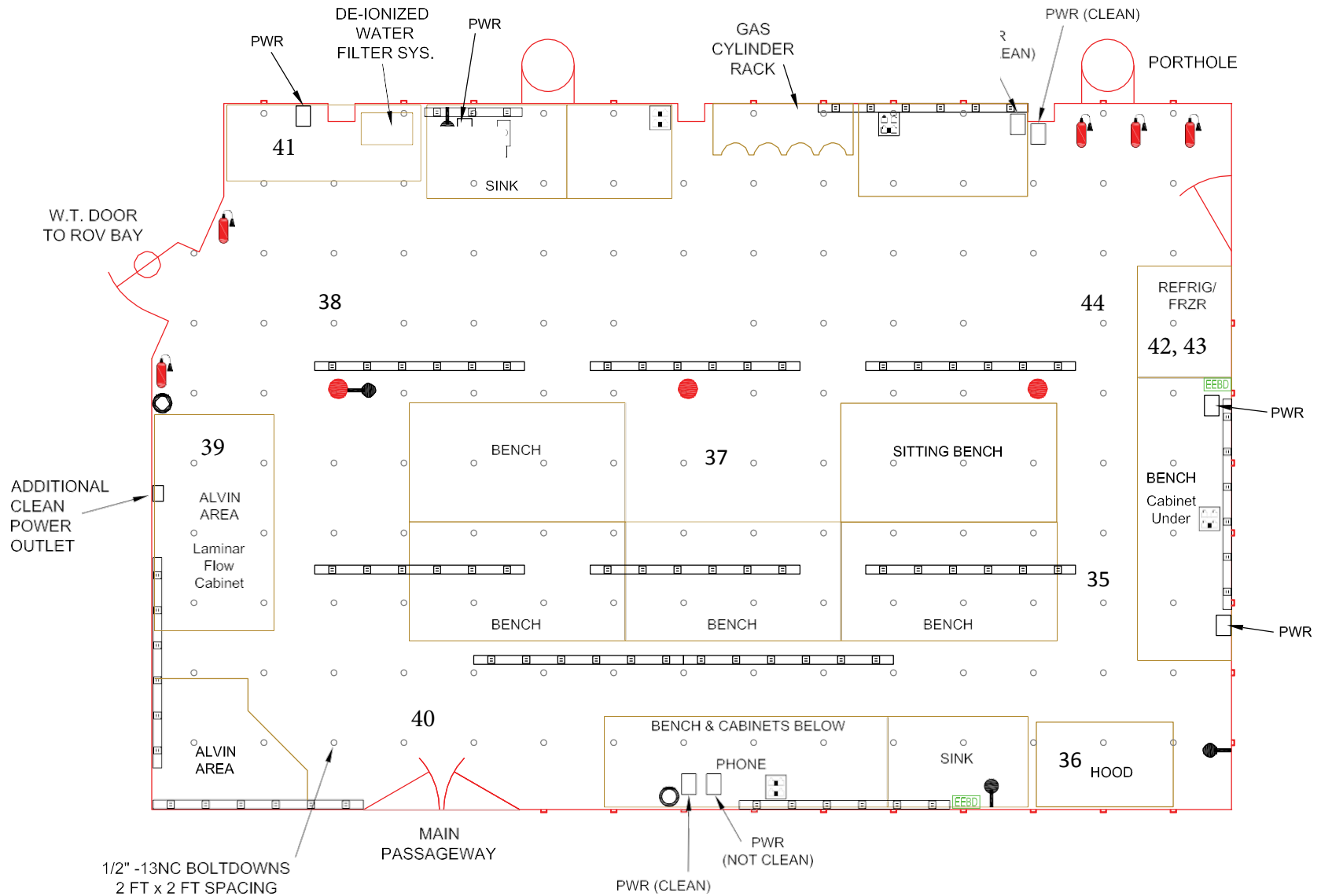


Laboratories & Scientific Storeroom General Locations
Atlantis Main Deck











FULL LENGTH OF LAB
ALL POWER CLEAN UNLESS NOTED

Figure 4
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20 April 2018



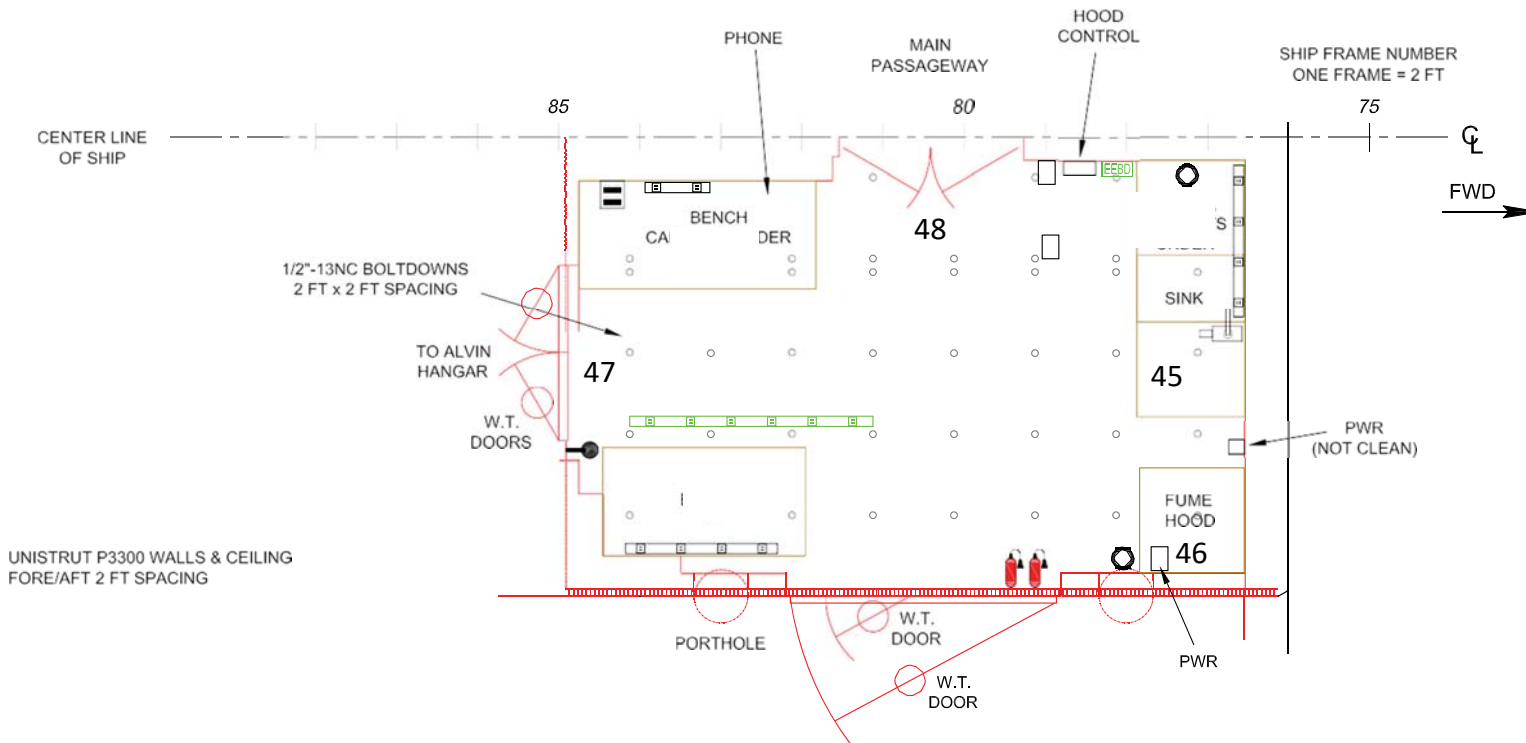
HYDROGRAPHIC LABORATORY
Atlantis Main Deck, Room 1-64-2

KEY

-  COMPUTER HUB
-  SHIP EQUIP - KEEP CLEAR
-  EMERGENCY ESCAPE BREATHING DEVICE
-  72" POWER STRIP, 6 PLUGS
-  FIRE EXTINGUISHER
-  SCIENCE SEA WATER
-  CABLE PASS THRU
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UNISTRUT:
 BULKHEADS
 2 FT SPACING
 OVERHEAD FORE/AFT,
 FULL LENGTH OF LAB
 ALL POWER CLEAN UNLESS NOTED

Figure 5
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WET LABORATORY
 Atlantis Main Deck, Rm 1-76-1

WHOI RADIOISOTOPE VAN

#625.6.03

Figure 6
SWAB # 899
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