



Tritium Laboratory  
16 January 2020

SWAB REPORT #975

SWAB DATE: 9 January 2020

*R/V Atlantis and WHOI Rad Van #625.6.03*

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Distribution:  
SWAB Committee  
David Fisichella

## COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for  $^3\text{H}$  and  $^{14}\text{C}$  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  $\text{dpm}/\text{m}^2$ . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in  $\text{dpm}/\text{m}^2$ . An error larger than the activity indicates that the activity is not significantly different from zero.

### Criteria for SWAB Results

Category	$^3\text{H}$ ( $\text{dpm}/\text{m}^2$ )	$^{14}\text{C}$ ( $\text{dpm m}^2$ )	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:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : 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.

$^{14}\text{C}$ : 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  $^3\text{H}$ .

### 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 institution promptly by phone or email.

REPORT FOR SWAB # 975

LOCATION: Balboa, Panama  
VESSEL/LAB: R/V Atlantis

DATE: 9 January 2020  
TECHNICIAN: Yudy Mendoza

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank C.O. #1	3	± 19	-17	± 28
	<u>Main Lab (Figure 1)</u>				
3	Port sink area	-35	± 24	4	± 65
4	Deck below mid-port entrance	14	± 43	-44	± 20
5	Deck below forward port entrance	-4	± 21	-20	± 42
6	Inside freezer	-13	± 32	-14	± 36
7	Inside refrigerator	-19	± 16	-15	± 16
8	Deck in front of -80 °C freezer	11	± 42	-40	± 32
9	Benchtop between ice machine and -80 °C	-2	± 38	-20	± 52
10	Fwd benchtop	-3	± 26	-9	± 38
11	Starboard sink area	-16	± 37	-10	± 25
12	Benchtop across from refrigerator	-78	± 22	-19	± 17
13	Benchtop across from Panasonic freezer	-91	± 15	-5	± 44
14	Benchtop fwd of starboard sink	-4	± 46	-27	± 28
15	Center benchtop	-28	± 28	-15	± 40
16	Benchtop across from ice maker	-9	± 36	-23	± 32
17	Benchtop across from port sink	-12	± 43	-14	± 60
18	Aft starboard sink	-168	± 54	-1	± 37
19	Deck in front of port sink	-15	± 13	-6	± 25
20	Center aft benchtop	-25	± 29	-24	± 22
21	Benchtop next to press air dryer	-50	± 38	8	± 57
22	Deck inside aft port entrance	-23	± 41	-4	± 10
23	Deck in front of starboard sink	-43	± 33	0	± 18
24	Deck inside aft entrance	-15	± 61	-36	± 49
25	Deck in front of ice maker	-22	± 47	1	± 13

Sample #	Sample Identification	$^3\text{H}$ dpm/m <sup>2</sup>		$^{14}\text{C}$ dpm/m <sup>2</sup>	
		activity	error	activity	error
	<u>Bio Analytical Lab (Figure 2)</u>				
26	Deck inside aft entrance	-11	± 38	-16	± 36
27	Aft sink area	19	± 76	-14	± 18
28	Inside fume hood	1	± 62	-35	± 42
29	Inside forward refrigerator	-50	± 43	10	± 53
30	Benchtop next to aft sink	-20	± 25	-8	± 31
31	Deck between fume hood and after sink	-9	± 39	-44	± 15
32	Forward sink area	-8	± 63	-25	± 38
33	Forward benchtop	-3	± 41	-13	± 45
34	Deck inside starboard entrance	1	± 38	-27	± 34
35	Benchtop across from sink	-20	± 26	15	± 42
36	Deck in front of refrigerator	-33	± 17	2	± 37
37	Final bucket blank C.O. #1	-12	± 44	-23	± 66
38	Initial bucket blank C.O. #2	-24	± 56	-21	± 41
	<u>Walk-in Coolers (Figure 3)</u>				
39	Deck of forward freezer	-28	± 25	-13	± 30
40	Deck of aft freezer	20	± 34	-45	± 37
41	Deck at entrance to Computer Lab	-19	± 58	-30	± 26
	<u>Computer Lab (Figure 3)</u>				
42	Deck inside starboard entrance	-6	± 24	-11	± 12
	<u>Hydro Lab (Figure 4)</u>				
43	Deck below port sink	-28	± 45	-33	± 24
44	Deck below starboard sink	-17	± 39	-14	± 39
45	Inside fume hood	7	± 87	-7	± 28
46	Deck inside starboard entrance	4	± 42	-12	± 43
47	Inside Frigidaire freezer	3	± 39	-22	± 27
48	Inside Frigidaire refrigerator	-19	± 24	-19	± 45
49	Deck in front of refrigerator	-23	± 18	-21	± 32
50	Benchtop next to refrigerator	-10	± 26	3	± 47
	<u>Wet Lab (Figure 5)</u>				
51	Forward sink area	-32	± 61	-24	± 58
52	Port benchtop	2	± 26	-19	± 24
53	Starboard benchtop	9	± 128	-12	± 19
54	Inside fume hood	-14	± 19	-25	± 26
55	Deck in center of lab	-5	± 43	-46	± 45

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
	<u>WHOI Rad Van 625.6.03 (Figure 6)</u>				
56	Deck outside aft entrance	25 ±	48	4 ±	28
57	Deck outside port entrance	4 ±	74	-3 ±	39
58	Inside Haier refrigerator	256 ±	62	20 ±	23
59	Benchtop across from sink	21 ±	38	15 ±	36
60	Sink area	20 ±	27	37 ±	38
61	Benchtop adjacent to sink	153 ±	38	*233 ±	45
62	Inside fume hood	38 ±	11	*382 ±	50
63	Inside refrigerator	191 ±	28	*754 ±	59
64	Benchtop adjacent to LSC	*529 ±	67	*290 ±	44
65	Benchtop across from Haier refrigerator	26 ±	55	-6 ±	53
66	Deck below fume hood	150 ±	42	*168 ±	42
67	Deck between sink and entrance	120 ±	31	*287 ±	47
68	Final bucket blank C.O. #2	-12 ±	0	1 ±	0

### 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 of isotope contamination.

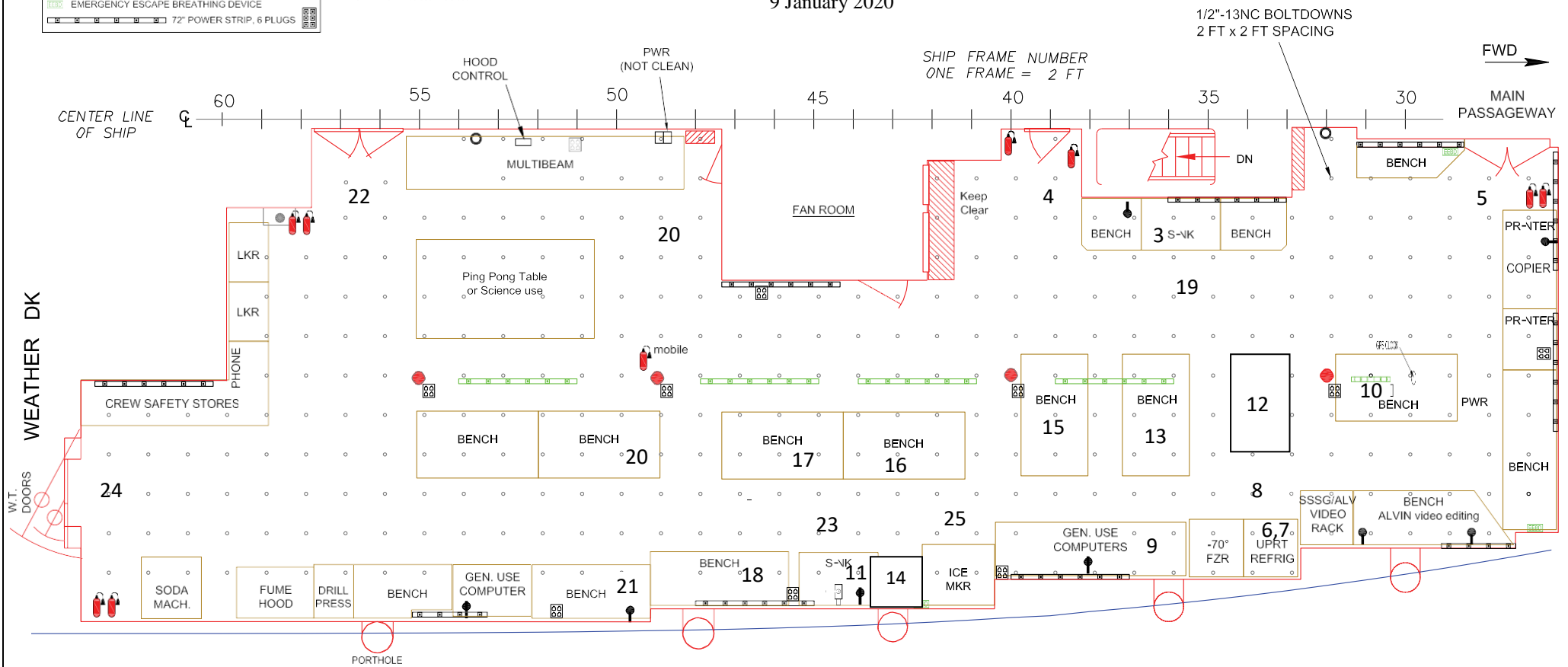
Minor <sup>14</sup>C and <sup>3</sup>H contamination was found in the Rad Van. No action is necessary, but cleaning the deck of the Rad Van would help prevent tracking contamination out of the van.

**KEY**

- FIRE EXTINGUISHER
- SCIENCE SEA WATER
- SHIP EQUIP - KEEP CLEAR
- 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**  
**SWAB 975**  
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**MAIN LABORATORY**  
 Atlantis Main Deck, Room 1-26-1

**KEY**










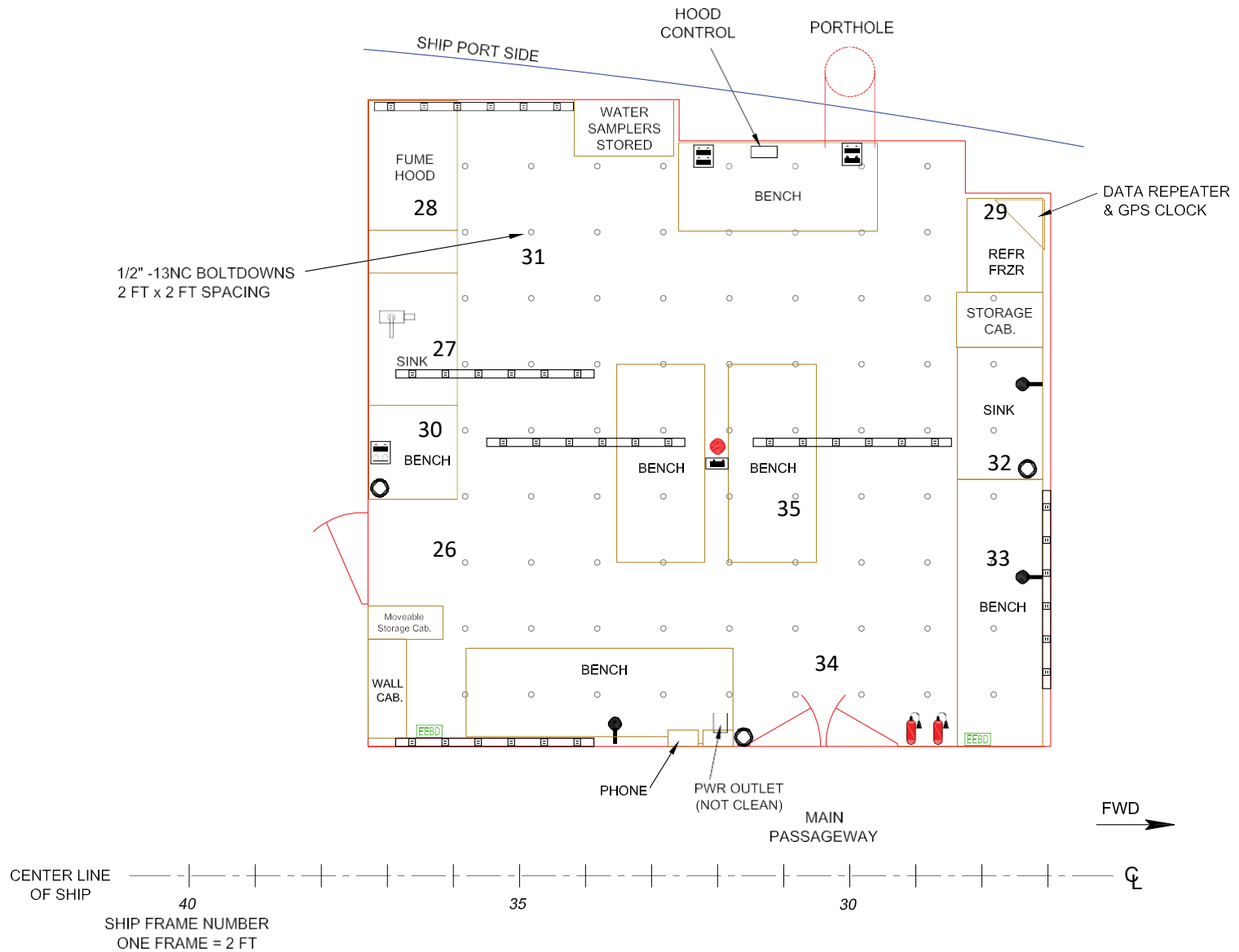
-  FIRE EXTINGUISHER
-  SCIENCE SEA WATER
-  COMPUTER HUB
-  CABLE PASS THRU
-  SHIP EQUIP -KEEP CLEAR
-  COMPRESSED AIR
-  EMERGENCY ESCAPE BREATHING DEVICE
-  72" POWER STRIP, 6 PLUGS
- 

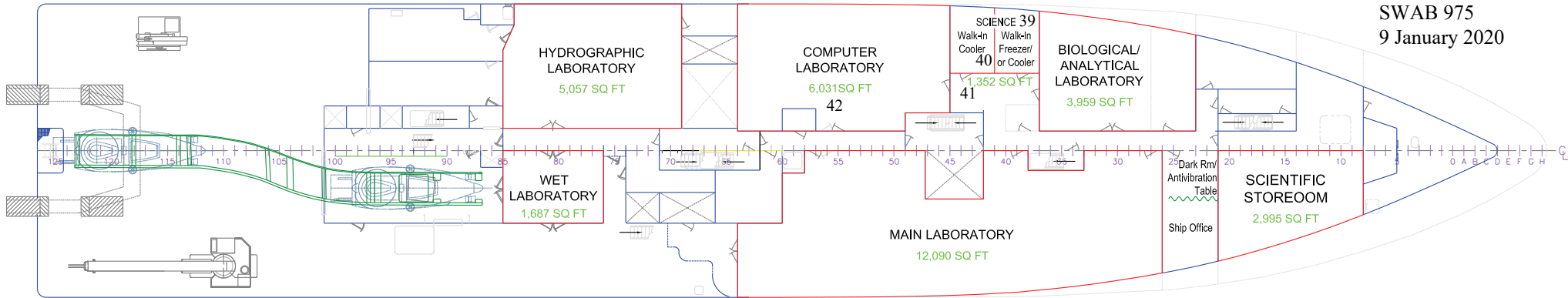
Figure 2  
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UNISTRUT:  
BULKHEADS  
2 FT SPACING  
OVERHEAD FORE/AFT,  
FULL LENGTH OF LAB  
  
ALL POWER CLEAN UNLESS NOTED



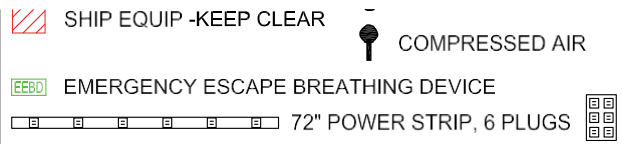
**BIOLOGICAL/ANALYTICAL CLEAN LABORATORY**  
*Atlantis Main Deck, Room 1-27-2*

Figure 3  
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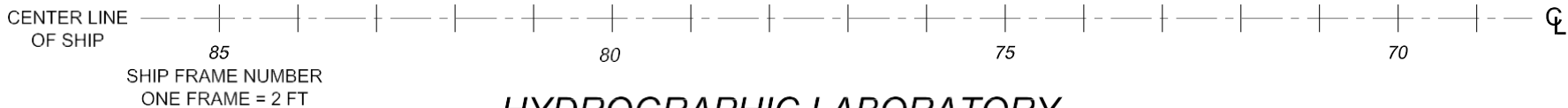
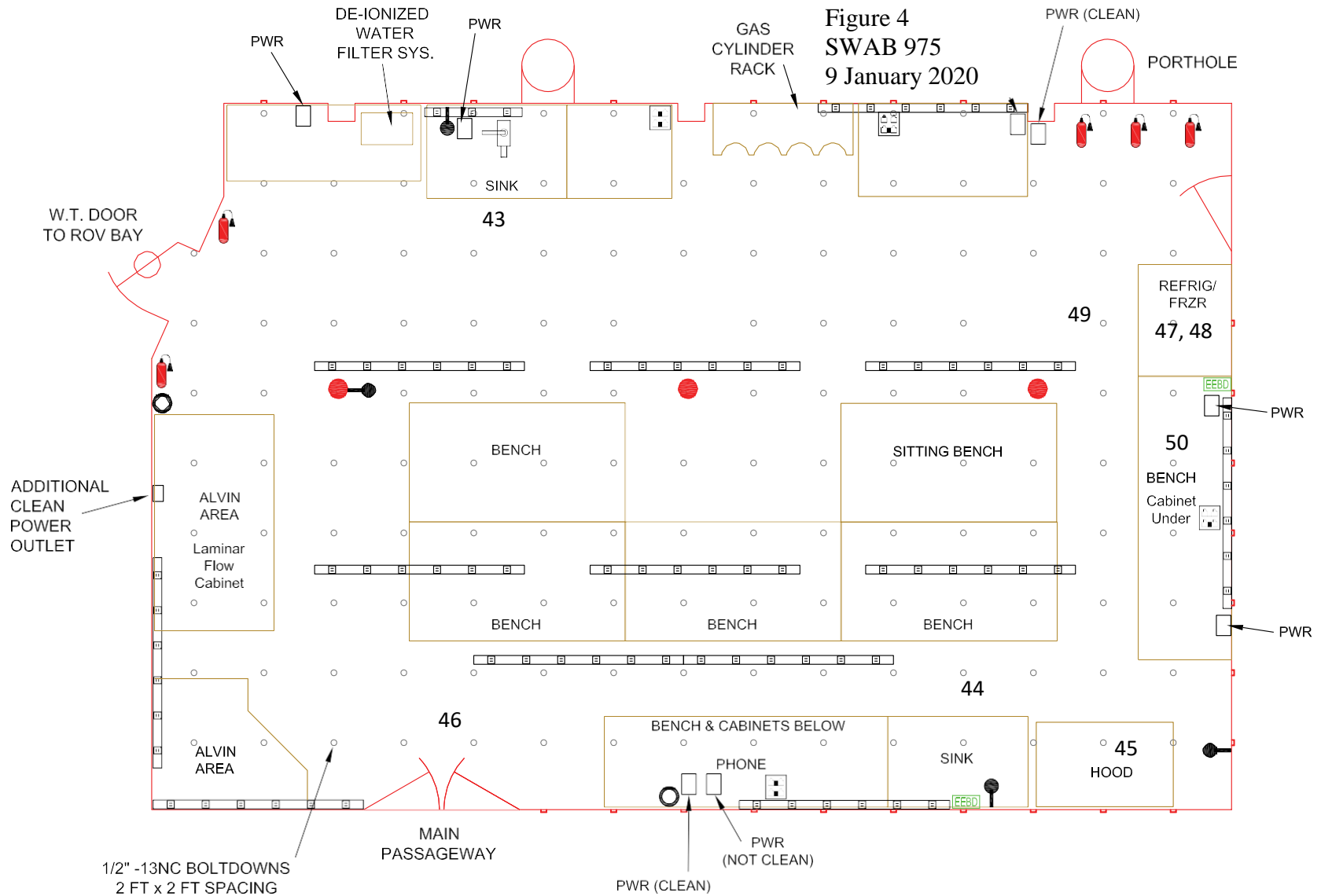
*Laboratories & Scientific Storeroom General Locations  
 Atlantis Main Deck*













FULL LENGTH OF LAB  
ALL POWER CLEAN UNLESS NOTED

Figure 4  
SWAB 975  
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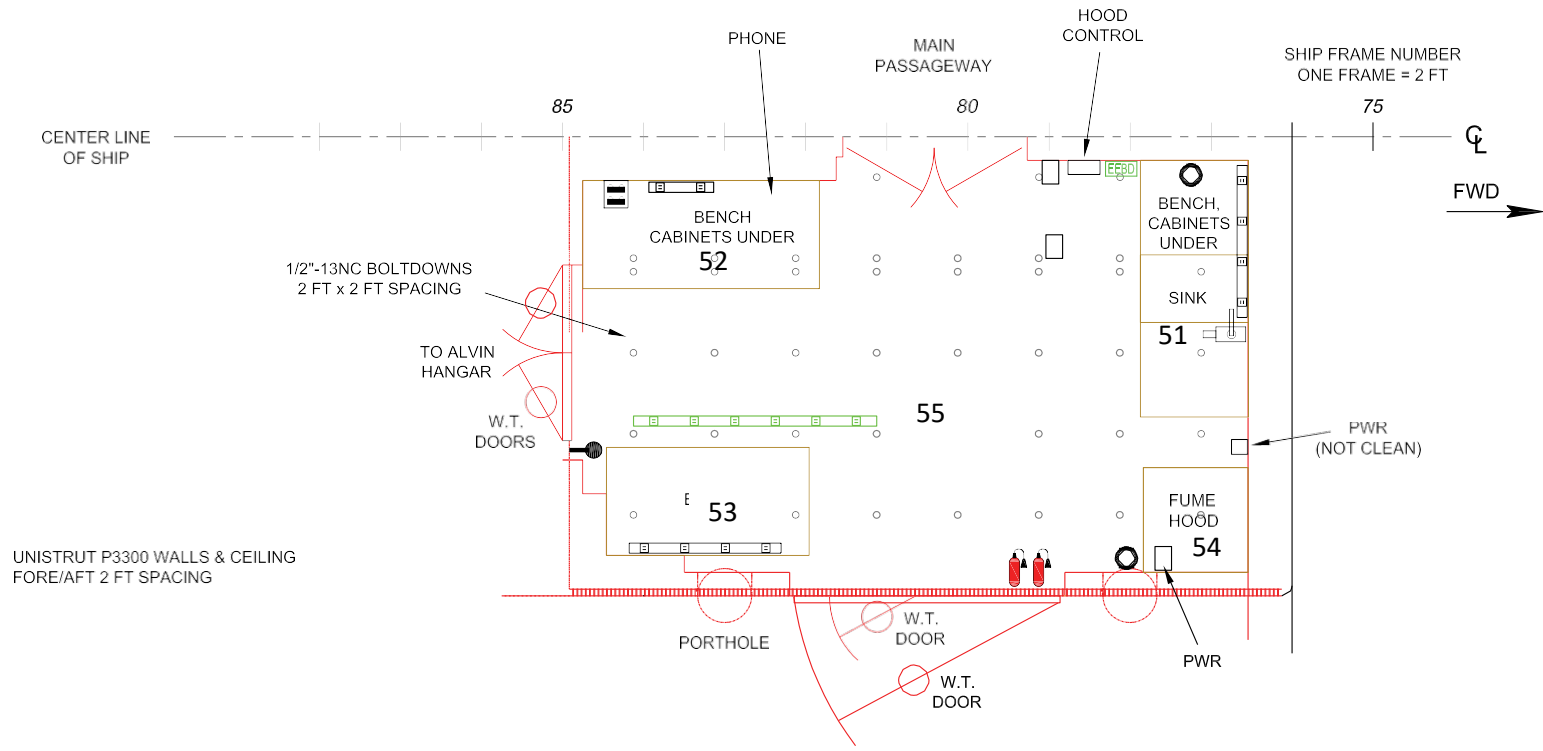
**HYDROGRAPHIC LABORATORY**  
Atlantis Main Deck, Room 1-64-2

**KEY**

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

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  
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