



Tritium Laboratory
5 April 2024

SWAB REPORT #1086

SWAB DATE: 22 March 2024

R/V Atlantis

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Distribution:
SWAB Committee
Sarah Fuller

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 institution promptly by phone or email.

REPORT FOR SWAB #1086

LOCATION: San Diego, CA

DATE: 22 March 2024

VESSEL/LAB: R/V Atlantis

TECHNICIAN: Charlene Grall

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	17 ±	13	13 ±	10
	<u>Bio-Analytical Lab (Figure 1)</u>				
3	Deck inside aft entrance	14 ±	11	13 ±	11
4	Aft sink area	19 ±	13	11 ±	11
5	Inside Cospolich refrigerator	38 ±	17	16 ±	11
6	Inside Frigidaire refrigerator	9 ±	6	29 ±	13
7	Forward sink area	82 ±	25	15 ±	10
8	Deck in front of refrigerators	-2 ±	3	24 ±	13
9	Deck inside starboard entrance	59 ±	23	1 ±	2
10	Port benchtop	20 ±	16	3 ±	8
11	Inside fume hood	15 ±	12	9 ±	11
12	Forward benchtop	1 ±	2	16 ±	12
13	Benchtop across from forward sink	-28 ±	17	21 ±	13
14	Benchtop across from aft sink	18 ±	11	17 ±	12
15	Benchtop adjacent to aft sink	7 ±	9	6 ±	11
	<u>Walk-in Coolers (Figure 2)</u>				
16	Deck of forward cooler	-7 ±	10	31 ±	14
17	Deck of aft cooler	8 ±	9	10 ±	11
18	Deck inside companionway	36 ±	18	14 ±	11
	<u>Hydro Lab (Figure 3)</u>				
19	Deck inside starboard entrance	13 ±	10	16 ±	12
20	Deck inside aft entrance	31 ±	15	17 ±	11
21	Deck between starboard sink and fume hood	9 ±	7	28 ±	13
22	Inside port Cospolich refrigerator	35 ±	18	3 ±	7
23	Inside starboard Cospolich refrigerator	0 ±	2	4 ±	11
24	Deck of lab on portside	19 ±	11	24 ±	12
	<u>Wet Lab (Figure 4)</u>				
25	Starboard benchtop	5 ±	5	18 ±	12
26	Inside fume hood	13 ±	9	20 ±	12
27	Port benchtop	14 ±	11	11 ±	11
28	Forward sink area with wood benchtops	-4 ±	4	-2 ±	6
29	Deck in center of lab	31 ±	15	20 ±	12

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
	<u>Miscellaneous areas (Figure 2)</u>				
30	Deck of Science Office	53 ±	22	-2 ±	114
31	Deck in front of -80 freezer in Science Storeroom	-2 ±	4	19 ±	12
32	Deck inside entrance of Science Storeroom	-12 ±	101	22 ±	13
33	Intermediate bucket sample	15 ±	10	16 ±	12
	<u>Main Lab (Figure 5)</u>				
34	Deck inside forward port entrance	2 ±	4	8 ±	11
35	Benchtop adjacent to port sink	-10 ±	7	15 ±	12
36	Port sink area	-22 ±	14	8 ±	15
37	Deck inside port entrance located aft of sink	26 ±	16	6 ±	10
38	Starboard benchtop forward of ice machine	-1 ±	1	16 ±	12
39	Starboard sink area and adjacent benchtop	13 ±	9	20 ±	12
40	Inside Frigidaire freezer	-23 ±	0	10 ±	13
41	Inside Frigidaire refrigerator	20 ±	15	2 ±	7
42	Deck inside aft port entrance	32 ±	17	9 ±	10
43	Deck inside aft entrance	1 ±	3	8 ±	11
44	Inside fume hood	-4 ±	4	5 ±	12
	<u>Radioisotope Van #625.6.03 Figure 6)</u>				
45	Inside Haier refrigerator under bench	*573 ±	41	*1840 ±	56
46	Inside ATVIO refrigerator under bench	*1480 ±	103	43 ±	7
47	Inside fume hood	128 ±	25	*158 ±	19
48	Benchtop adjacent to sink	*1705 ±	109	*109 ±	12
49	Benchtop across from sink	*783 ±	74	*54 ±	10
50	Sink area	*801 ±	74	*90 ±	13
51	Benchtop across from refrigerator	*2210 ±	123	*197 ±	16
52	Benchtop across from fume hood	*767 ±	73	*64 ±	11
53	Deck in front of fume hood	*2087 ±	136	*325 ±	23
54	Deck between sink and blue sticky shoe pad	*2376 ±	134	*248 ±	19
55	Deck outside van entrance	42 ±	19	27 ±	12
56	Final bucket blank	35 ±	16	19 ±	11

COMMENTS

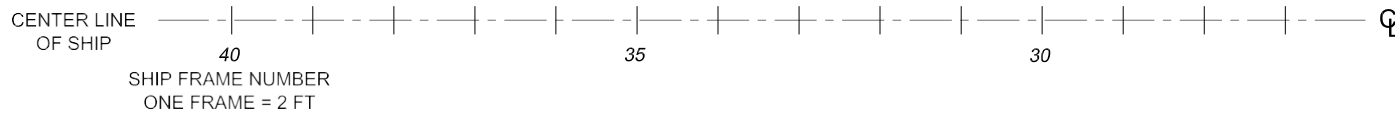
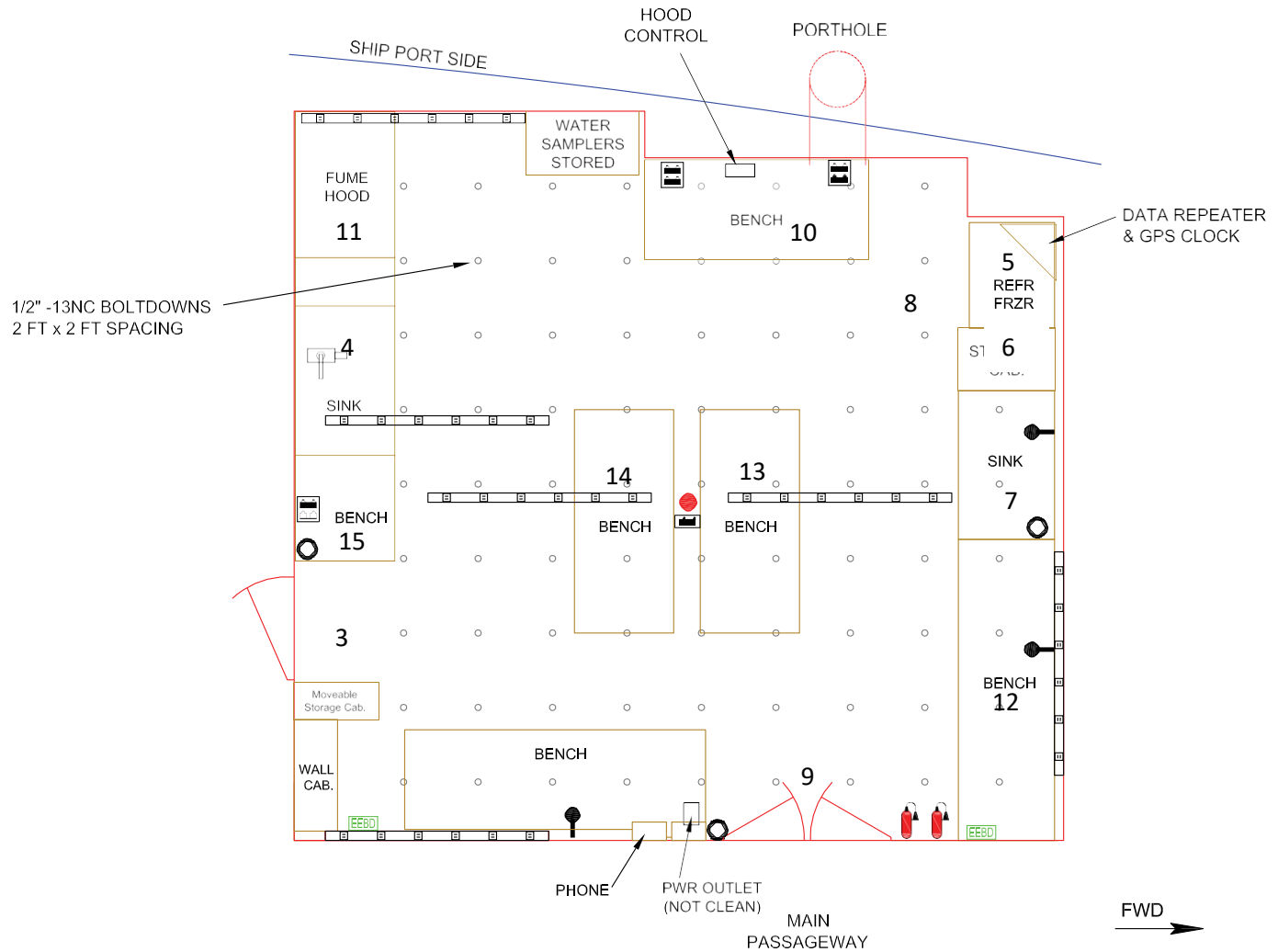
Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded the negative values to zero. Values are only significantly above background when they are positive and larger than the error. All areas on board the ship were free from isotope contamination that requires cleaning. The Rad Van had minor ^3H and ^{14}C contamination, but no cleaning required.

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

Figure 1
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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

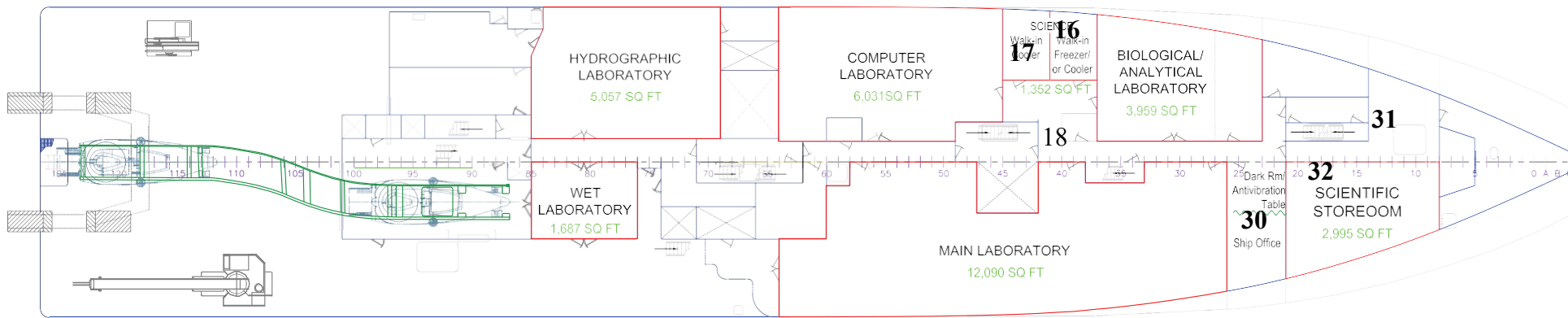


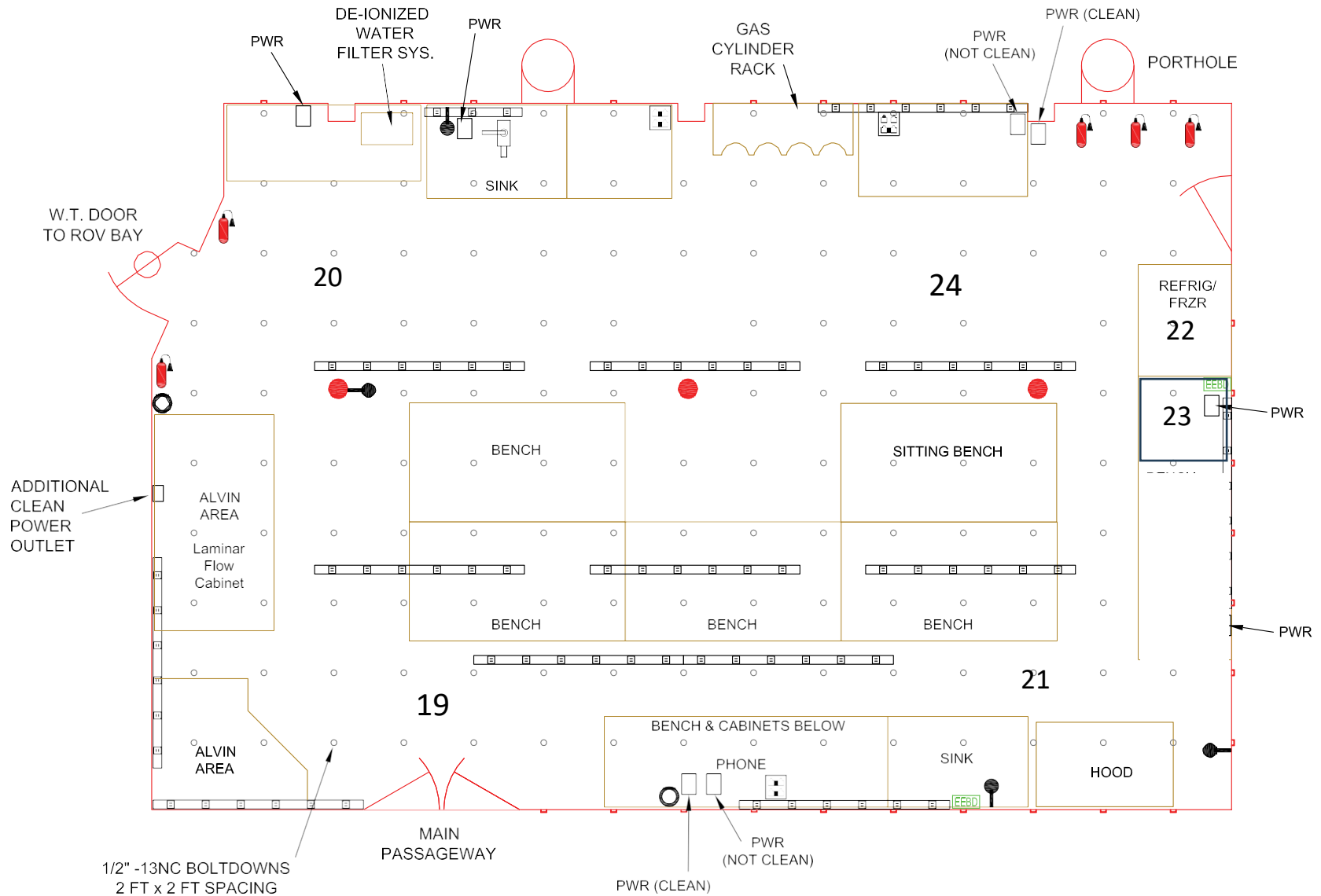
Figure 2
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Atlantis Laboratories and Scientific Storeroom General Locations






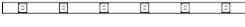




FULL LENGTH OF LAB
ALL POWER CLEAN UNLESS NOTED

Figure 3
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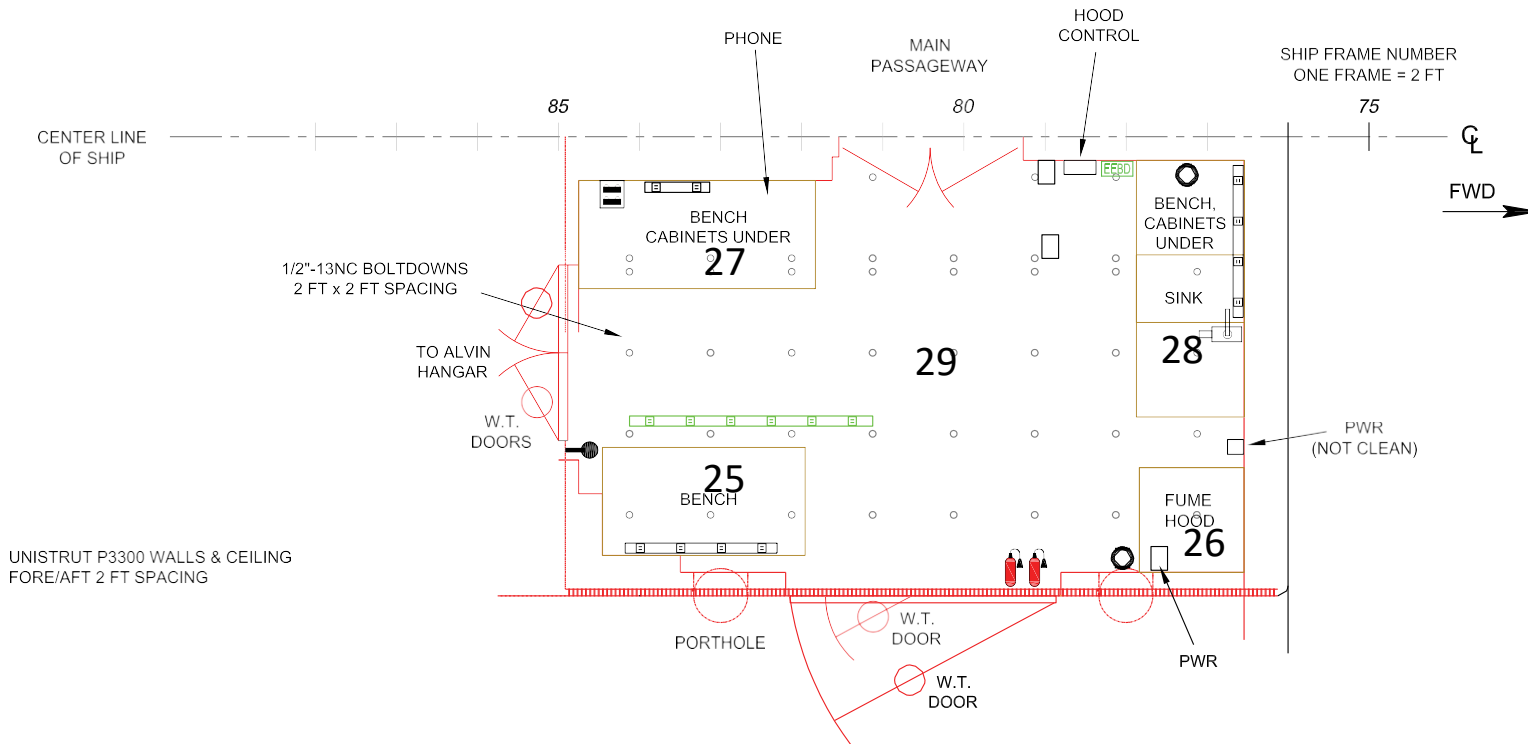
HYDROGRAPHIC LABORATORY
Atlantis Main Deck, Room 1-64-2

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

Figure 4
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WET LABORATORY
Atlantis Main Deck, Rm 1-76-1

WHOI RADIOISOTOPE VAN

55

#625.6.03

Figure 6
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