

UNIVERSITY OF MIAMI

ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



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Tritium Laboratory
June 6, 2022

SWAB REPORT # 1031

SWAB DATE: 31 May 2022

R/V Atlantis and WHOI Rad Van #625.6.03

James D. Happell

Distribution:
SWAB Committee
David Fisichella
Sarah Fuller
Catie Graver

COMMENTS TO SWAB REPORTS

15 December 2021

The LSC is now a Quantulus GCT 6220, with the SWAB counting assay having background cpm of 0.3 & 1.2 for ^3H & ^{14}C . This replaces an LSC with background cpm of 1.6 & 5.5 for ^3H & ^{14}C .

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. All activities significantly above background will be in **bold**.

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 # 1032

LOCATION: Woods Hole, MA
VESSEL: R/V Atlantis

DATE: 31 May 2022
TECHNICIAN: Catie Graver

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	-43	± 61	1	± 0
<u>Main Lab (Figure 1)</u>					
3	Deck between multibeam and benches	-57	± 81	-3	± 7
4	Deck inboard walkway aft of inboard sink	-18	± 25	-8	± 18
5	Deck inboard walkway leading to forward	-43	± 60	-12	± 26
6	Deck outboard forward corner	-12	± 17	-8	± 17
7	Deck aft of -70o freezers	-23	± 33	-9	± 20
8	Deck between two aft portholes	-56	± 79	9	± 19
9	Deck near door to weather deck	-25	± 36	4	± 19
10	Benchtop across from outboard sink	-6	± 35	10	± 13
11	Benchtop in forward outboard position	-35	± 49	1	± 3
12	Benchtop forward of inboard sink	-46	± 65	8	± 18
13	Benchtop forward of Alvin video area	-24	± 33	-8	± 18
14	Benchtop forward of outboard sink	-35	± 50	19	± 15
<u>Bioanalytical Lab (Figure 2)</u>					
15	Benchtop between two aft portholes	-45	± 64	16	± 15
16	Deck inside double doors	-27	± 38	0	± 1
17	Deck between fume hood and aft sink	-28	± 39	4	± 18
18	Forward benchtop	-39	± 56	8	± 17
19	Outboard benchtop	-21	± 29	-10	± 23
20	Aft benchtop	-20	± 29	-4	± 19
<u>Main Deck (Figure 3)</u>					
21	Deck near Bio-Lab door	-35	± 50	-7	± 34
22	Deck near computer lab door	-50	± 71	17	± 16
<u>Computer Lab (Figure 4)</u>					
23	Deck aft of winch station	-39	± 54	-7	± 17
24	Deck inside of double doors	-6	± 35	1	± 22
25	Deck inboard of server racks	-35	± 49	-3	± 14

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Hydro Lab (Figure 5)</u>					
26	Deck inside double doors	-33	± 47	4	± 21
27	Deck near outboard sink	-31	± 43	3	± 23
28	Deck near inboard sink	-48	± 68	4	± 27
29	Benchtop opposite gas cylinder rack	-2	± 18	11	± 13
30	Aft inboard benchtop	-33	± 47	0	± 1
31	Benchtop forward of outboard sink	9	± 49	-7	± 32
<u>Wet Lab (Figure 6)</u>					
32	Deck near forward inboard bench	-33	± 47	12	± 15
33	Aft inboard benchtop	-30	± 42	5	± 18
<u>WHOI Rad Van #625.6.03 (Figure 7)</u>					
34	Forward port benchtop	-14	± 20	10	± 14
35	Middle port benchtop	-30	± 43	36	± 15
36	Inside fume hood	34	± 17	*93	± 17
37	Inside large refrigerator	95	± 14	*697	± 36
38	Center starboard benchtop	247	± 46	*120	± 18
39	Sink area	128	± 35	*74	± 16
40	Deck near fumehood	205	± 38	*177	± 21
41	Deck inside entrance door	52	± 23	*83	± 17
42	Deck outside entrance door	-55	± 0	24	± 16
43	Final bucket blank	-22	± 0	2	± 34

Comments

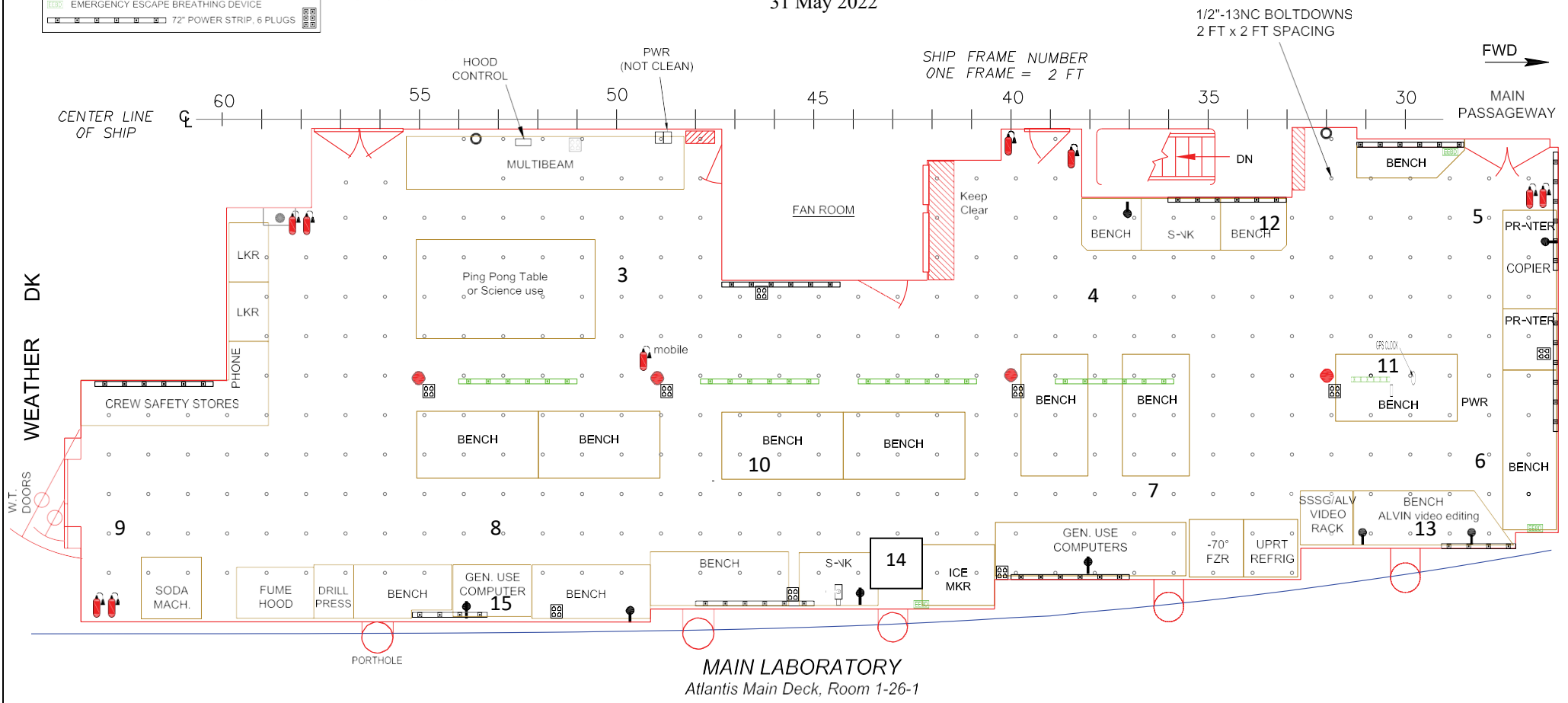
Please note that the error reported for each isotope is the two-standard deviation counting error. Reports may now contain values less than zero. Decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded the negative values to zero. Values are only significantly above background when they are positive and larger than the error. Please note that we are now using a Quantulus 6220 LSC which counts very near natural background. While the cleanup standards have not changed all values above background will now be in bold. All areas tested inside the ship had no contamination that requires cleaning. Minor ¹⁴C contamination was found in the Rad Van, but no action is needed.

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 1032
 31 May 2022



KEY








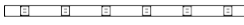

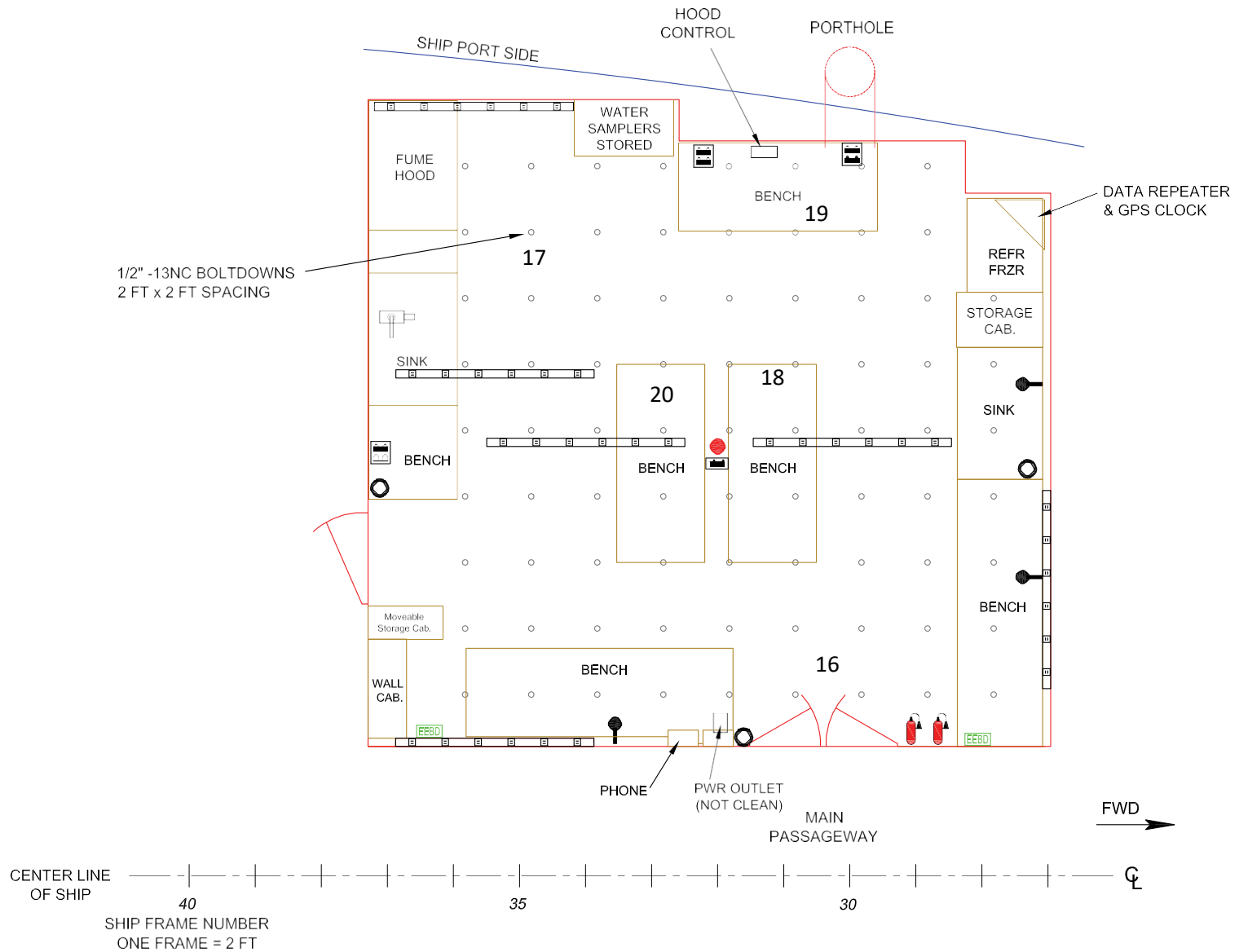
-  FIRE EXTINGUISHER
-  SCIENCE SEA WATER
-  COMPUTER HUB
-  CABLE PASS THRU
-  SHIP EQUIP -KEEP CLEAR
-  COMPRESSED AIR
-  EMERGENCY ESCAPE BREATHING DEVICE
-  72" POWER STRIP, 6 PLUGS
- 

Figure 2
SWAB 1032
31 May 2022

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

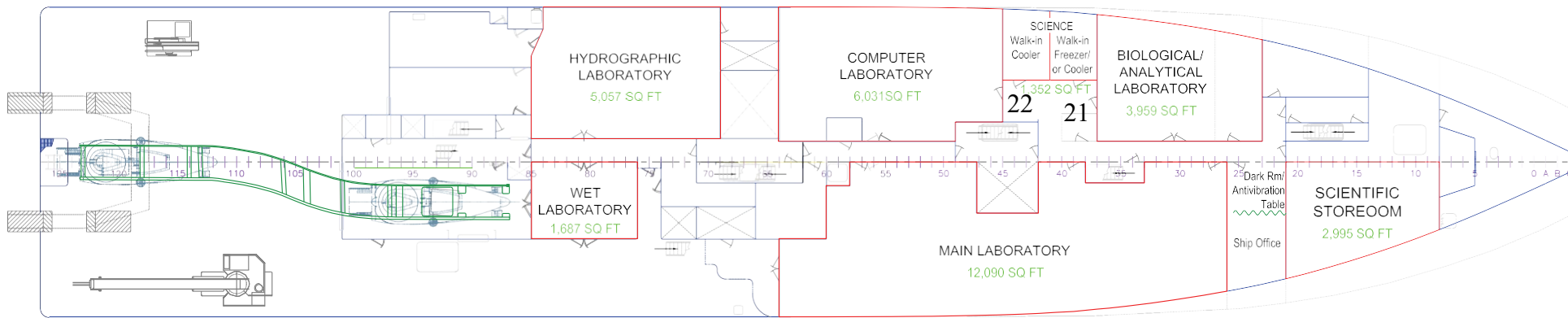


Figure 3
 SWAB 1032
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Atlantis Laboratories and Scientific Storeroom General Locations





KEY

 COMPUTER HUB

 SHIP EQUIP -KEEP CLEAR

 EMERGENCY ESCAPE BREATHING DEVICE

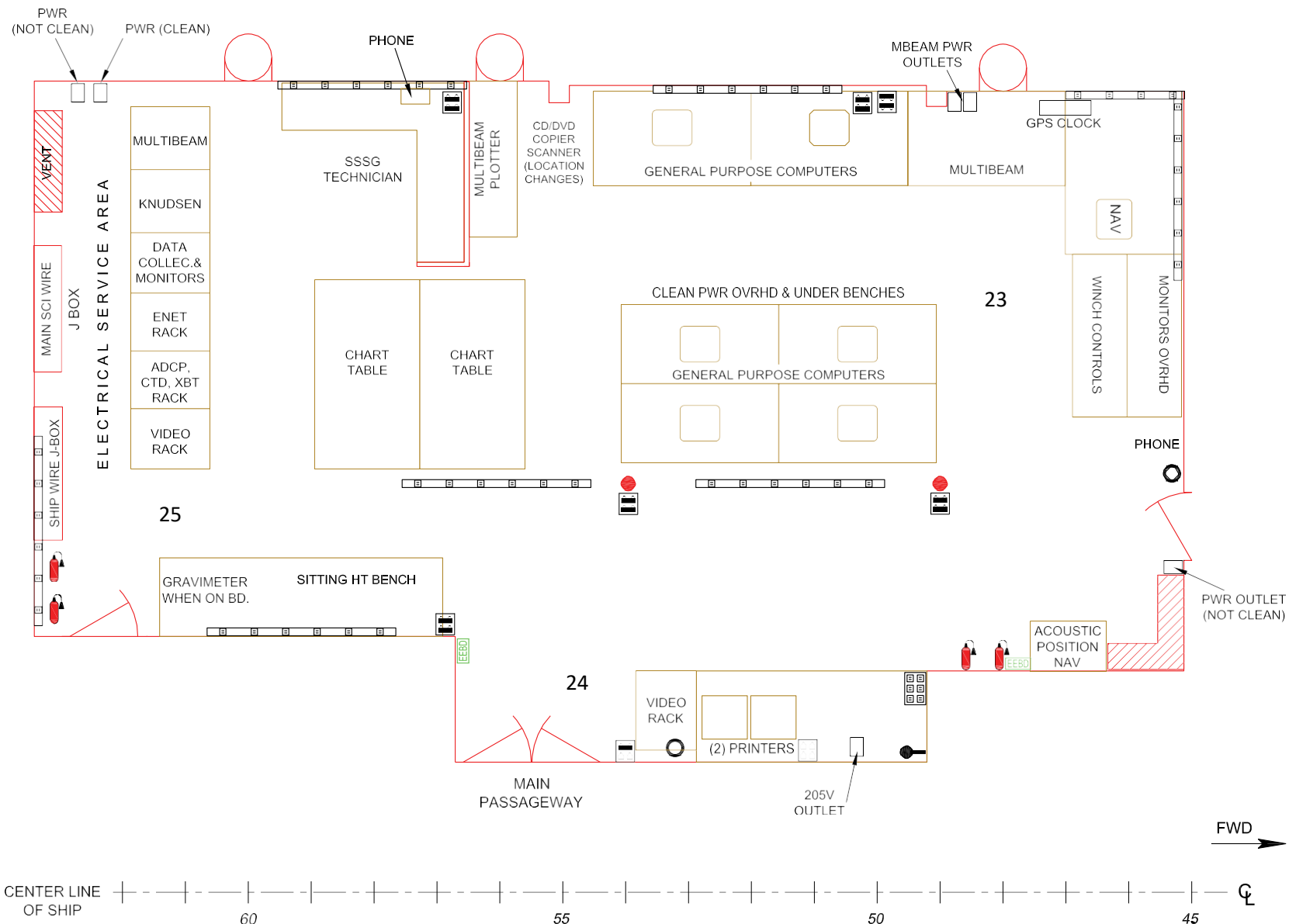
 72" POWER STRIP, 6 PLUGS

-  FIRE EXTINGUISHER
-  SCIENCE SEA WATER
-  CABLE PASS THRU
-  COMPRESSED AIR

UNISTRUT:
BULKHEADS
2 FT SPACING
OVERHEAD FORE/AFT,
FULL LENGTH OF LAB

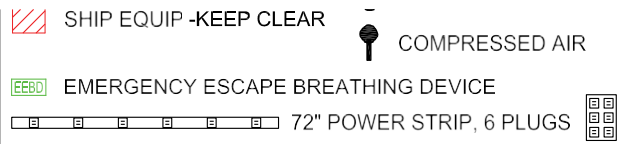
ALL POWER CLEAN UNLESS NOTED

Figure 4
SWAB 1032
31 May 2022



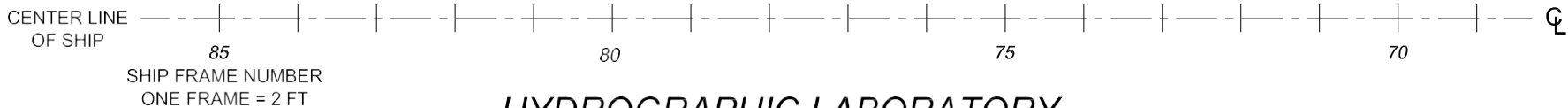
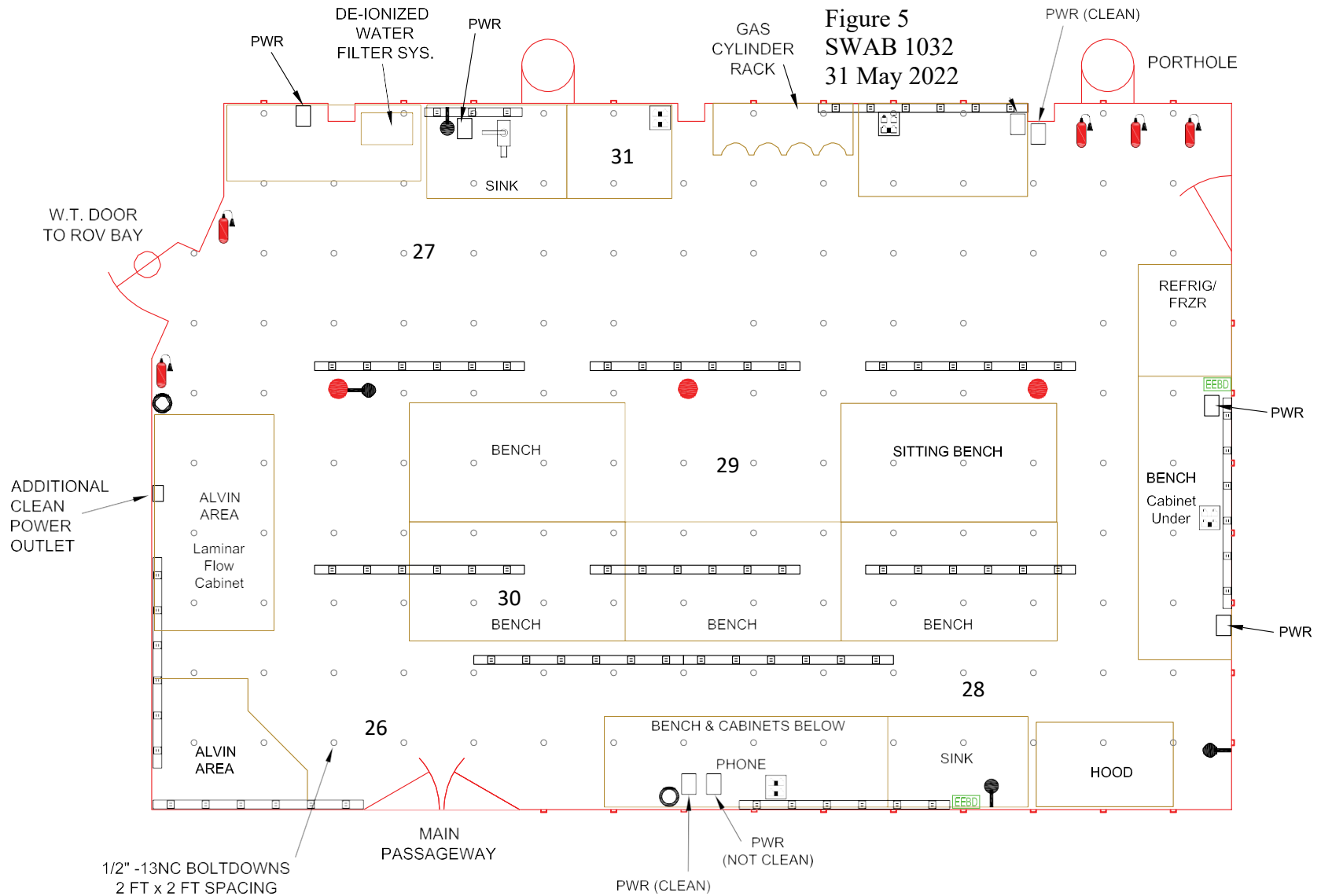
COMPUTER LABORATORY
Atlantis Main Deck, Room 1-45-2

SHIP FRAME NUMBER
ONE FRAME = 2 FT











FULL LENGTH OF LAB
ALL POWER CLEAN UNLESS NOTED

Figure 5
SWAB 1032
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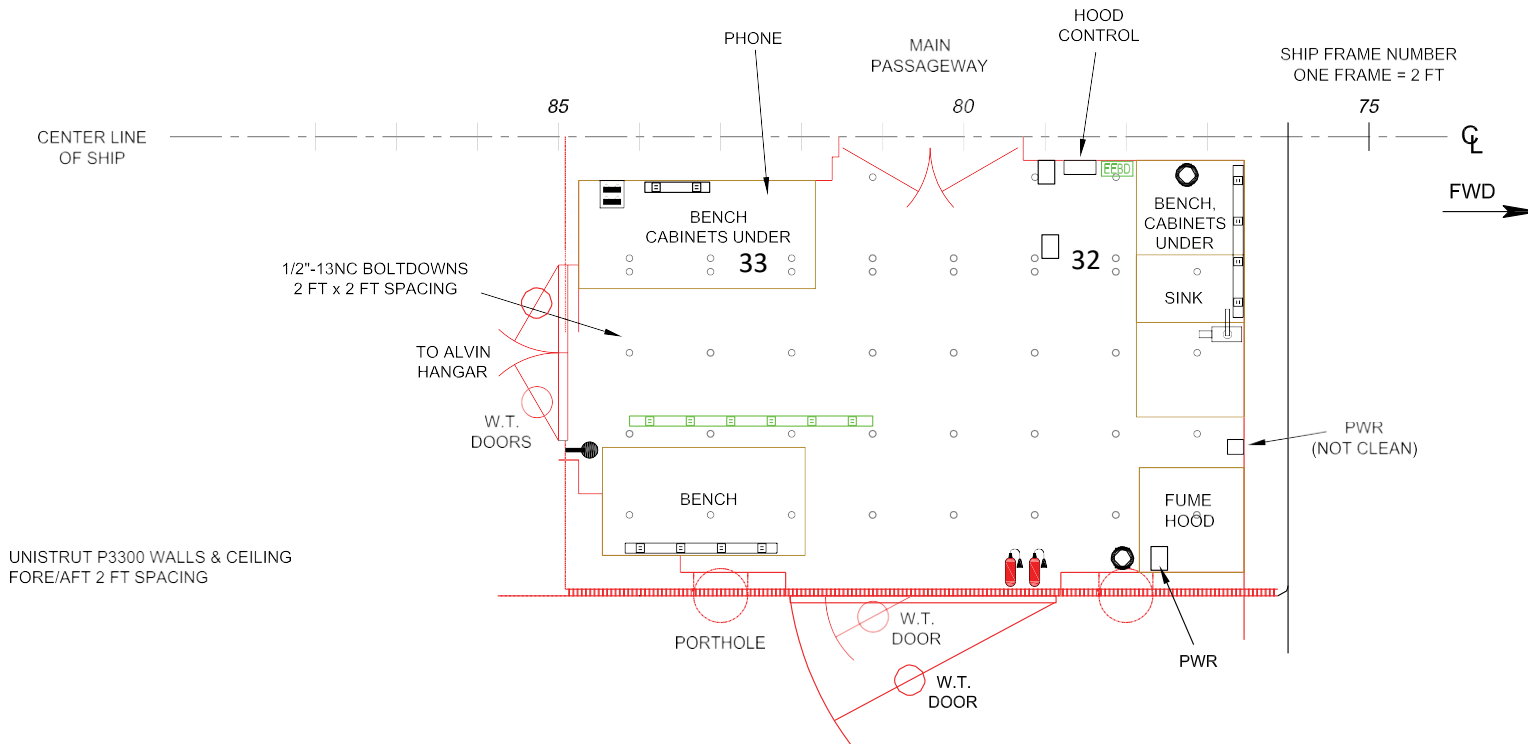
HYDROGRAPHIC LABORATORY
Atlantis Main Deck, Room 1-64-2

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 6
SWAB 1032
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WET LABORATORY
Atlantis Main Deck, Rm 1-76-1

WHOI RADIOISOTOPE VAN

#625.6.03

Figure 7
SWAB # 1032
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