UNIVERSITY
OF MIAMI

Rosenstiel School of Marine, Atmospheric, and Earth Science
Tritium Laboratory

4600 Rickenbacker Causeway
Miami, FL 33149-1031

P: 305-421-4100
F: 305-421-4112
tritium@miami.edu

Tritium Laboratory
27 June 2023

SWAB REPORT #1068

SWAB DATE: 30-31 July 2023

R/V Atlantis and WHOI Rad Van #2408-02, Rad Van #625.6.03

James Happell Digitally signed by James Happell Date: 2023.08.09 16:50:39 -04'00'

James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Sarah Fuller

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 # 1068

LOCATION: San Diego, CA
VESSEL/LAB: *R/V Atlantis*

DATE: 30-31 July 2023
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 (C.O.#1)	17	±	36	-14	±	12
	Main Lab (Figure 1)						
3	Port sink area and adjacent bench	13	±	59	-18	±	15
4	Deck below mid-port entrance	21	±	27	-6	±	19
5	Deck below forward port entrance	-22	±	46	**14**	**±**	**13**
6	Deck in front of port sink	15	±	18	10	±	11
7	Deck in front of -80 °C freezer and refrigerator	12	±	14	**15**	**±**	**11**
8	Deck inside aft port entrance	19	±	24	2	±	8
9	Deck inside aft entrance	-7	±	29	**14**	**±**	**12**
10	Deck forward of starboard sink area	**40**	**±**	**29**	-12	±	12
11	Starboard sink area and adjacent bench	-2	±	9	-12	±	13
12	Inside fume hood	21	±	43	-20	±	12
	Bio-Analytical Lab (Figure 2)						
13	Deck inside aft entrance	-33	±	19	**58***	**±**	**15**
14	Inside Cospolitch freezer	17	±	52	-21	±	13
15	Inside Cospolitch refrigerator	20	±	31	-11	±	11
16	Inside Frigidaire refrigerator	17	±	30	-9	±	9
17	Inside Frigidaire freezer	19	±	35	-13	±	13
18	Deck in front of refrigerators	-4	±	7	**31**	**±**	**13**
19	Deck inside starboard entrance	10	±	19	3	±	9
20	Port benchtop	-5	±	6	**48**	**±**	**14**
21	Forward sink area	-33	±	9	**332***	**±**	**26**
22	Forward benchtop	**24**	**±**	**22**	5	±	9
23	Benchtop across from forward sink	**25**	**±**	**13**	**57***	**±**	**14**
24	Benchtop across from aft sink	-4	±	3	**83***	**±**	**16**
25	Starboard benchtop	-5	±	7	2	±	12
26	Aft benchtop adjacent to aft sink	0	±	0	**63***	**±**	**15**
27	Aft sink area	-11	±	5	**150***	**±**	**19**
28	Inside fume hood	-27	±	29	19	±	13
29	Deck between fume hood and aft sink	**22**	**±**	**15**	**32**	**±**	**13**
30	Intermediate bucket blank	-19	±	5	-5	±	9
	Radioisotope Van #2408-02 (Figure 3)						
31	Sink area	**21**	**±**	**5**	**303***	**±**	**25**
32	Benchtop adjacent to sink	**16**	**±**	**5**	**182***	**±**	**20**

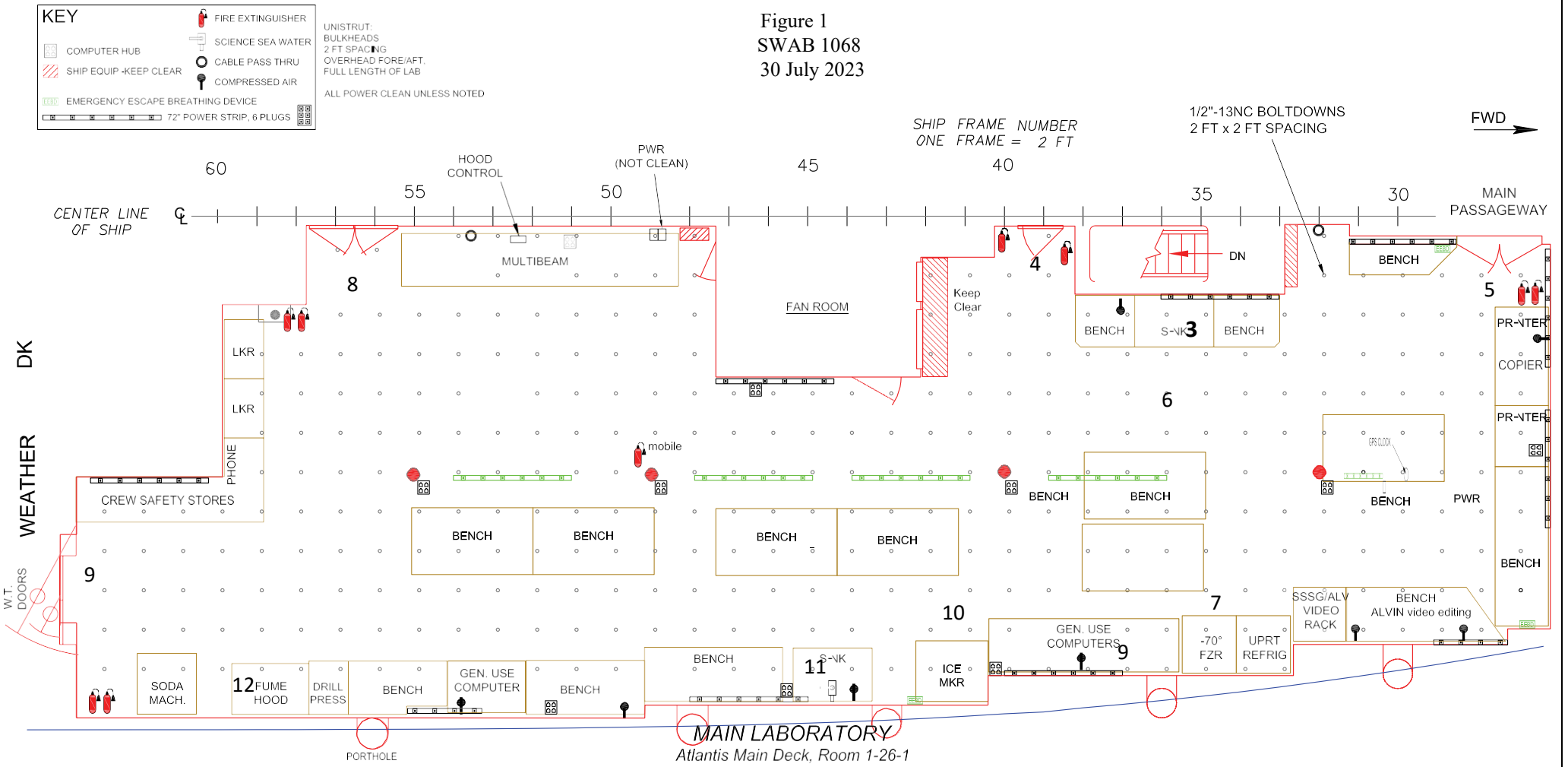
Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
33	Benchtop adjacent to fume hood	-35	±	3	**1907***	±	**58**
34	Inside fume hood	**64**	±	**11**	**521***	±	**32**
35	Benchtop adjacent to LSC	18	±	19	10	±	10
36	Benchtop across from sink	**13**	±	**9**	**55***	±	**14**
37	Inside Kenmore freezer	**209**	±	**35**	**219***	±	**21**
38	Inside Danby refrigerator	-7	±	64	**19**	±	**12**
39	Deck in front of fume hood	**909**	±	**60**	**1904***	±	**57**
40	Deck between freezer/refrigerator	-2	±	1	**1370***	±	**49**
41	Deck inside entrance	**100**	±	**10**	**1466***	±	**51**
	WHOI Rad Van #625.6.03 (Figure 4)						
42	Benchtop across from refrigerator	31	±	33	-17	±	15
43	Benchtop across from fume hood	**15**	±	**6**	**143***	±	**19**
44	Benchtop adjacent to LSC	**35**	±	**20**	**25**	±	**12**
45	Inside refrigerator	-18	±	1	**5423***	±	**97**
46	Inside freezer	**190**	±	**31**	**279***	±	**24**
47	Inside fume hood and bench it sits on	**28**	±	**11**	**108***	±	**17**
48	Benchtop adjacent to sink	**65**	±	**29**	4	±	6
49	Inside refrigerator under bench	**32**	±	**17**	**44**	±	**13**
50	Sink area	**114**	±	**23**	**234***	±	**22**
51	Deck in center of van	**156**	±	**25**	**418***	±	**28**
52	Deck between sink and sticky blue shoe pad	**145**	±	**23**	**459***	±	**30**
53	Final bucket sample (C.O. #1)	-1	±	5	-18	±	15
	Wet Lab (Figure 5)						
54	Starboard benchtop	21	±	29	-9	±	11
55	Inside fume hood	30	±	29	-7	±	8
56	Deck in center of lab	6	±	10	**18**	±	**12**
57	Port benchtop	9	±	43	-9	±	11
58	Forward sink area	21	±	34	-16	±	13
	Walk-in Coolers (Figure 6)						
59	Benchtops of forward cooler	-7	±	10	-16	±	14
60	Deck of forward cooler	-11	±	7	-8	±	9
61	Deck of aft cooler	-17	±	50	-16	±	14
62	Deck inside companionway	15	±	26	-5	±	6
	Hydro Lab (Figure 7)						
63	Deck inside starboard entrance	**47**	±	**27**	**15**	±	**10**
64	Deck inside aft entrance	-20	±	5	9	±	13
65	Deck forward of port sink	4	±	12	9	±	11
66	Inside port Cospolich refrigerator	9	±	29	-6	±	7

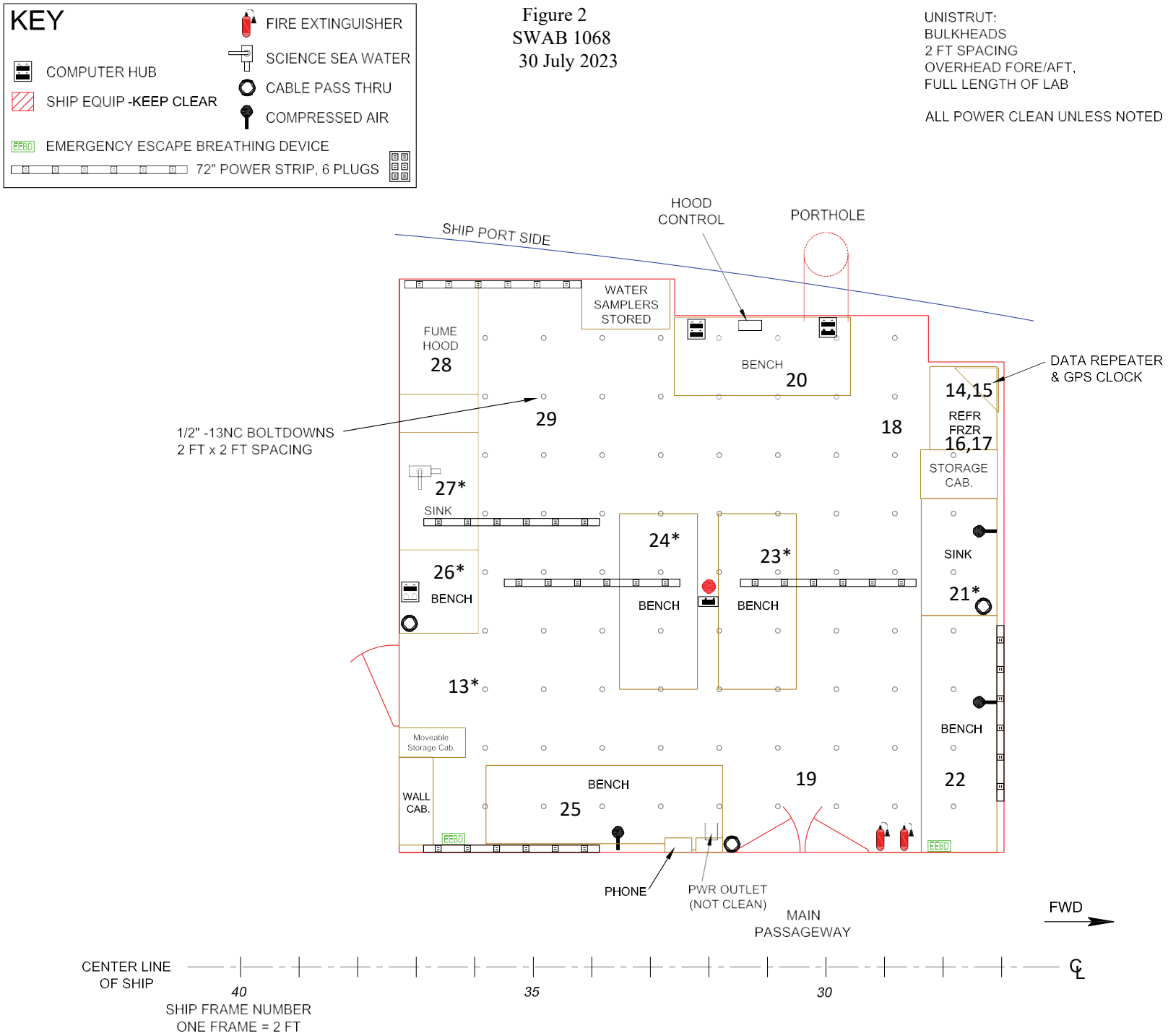
Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
67	Deck between fume hood and Cospolich fridge	2	±	9	7	±	11
68	Inside starboard Cospolich refrigerator	-6	±	10	-9	±	10
69	Final bucket blank (C.O.#2)	-17	±	51	-14	±	12

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. The bio-analytical lab had some minor ^{14}C contamination in several locations, in particular, the forward and aft sink areas. This lab should be cleaned before any natural abundance work is done in this lab. Minor ^{14}C and ^{3}H contamination was found in both Rad Vans. No action is necessary at this time.

Figure 1
SWAB 1068
30 July 2023





BIOLOGICAL/ANALYTICAL CLEAN LABORATORY

Atlantis Main Deck, Room 1-27-2

12/30/2013

Rad Van #2408-02

Figure 3
SWAB #1068
30 July 2023

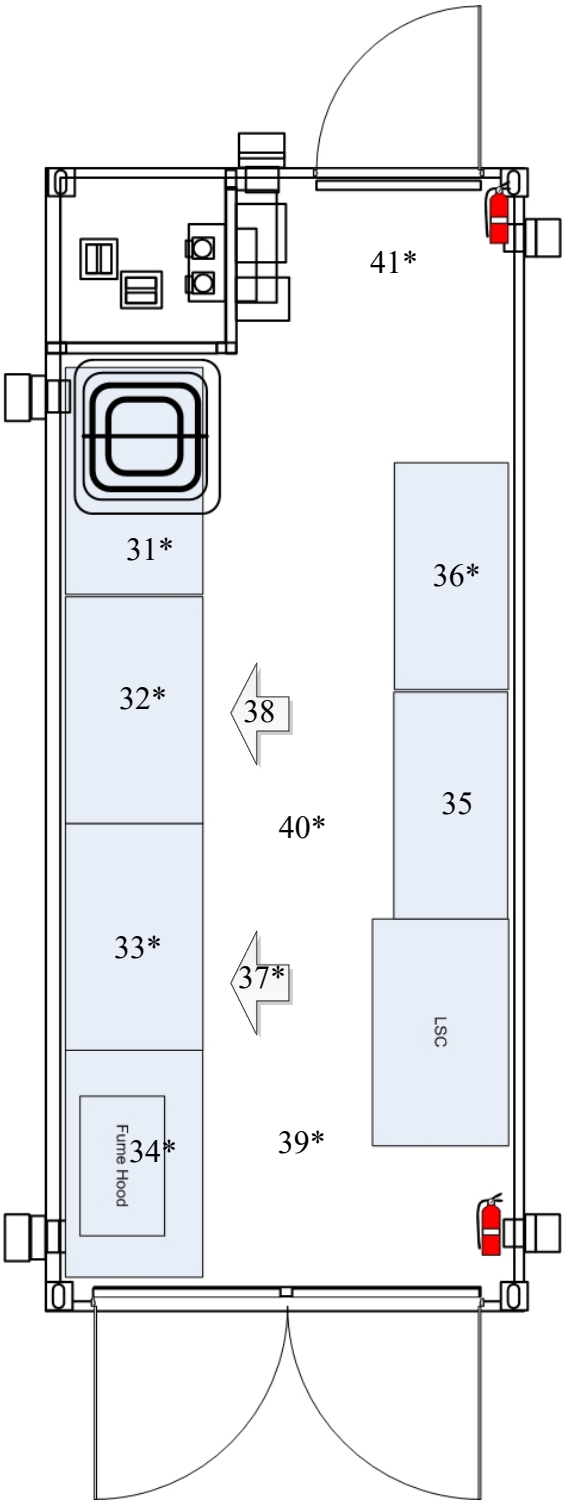
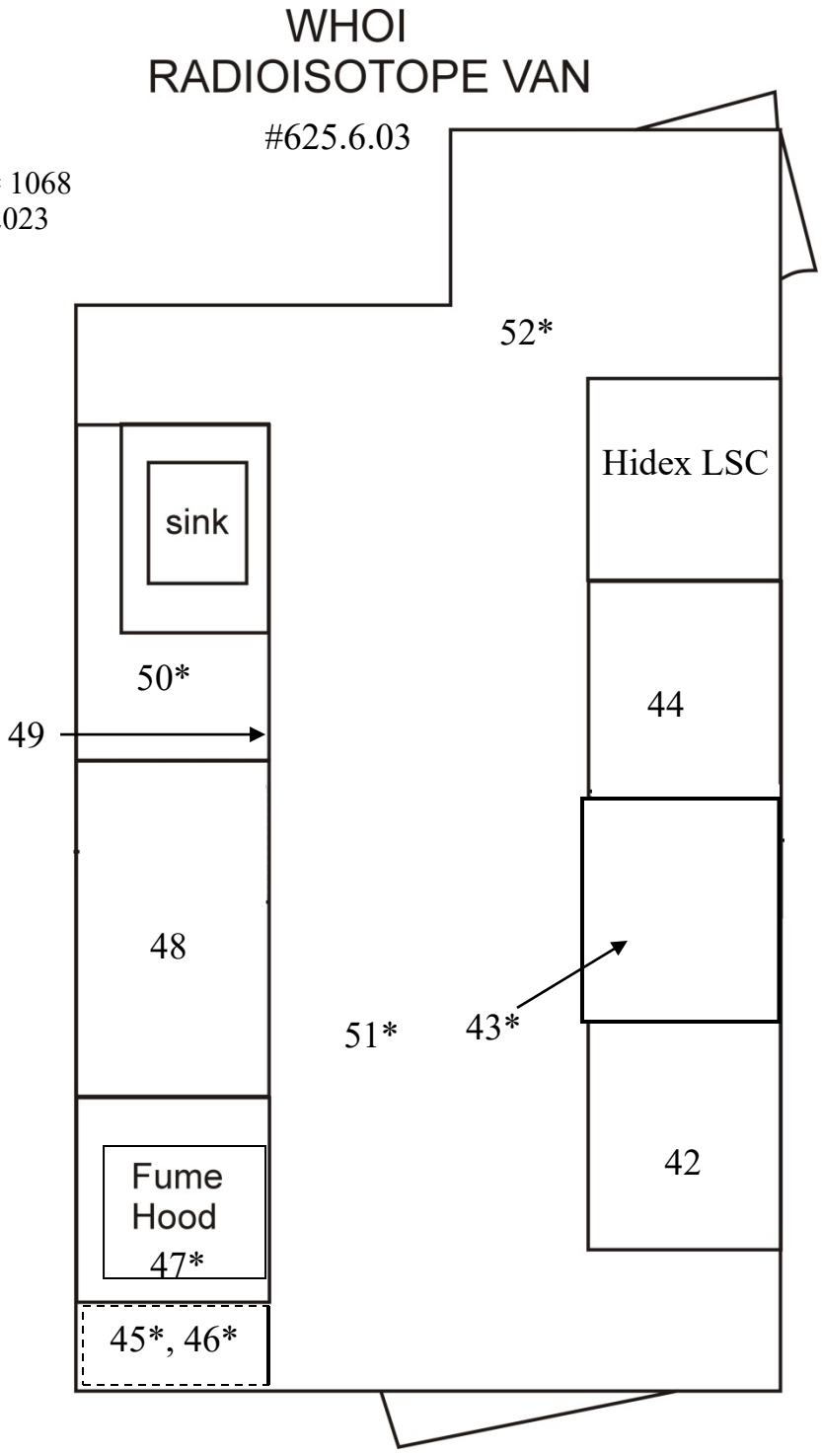


Figure 4
SWAB # 1068
30 July 2023



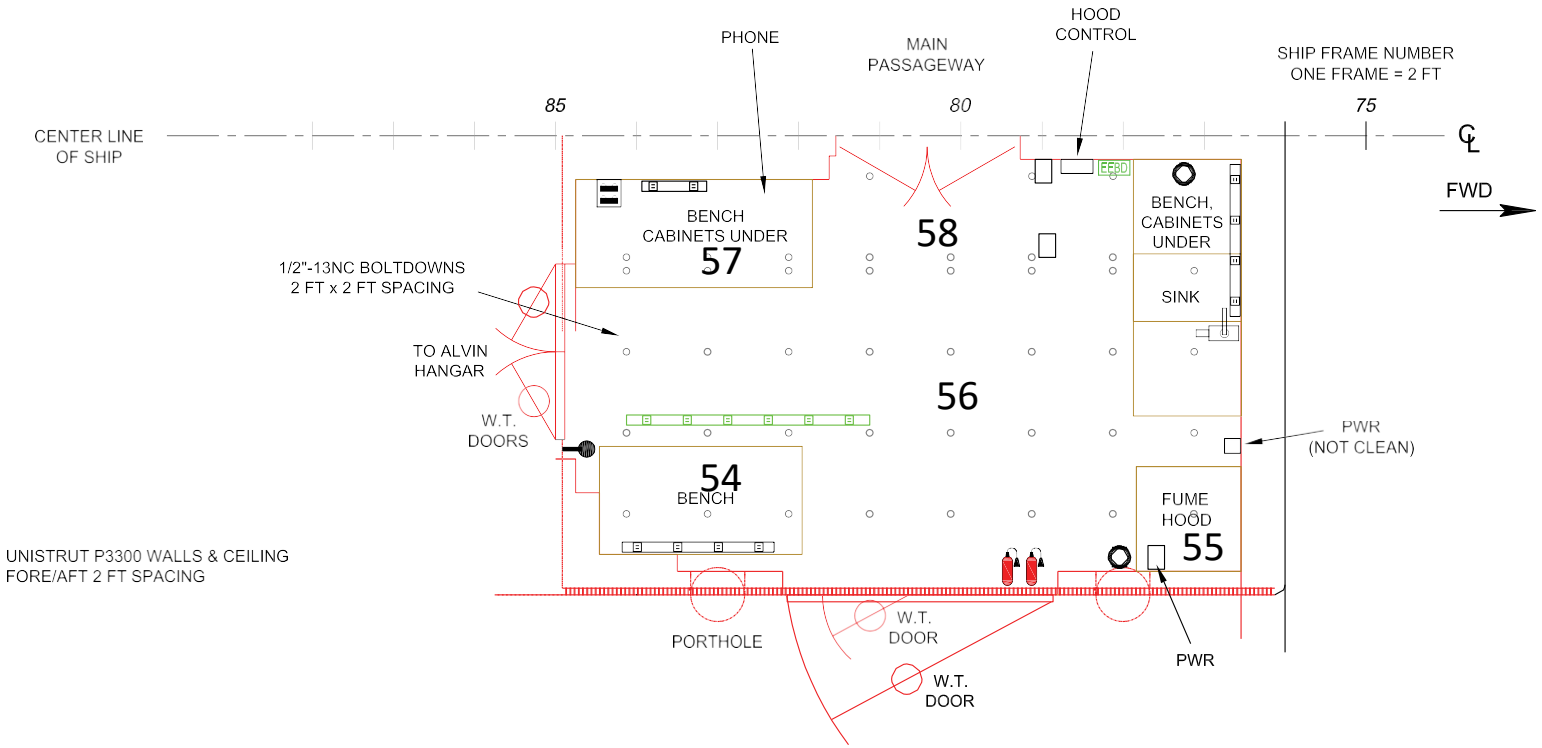
KEY

- FIRE EXTINGUISHER
- SCIENCE SEA WATER
- CABLE PASS THRU
- COMPRESSED AIR
- COMPUTER HUB
- SHIP EQUIP -KEEP CLEAR
- EEBD 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 5
SWAB 1068
31 July 2023



WET LABORATORY

Atlantis Main Deck, Rm 1-76-1

12/30/2013

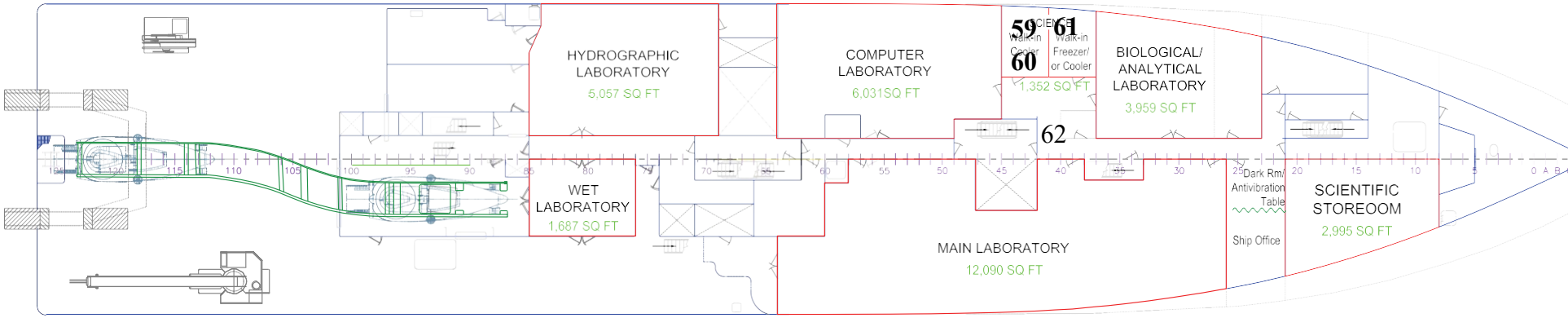
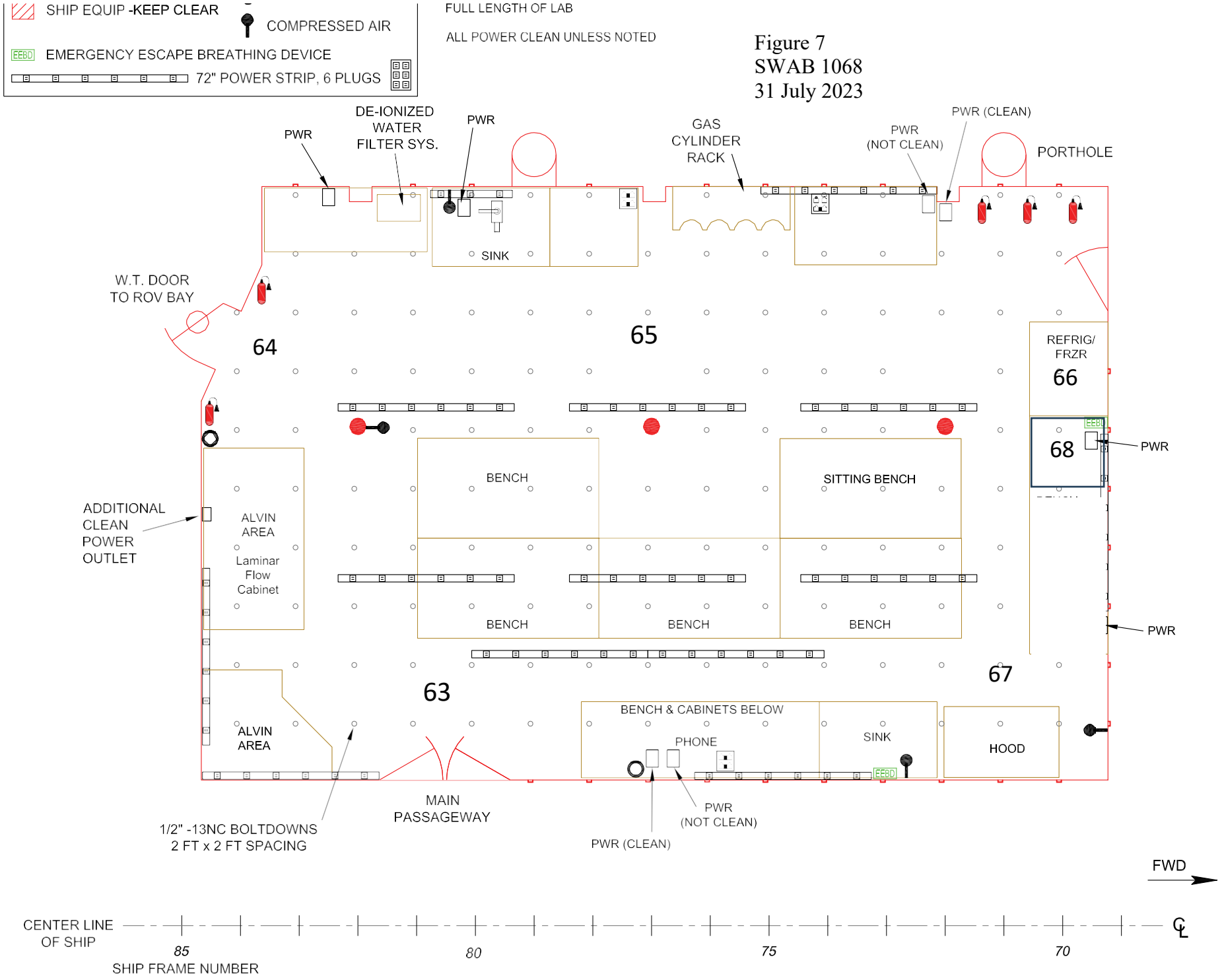


Figure 6
SWAB 1068
31 July 2023

Atlantis Laboratories and Scientific Storeroom General Locations

Figure 7
SWAB 1068
31 July 2023



HYDROGRAPHIC LABORATORY

Atlantis Main Deck, Room 1-64-2

12/30/2013