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Tritium Laboratory
16 March 2022

SWAB REPORT # 1027

SWAB DATE: 16 March 2022

R/V Roger Revelle and Radioisotope Van #2408-02

James Happell Digitally signed by James Happell Date: 2022.03.29 10:59:42 -04'00'

James D. Happell

Distribution:
SWAB Committee
Gary Lain

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 ^{3}H & ^{14}C. This replaces an LSC with background cpm of 1.6 & 5.5 for ^{3}H & ^{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	^{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 # 1027

LOCATION: US Naval Base, Guam
VESSEL: *R/V Roger Revelle*

DATE:16 March 2022
TECHNICIAN: Charlene Grall

Sample #	Sample Identification	^{3}H dpm/m^{2} activity	±	error	^{14}C dpm/m^{2} activity	±	error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	6	±	23	0	±	8
	Main Lab (Figure 1)						
3	Starboard sink area	-1	±	6	11	±	13
4	Benchtop aft of starboard sink	11	±	19	7	±	12
5	Starboard bench forward of fume hood	3	±	26	-1	±	10
6	Forward center benchtop	-15	±	22	3	±	16
7	Inside fume hood	-12	±	18	-9	±	14
8	Top of freezer	17	±	26	-1	±	12
9	Aft workbench	-3	±	11	2	±	13
10	Deck inside aft entrance	8	±	16	10	±	12
11	Deck inside aft port entrance	1	±	3	**14**	**±**	**13**
12	Benchtop forward of starboard sink	-34	±	35	3	±	33
13	Forward starboard benchtop	17	±	30	-6	±	9
14	Deck inside port entrance	-11	±	20	8	±	13
15	Port sink area	11	±	32	-5	±	8
16	Deck below port sink	18	±	24	2	±	8
17	Deck inside forward port entrance	-7	±	29	-2	±	15
18	Deck below forward benchtop	-18	±	27	**15**	**±**	**14**
19	Benchtop across from port sink	-26	±	47	1	±	7
20	Benchtop across from large monitor	-37	±	38	**25**	**±**	**15**
	Bio-Analytical Lab (Figure 1)						
21	Inside fume hood	17	±	43	-10	±	15
22	Forward sink area	-12	±	22	9	±	13
23	Inside freezer	-53	±	55	***100**	±	**18**
24	Deck at starboard entrance	-32	±	34	-5	±	8
25	Deck at aft entrance	-41	±	43	**18**	**±**	**15**
26	Inside refrigerator	-5	±	12	**31**	**±**	**14**
27	Aft sink area	-27	±	47	9	±	14
28	Forward deck between benchtops	-26	±	46	3	±	22

Sample #	Sample Identification	^{3}H dpm/m^{2} activity	error	^{14}C dpm/m^{2} activity	error
	Miscellaneous Areas (Figure 1)				
29	Deck inside walk-in refrigerator	-2	2	-3	4
30	Deck outside walk-in freezer	9	28	1	7
31	Deck of science freezer vestibule	-34	35	7	16
32	Deck inside darkroom	-21	37	7	14
33	Deck inside science storeroom	-29	31	8	15
	Hydro Lab (Figure 2)				
34	Starboard sink area	-5	41	**15**	**13**
35	Inside fume hood	-25	44	-6	9
36	Forward deck	2	14	3	12
37	Benchtop aft of starboard sink	-25	44	2	26
38	Inside Cospolish refrigerator	31	32	-9	13
39	Port benchtop	-1	5	13	13
40	Inside Cospolish freezer	3	17	3	12
41	Deck inside starboard entrance	22	38	-10	16
42	Deck in front of aft port sink	-17	26	14	14
43	Aft port sink area	-18	27	**19**	**14**
44	Intermediate bucket blank	-6	25	-9	13
	Wet Lab (Figure 2)				
45	Forward benchtop	-5	20	5	13
46	Sink area	-26	45	2	57
47	Inside fume hood	-17	25	9	14
48	Deck at port entrance	-1	5	**19**	**13**
49	Starboard benchtop aft of sink	3	13	7	12
50	Deck at aft entrance	-35	37	-9	14
51	Deck of staging bay	-3	11	2	13
	Radioisotope Van #2408-02 (Figure 3)				
52	Benchtop adajacent to fume hood	-44	46	7	18
53	Inside fume hood	-5	216	9	13
54	Benchtop adjacent to LSC	-6	22	-1	10
55	Benchtop across from sink	***1085**	**123**	**12**	**3**
56	Inside refrigerator	-24	42	***284**	**26**
57	Inside freezer	1	7	8	13
58	Deck between LSC and fume hood	***1247**	**115**	***230**	**21**
59	Benchtop adjacent to sink	-8	44	**23**	**15**
60	Deck inside of van entrance	**424**	**64**	***86**	**15**
61	Sink area	-46	47	11	16
62	Final bucket blank	10	21	5	11

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. Inside the freezer in the Bio-Analytical Lab had minor ^{14}C contamination. The freezer requires cleaning before any background ^{14}C work. There was some minor ^{3}H and ^{14}C contamination found in the Rad Van, but no cleaning is required.

Figure 1
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R/V ROGER REVELLE

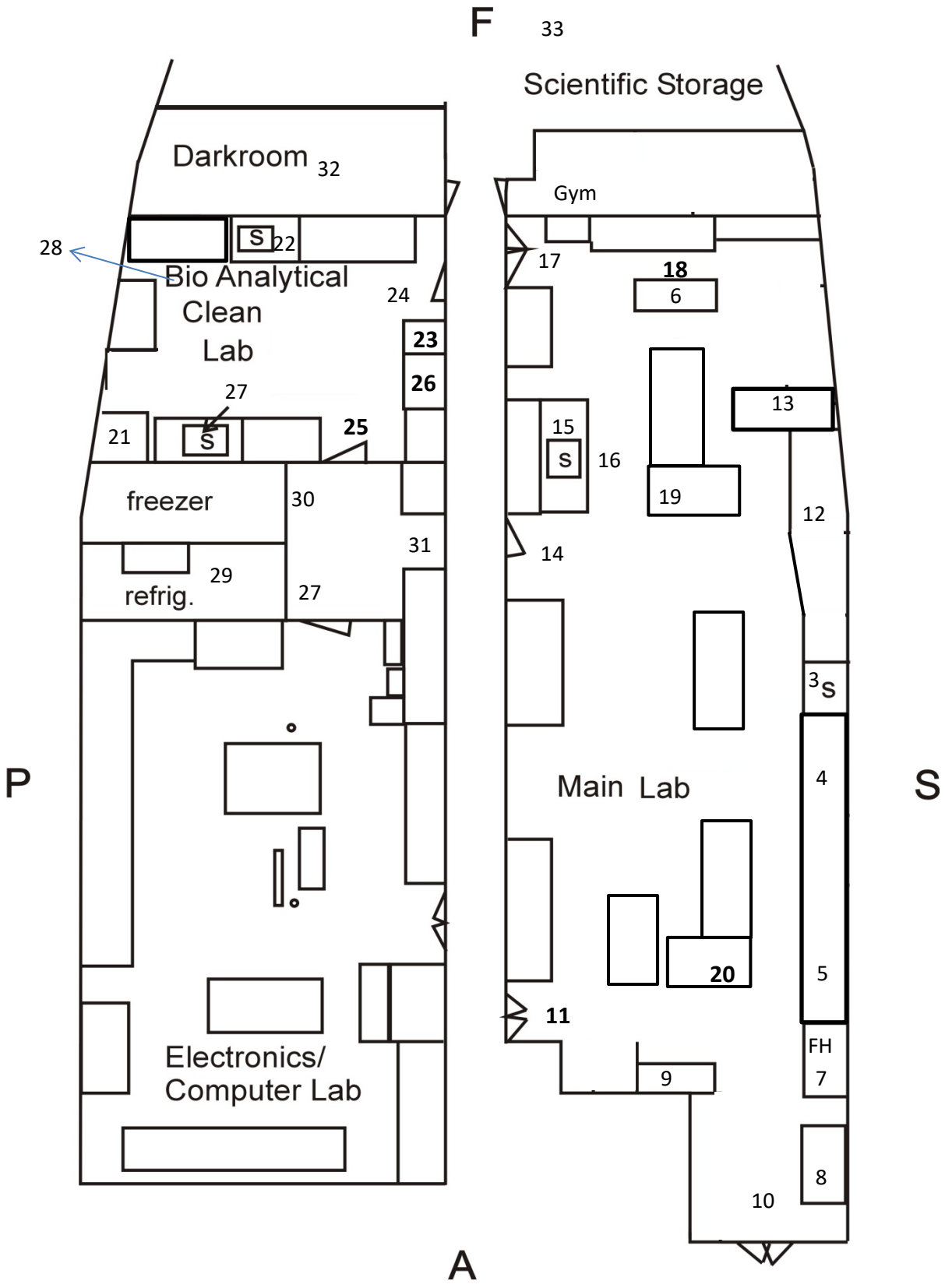

Figure 2
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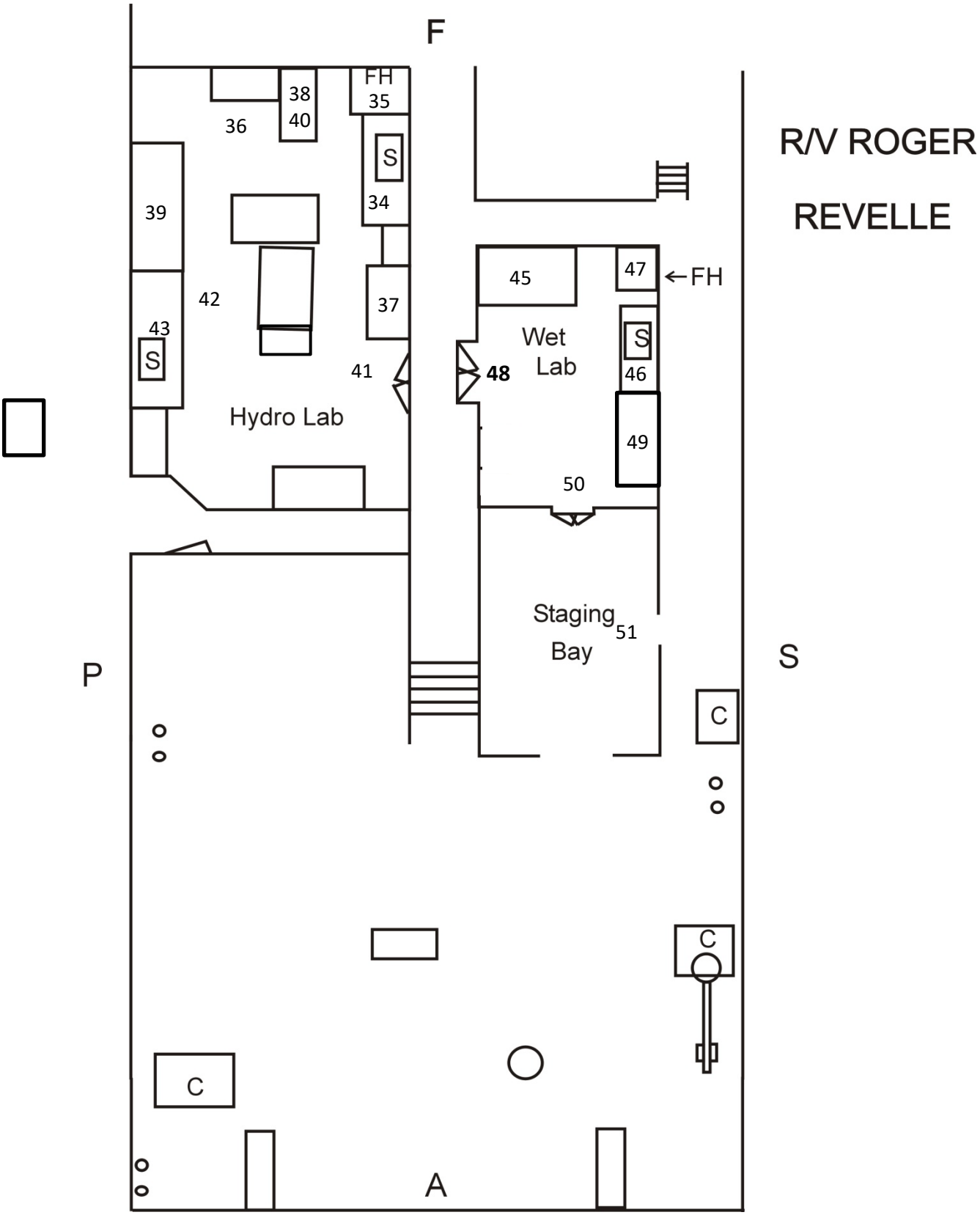

Rad Van #2408-02

Figure 3
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