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Tritium Laboratory
24 September 2018

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SWAB REPORT # 915

SWAB DATE: 13 September 2018

R/V Roger Revelle, Van #654.1.01.2, Van 2408-01

Dr. James D. Happell
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Distribution:
SWAB Committee
Gary Lain

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 # 915

LOCATION: Seattle, WA

DATE: 13 September 2018

VESSEL: R/V Roger Revelle, Van #654.1.01.2, Van 2408-01

TECHNICIAN: Jim Happell

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	-22	± 38	29	± 39
	<u>Main Lab (Figure 1)</u>				
3	Starboard sink area	36	± 49	10	± 31
4	Bench aft of starboard sink	17	± 74	-6	± 46
5	Starboard bench below giant monitor	-11	± 25	19	± 38
6	Starboard bench across from giant monitor	17	± 38	10	± 34
7	Starboard bench forward of fume hood	-15	± 89	43	± 39
8	Inside fume hood	28	± 50	-3	± 28
9	Inside bottom of Cospolich fridge (top N/A)	34	± 63	-18	± 55
10	Desk inside aft entrance	26	± 37	16	± 34
11	Desk inside aft port entrance	40	± 67	-22	± 31
12	Port center Bench	26	± 57	-7	± 54
13	Deck between plotter and center deck	-2	± 15	15	± 37
14	Deck inside port entrance	48	± 57	-12	± 36
15	Port sink area	17	± 39	8	± 33
16	Deck below port sink	29	± 41	12	± 33
17	Desk inside forward port entrance	2	± 6	26	± 37
18	Deck below forward bench	23	± 64	-11	± 34
	<u>Bio-Analytical Lab (Figure 1)</u>				
19	Forward sink area	29	± 47	10	± 32
20	Deck below Cospolich refrigerator	31	± 50	3	± 24
21	Inside fume hood	-19	± 168	43	± 40
22	Aft sink area	68	± 52	7	± 24
23	Deck below sink and fume hood	-28	± 49	40	± 39
24	Deck at starboard entrance	37	± 65	-18	± 56
25	Deck at aft entrance	7	± 23	15	± 36
26	Bench opposite of aft sink area	33	± 45	7	± 30
	<u>Miscellaneous Areas (Figure 1)</u>				
27	Deck outside Freeze Box	8	± 39	3	± 31
28	Bench inside aft climate control chamber	22	± 43	6	± 31
29	Deck of aft climate control chamber	38	± 61	-16	± 51

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
30	Deck of vestibule adjacent to companionway	21	± 61	-10	± 31
31	Deck inside Darkroom	25	± 43	6	± 29
32	Deck inside Ship Office	-4	± 12	6	± 38
33	Deck in front of -80 freezer in Science storeroom	47	± 45	8	± 28
<u>Hydro Lab (Figure 2)</u>					
34	Hydro Lab Stbd sink area	-7	± 22	-6	± 45
35	Inside fume hood	48	± 54	-5	± 43
36	Forward deck	7	± 177	-10	± 32
37	Benchtop aft of stbd sink area	41	± 57	-11	± 35
38	Inside Whirlpool freezer	-3	± 10	-3	± 27
39	Port bench	16	± 140	-20	± 62
40	Inside Whirlpool refrigerator bottom	48	± 57	-12	± 36
41	Deck inside stbd entrance	15	± 33	-30	± 43
42	Deck in front of aft port sink	-1	± 4	1	± 39
43	Aft port sink area	51	± 50	5	± 24
<u>Wet Lab (Figure 2)</u>					
44	Wet Lab Wet lab inside Cospolich freezer	43	± 50	4	± 22
45	Forward lab bench	17	± 62	-7	± 60
46	Sink area	27	± 49	4	± 26
47	Inside fume hood	4	± 66	-3	± 22
48	Deck in center of lab	25	± 75	-20	± 29
49	Deck in center of staging bay	13	± 29	17	± 36
50	Final bucket blank #1	-8	± 26	5	± 40
51	Initial bucket blank #2	-16	± 35	18	± 39
<u>Radioisotope Van #654.1.01.2 (Figure 3)</u>					
52	Inside fume hood	26	± 45	4	± 27
53	Bench top between fume hood and LSC	-8	± 27	-13	± 41
54	Sink area	-3	± 8	-5	± 38
55	Bench top across from fume hood	18	± 28	26	± 36
56	Bench top across from LSC	32	± 53	-8	± 69
57	Inside refrigerator	46	± 48	2	± 15
58	Inside freezer	10	± 23	21	± 36
59	Deck in front of fume hood	57	± 47	10	± 28
60	Deck in center of van	88	± 52	2	± 12
61	Deck in front of sink	75	± 43	39	± 34

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
	<u>Radioisotope Van #2408-01 (Figure 4)</u>				
62	Rad Van #2408.01 Inside fume hood	92	± 46	28	± 32
63	Benchtop adjacent to fume hood	22	± 9	*240	± 45
64	Benchtop adjacent to sink	50	± 18	*225	± 44
65	Sink area	64	± 39	46	± 36
66	Benchtop adjacent to LSC	463	± 74	-1	± 1
67	Benchtop across from sink	458	± 63	*24	± 41
68	Inside refrigerator	267	± 63	-4	± 12
69	Inside freezer	**25096	± 437	*558	± 24
70	Deck between fume hood and LSC	*611	± 66	*512	± 50
71	Deck in center of van	346	± 61	*109	± 35
72	Deck in front of sink	220	± 54	*77	± 34
73	Final bucket blank #2	42	± 57	-20	± 29

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 positive and larger than the error. All areas tested on the ship and in Van #654.1.01.2 were free from any isotope contamination that requires cleaning. Minor to moderate ³H and minor ¹⁴C contamination found in Van #2408-01. The freezer in Van #2408-01 should be cleaned ASAP.

R/V ROGER REVELLE

Figure 1
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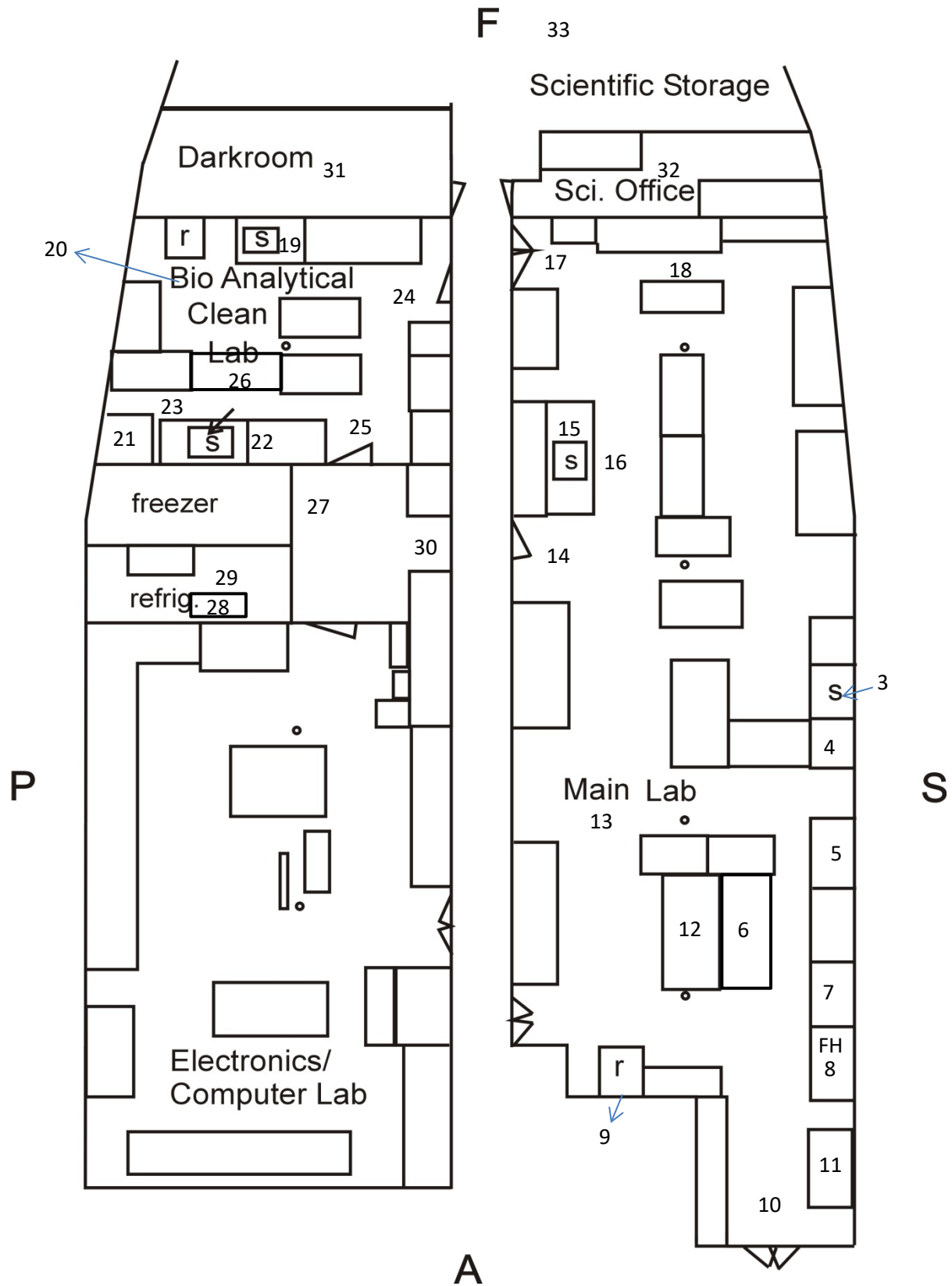


Figure 2
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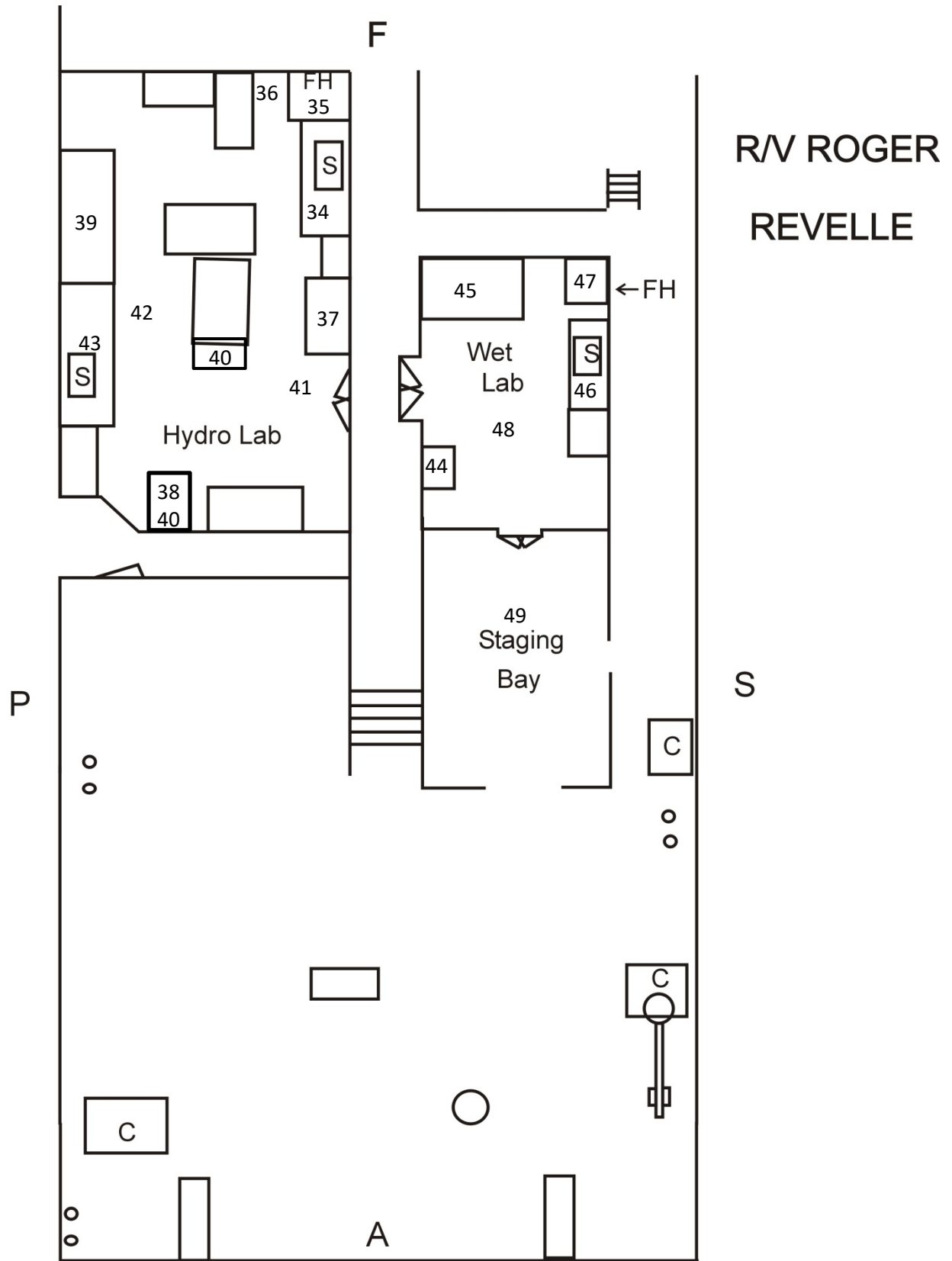


Figure 3
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Radiation Van #654.1.01.2

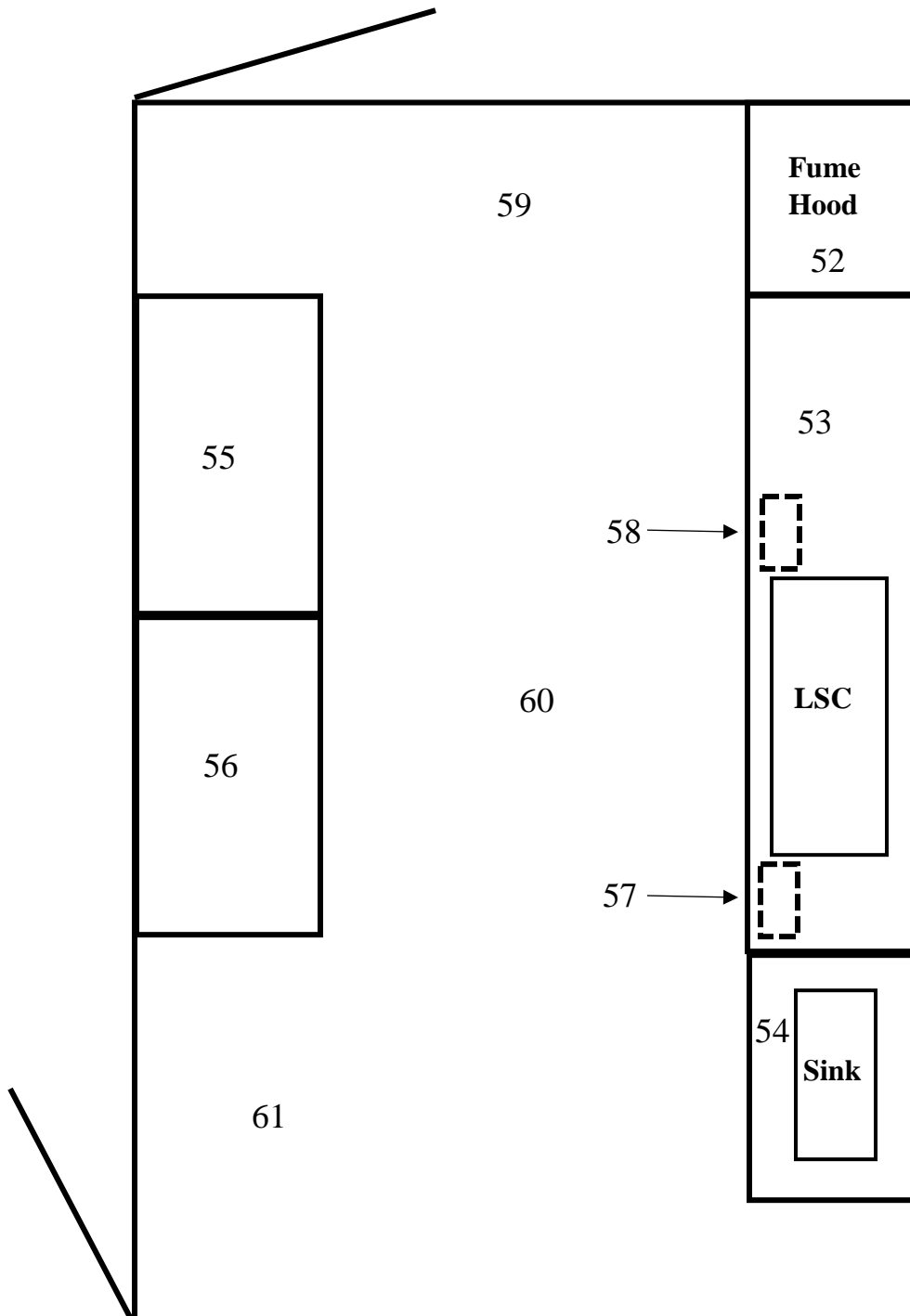


Figure 4
SWAB #915
13 September 2018

Polar Programs Van 2408.01

