

UNIVERSITY OF MIAMI

ROSENSTIEL  
SCHOOL of MARINE &  
ATMOSPHERIC SCIENCE



Tritium Laboratory

9 December 2019

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SWAB REPORT # 967

SWAB DATE: 3 December 2019

*R/V Oceanus* and Vans (2408-05, 625.4.03, 625.1.05)

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## COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for  $^3\text{H}$  and  $^{14}\text{C}$  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  $\text{dpm}/\text{m}^2$ . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in  $\text{dpm}/\text{m}^2$ . An error larger than the activity indicates that the activity is not significantly different from zero.

### Criteria for SWAB Results

Category	$^3\text{H}$ ( $\text{dpm}/\text{m}^2$ )	$^{14}\text{C}$ ( $\text{dpm m}^2$ )	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:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : 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.

$^{14}\text{C}$ : 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  $^3\text{H}$ .

### 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 institution promptly by phone or email.

REPORT FOR SWAB # 967

LOCATION: Newport, OR

DATE: 3 December 2019

VESSEL: *R/V Oceanus*

TECHNICIAN: Charlene Grall

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Background	0	± 0	0	± 0
2	Initial bucket blank	-15	± 57	19	± 40
	<u>Main Lab (Figure 1)</u>				
3	Forward sink area	49	± 60	-12	± 24
4	Benchtop opposite of forward sink area	-40	± 58	23	± 43
5	Inside top refrigerator drawer	-12	± 43	3	± 47
6	Inside bottom refrigerator drawer	-17	± 65	-3	± 11
7	Inside top freezer drawer	12	± 83	-9	± 41
8	Inside bottom freezer drawer	-16	± 61	-15	± 32
9	Center benchtop	-17	± 63	-2	± 7
10	Forward section of port benchtop	-13	± 49	-14	± 30
11	Aft section of port benchtop	-19	± 72	-19	± 41
12	Deck forward of So-Lo -80 freezer	-24	± 52	-1	± 6
13	Aft benchtop	-29	± 64	-8	± 34
14	Forward section of aft port benchtop	-22	± 48	10	± 43
15	Aft section of aft port benchtop	23	± 50	0	± 4
16	Deck of winch station	-1	± 4	-16	± 34
17	Deck outside aft lab entrance	-14	± 53	10	± 42
	<u>Wet Lab (Figure 1)</u>				
18	Forward benchtop	-7	± 51	31	± 40
19	Forward port benchtop	-53	± 78	-24	± 45
20	Port benchtop	-15	± 55	5	± 45
21	Starboard sink area	20	± 73	-13	± 27
22	Inside starboard chest freezer	-11	± 42	-14	± 30
23	Aft deck inside double doors	42	± 72	-25	± 47
	<u>Upper Lab (Figure 1)</u>				
24	Deck forward and starboard of stairs	18	± 82	-15	± 32
25	Deck between the two aft doors	-15	± 57	0	± 3
	<u>01 Deck (Figure 1)</u>				
26	Deck where sink hose leaked from Van	10	± 37	-26	± 49
27	Deck at entrance of CalCofi Van	23	± 238	-40	± 52

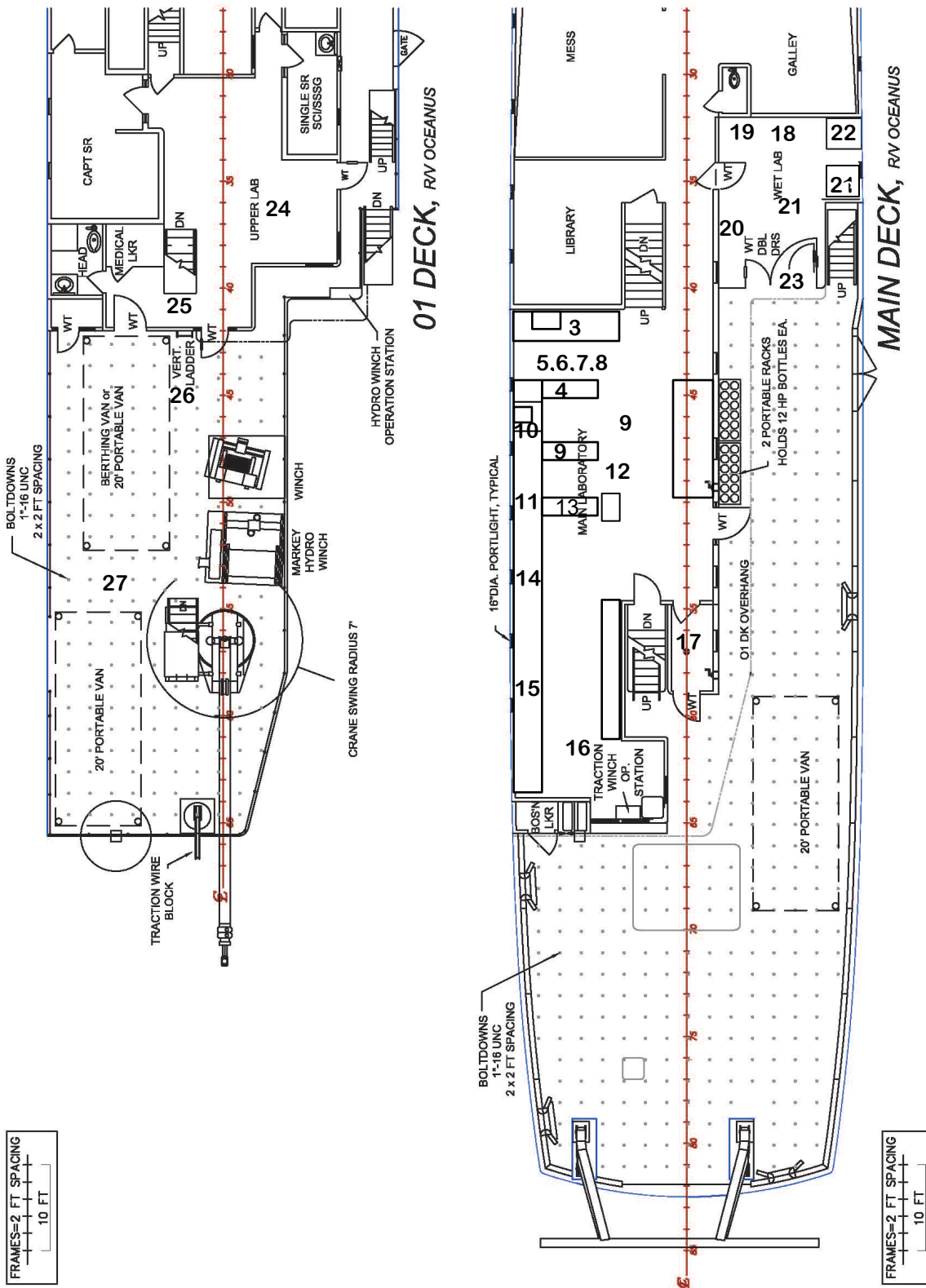
Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
<u>General Purpose Van #2408-05 (Figure 3)</u>					
28	Inside fume hood	-34	± 51	6	± 56
29	Benchtop adjacent to fume hood	-30	± 66	-8	± 34
30	Benchtop adjacent to sink area	33	± 74	-24	± 46
31	Sink area	-44	± 65	6	± 63
32	Inside incubator	-73	± 422	*60	± 31
33	Inside refrigerator	65	± 57	-10	± 22
34	Benchtop across from fume hood	6	± 25	-26	± 49
35	Benchtop across from refrigerator	19	± 108	-24	± 44
36	Benchtop across from sink area	12	± 79	-10	± 21
37	Deck in front of fume hood	-21	± 46	8	± 45
38	Deck outside entrance of van	-1	± 6	2	± 40
<u>General Purpose Van #625.4.03 (Figure 3)</u>					
39	Sink area	27	± 78	-21	± 40
40	Benchtop adjacent to sink area	-22	± 49	-3	± 15
41	Benchtop adjacent to fume hood	-14	± 51	-11	± 24
42	Inside fume hood	-4	± 46	17	± 39
43	Deck in front of fume hood	7	± 33	8	± 37
44	Initial bucket blank #2	8	± 34	-26	± 49
45	Benchtop across from freezer	-4	± 17	2	± 43
46	Benchtop across from refrigerator	-15	± 56	23	± 40
47	Inside freezer	-8	± 36	-15	± 31
48	Inside refrigerator	-17	± 65	-11	± 24
49	Deck between sink and entrance	-13	± 48	3	± 51
50	Intermediate bucket blank	6	± 25	-19	± 40
<u>Radiation Van #625.1.05 (Figure 4)</u>					
51	Inside fume hood	84	± 43	*52	± 37
52	Benchtop adjacent to fume hood	94	± 41	*73	± 38
53	Benchtop adjacent to sink area	98	± 52	20	± 31
54	Sink area (contaminated with hand soap)	61	± 51	30	± 36
55	Benchtop across from sink area	36	± 54	-4	± 16
56	Benchtop adjacent to LSC	88	± 57	-6	± 27
57	Inside freezer	272	± 61	*64	± 33
58	Inside refrigerator	61	± 25	*170	± 43
59	Deck in front of fume hood	60	± 45	28	± 35
60	Deck in center of van	19	± 29	32	± 38
61	Deck inside entrance	73	± 39	*75	± 39
62	Final bucket blank	0	± 0	-9	± 40

## 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 tested on the ship and in Van # 625.4.03 were free of isotope contamination. General Purpose Van #2408-05 had minor  $^{14}\text{C}$  contamination inside the incubator. This area should be cleaned. Minor  $^{14}\text{C}$  contamination was found in Rad Van #625.1.05. No action is necessary although we recommed cleaning the deck to help prevent tracking contamination outside the van.

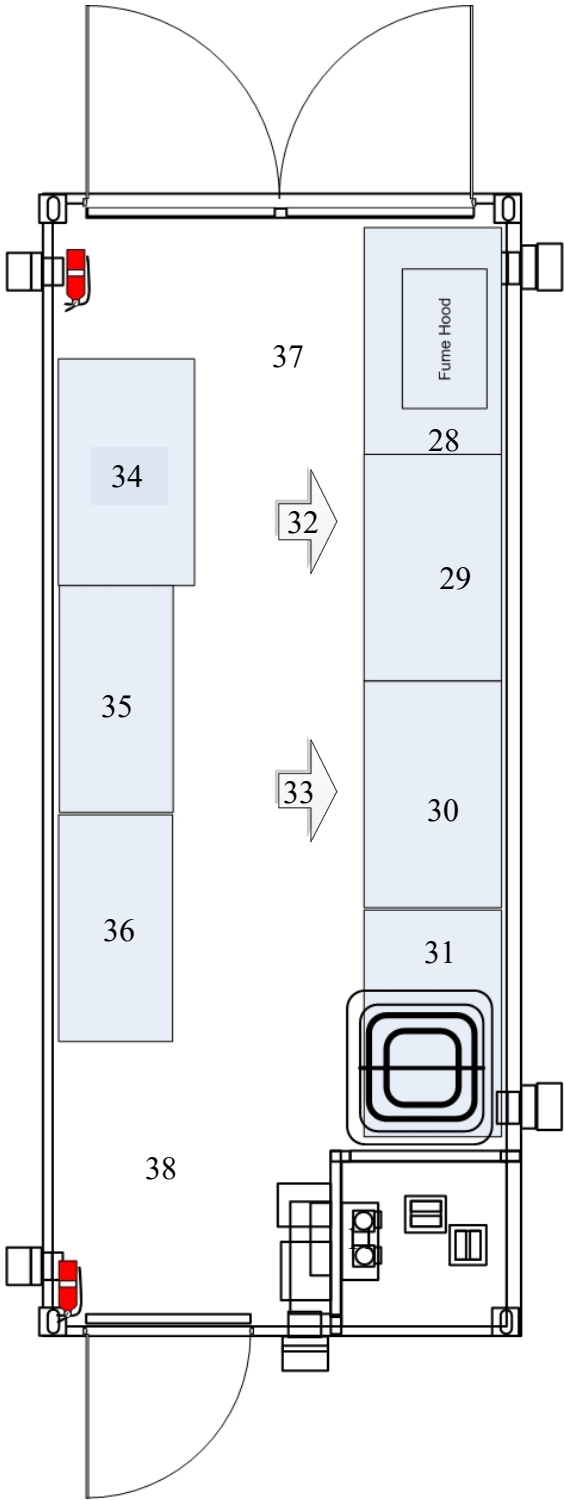
Figure 1  
 SWAB #967  
 3 December 2019

# R/V Oceanus



UNOLS Van #2408-05

Figure 2  
SWAB #967  
3 December 2019



# UNOLS General Purpose Van 625.4.03

Figure 3  
SWAB #967  
3 December 2019

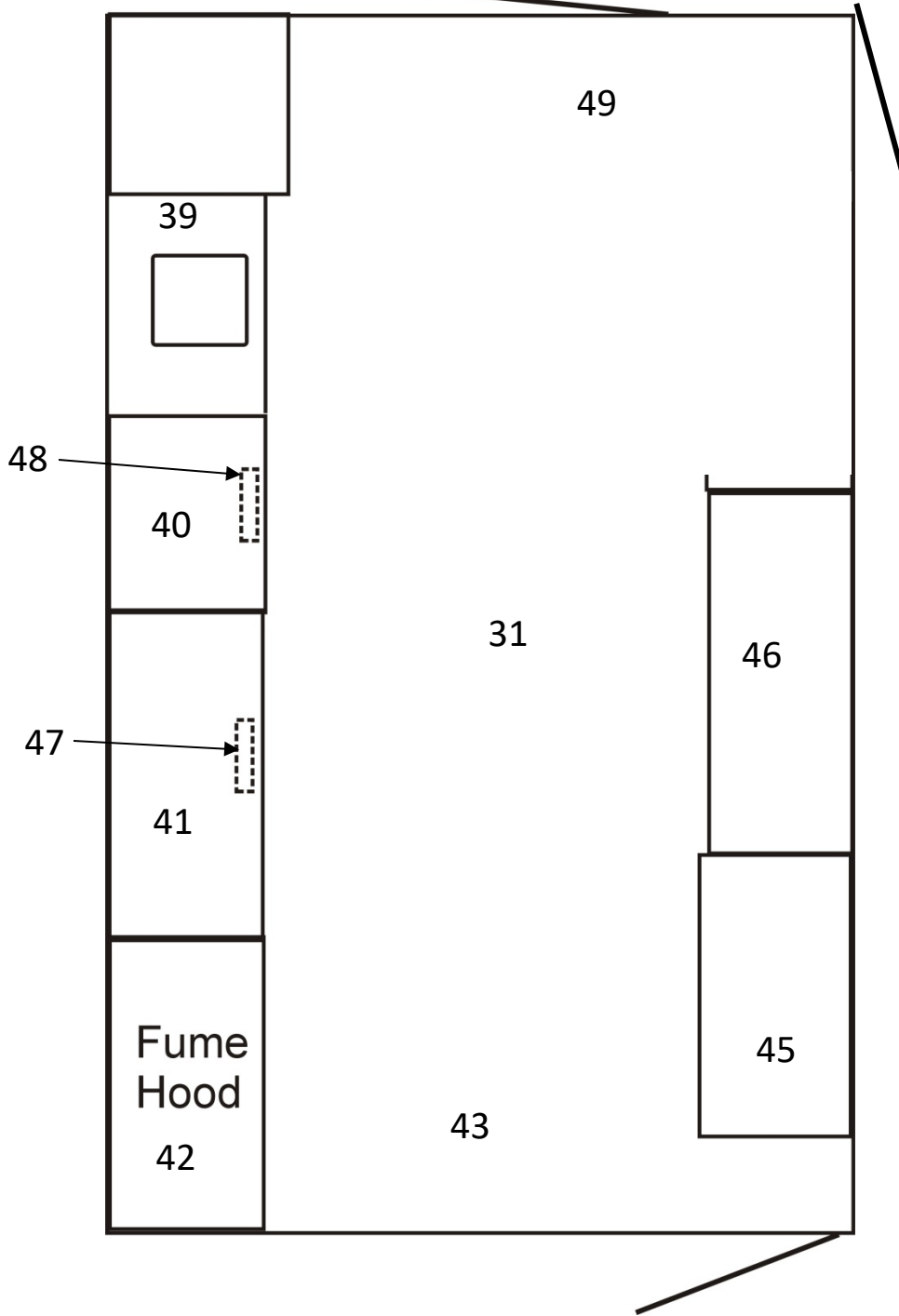




Figure 4  
SWAB # 967  
2 December 2019

UNOLS Rad Van #625.101-2

