

UNIVERSITY OF MIAMI

ROSENSTIEL  
SCHOOL of MARINE &  
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Tritium Laboratory  
15 June 2012

SWAB REPORT # 640

SWAB DATE: 9 August 2012

*R/V Atlantis*

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James D. Happell

Distribution:  
SWAB Committee  
Dave Fisichella

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 dpm/m<sup>2</sup>. Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m<sup>2</sup>. An error larger than the activity indicates that the activity is not significantly different from zero.

#### Criteria for SWAB Results

Category	$^3\text{H}$ (dpm/m <sup>2</sup> )	$^{14}\text{C}$ (dpm/m <sup>2</sup> )	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 <sup>2</sup> 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 dispose in radiation waste system.

Note: If category C or D is encountered, we try to notify the institution promptly by phone or email.

# REPORT FOR SWAB # 640

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

DATE: 9 August 2012  
TECHNICIAN: Jim Happell

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 Bkgnd	0	±	0	0	±	0
UNOLS Radiation Van #6251057 (See Fig. 1)							
2	Initial bucket blank C.O. #1	8	±	47	0	±	0
3	Center benchtop	49	±	46	0	±	0
4	Inside fume hood	20	±	49	0	±	0
5	Benchtop adjacent to LSC	54	±	63	0	±	0
6	Sink area	339	±	58	26	±	21
7	Inside refrigerator	*697	±	71	*130	±	31
8	Deck in front of fume hood	409	±	59	*102	±	32
9	Deck between sink and entrance	*848	±	81	*77	±	24
WHOI Radiation Van #2001400 (See Fig. 2)							
10	Center benchtop	272	±	56	7	±	11
11	Inside fume hood	**20617	±	348	*460	±	21
12	Benchtop adjacent to fume hood	154	±	51	24	±	27
13	Sink area	173	±	49	0	±	0
14	Inside refrigerator	208	±	33	*433	±	48
15	Inside freezer	*1570	±	98	*124	±	24
16	Deck between freezer and fume hood	*783	±	77	10	±	7
17	Deck between sink and entrance	*783	±	74	*75	±	25
Main Lab (See Fig. 3)							
18	Top of Revco freezer #1	4	±	0	0	±	0
19	Top of Revco freezer #2	17	±	474	0	±	0
20	Inside stbd. freezer top	10	±	439	0	±	0
21	Inside stbd. fridge bottom	19	±	107	0	±	0
22	Deck in front of freezer	3	±	0	0	±	0
23	Port sink area	8	±	0	0	±	0
24	Deck inside fwd. port entrance	15	±	0	0	±	0
25	Deck inside aft. port entrance	0	±	0	0	±	0
26	Center benchtop across from port sink	12	±	0	0	±	0
27	Stbd sink area	52	±	53	0	±	0
28	Inside fume hood	0	±	0	0	±	0
29	Deck inside aft doors	22	±	0	0	±	0
30	Center benchtop	0	±	0	0	±	0

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	
Bioanalytical/Clean Lab (See Fig. 3)							
31	Inside Cospolitch top	23	±	184	0	±	0
32	Inside Cospolitch bottom	45	±	57	0	±	0
33	Forward sink area	7	±	0	0	±	0
34	Deck in front of Cospolitch	2	±	0	0	±	0
35	Inside fume hood	21	±	98	0	±	0
36	Aft. sink area	0	±	0	0	±	0
37	Deck in front of fume hood	0	±	0	0	±	0
38	Deck inside stbd door	0	±	0	0	±	0
Walk-in coolers (no Fig.)							
39	Benchtop in forward walk-in cooler	8	±	0	0	±	0
40	Deck in aft walk-in cooler	1	±	0	0	±	0
41	Deck in forward walk-in cooler	12	±	0	0	±	0
42	Benchtop in aft. walk-in cooler	1	±	0	0	±	0
43	Final bucket blank C.O. #1	14	±	0	0	±	0
44	Initial bucket blank C.O. #2	9	±	0	0	±	0
Electronics Lab (No Fig.)							
45	Deck at stbd. entrance	0	±	0	0	±	0
46	Deck at fwd. entrance	0	±	0	0	±	0
47	Deck inside Science storeroom	7	±	37	0	±	0
Wet Lab (See Fig. 4)							
48	Inside fume hood	0	±	0	0	±	0
49	stbd. sink area	3	±	0	0	±	0
50	Deck at stbd. door	10	±	109	0	±	0
51	Stbd benchtop	0	±	0	0	±	0
Hydro Lab (See Fig. 5)							
52	Inside Cospolitch top	18	±	0	0	±	0
53	Inside Cospolitch bottom	6	±	0	0	±	0
54	Deck in front of Cospolitch bottom	0	±	0	0	±	0
55	Deck inside aft door	0	±	0	0	±	0
56	Port sink area	32	±	57	0	±	0
57	Deck inside stbd doors	8	±	0	0	±	0
58	Stbd sink area	20	±	59	0	±	0
59	Inside fume hood	0	±	0	0	±	0
60	Final bucket blank C.O. #2	39	±	75	0	±	0

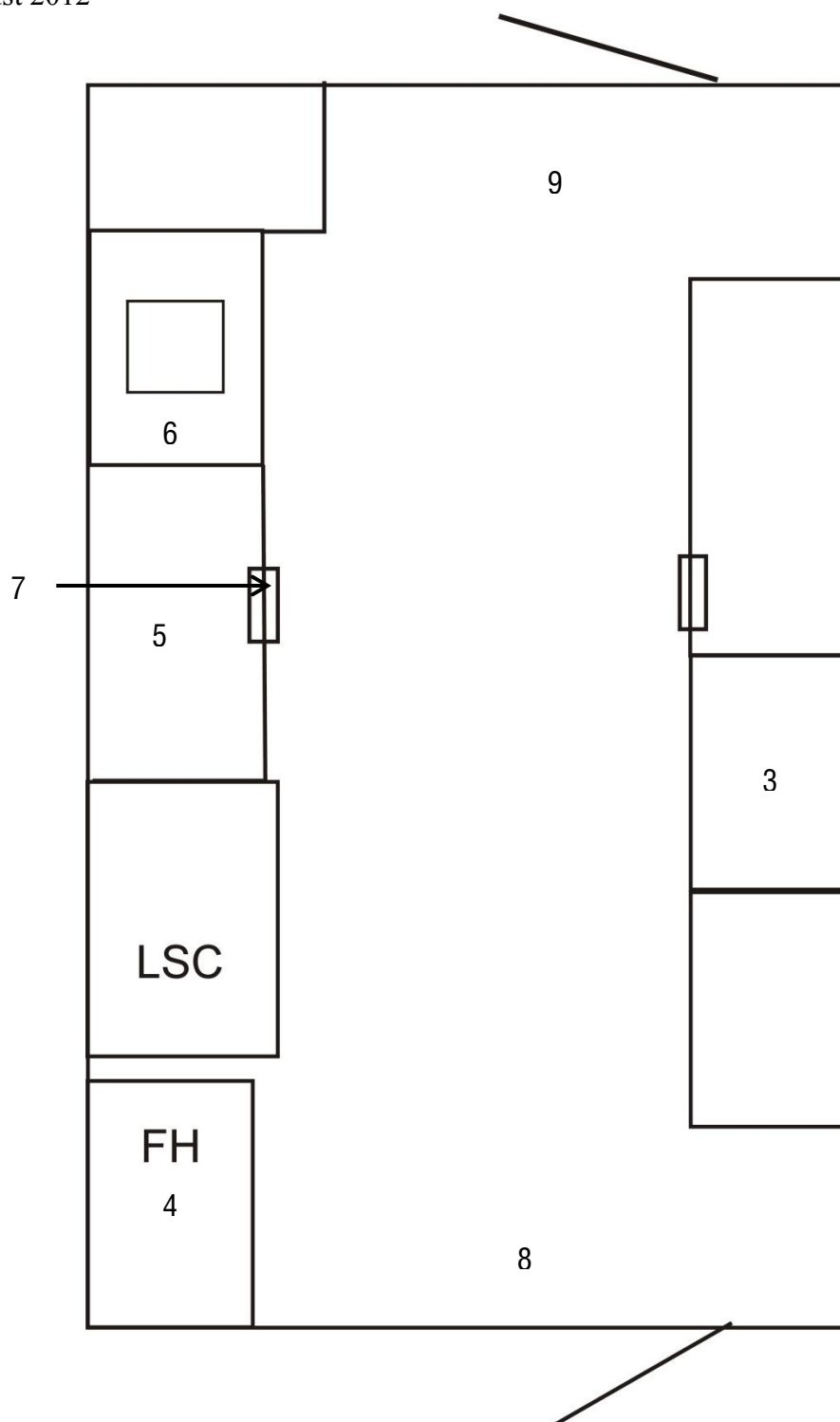
### Comments

Please note that the error reported for each isotope is the two-standard deviation counting error.

All areas tested on the ship were free of  $^3\text{H}$  and  $^{14}\text{C}$  contamination that requires cleaning. Minor  $^3\text{H}$  and  $^{14}\text{C}$  contamination found in UNOLS Radiation Van #6251057. No cleaning needed. Minor  $^{14}\text{C}$  and minor to moderate  $^3\text{H}$  contamination found in WHOI Radiation Van #2001400. The fume hood in this van should be cleaned before any further use.

Figure 1  
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# UNOLS Radioisotope Van #6251057



# WHOI RADIOISOTOPE VAN

#200140

Figure 2  
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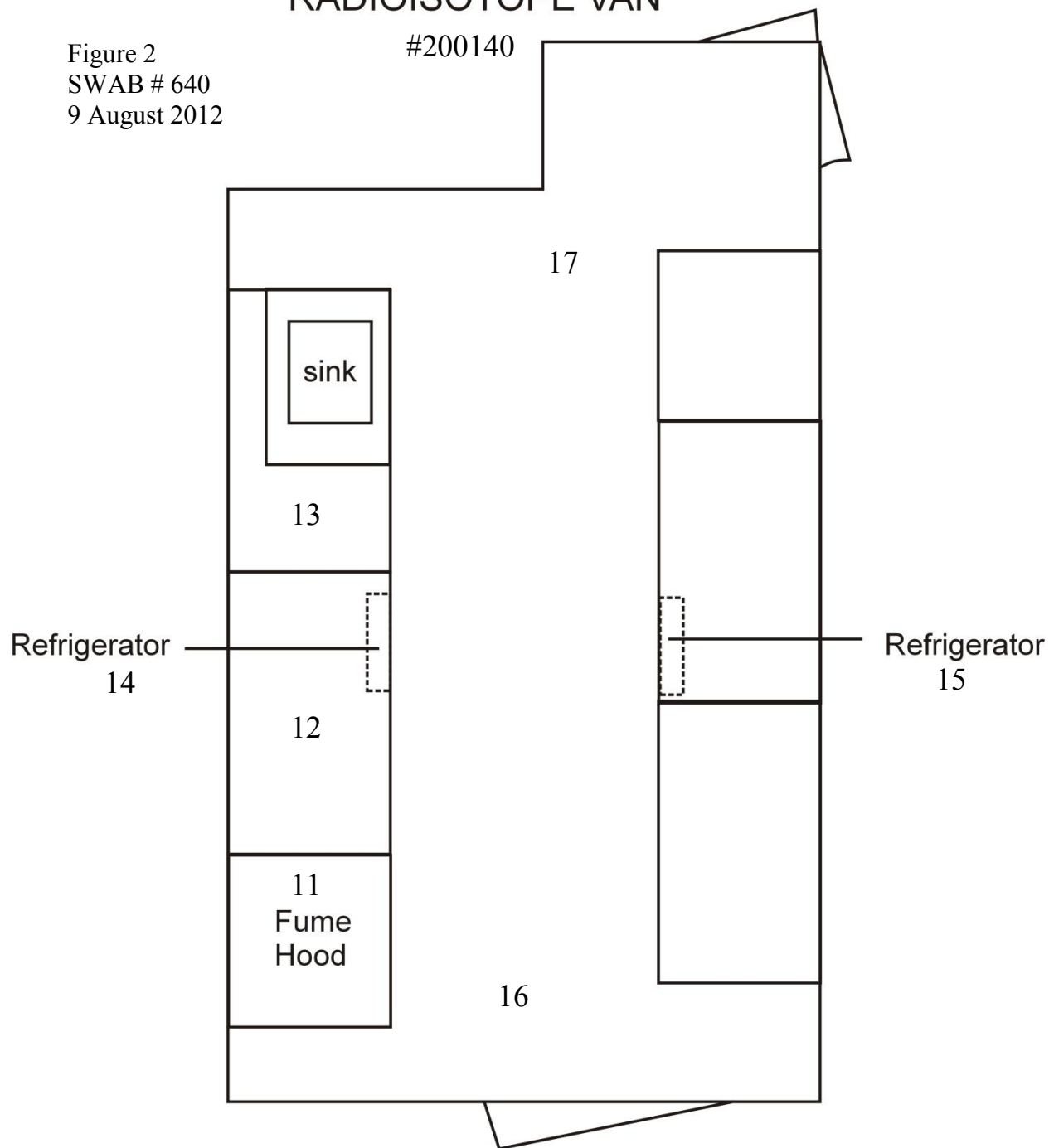
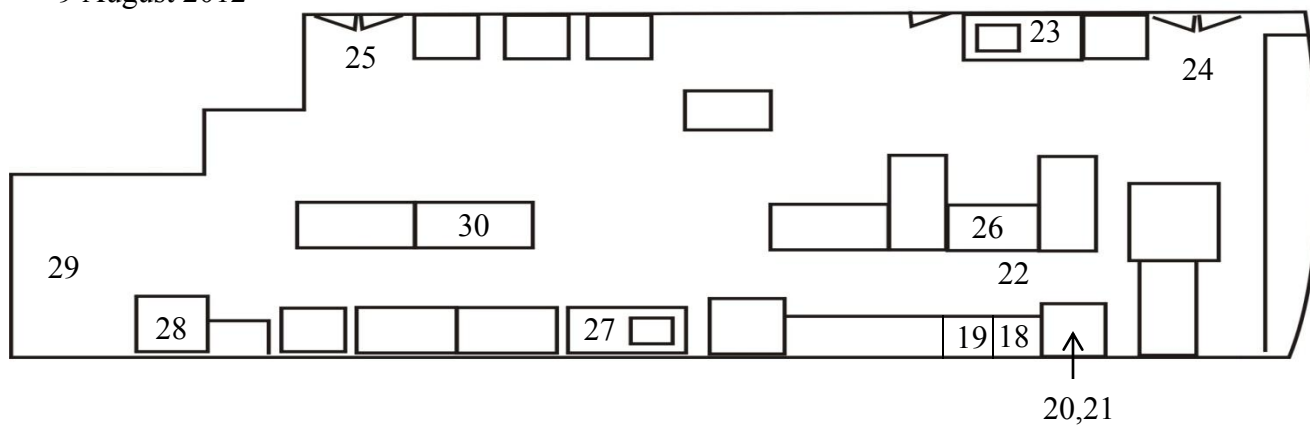


Figure 3  
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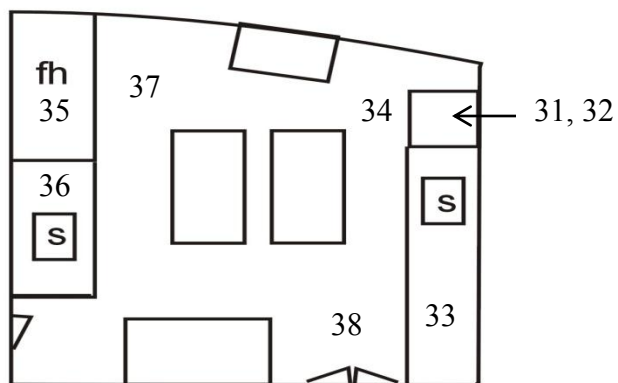
# Atlantis Main Lab Port



Aft

Fwd

## Biology/Analytical Clean Lab



Stbd



Figure 4  
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