



Tritium Laboratory
4 December 2013

SWAB REPORT # 705

SWAB DATE: 23 November 2013

R/V Atlantis & WHOI Radioisotope Van

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Distribution:
SWAB Committee
Dave Fisichella

Typical LSC instrument background values for ³H and ¹⁴C 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/m². Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m². 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: ¹⁴C and ³⁵S have peak energies of 156 and 167 KeV, respectively; thus ³⁵S will be registered as ¹⁴C 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.

¹⁴C: Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing ¹⁴CO₂). Follow up with wash as if for ³H.

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.

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

DATE: 23 November 2013
TECHNICIAN: Cecilia Roig

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	39	± 51	0	± 0
<u>Hydro Lab (Figure 1)</u>					
3	Inside Cospolitch top	0	± 0	9	± 35
4	Inside Cospolitch bottom	5	± 43	1	± 26
5	Deck in front of Cospolitch	0	± 0	7	± 39
6	Deck inside aft door	0	± 0	0	± 0
7	Port sink area	0	± 0	16	± 40
8	Deck inside stbd. doors	0	± 0	27	± 37
9	Stbd. sink area	0	± 0	0	± 0
10	Inside fume hood	2	± 24	5	± 33
<u>Wet Lab (Figure 1)</u>					
11	Inside fume hood	4	± 26	7	± 33
12	Fwd. sink area	0	± 0	18	± 38
13	Deck at port door	10	± 45	2	± 25
14	Stbd. benchtop	0	± 0	15	± 38
<u>Main Lab (Figure 2)</u>					
15	Top of Revco freezer #1	0	± 0	4	± 35
16	Top of Revco freezer #2	20	± 48	1	± 16
17	Inside stbd. freezer top	0	± 0	9	± 39
18	Inside stbd. fridge bottom	0	± 0	23	± 36
19	Deck in front of freezer	0	± 0	35	± 38
20	Port sink area	0	± 0	36	± 37
21	Deck inside fwd. port entrance	0	± 0	5	± 35
22	Deck inside mid port entrance	0	± 0	6	± 51
23	Center benchtop across from port sink	0	± 0	0	± 0
24	Stbd. sink area	0	± 0	20	± 35
25	Inside fume hood	0	± 0	29	± 36
26	Deck inside aft doors	2	± 14	8	± 33
27	Center benchtop	12	± 60	0	± 0
<u>Electronics Lab (no figure)</u>					
28	Deck at stbd. entrance	0	± 0	25	± 36
29	Deck at fwd. entrance	0	± 0	6	± 37

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
30	Deck inside Science storeroom	0	± 0	33	± 37
	<u>Bioanalytical/Clean Lab (Figure 2)</u>				
31	Inside Cospolitch top	0	± 0	6	± 38
32	Inside Cospolitch bottom	0	± 0	19	± 37
33	Forward sink area	0	± 0	0	± 0
34	Deck in front of Cospolitch	0	± 0	10	± 40
35	Inside fume hood	0	± 0	3	± 61
36	Aft sink area	0	± 0	7	± 39
37	Deck in front of fume hood	0	± 0	10	± 36
38	Deck inside stbd. door	0	± 0	14	± 41
	<u>Walk-in Coolers (no figure)</u>				
39	Benchtop in forward walk-in cooler	8	± 28	12	± 33
40	Deck in fwd. walk-in cooler	0	± 0	31	± 35
41	Deck in aft walk-in cooler	0	± 0	22	± 37
42	Benchtop in aft walk-in cooler	41	± 54	0	± 0
43	Final bucket blank C.O. #1	0	± 0	0	± 0
44	Initial bucket blank C.O. #2	0	± 0	4	± 38
	<u>WHOI Radiation Van #2001400 (Figure 3)</u>				
45	Benchtop across hood	82	± 50	12	± 25
46	Inside fume hood	60	± 47	11	± 26
47	Benchtop adjacent to fume hood	27	± 43	10	± 29
48	Sink area	113	± 43	*91	± 35
49	Inside refrigerator	48	± 30	*76	± 35
50	Inside freezer	57	± 37	*55	± 34
51	Benchtop across sink	63	± 45	20	± 29
52	Benchtop across fridge	43	± 44	14	± 29
53	Inside small Haier	*1,862	± 126	15	± 5
54	Deck between freezer and hood	143	± 52	46	± 30
55	Deck between sink and entrance	127	± 48	*61	± 32
56	Final bucket blank C.O. #2	10	± 24	20	± 33

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 ^3H and ^{14}C contamination that requires cleaning.

Minor ^{14}C and ^3H contamination found in WHOI Radiation Van, no action required.

Figure 1
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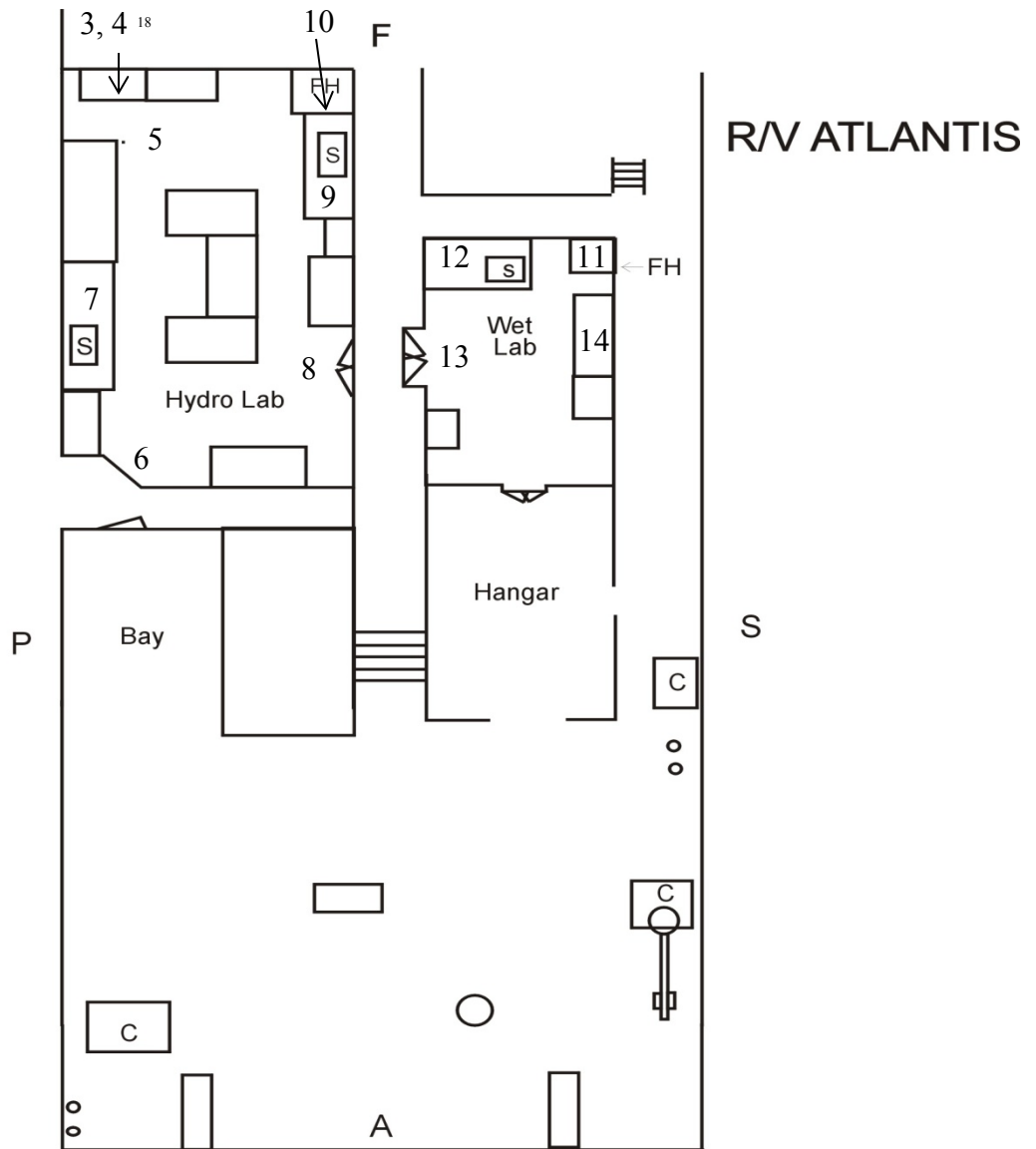
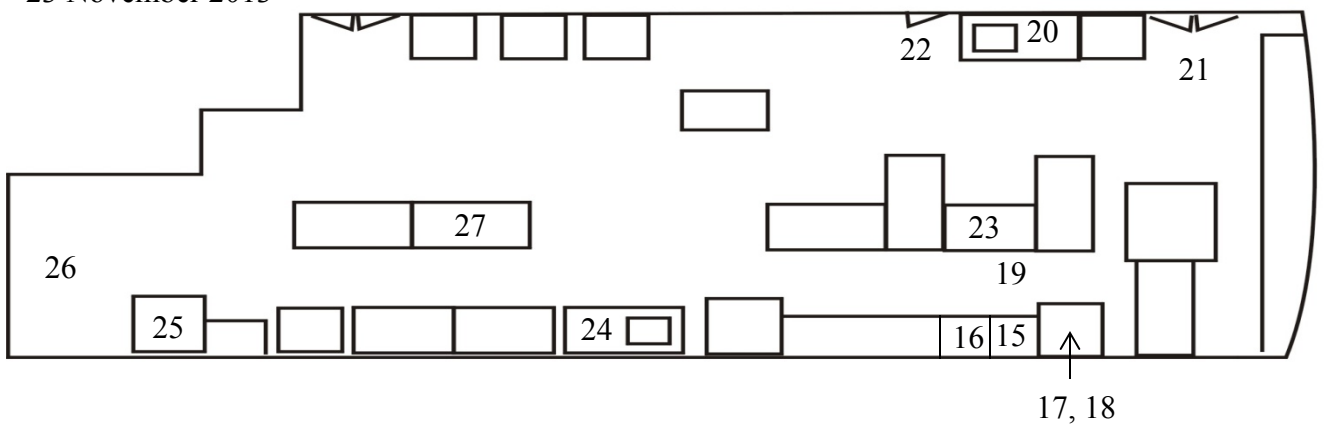


Figure 2
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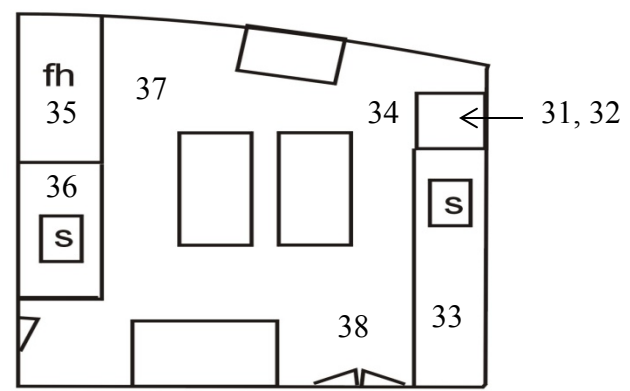
Atlantis Main Lab Port



Aft

Fwd

Biology/Analytical Clean Lab



Stbd

WHOI RADIOISOTOPE VAN

#200140

Figure 3
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