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Tritium Laboratory
4 May 2016

SWAB REPORT # 809

SWAB DATE: 30 April 2016

R/V Atlantic Explorer

James Happell

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COMMENTS TO SWAB REPORTS 12 May 2014

Typical LSC instrument background values for ^{3}H 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	^{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 # 809

LOCATION: St. Georges, Bermuda
VESSEL: *R/V Atlantic Explorer*

DATE: 30 April 2016
TECHNICIAN: Jim Happell

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
	Forward Lab (Figure 1)						
2	Initial bucket blank	25	±	38	10	±	33
3	Port benchtop aft of sink	2	±	11	15	±	37
4	Port sink area	21	±	38	10	±	33
5	Center benchtop	10	±	88	-11	±	36
6	Forward benchtop	15	±	101	-20	±	54
7	Deck at starboard entrance	17	±	45	0	±	0
8	Deck at aft entrance	23	±	43	3	±	26
9	Benchtop inside Enviro room	14	±	101	-17	±	47
10	Deck in Enviro room	74	±	51	-2	±	40
	Aft Lab (Figure 1)						
11	Port sink area	22	±	37	12	±	34
12	Port benchtop forward of sink	39	±	47	0	±	7
13	Forward benchtop	1	±	6	-2	±	15
14	Center benchtop	-3	±	15	-9	±	31
15	Inside fume hood	32	±	58	-16	±	43
16	Deck below fume hood	25	±	43	4	±	28
17	Inside aft Cospolich refriigerator	-4	±	21	-17	±	46
18	Inside forward Cosplolich refrigerator	31	±	40	11	±	32
19	Inside aft Cospolich freezer	28	±	51	-7	±	55
20	Inside forward Cospolich freezer	30	±	77	-27	±	74
	Main Lab (Figure 1)						
21	Deck between sink and center benchtop	22	±	47	-1	±	11
22	Port sink area	18	±	36	12	±	34
23	Benchtop aft of port sink	-9	±	44	8	±	39
24	Inside clean bench area	25	±	52	-7	±	55
25	Center benchtop	19	±	51	-4	±	37
26	Deck inside forward entrance	1	±	7	-3	±	24
27	Inside starboard freezer	39	±	42	11	±	31
28	Inside port freezer	16	±	49	-3	±	23
29	Starboard benchtop	17	±	39	6	±	32

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		^{3}H dpm/m^{2} error	^{14}C dpm/m^{2} activity		^{14}C dpm/m^{2} error
	Misc. Areas (Figure 1)						
30	Deck in passageway between Lounge and me	27	±	42	6	±	29
	Rad Van # 2409-01 (Figure 2)						
31	Sink area	*3280	±	157	*57	±	11
32	Inside Danby refrigerator	*5855	±	202	*490	±	36
33	Benchtop across from fume hood and sink	*5632	±	202	*107	±	13
34	Top of LSC	**48423	±	586	*763	±	24
35	Inside fume hood	*7953	±	237	*94	±	9
36	Deck between LSC and fume hood	***566956	±	1984	*5830	±	51
37	Deck at entrance	*5082	±	195	*92	±	12
38	Deck outside entrance	70	±	53	-11	±	37
39	Final bucket blank	24	±	58	-13	±	43

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 inside the ship were free from isotope conatmiantion that requires cleanin Ran van #2409-01 had minor ^{14}C contamination, and minor to major ^{3}H contamination. The deck of the rad van should be throughly and immediately cleaned. The top of the LSC should also be cleaned.

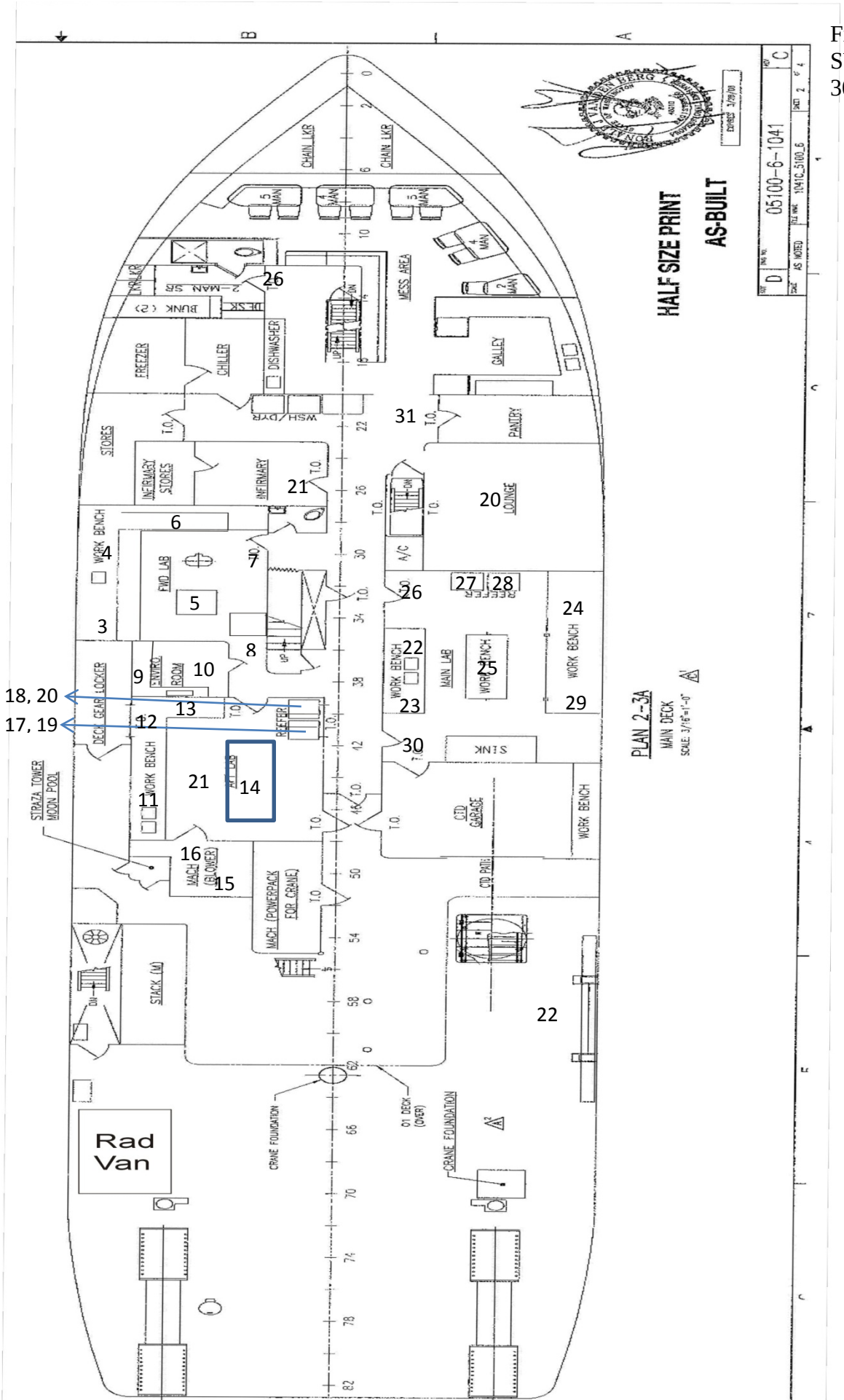

Figure 1
SWAB #809
30 April 2016

SWAB #809
Figure 2
30 April 2016

UNOLS Shared Use Van 2409-01