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Tritium Laboratory
8 June 2017

SWAB REPORT # 861

SWAB DATE: 2 June 2017

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 # 861

LOCATION: St. George, Bermuda
VESSEL: *R/V Antlantic Explorer*

DATE: 2 June 2017
TECHNICIAN: Charlene Grall

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
2	Initial bucket blank	40	±	41	7	±	28
	Main Lab (Figure 1)						
3	Port sink area	34	±	36	21	±	34
4	Benchtop aft of sink	41	±	41	10	±	30
5	Center benchtop	47	±	41	10	±	29
6	Deck inside forward entrance	65	±	44	9	±	27
7	Deck between center benchtop and starboard bench	59	±	42	17	±	31
8	Forward starboard benchtop (Clean area)	39	±	45	-2	±	10
9	Deck in front of CTD bottle rack on aft bulkhead	35	±	45	0	±	6
10	Deck in front of port sink	68	±	48	2	±	13
	Forward Lab (Figure 1)						
11	Port sink area	58	±	46	1	±	9
12	Benchtop aft of sink	44	±	50	-9	±	27
13	Center benchtop	3	±	18	9	±	36
14	Forward benchtop	56	±	47	-2	±	67
15	Deck at forward entrance	42	±	52	-12	±	34
16	Deck at aft entrance	36	±	42	5	±	26
17	Deck in front of port sink	66	±	61	-36	±	50
18	Benchtop inside Enviro Room	21	±	35	12	±	33
19	Deck in Enviro Room	55	±	54	-13	±	37

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
	Aft Lab (Figure 1)						
20	Port sink area	37	±	43	3	±	22
21	Benchtop forward of sink	23	±	44	0	±	5
22	Forward benchtop	-5	±	97	17	±	37
23	Center benchtop	20	±	30	21	±	35
24	Inside fume hood	68	±	59	-34	±	46
25	Deck in front of fume hood	67	±	47	0	±	4
26	Inside aft Cospolich refrigerator	58	±	39	24	±	33
27	Inside forward Cospolich refrigerator	52	±	43	7	±	26
28	Inside aft Cospolich freezer	39	±	43	4	±	25
29	Inside forward Cospolich freezer	24	±	33	17	±	34
30	Deck inside forward entrance	72	±	51	-13	±	37
31	Deck inside aft entrance	22	±	32	18	±	35
32	Deck in front of port sink	61	±	46	1	±	11
33	Intermediate bucket blank	60	±	51	-15	±	43
	Radioisotiope Van 2409-01 (Figure 2)						
34	Sink area	236	±	50	*126	±	37
35	Benchtop across from sink	279	±	63	13	±	17
36	Inside fume hood	40	±	47	-5	±	27
37	Top of LSC	*910	±	90	23	±	12
38	Inside Danby refrigerator under sink	**46212	±	568	*905	±	28
39	Forward benchtop	132	±	49	17	±	26
40	Deck between LSC and hood	**15005	±	329	*379	±	22
41	Deck at entrance	*1257		105	*77		22
42	Deck outside van entrance on 01 Deck	72		47	12		28
43	Final bucket blank	41		48	-7		37

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 were free from any isotope contamination that requires cleaning. Minor to moderate ^{3}H and minor ^{14}C contamination found in the rad van.
The deck between the LSC and fume hood and the refrigerator should be cleaned before any further use.

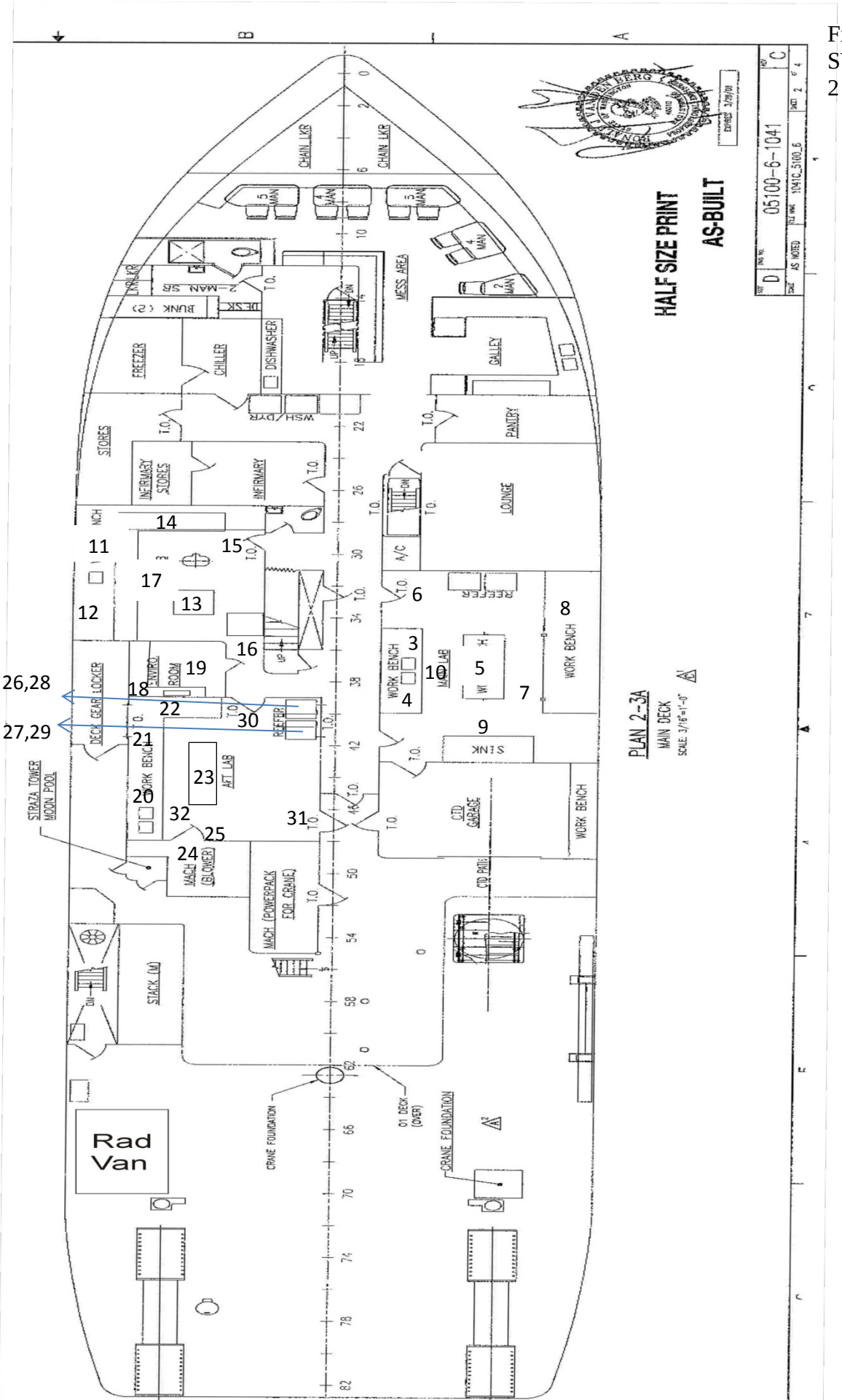

Figure 1
SWAB #861
2 June 2017

SWAB #861
Figure 2
2 June 2017

UNOLS Shared Use Van 2409-01