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Tritium Laboratory
31 July 2017

SWAB REPORT # 868

SWAB DATE: 24 July 2017

R/V Atlantic Explorer

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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 # 868

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

DATE: 24 July 2017
TECHNICIAN: Yudy Mendoza

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	21	±	48	1	±	13
	Main Lab (Figure 1)						
3	Port sink area	47	±	48	-5	±	12
4	Benchtop aft of sink	46	±	42	10	±	30
5	Center benchtop	37	±	59	-20	±	15
6	Deck inside forward entrance	40	±	47	-2	±	163
7	Deck between center benchtop and starboard	37	±	43	5	±	26
8	Forward starboard benchtop	28	±	37	13	±	33
9	Deck in front of CTD bottle rack on aft bulkhead	70	±	47	6	±	23
10	Deck in front of port sink	30	±	35	13	±	33
	Forward Lab (Figure 1)						
11	Port sink area	21	±	28	26	±	36
12	Benchtop aft of sink	10	±	43	0	±	16
13	Center benchtop	57	±	41	18	±	32
14	Forward benchtop	48	±	48	-7	±	9
15	Deck at forward entrance	60	±	58	-28	±	20
16	Deck at aft entrance	19	±	69	-15	±	13
17	Deck in front of port sink	27	±	51	-8	±	15
18	Benchtop inside Enviro Room	20	±	50	-6	±	20
19	Deck in Enviro Room	45	±	50	-11	±	21

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	31	±	40	8	±	31
21	Benchtop forward of sink	38	±	37	17	±	33
22	Forward benchtop	70	±	46	11	±	28
23	Center benchtop	37	±	38	18	±	34
24	Inside fume hood	19	±	39	5	±	30
25	Deck in front of fume hood	52	±	60	-25	±	17
26	Inside aft Cospolich refrigerator	12	±	54	-6	±	13
27	Inside forward Cospolich refrigerator	60	±	42	14	±	30
28	Inside aft Cospolich freezer	-17	±	10	7	±	42
29	Inside forward Cospolich freezer	10	±	28	12	±	36
30	Deck inside forward entrance	25	±	46	-4	±	15
31	Deck inside aft entrance	31	±	43	1	±	15
32	Deck in front of port sink	24	±	37	9	±	33
33	Intermediate bucket blank	-3	±	19	23	±	38
	Radioisotiope Van 2409-01 (Figure 2)						
34	Sink area	119	±	50	11	±	23
35	Benchtop across from sink	165	±	53	13	±	22
36	Inside fume hood	49	±	47	-2	±	180
37	Top of LSC	113	±	50	-1	±	6
38	Inside Danby refrigerator under sink	4795*	±	188	88*	±	12
39	Deck between LSC and hood	976*	±	93	20	±	11
40	Deck at entrance	513*	±	74	6	±	7
41	Deck outside van entrance on 01 Deck	70	±	51	-1	±	12
42	Final bucket blank	18	±	35	9	±	34

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 ^{3}H and ^{14}C contamination found in the Rad Van. No action is necessary in the Rad Van

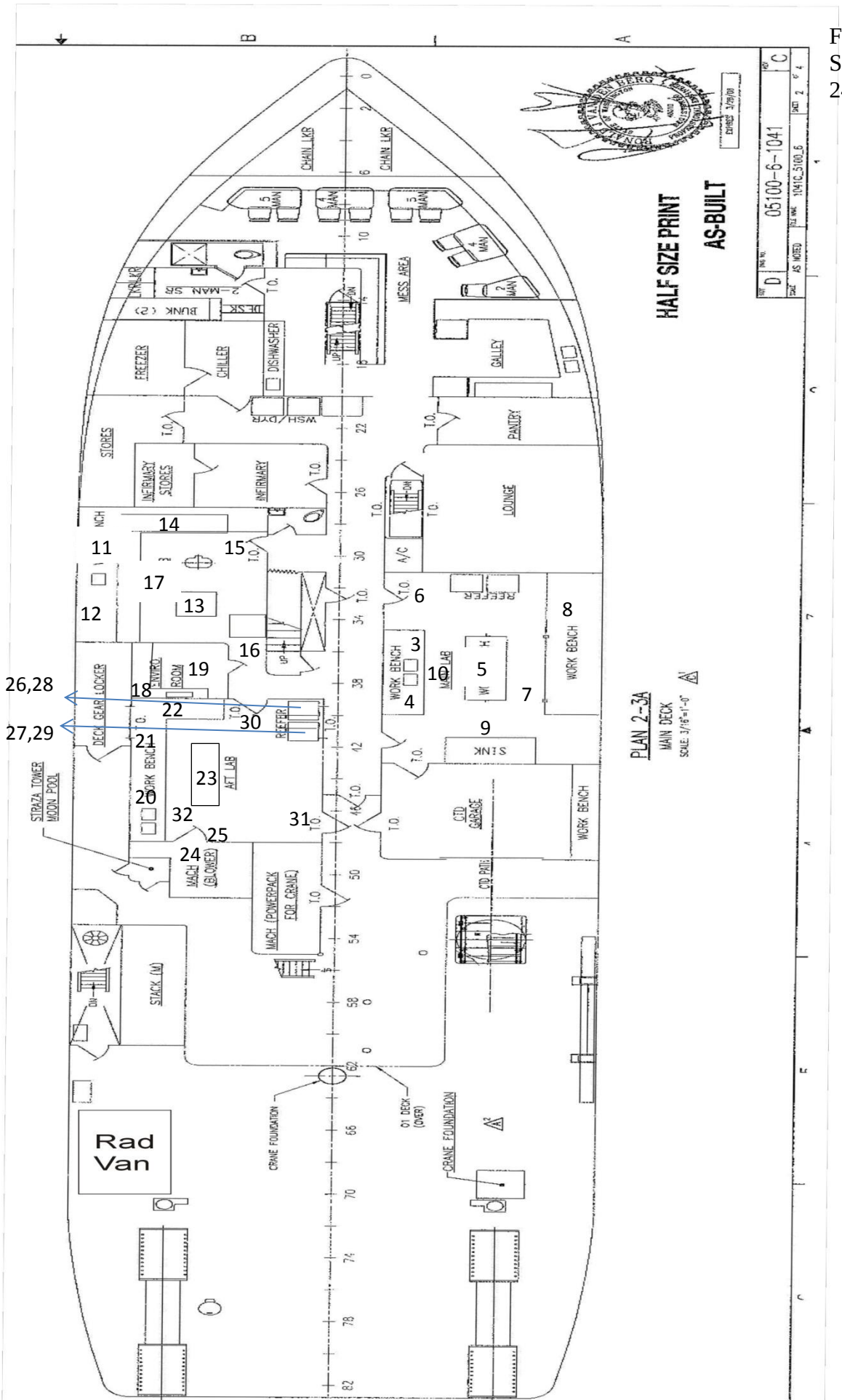

Figure 1
SWAB #868
24 July 2017

SWAB #868
Figure 2
24 July 2017

UNOLS Shared Use Van 2409-01