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Tritium Laboratory
25 March 2013

SWAB REPORT # 671

SWAB DATE: 20 March 2013

R/V Atlantic Explorer and UNOLS Van #2409.01

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Distribution:
SWAB Committee
James Caison

COMMENTS TO SWAB REPORTS 23 November 2010

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/m2 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 dispose in radiation waste system.

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

REPORT FOR SWAB # 671

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

DATE: 20 March 2013
TECHNICIAN: Cecilia Roig

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	19	±	69	0	±	0
	Aft/Wet Lab (Figure 1)						
3	Inside fume hood	0	±	0	0	±	0
4	Deck at entrance to hood room	2	±	0	0	±	0
5	Benchtop forward of sink	46	±	76	0	±	0
6	Inside Roper freezer top	19	±	39	8	±	32
7	Inside Roper fridge bottom	0	±	0	7	±	40
8	Inside GE freezer	4	±	0	0	±	0
9	Inside small black GE	0	±	0	0	±	0
10	Center benchtop	21	±	107	0	±	0
11	Deck at forward entrance	0	±	0	12	±	38
12	Forward benchtop	25	±	63	0	±	0
	Forward Lab (Figure 1)						
13	Benchtop forward fo sink	0	±	0	0	±	0
14	Forward benchtop	0	±	0	7	±	40
15	Deck at starboard entrance	6	±	29	7	±	34
16	Deck at infirmary entrance	2	±	0	0	±	0
17	Deck at top of stairs	0	±	0	27	±	38
18	Inside VWR freezer	4	±	0	0	±	0
19	Deck under center benchtop	0	±	0	7	±	36
20	Benchtop aft of sink	0	±	0	0	±	0
21	Deck in Enviro Room	59	±	50	5	±	21
22	Benchtop inside Enviro Room	3	±	0	0	±	0
	Main Lab (Figure 1)						
23	Starboard forward freezer	26	±	44	5	±	28
24	Port forward freezer	0	±	0	0	±	0
25	Starboard benchtop	0	±	0	4	±	37
26	Deck in front of port benchtop	35	±	56	0	±	0
27	Deck in front of freezers	12	±	85	0	±	0
28	Deck in front of starboard benchtop	0	±	0	0	±	0
29	Deck inside aft entrance	19	±	55	0	±	0

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
30	Center benchtop	11	±	103	0	±	0
31	Benchtop aft of sink	0	±	0	0	±	0
32	Sink area	0	±	0	0	±	0
33	Inside clean air bench	8	±	0	0	±	0
34	Intermediate bucket blank	22	±	76	0	±	0
	UNOLS Shared Use Van 2409.01 (Figure 2)						
35	Sink area	249	±	66	11	±	17
36	Benchtop next to LSC	403	±	69	18	±	17
37	Inside fume hood	348	±	64	44	±	26
38	Top of LSC	249	±	60	32	±	26
39	Deck between LSC and hood	*626	±	81	38	±	20
40	Deck at entrance	173	±	57	5	±	13
41	Forward benchtop	92	±	52	0	±	0
42	Inside Danby under sink	**15,014	±	347	*9,315	±	164
43	Final bucket blank	18	±	79	0	±	0

Comments

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

All areas tested in the ship were free from ^{3}H or ^{14}C contamination that requires cleaning.

Minor to moderate ^{3}H and minor ^{14}C contamination found in the van. The inside of the Danby refrigerator needs to be cleaned before any further use.

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Figure 1

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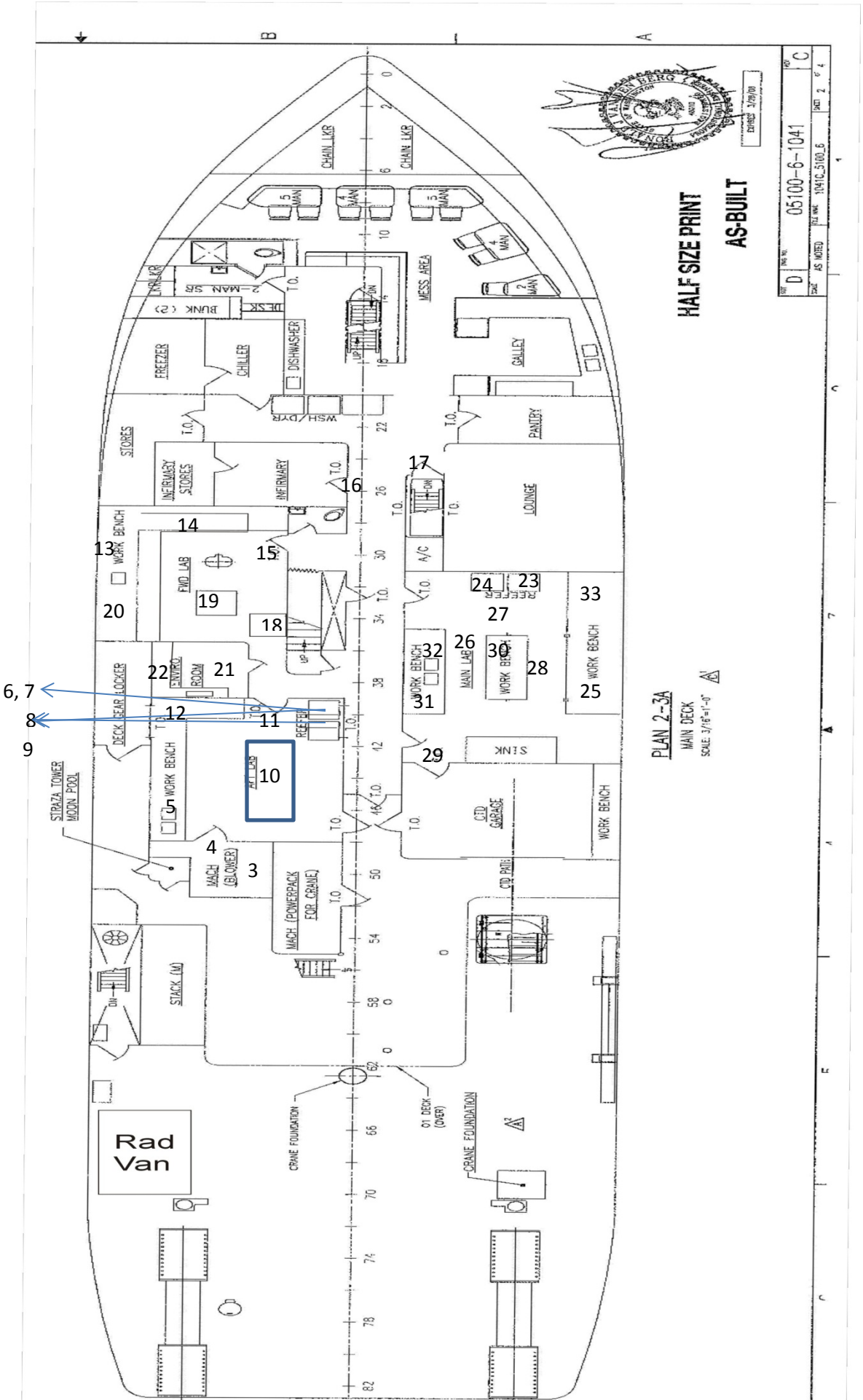

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Figure 2

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