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Tritium Laboratory
11 September 2012

SWAB REPORT # 645

SWAB DATE: 31 August 2012

R/V Atlantic Explorer

James D. Happell

Distribution:
SWAB Committee
James Caison

COMMENTS TO SWAB REPORTS 23-Nov-10

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 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 # 642

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

DATE: 31 August 2012
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 C.O. #1	4	± 0	0	± 0
	Aft/Wet Lab (Figure 1)				
3	Inside fume hood	19	± 199	0	± 0
4	Deck at entrance to hood room	52	± 49	0	± 0
5	Benchtop forward of sink	19	± 73	0	± 0
6	Inside Roper freezer top	18	± 41	1	± 13
7	Inside Roper fridge bottom	60	± 55	0	± 0
8	Inside GE freezer	23	± 46	0	± 0
9	Inside small black GE	13	± 51	0	± 0
10	Center benchtop	11	± 94	0	± 0
11	Deck at forward entrance	25	± 85	0	± 0
12	Forward benchtop	42	± 53	0	± 0
	Forward Lab (Figure 1)				
13	Benchtop foward of sink	44	± 48	0	± 0
14	Forward benchtop	57	± 56	0	± 0
15	Deck at starboard entrance	13	± 142	0	± 0
16	Deck at infirmary entrance	12	± 28	14	± 33
17	Deck at top of stairs	16	± 67	0	± 0
18	Deck in front of ice machine	16	± 51	0	± 0
19	Deck in front of sink	64	± 52	0	± 0
20	Benchtop aft of sink	38	± 49	0	± 0
21	Deck in Enviro Room	47	± 55	0	± 0
22	Inside VWR freezer	33	± 63	0	± 0
	Main Lab (Figure 1)				
23	Starboard forward freezer	43	± 59	0	± 0
24	Port forward freezer	14	± 47	0	± 0
25	Starboard benchtop	55	± 58	0	± 0
26	Aft benchtop	37	± 41	5	± 24
27	Deck in front of freezers	25	± 77	0	± 0
28	Deck in front of starboard bench	54	± 48	0	± 0
29	Deck inside aft entrance	23	± 57	0	± 0

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
30	Center benchtop	23	±	50	0	±	0
31	Benchtop aft of sink	37	±	51	0	±	0
32	Benchtop forward of sink	26	±	43	0	±	0
33	Inside clean air bench	41	±	52	0	±	0
34	Intermediate bucket blank	43	±	61	0	±	0
	UNOLS Shared Use Van 2409.01 (Figure 2)						
35	Sink area	78	±	44	18	±	28
36	Benchtop next to LSC	66	±	53	0	±	0
37	Inside fume hood	341	±	63	19	±	18
38	Top of LSC	171	±	49	41	±	29
39	Deck between LSC and hood	143	±	44	*98	±	35
40	Inside Danby next to LSC	115	±	45	32	±	29
41	Inside Danby under sink	*2005	±	123	*167	±	26
42	Deck at entrance	299	±	59	46	±	26
43	Forward benchtop	*1173	±	100	43	±	15
44	Final bucket blank	70	±	47	0	±	0

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error.
All areas tested on ship were free from isotope contamination that required cleaning.
Minor ^{3}H and ^{14}C contamination found in the UNOLS shared use van. No action is required, however we do recommend cleaning the deck of the van to help prevent spreading contaimination.

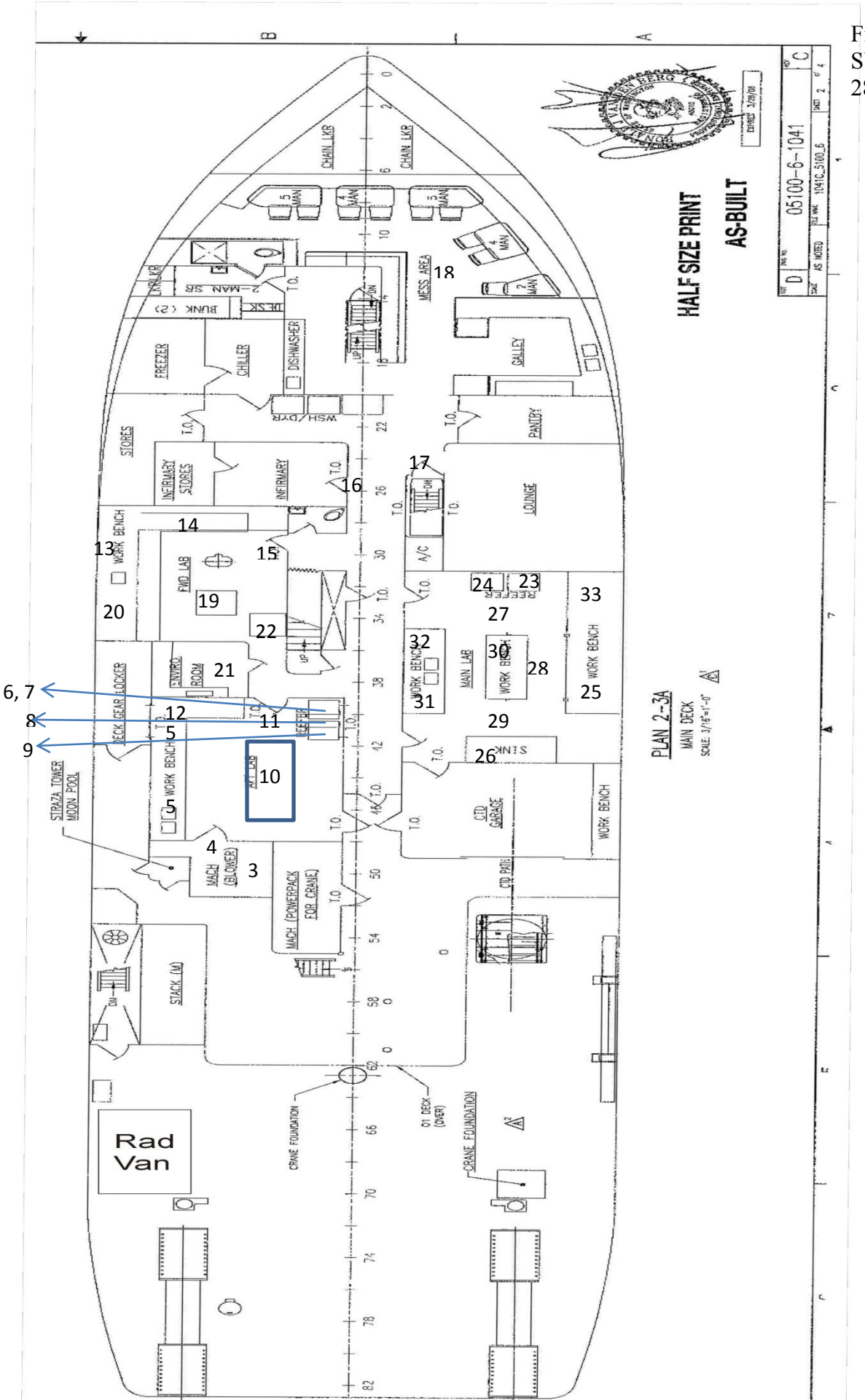

Figure 1
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Figure 2
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UNOLS Shared Use Van 2409.01