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Tritium Laboratory
4 April 2014

SWAB REPORT # 719

SWAB DATE: 27 March 2014

R/V Kilo Moana

Dr. James D. Happell
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Distribution:
SWAB Committee
Scott Ferguson
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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/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 # 719

LOCATION: Honolulu, HI
VESSEL: *R/V Kilo Moana*

DATE: 27 March 2014
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	0	±	0	0	±	0
	Lab #2 (Figure 1)						
3	Deck inside entrance	5	±	23	13	±	33
4	Deck in front of aft sink area	0	±	0	17	±	37
5	Deck in front of fwd sink	7	±	27	14	±	33
6	Fwd sink area	0	±	0	*61	±	37
7	Deck in front of aft port sink	0	±	0	34	±	36
8	Deck in front of fwd port bench	0	±	0	24	±	36
9	Port benchtop aft section	0	±	0	0	±	0
10	Deck in Staging Bay near foot of stairs	0	±	0	9	±	44
	Chemistry Lab (Figure 1)						
11	Fwd sink area	110	±	57	0	±	0
12	Aft sink area	84	±	56	0	±	0
13	Deck at port entrance	27	±	86	0	±	0
14	Deck in front of fume hood	59	±	73	0	±	0
15	Stbd benchtop, center section	24	±	71	0	±	0
16	Inside fume hood	3	±	0	0	±	0
	Lab #1 (Figure 1)						
17	Deck inside fwd entrance	0	±	0	3	±	52
18	Deck inside aft entrance	0	±	0	25	±	38
	Miscellaneous Areas (Figure 1)						
19	Galley/Mess Deck below drink machine	0	±	0	7	±	36
20	Lounge/Library Deck in center of room	0	±	0	28	±	35
21	PCO2 Lab - Aft benchtop where PCO2 machine	0	±	0	16	±	37
22	PCO2 Lab - Deck below aft bench and sink	0	±	0	20	±	37
23	Computer Lab - Deck inside fwd stbd entrance	0	±	0	27	±	35
24	Computer Lab - Deck inside aft entrance	0	±	0	17	±	37
25	01 Deck outside entrance to Rad Van	0	±	0	18	±	39
26	02 Deck in front of incubator location	0	±	0	13	±	37
27	02 Deck at incubator drain	0	±	0	29	±	39

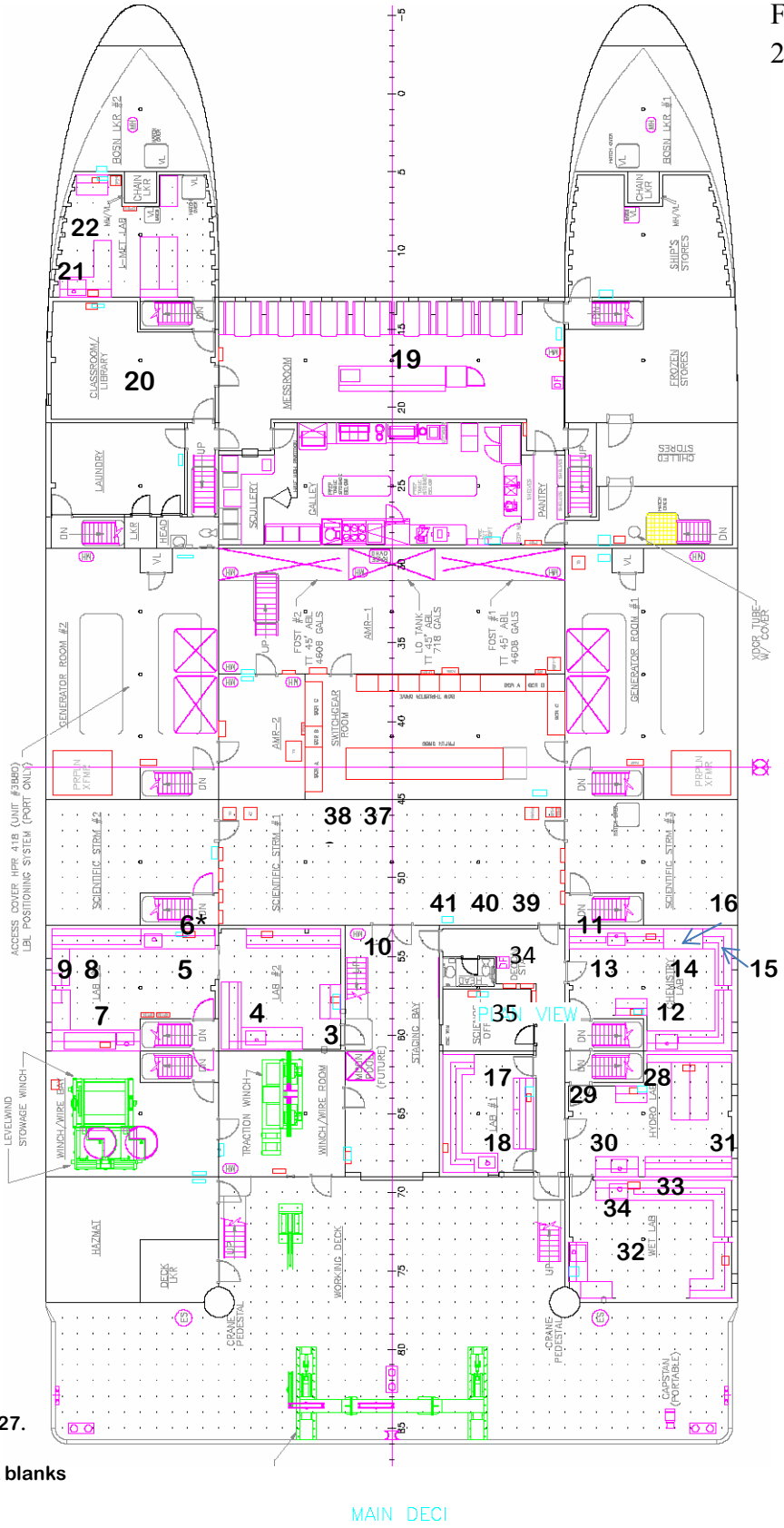
Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
	Hydro Lab (Figure 1)						
28	Deck stbd of center bench	0	±	0	35	±	36
29	Deck inside fwd entrance	0	±	0	28	±	34
30	Deck in front of aft sink	0	±	0	40	±	36
31	Inside stbd small Revco refrigerator	0	±	0	0	±	0
	Wet Lab (Figure 1)						
32	Deck in center of lab, aft of hatch	21	±	80	0	±	0
33	Fwd benchtop	19	±	0	0	±	0
34	Deck below sink	0	±	0	0	±	0
	Scientific Storage (Figure 1)						
35	Final bucket sample CO #1	0	±	0	19	±	36
36	Initial bucket sample CO #2	0	±	0	8	±	36
37	Top of Kenmore freezer (Karl)	4	±	16	20	±	33
38	Inside GE chest freezer ice only	82	±	53	8	±	22
39	Inside Cospolich #1 refrigerator	48	±	52	5	±	21
40	Inside Cospolich #2 refrigerator	4	±	38	2	±	31
41	Inside Cospolich #3 refrigerator	0	±	0	26	±	37
	Radioisotope Van (Figure 2)						
42	Benchtop across from side entrance	88	±	51	29	±	30
43	Deck inside side entrance	*3630	±	188	*289	±	30
44	Inside freezer next to side entrance	*505	±	76	*73	±	27
45	Benchtop next to fume hood	*740	±	90	26	±	14
46	Benchtop next to side entrance	34	±	37	31	±	33
47	Deck in center of van	*4978	±	211	*712	±	46
48	Inside freezer closest to fume hood	*2719	±	132	*1522	±	70
49	Deck at entrance next to fume hood	*2060	±	139	*468	±	43
50	Inside fume hood	*952	±	99	*73	±	23
51	Top of LSC	*1583	±	119	*155	±	27
52	Final bucket blank	0	±	0	43	±	37

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 contamination that requires cleaning. Minor ^{14}C contamination was detected in Lab #2 on the forward sink area, this area needs to be cleaned before any natural tracer work. Radioisotope van had minor ^{3}H and ^{14}C contamination. While no action is required we recommend clean the deck areas to help prevent tracking contamination into the ship.

SWAB # 719
Figure 1
27 March 2014



No figures for samples 23-27.

Samples 35, 36 are bucket blanks

Figure 2
SWAB #719
27 March 2014

UNIVERSITY OF HAWAII

R/V KILO MOANA
RADIOISOTOPE VAN