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Tritium Laboratory
3 March 2018

SWAB REPORT #888

SWAB DATE: 28 February 2018

R/V Kilo Moana

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 # 888

LOCATION:Honolulu, Hawaii
VESSEL/LAB: *R/V Kilo Moana*

DATE: 28 February 2018
TECHNICIAN: Jim Happell

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	-66	±	110	30	±	42
	Hydro Lab (Figure 1)						
3	Aft sink area	-30	±	50	-7	±	43
4	Forward benchtop	-10	±	32	7	±	39
5	Starboard benchtop aft section	430	±	73	34	±	23
6	Port benchtop	-52	±	87	25	±	41
7	Deck in front of starboard bench	-30	±	50	-4	±	23
8	Deck inside port entrance	-25	±	42	1	±	5
	Wet Lab (Figure 1)						
9	Sink area	-50	±	84	31	±	40
10	Deck inside aft hanger door entrance	-44	±	73	0	±	1
11	Deck below port fume hood	-56	±	95	16	±	45
12	Starboard benchtop	-22	±	36	-8	±	47
	Lab #1 (Figure 1)						
13	Starboard benchtop	-73	±	123	28	±	43
14	Deck below aft sink	-32	±	54	8	±	47
15	Deck at forward entrance	-23	±	38	11	±	41
16	Port benchtop	-57	±	95	-2	±	13
	Chemistry Lab (Figure 1)						
17	Forward sink area	-1	±	4	0	±	0
18	Deck in front of Kenmore refrigerator	-50	±	84	-18	±	65
19	Deck below fume hood	2	±	5	-30	±	39
20	Aft sink area	-70	±	231	9	±	62
21	Deck at port entrance	-2	±	6	0	±	44
22	Inside fume hood	222	±	67	-23	±	30
23	Starboard benchtop	-30	±	50	0	±	2
24	Aft benchtop	-36	±	60	-5	±	27
25	Center benchtop	-7	±	24	-8	±	46

Sample #	Sample Identification	^{3}H dpm/m^2			^{14}C dpm/m^2		
		activity		error	activity		error
	Scientific Storage Area (Figure 1)						
26	Inside Cospolich refrigerator 1	227	±	45	64	±	31
27	Inside Cospolich refrigerator 2	-45	±	76	-1	±	5
28	Inside Cospolich refrigerator 3	-54	±	90	1	±	6
29	Top of center GE chest freezer	-65	±	108	28	±	42
30	Top of Kenmore chest freezer	-83	±	138	-2	±	14
	Lab #2 (Figure 1)						
31	Aft sink area	-49	±	82	-15	±	55
32	Deck inside entrance	-70	±	118	2	±	12
33	Forward sink area	-25	±	41	-10	±	36
34	Deck at bulkhead between lab spaces	-42	±	71	-22	±	78
35	Port benchtop center section	-51	±	86	11	±	48
36	Port aft sink area	-54	±	90	12	±	48
37	Benchtop opposite of aft sink	-12	±	41	-20	±	73
38	Deck in front of port aft sink	-36	±	61	8	±	47
39	Benchtop against center bulkhead	-40	±	66	-7	±	43
40	Center benchtop	-39	±	65	0	±	2
41	Intermediate bucket blank	-18	±	60	-8	±	46
	Hawaii Van #23 (Figure #2)						
42	Benchtop to left of door	10	±	33	15	±	35
43	Sink area	150	±	62	16	±	25
44	Benchtop across from and left of door	*679	±	59	*1338	±	70
45	Benchtop across from and right of door	78	±	56	16	±	29
46	Benchtop to right of door	280	±	76	10	±	15
47	Inside refrigerator left of door	115	±	15	*1179	±	68
48	Inside refrigerator right of door	*2925	±	155	*103	±	18
49	Center deck	*3799	±	183	*150	±	21
50	Final bucket blank	-31	±	0	9	±	44

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 contamination that requires cleaning. Radioisotope Van #23 had minor ^{3}H and ^{14}C contamination. No action is required, but we recommend that the deck be cleaned to help prevent tracking contamination out of van.

SWAB # 888
Figure 1
28 February 2018

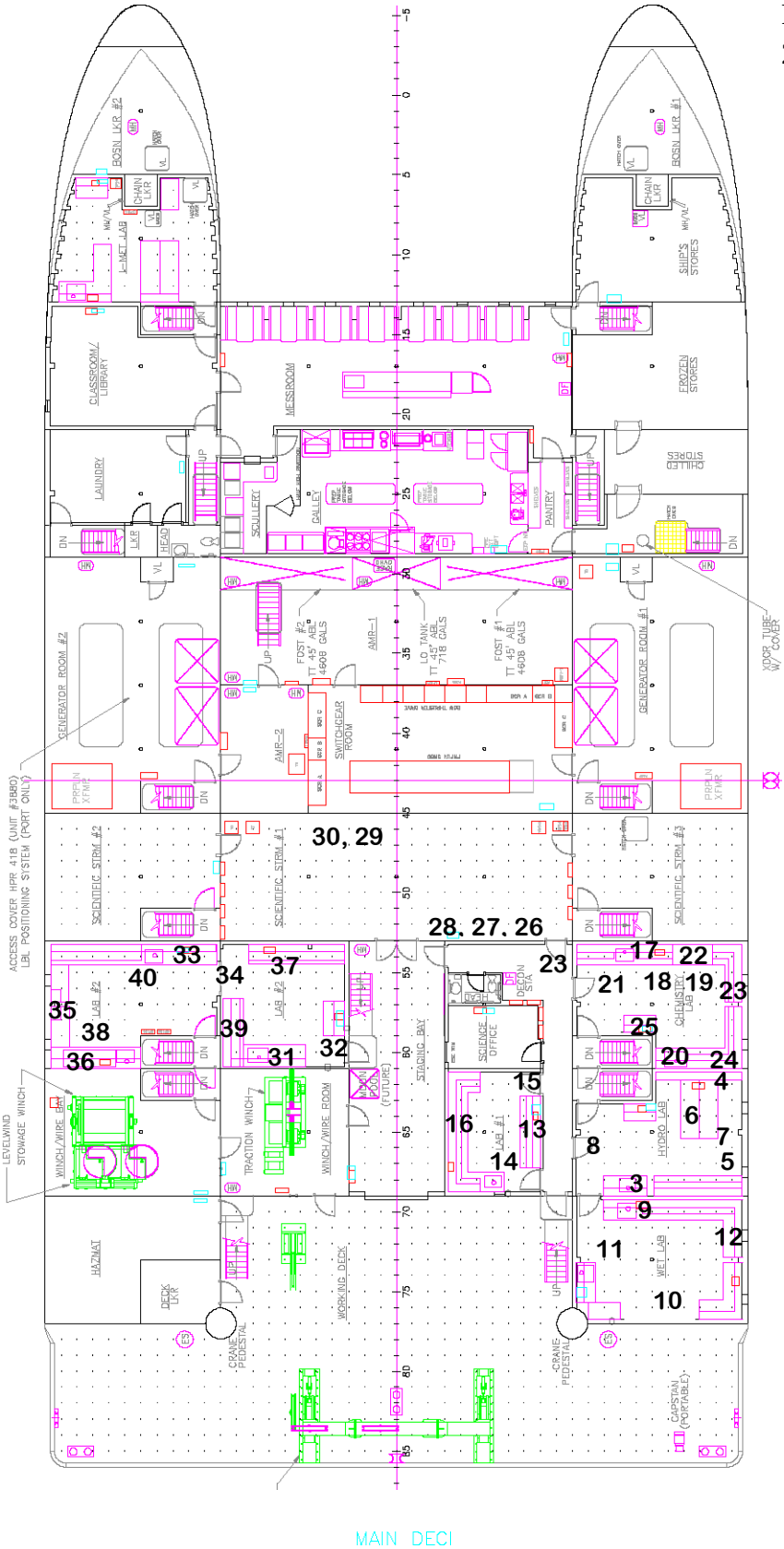

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Figure 2

Hawaii Van #23