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Tritium Laboratory

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SWAB REPORT # 775

SWAB DATE: 23 June 2015

R/V Endeavor

Dr. James D. Happell
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Distribution:
SWAB Committee
William Fanning

COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for ^3H 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	^3H (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 $1000 \text{ dpm}/\text{m}^2$ 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 Procedure

Wearing ordinary household rubber gloves:

^3H : 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 $^{14}\text{CO}_2$). Follow up with wash as if for ^3H .

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 # 775

LOCATION: Gulfport, MS

DATE: 23 June 2015

VESSEL: R/V Endeavor

TECHNICIAN: Charlene Grall

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	-35	± 0	-14	± 0
<u>UNOLS Radioisotope Van # 625.5.02 (Figure 1)</u>					
3	Sink area	*1090	± 71	*1852	± 79
4	SS benchtop to the left of sink	*546	± 48	*1352	± 70
5	SS benchtop across from LSC	95	± 16	*715	± 57
6	Inside fume hood	363	± 47	*592	± 53
7	Top of LSC	*5074	± 183	*1186	± 60
8	SS benchtop next to LSC	*8802	± 249	*192	± 16
9	SS benchtop across from sink	210	± 53	*96	± 35
10	Inside freezer	38	± 40	22	± 33
11	Inside refrigerator	*1416	± 79	*2485	± 89
12	Deck in front of fume hood	*3171	± 120	*4693	± 118
13	Deck in center of van	*1011	± 75	*1523	± 74
14	Deck at entrance next to sink	238	± 44	*334	± 46
15	Deck outside van entrance	193	± 31	*628	± 55
16	Intermediate bucket blank	-22	± 34	-16	± 24
<u>Special Purpose Lab (Figure 2)</u>					
17	Benchtop aft of sink	-29	± 44	-11	± 17
18	Sink area	-4	± 6	1	± 50
19	Inside fume hood	-99	± 151	-64	± 97
20	Inside black chest freezer	-6	± 10	-13	± 20
21	Inside Revco refrigerator	-15	± 23	-35	± 53
22	Forward benchtop	-8	± 13	-25	± 38
23	Benchtop in front of chest freezer	12	± 192	-21	± 31
24	Deck in front of sink	-12	± 19	-6	± 10
25	Deck in front of fume hood	-23	± 35	-16	± 24
<u>Wet Lab (Figure 2)</u>					
26	Deck inside aft door	-17	± 26	-2	± 3
27	Benchtop aft of sink, fwd section	-30	± 46	-9	± 13
28	Benchtop aft of sink, aft section	-15	± 22	-25	± 38
29	Benchtop aft of port entrance	-27	± 42	-29	± 44

Sample #	Sample Identification	^3H dpm/m ²			^{14}C dpm/m ²		
		activity	±	error	activity	±	error
30	Deck inside port entrance	-11	±	16	-44	±	68
	<u>Main Lab (Figure 3)</u>						
31	Deck in front of aft sink	-46	±	70	-13	±	20
32	Port sink area	-11	±	17	-23	±	34
33	Port benchtop	-29	±	44	-35	±	53
34	Aft center benchtop	-7	±	10	-12	±	19
35	Center center benchtop	-19	±	29	-22	±	33
36	Fwd center benchtop	4	±	6	-23	±	35
37	Deck at aft entrance	4	±	6	-30	±	45
38	Deck inside starboard entrance	-25	±	38	0	±	0
39	Final bucket blank, C.O. #1	13	±	19	-36	±	54
40	Initial bucket blank, C.O. #2	-13	±	19	-24	±	37
41	Deck in front of fwd computer rack	-29	±	44	-13	±	20
42	Inside Kenmore refrigerator	-33	±	50	-4	±	7
43	Deck at bottom of fwd stairs	-67	±	102	-28	±	42
44	Deck at entrance to Mess	-8	±	12	-18	±	27
45	Final bucket blank, C.O. #2	-10	±	15	-20	±	31

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. Moderate ^{14}C and ^3H contamination was found in radioisotope van; we recommend cleaning the van deck.

East Coast Van Pool Van #625.5.02

Figure 1
SWAB #775
23 June 2015

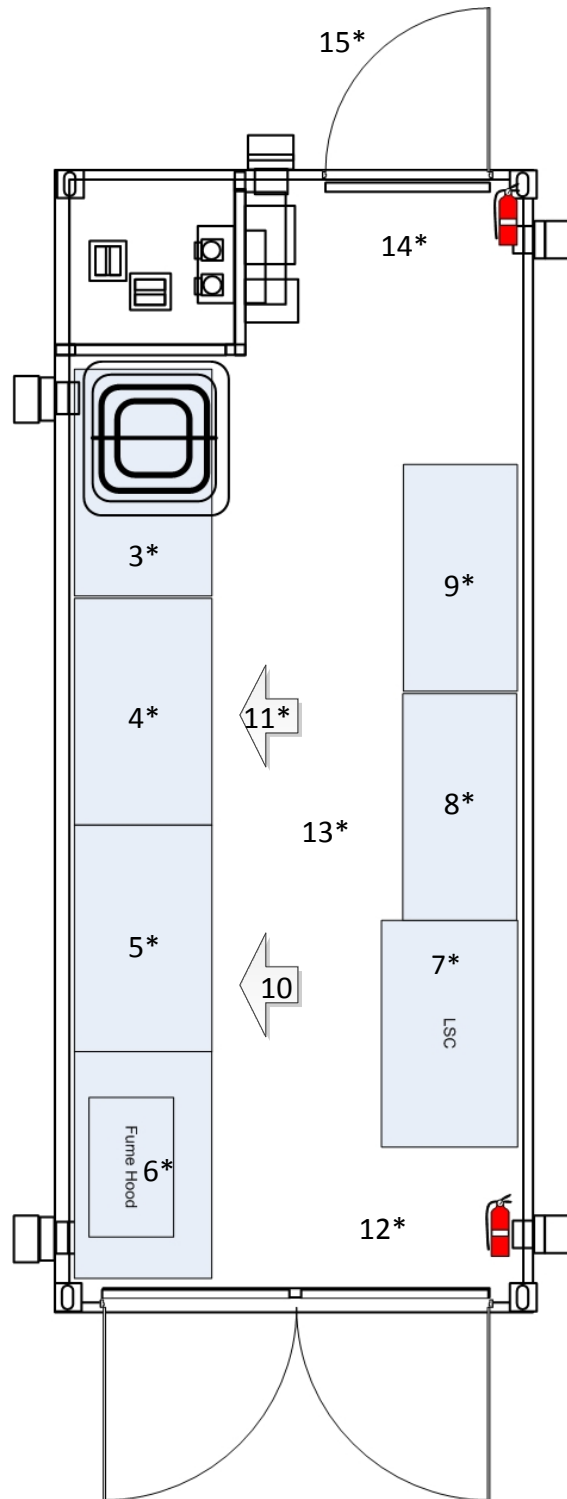


Figure 2
 SWAB # 775
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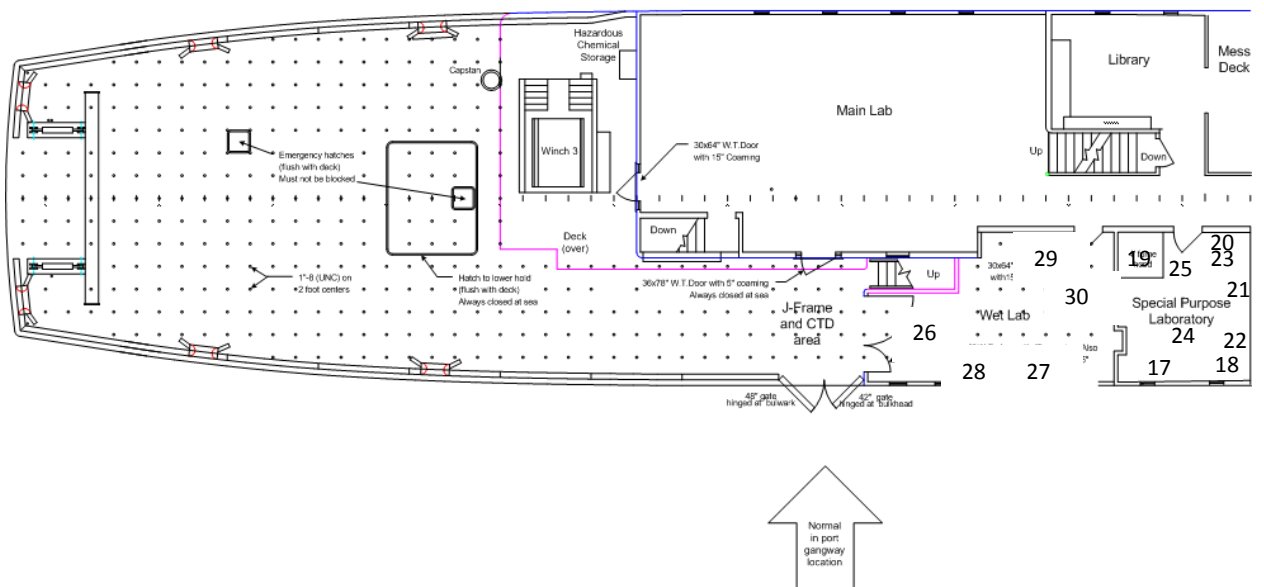
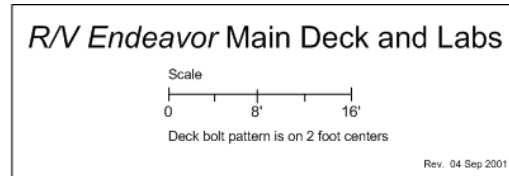


Figure 3
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