



Tritium Laboratory
31 March 2014

SWAB REPORT #718

SWAB DATE: 24 March 2014

R/V Hugh Sharp

James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Timothy Deering

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 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 # 718

LOCATION: Lewes, DE
VESSEL: *R/V Hugh Sharp*

DATE: 24 March 2014
TECHNICIAN: Charlene Grall

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
	<u>General Purpose Van(Figure 1)</u>				
1	1st Vial Bkgnd				
2	Initial bucket blank C.O. # 1	0 ±	0	0 ±	0
3	Stbd benchtop left of sink	0 ±	0	5 ±	184
4	Stbd benchtop right of fume hood	0 ±	0	49 ±	39
5	Inside fume hood	0 ±	0	+61 ±	39
6	Port benchtop opposite of fume hood	38 ±	32	+87 ±	38
7	Port benchtop center	53 ±	35	+103 ±	39
8	Port benchtop opposite of sink	0 ±	0	+75 ±	40
9	Inside freezer	0 ±	0	8 ±	76
10	Inside refrigerator	0 ±	0	46 ±	39
11	Sink area	+171 ±	48	+204 ±	42
12	Deck in front of sink at fwd entrance	+72317 ±	673	+50553 ±	369
13	Deck center of van	+174638 ±	1048	+119334 ±	561
14	Deck in front of fume hood aft entrance	+608723 ±	3044	+464628 ±	1766
	<u>Main Lab (Figure 2)</u>				
15	Inside whirlpool freezer top	0	0	19 ±	40
16	Inside whirlpool refrigerator bottom	0 ±	0	33 ±	42
17	Inside Holiday freezer	0 ±	0	0 ±	0
18	Top of Thermo freezer	0 ±	0	0 ±	0
19	Port benchtop across from freezers	29 ±	66	0 ±	0
20	Port benchtop across from whirlpool	0 ±	0	0 ±	0
21	Fwd stbd benchtop	0 ±	0	4 ±	0
22	Center stbd benchtop	0 ±	0	0 ±	0
23	Aft stbd benchtop	0 ±	0	0 ±	0
24	Aft benchtop across from spill control sta	0 ±	0	0 ±	0
25	Aft benchtop across from sink	0 ±	0	19 ±	49
26	Sink area	0 ±	0	11 ±	51
27	Deck below sink	+3866 ±	164	+2914 ±	95
28	Deck at entrance to Wet Lab	+761 ±	74	+576 ±	51
29	Deck in front of freezers	+1285 ±	100	+1073 ±	64
30	Deck between fwd and aft port benchtops	+1279 ±	102	+974 ±	61
31	Deck between stbd and port benches	+1682 ±	105	+1249 ±	67

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Wet Lab (Figure 2)</u>					
32	Final bucket blank C.O. # 1	0	± 0	0	± 0
33	Initial bucket blank C.O. # 2	0	± 0	0	± 0
34	Fwd stbd benchtop next to CTD	+42	± 25	+145	± 41
35	Deck at aft entrance	+132	± 48	+144	± 40
36	Deck below aft sink	+206	± 52	+239	± 43
37	Aft benchtops	0	± 0	25	± 48
38	Inside Whirpool freezer	0	± 0	11	± 73
39	Inside Whirpool fridge	0	± 0	0	± 0
<u>Rad Van, UNOLS 2408.04 (Figure 3)</u>					
40	Inside fume hood	254	± 40	*635	± 55
41	Benchtop adjacent to fume hood	352	± 48	*684	± 56
42	Benchtop adjacent to sink	0	± -13	*414	± 50
43	Benchtop next to LSC	50	± 13	*508	± 52
44	Benchtop opposite of sink	0	± -14	*494	± 52
45	Inside freezer	0	± 0	*1005	± 65
46	Inside refrigerator	*3087	± 107	*7698	± 151
47	Deck at aft entrance in front of fume hood	*622	± 51	*1841	± 80
48	Sink area	0	± 0	*654	± 56
49	Deck in front of sink inside fwd entrance	*2105	± 113	*2020	± 81
50	Final bucket blank C.O. # 2	0	± 0	17	± 51

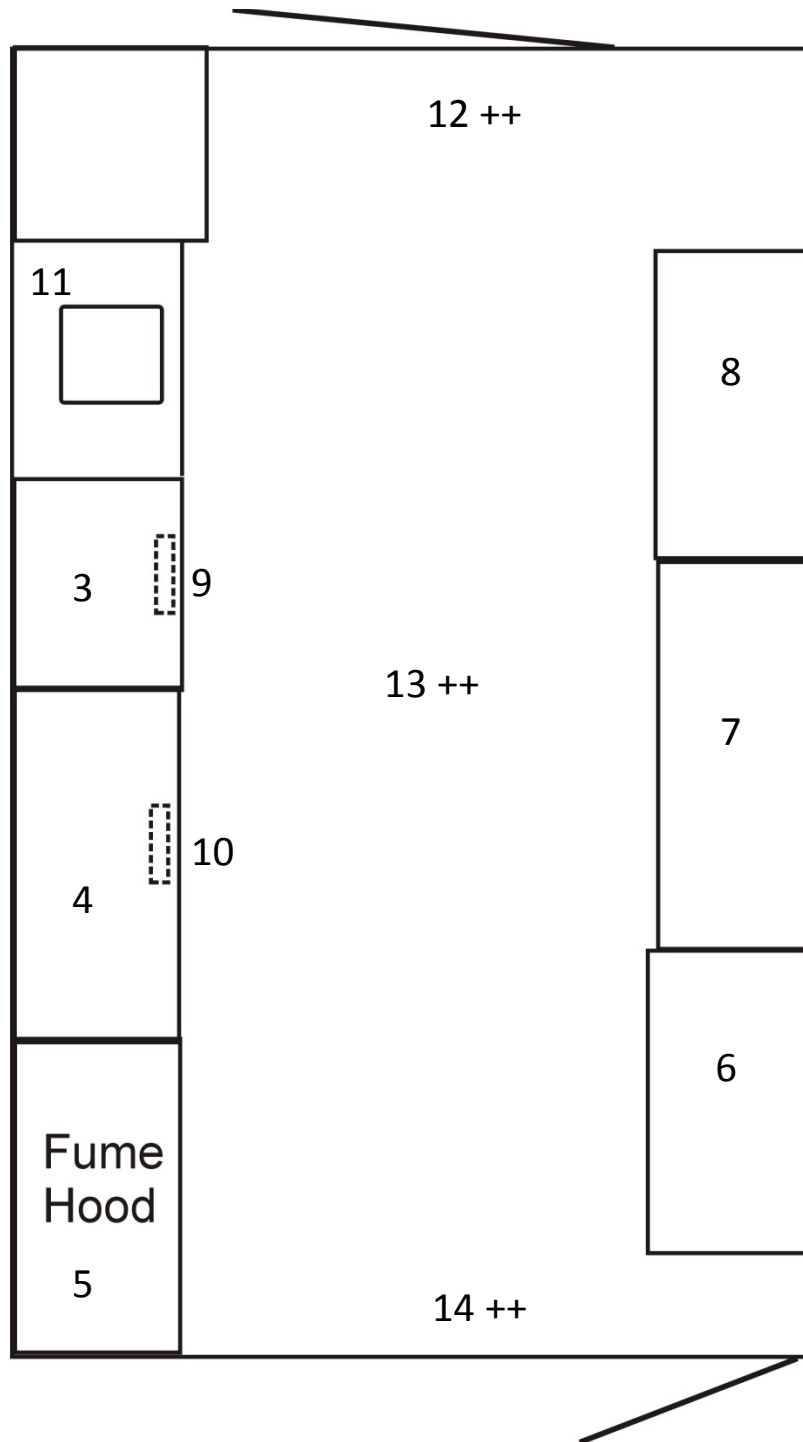
Comments

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

+These numbers are either above the cleanup limits or above background, however it is believed that they are false positive results due to the presense of DAPI dye. This fluorescent dye was used in general purpose van and then probably tracked throughout the ship. Because the LSC ultimately measures light fluorescent dyes can produce false positive results. Samples #14, 27, 31 and 36 were analyzed for tritium in gas proportional counters which are not affected by dyes because they do not measure light. All four of these samples were at background. Even though it appears that the "hot" samples in the General Purpose van and in the ship are not due to elevated ³H or ¹⁴C these areas still need to be cleaned throughly of the dye to prevent false positives in the future.

*Minor ³H and ¹⁴C contamination was found in the Rad Van. No action is required although we do recommend cleaning of the deck areas to prevent tracking contamination into the ship.

UNOLS General Purpose Van 625.4.02

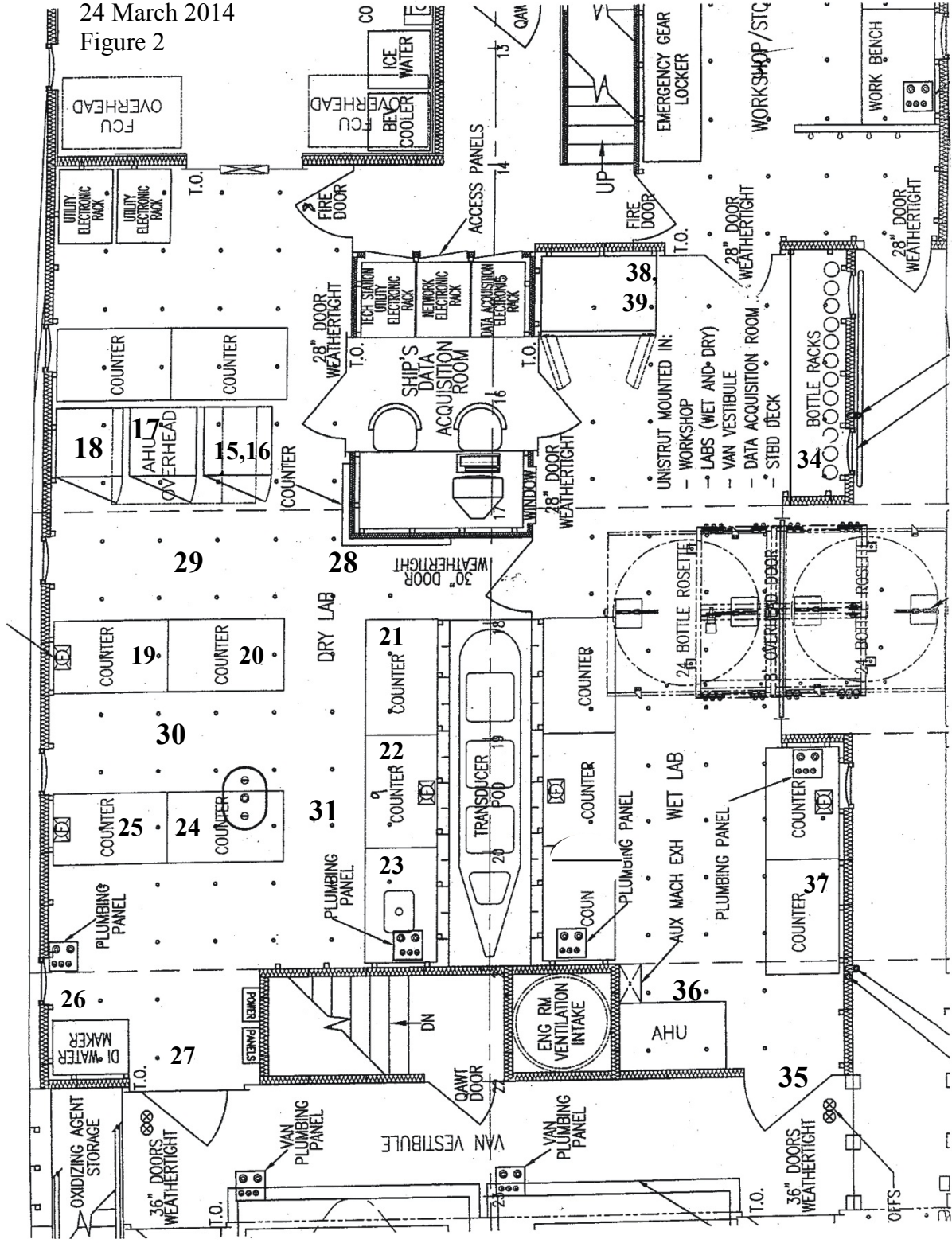


RV High Sharp Lab Spaces

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Figure 2



UNOLS VAN 2408.04

