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Tritium Laboratory
20 August 2012

SWAB REPORT # 641

SWAB DATE: 14 August 2012

R/V Hugh Sharp

James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Timothy Deering

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 a
reported in dpm/m^2. Bucket blank activities are not subtracted. Counting errors (2 standard
deviations) are also reported in dpm/m2. An error larger than the activity indicates that the activi
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 14C by our counting techniques. Categories A, B and C are not a health haz

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 disso 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 ema

REPORT FOR SWAB # 641

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

DATE: 14 August 2012
TECHNICIAN: Cecilia Roig

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	18	±	41	0	±	0
	<u>UNOLS Van 2408-04 (Figure 1)</u>						
3	Sink area	*668	±	75	33	±	16
4	Bench top left of sink	*1,059	±	91	*125	±	27
5	Bench top right of hood	*1,822	±	117	*169	±	27
6	Inside hood	*764	±	77	*351	±	41
7	Bench top across sink	394	±	66	20	±	16
8	Bench top left of LSC	204	±	55	34	±	25
9	Top of LSC	*981	±	91	*55	±	18
10	Inside fridge	*983	±	91	30	±	13
11	Inside freezer	464	±	73	39	±	21
12	Deck at entrance next to sink	*5,837	±	200	*228	±	21
13	Deck center of van	**10,804	±	272	*478	±	28
14	Deck at entrance next to hood	*3,856	±	163	*241	±	25
15	Intermediate bucket blank	8	±	71	0	±	0
	<u>Main Lab (Figure 2)</u>						
16	Inside Whirlpool freezer top	34	±	38	20	±	30
17	Inside Whirlpool fridge bottom	0	±	0	20	±	34
18	Inside Holiday freezer	64	±	40	39	±	31
19	Top of Thermo freezer	128	±	51	15	±	23
20	Port bench top across freezers	0	±	0	23	±	33
21	Port bench top across Whirlpool	32	±	35	27	±	31
22	Fwd. stbd. bench top	21	±	27	36	±	33
23	Mid stbd. bench top	180	±	54	18	±	21
24	Aft stbd. bench top	31	±	35	28	±	31
25	Deck at aft exit	24	±	33	29	±	32
26	Deck in front of Whirlpool	125	±	53	6	±	15
	<u>Wet Lab (Figure 2</u>						
27	Inside freezer top	66	±	43	28	±	30
28	Inside fridge bottom	57	±	48	7	±	23
29	Inside Holiday freezer	0	±	0	27	±	34
30	Aft sink area	83	±	43	36	±	30
31	Stbd. sink area	*573	±	74	*89	±	27

Sample #	Sample Identification	^{3}H dpm/m^2			^{14}C dpm/m^2		
		activity		error	activity		error
32	Stbd. aft bench top	30	±	31	39	±	32
33	Stbd. bench top next to CTD door	29	±	34	27	±	31
34	Stbd. fwd. bench top	0	±	0	35	±	35
35	Intermediate bucket blank	3	±	11	23	±	33
	Radioisotope Van 625.1.05-1(Figure 3)						
36	Sink area	*953	±	89	*116	±	27
37	Bench top left of sink	0	±	2	30	±	33
38	Top of LSC	151	±	46	*86	±	33
39	Inside hood	8	±	10	*71	±	35
40	Bench top across LSC	121	±	47	*54	±	31
41	Bench top across fridge	92	±	45	36	±	30
42	Bench top above freezer	92	±	44	47	±	31
43	Inside fridge	227	±	56	33	±	24
44	Inside freezer	45	±	28	*87	±	35
45	Deck in front of hood	219	±	54	*58	±	29
46	Deck center of van	*3,402	±	161	*176	±	22
47	Deck at entrance next to sink	*2,634	±	142	*161	±	23
48	Final bucket blank	0	±	0	5	±	36

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. One sample taken on the ship tested positive for minor ^{3}H and ^{14}C contamination, this area needs immediate cleaning. UNOLS Van 2408-04 had mild to moderate ^{3}H and ^{14}C contamination. Radioisotope Van 625.1.05-1 also had minor ^{3}H and ^{14}C contamination. Decks on both vans require cleaning to prevent tracking on to ship.

Figure 1

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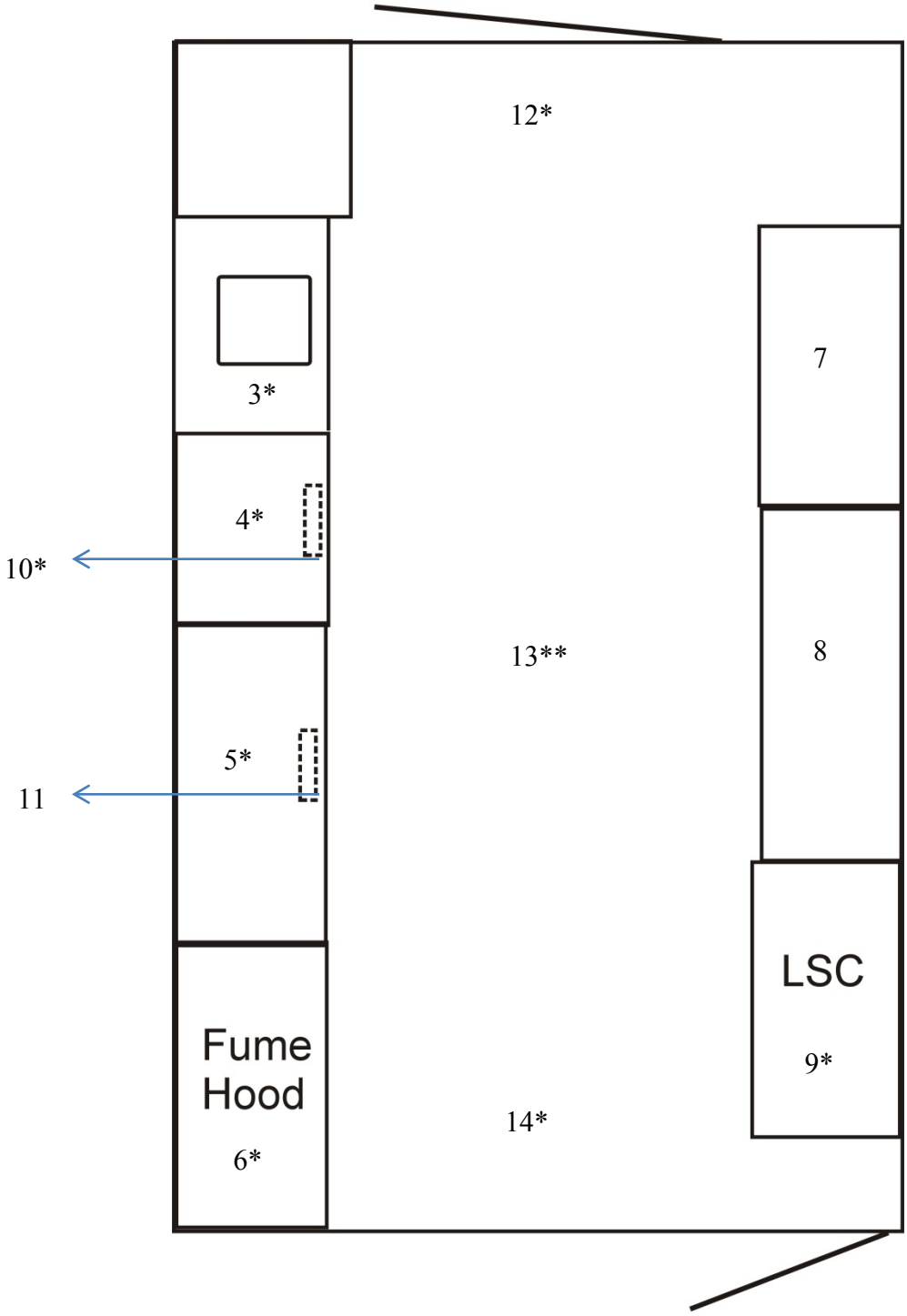
UNOLS VAN 2408-04



RV Hugh Sharp Lab Spaces

Figure 2
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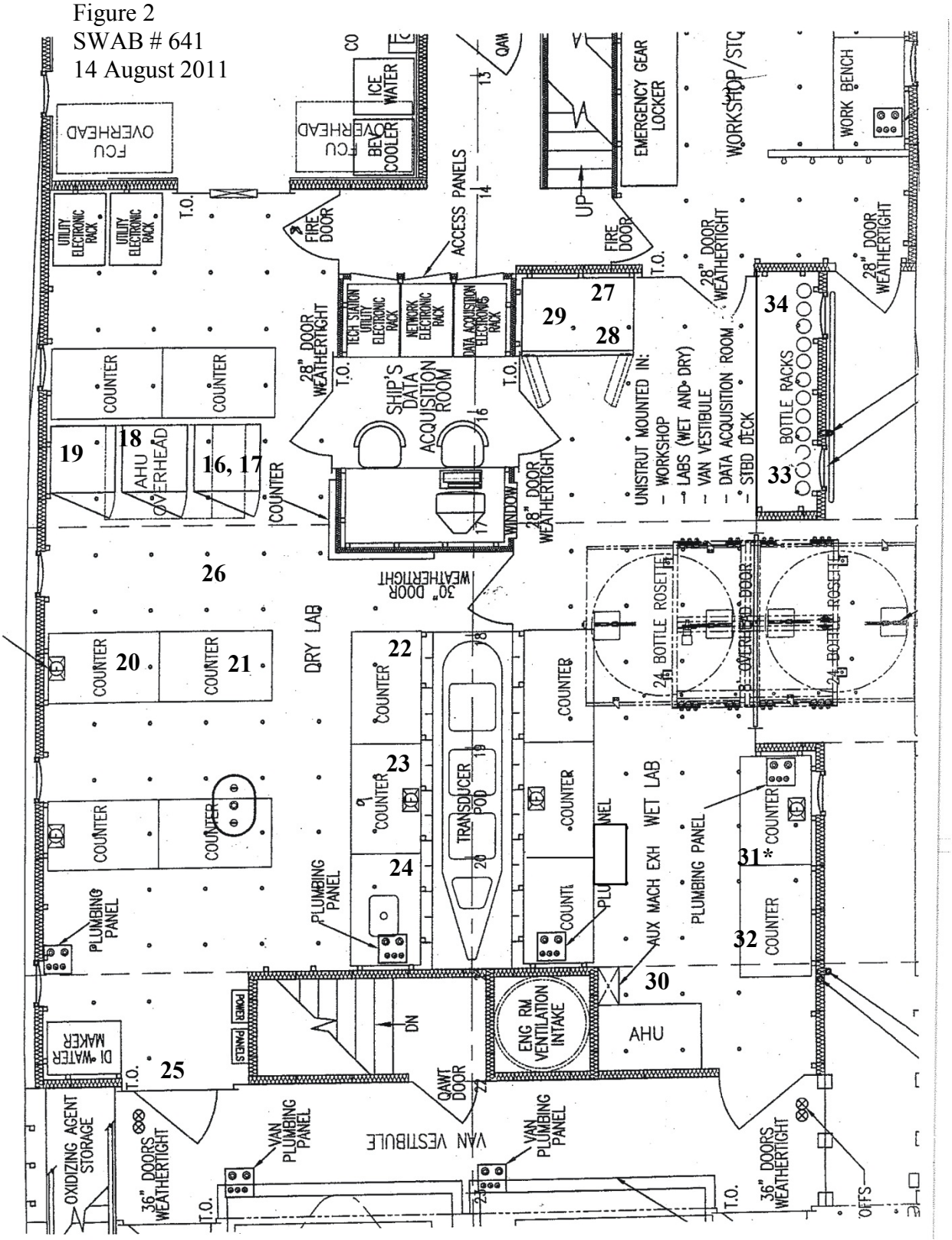

Figure 3
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University of Delaware Radioisotope Van