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Tritium Laboratory

8 August 2016

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SWAB REPORT # 825

SWAB DATE: 28 July 2016

R/V Oceanus

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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 institution promptly by phone or email.

REPORT FOR SWAB # 825

LOCATION: Newport, OR
VESSEL: *R/V Oceanus*

DATE: 28 July 2016
TECHNICIAN: Yudy Mendoza

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	-36	±	23	5	±	63
<u>Main Lab (see Figure 1)</u>						
3 Benchtop next to sink area	-13	±	30	-7	±	15
4 Inside fwd port refrigerator	-11	±	41	-14	±	39
5 Deck near fwd stairs	-31	±	16	-1	±	16
6 Deck by aft entrance	-27	±	21	-2	±	22
7 Forward sink area	12	±	47	1	±	20
8 Benchtop next to fwd port refrigerator	-76	±	33	15	±	52
9 Starboard aft benchtop	-38	±	18	35	±	41
10 Deck at winch control	-42	±	26	12	±	46
11 Top of Whirlpool chest freezer	-39	±	33	13	±	45
12 Top of So-Lo -80 freezer	-4	±	16	6	±	38
13 Benchtop next to Whirlpool freezer	-90	±	51	6	±	149
<u>Wet Lab (Figure 1)</u>						
14 Sink area	0	±	5	4	±	37
15 Deck center of Lab	-8	±	0	1	±	55
16 Deck by aft door	10	±	47	2	±	30
17 Port benchtop	-21	±	19	-1	±	18
18 Forward benchtop	-34	±	23	0	±	0
19 Companionway between Library and Wet Lab	-35	±	40	18	±	42
20 Deck in Mess in front of hot foodstation	-18	±	36	5	±	46
21 Companionway at forward entrance to Main	-14	±	27	-25	±	26
<u>01 Deck (see Figure 1)</u>						
22 Deck at top of stairs to Upper Lab	-25	±	32	-3	±	18
23 Upper Lab deck near stbd outer door	-16	±	14	11	±	41
24 Deck between aft head and Infirmary	-45	±	33	12	±	46
25 Intermediate bucket sample	-46	±	26	4	±	91

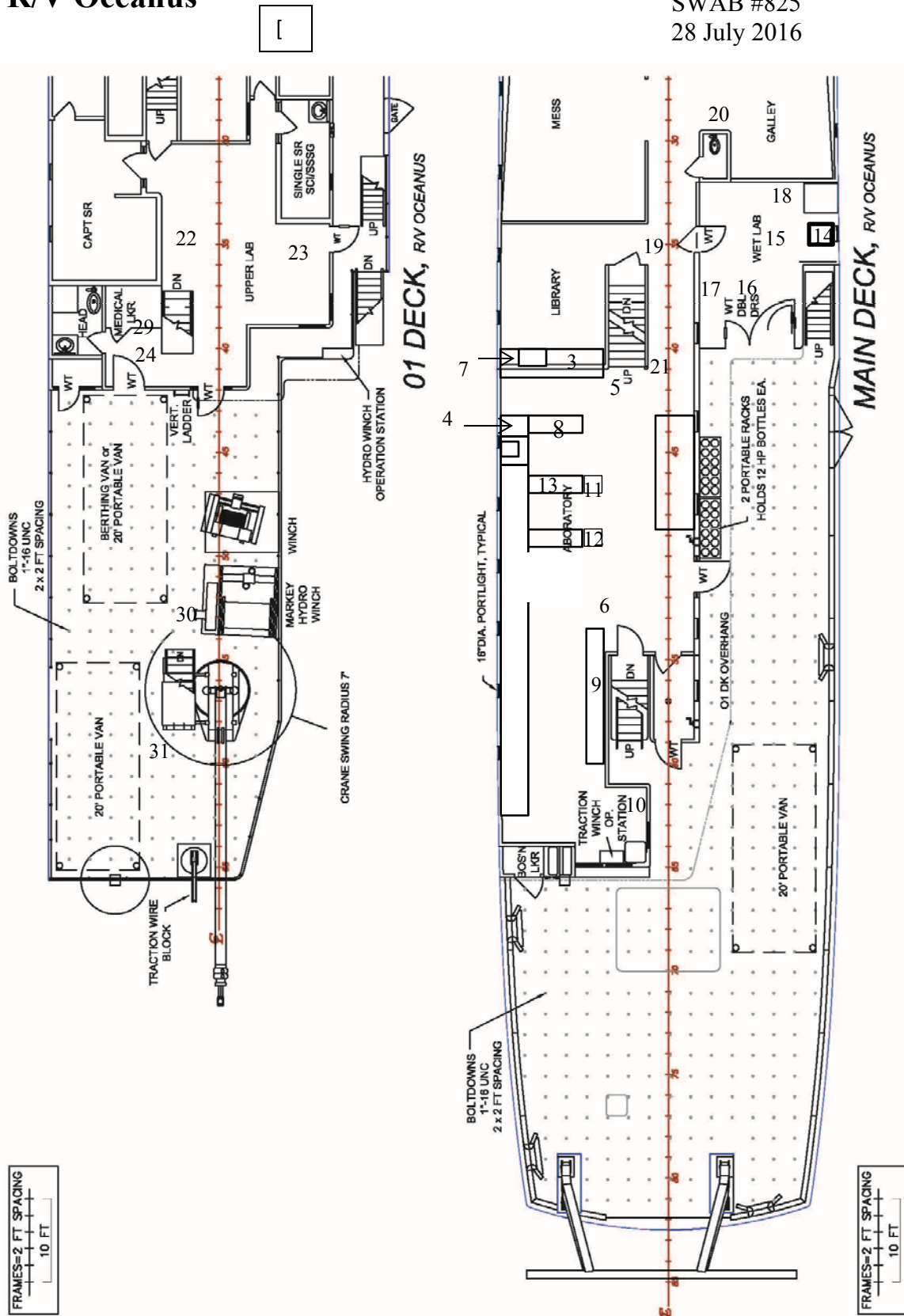
Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
	<u>Radioisotope Van (See Figure 2)</u>				
26	Sink area	104	± 53	7	± 21
27	Inside Marvel Freezer next to sink	148	± 57	-4	± 42
28	Benchtop next to LSC	59	± 54	-6	± 15
29	Inside Marvel Scientific next to fume hood	321	± 63	*61	± 31
30	Deck in front of fume hood	143	± 52	*50	± 34
31	Benchtop next to fire extinguisher station	-34	± 38	*57	± 40
32	Benchtop across from LSC	307	± 66	10	± 14
33	Deck in front of LSC	94	± 38	*113	± 39
34	Deck inside entrance	168	± 55	*56	± 34
35	Deck outside entrance of van	-11	± 19	-11	± 23
36	Final bucket blank	-16	± 22	-12	± 17

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 and in the rad van were free from any isotope contamination that requires cleaning. The rad van had some minor ¹⁴C contamination in one refrigerator, two benchtops and in some deck areas. No action is necessary in the van.

R/V Oceanus

Figure 1
SWAB #825
28 July 2016



VAN SN-645101-2

