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ROSENSTIEL  
SCHOOL of MARINE &  
ATMOSPHERIC SCIENCE



Tritium Laboratory

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SWAB REPORT # 631

SWAB DATE: 29 May and 2 June 2012

*R/V Kilo Moana* and UH radioisotope van

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Distribution:  
SWAB Committee  
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## COMMENTS TO SWAB REPORTS

23 November 2010

Typical LSC instrument background values for  $^3\text{H}$  and  $^{14}\text{C}$  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  $\text{dpm}/\text{m}^2$ . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in  $\text{dpm}/\text{m}^2$ . An error larger than the activity indicates that the activity is not significantly different from zero.

### Criteria for SWAB Results

Category	$^3\text{H}$ ( $\text{dpm}/\text{m}^2$ )	$^{14}\text{C}$ ( $\text{dpm m}^2$ )	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:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : 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.

$^{14}\text{C}$ : 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  $^3\text{H}$ .

### 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 email.

REPORT FOR SWAB # 631

LOCATION: Honolulu, Hawaii

DATE: 29 May and 2 June 2012

VESSEL: *R/V Kilo Moana* and UH radioisotope van

TECHNICIAN: Cecilia Roig

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank C.O. #1	0	± 0	16	± 35
	<u>Lab # 2 (Figure 1)</u>				
3	Deck inside entrance	0	± 0	14	± 38
4	Aft sink area	0	± 0	32	± 35
5	Deck below hydro monitor	0	± 0	4	± 41
6	Fwd. sink area	0	± 0	31	± 36
7	Port aft sink area	0	± 0	24	± 35
8	Port bench top	0	± 0	3	± 47
9	Deck in front of fwd. sink	0	± 0	19	± 36
10	Deck in front of port aft sink area	0	± 0	29	± 37
	<u>Scientific Storage (Figure 1)</u>				
11	Ice inside Gibson chest freezer	0	± 0	24	± 35
12	Top of GE chest freezer	0	± 0	11	± 41
13	Inside Cospolich #1 fridge	19	± 28	32	± 33
14	Inside Cospolich #2 freezer	0	± 0	42	± 35
15	Inside Cospolich #3 freezer	0	± 0	31	± 36
16	Ice inside Thermo Sci.	0	± 0	17	± 37
	<u>Chemistry Lab (Figure 1)</u>				
17	Inside fume hood	0	± 0	25	± 35
18	Fwd. sink area	0	± 0	20	± 36
19	Aft sink area	0	± 0	24	± 34
20	Deck inside entrance	0	± 0	27	± 38
21	Deck center of lab	0	± 0	8	± 38
22	Inside small Kenmore fridge	0	± 0	3	± 74
	<u>Lab # 1 (Figure 1)</u>				
23	Deck inside aft entrance	0	± 0	7	± 48
24	Deck inside fwd. entrance	0	± 0	13	± 38
	<u>Hydro Lab (Figure 1)</u>				
25	Center bench top	0	± 0	32	± 35

Sample #	Sample Identification	$^3\text{H}$ dpm/m <sup>2</sup>		$^{14}\text{C}$ dpm/m <sup>2</sup>	
		activity	error	activity	error
26	Deck stbd. of center bench top	0	± 0	14	± 36
27	Deck at entrance	0	± 0	28	± 36
28	Aft bench top	0	± 0	7	± 41
	<u>Wet Lab (Figure 1)</u>				
29	Deck center of lab	0	± 0	18	± 39
30	Stbd. bench top	0	± 0	12	± 37
31	Deck inside fwd. entrance	0	± 0	11	± 37
	<u>Miscellaneous Areas (Figure 1)</u>				
32	Deck inside Library	0	± 0	15	± 37
33	Deck below drink machine	0	± 0	5	± 50
	<u>01 Deck (no figure)</u>				
34	Passageway outside ET locker	0	± 0	8	± 47
35	Port passage used by rad. people	0	± 0	18	± 39
	<u>Clean Power Room (Figure 1)</u>				
36	Inside door	0	± 0	27	± 36
37	Final bucket blank C.O. #1	0	± 0	28	± 37
	<u>UH Radioisotope Van (Figure 2)</u>				
38	Initial bucket blank C.O. #2	0	± 0	0	± 0
39	Inside fume hood	5	± 12	38	± 34
40	Sink area	105	± 46	*92	± 35
41	Bench top across LSC	26	± 28	47	± 33
42	Bench top above freezer	165	± 56	22	± 24
43	Deck at entrance next to hood	*9,164	± 263	*234	± 18
44	Inside freezer	*699	± 82	42	± 18
45	Inside fridge	*1,016	± 94	*53	± 18
46	Bench top next to hood	53	± 31	*91	± 35
47	Deck center of van	*3,402	± 165	*131	± 18
48	Deck at entrance next to sink	*1,165	± 101	*150	± 29
49	Final bucket sample (C.O. #2)	0	± 0	15	± 36

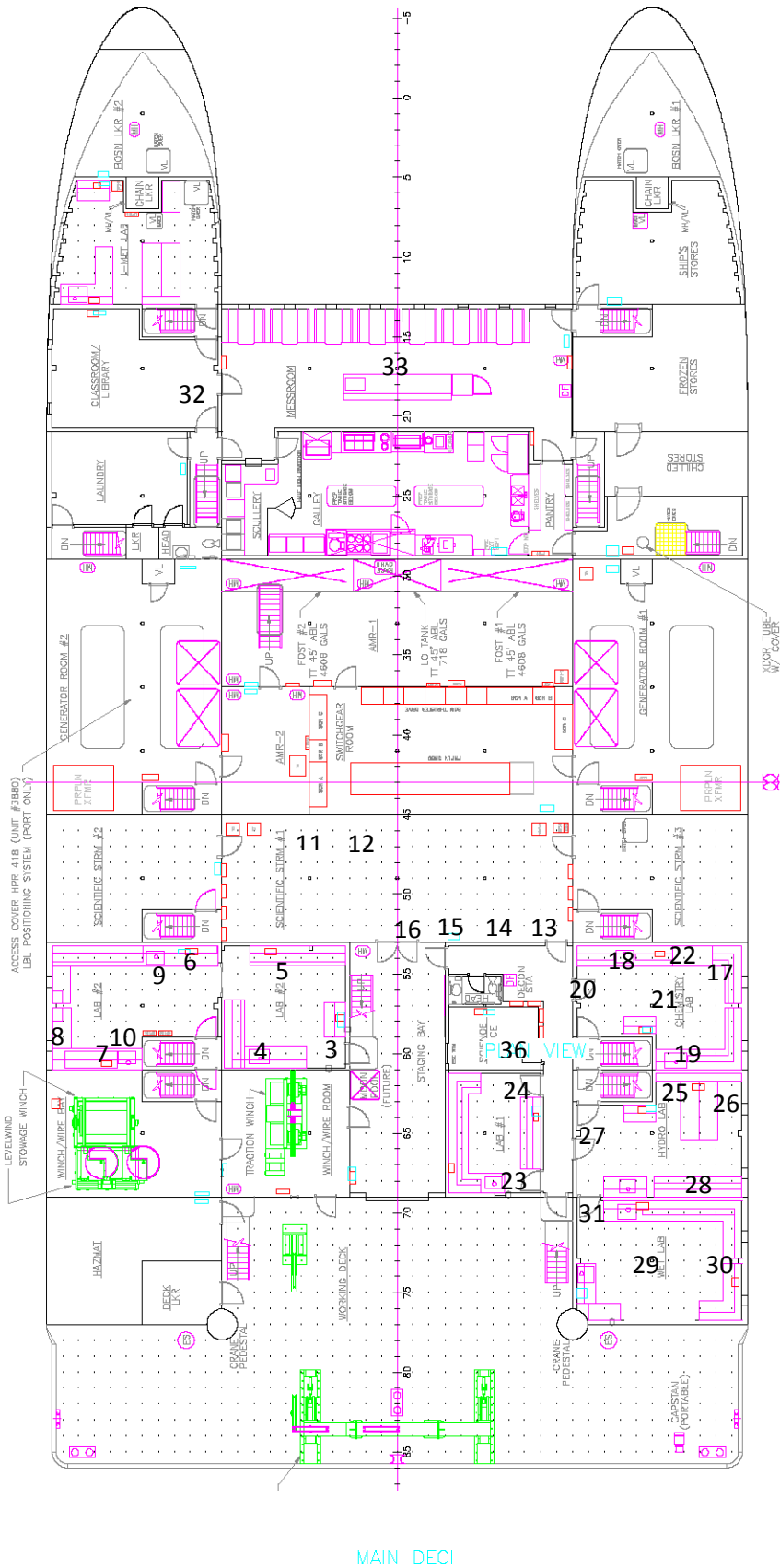
### Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. All areas tested in the ship were free from radioisotope contamination. Minor  $^3\text{H}$  and  $^{14}\text{C}$  contamination found in the rad van, cleaning of deck areas is recommended to prevent tracking into the ship.

Figure 1

SWAB # 631

29 May 2012



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Figure 2

SWAB # 631

2 June 2012

# *RV KILO MOANA* RADIOISOTOPE VAN

