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Tritium Laboratory 21 May 2025

# SWAB REPORT # 1117

# SWAB DATE: 22 April 2025

R/V Nathaniel B. Palmer

Dr. James D. Happell Associate Research Professor

Distribution: SWAB Committee Jamee Johnson

## COMMENTS TO SWAB REPORTS

The LSC is now a Quantulus GCT 6220, with the SWAB counting assay having background cpm of 0.3 & 1.2 for  ${}^{3}\text{H} \& {}^{14}\text{C}$ . This replaces an LSC with background cpm of 1.6 & 5.5 for  ${}^{3}\text{H} \& {}^{14}\text{C}$ .

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. All activities significantly above background will be in **bold**.

#### Criteria for SWAB Results

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

<u>Recommended Cleaning Proceedure</u> Wearing ordinary household rubber gloves:

<sup>3</sup>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.

<sup>14</sup>C: Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing <sup>14</sup>CO<sub>2</sub>). Follow up with wash as if for <sup>3</sup>H.

#### 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 # 1117

LOCATION: Lyttelton, New Zealand VESSEL: *R/V Nathaniel B. Palmer* 

DATE: 22 April 2025 TECHNICIAN: Jamee Johnson, Evan Q

Sample # Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>			<sup>14</sup> C dpm/m <sup>2</sup>		
	activity	(	error	activity	activity er	
1 1st Vial Bkgnd	0	±	0	0	±	0
2 Initial bucket blank	20	±	26	-12	±	39
Aft Dry Lab (Figure 1)						
3 Bench top	5	±	6	28	±	16
4 Deck between the tables & corrosive chemical locker	26	±	24	-8	±	26
5 Deck by the Baltic Room door at the end of the tables	31	±	23	-5	±	15
6 Deck by the door to the forward dry lab	12	±	22	-4	±	13
7 Deckin front of the upright -20°C freezer	20	±	21	-1	±	23
Bio Lab (Figure 2)						
8 Deck in front of the starboard sink	19	±	24	-6	±	20
9 Table top forward	32	±	27	-14	±	46
10 Inside main door	22	±	26	-11	±	35
Forward Dry Lab (Figure 3)						
11 Deck in front of the light table	-6	±	100	4	±	16
12 Deck inside port entry door	27	±	26	-12	±	40
Electronics Lab (Figure 4)						
13 Deck by the entrance to the ET shop	28	±	31	-18	±	58
14 Deck in front of th printer on the starboard wall	14	±	32	-12	±	41
Hydro Lab (Figure 5)						
15 Table top portside forward	35	±	25	-3	±	11
16 Deck inside starboard entry door by the gas cylinders	18	±	31	-14	±	45
17 Deck in front of the ice machine	19	±	20	2	±	9
Wet Lab (Figure 6)						
18 Outside of the doorway toward Hydrolab	14	±	21	-3	±	9
19 Deck inside the forward door to passageway	12	±	19	3	±	12
Rad Van 2 (Figure 7)						
20 Deck in front of the waste drums	387	±	55	29	±	10
21 Deck in front of the LSC	96	±	31	10	±	11

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	
Main Deck (Figure 8)						
22 Aft stairs at bottom of the stairway	10	±	31	-8	±	27
23 MLT office door inside of office	4	±	58	-5	±	17
24 Mudroom entryway in front of the waterbaths	24	±	41	-21	±	69
25 Deck inside the MPC office at entry	43	±	27	-7	$\pm$	24
26 Deck at the bottom of the stairway to Helo hangar	27	±	33	-23	±	76
Helo Deck and Hangar (Figure 9)						
27 Helo deck in front of the waste drums	-6	±	93	3	$\pm$	16
28 Helo deck outside of RV personnel door	13	±	34	-13	±	42
29 Helo deck aft in front of starboard incubator	7	±	42	-8	±	28
30 Helo hangar workshop in front of sink	-14	±	228	-14	±	47
31 Hood in Rad Van 2	113	±	34	-1	±	3
32 Refrigerator in Rad Van 2	240	±	45	7	±	6
33 Final bucket blank	3	±	52	-8	±	25

## **Comments**

Please note that the error reported for each isotope is the two-standard deviation counting error. Reports may now contain values less than zero. 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. Please note that we are now using a Quantulus 6220 LSC which counts very near natural background. While the cleanup standards have not changed all values above background will now be in bold. All areas tested were free from isotope contamination that requires cleaning.

Figure 1 SWAB # 1117 22 April 2025













Figure 7 SWAB #1117 22 April 2025

# Rad Van 2





Figure 9 SWAB #1117 22 April 2025

