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OF MIAMI

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Tritium Laboratory
14 October 2024

SWAB REPORT # 1102

SWAB DATE: 2 October 2024

R/V Atlantic Explorer
UNOLS Radioisotope Van #2408-04

James Happell Digitally signed by James Happell Date: 2024.10.14 13:33:40 -04'00'

James D. Happell

Distribution:
SWAB Committee
Capt. Rick Verlini
Rod Johnson
Rory O'Connell

COMMENTS TO SWAB REPORTS 15 December 2021

The LSC is now a Quantulus GCT 6220, with the SWAB counting assay having background cpm of 0.3 & 1.2 for ^{3}H & ^{14}C. This replaces an LSC with background cpm of 1.6 & 5.5 for ^{3}H & ^{14}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^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 ^{14}C by our counting techniques. Categories A, B and C are not a health hazard.

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 dissolve 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 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 # 1102

LOCATION: St. Georges, Bermuda
DATE:30 May 2024
VESSEL: *R/V Atlantic Explorer*
TECHNICIAN: yudy Mandoza

Sample #	Sample Identification	^{3}H dpm/m^{2} activity	±	^{3}H dpm/m^{2} error	^{14}C dpm/m^{2} activity	±	^{14}C dpm/m^{2} error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	-11	±	0	8	±	14
	Forward Lab (Figure 1)						
3	Forward benchtop	-28	±	0	20	±	15
4	Port benchtop forward of sink	4	±	9	13	±	14
5	Deck inside starboard entrance	-5	±	11	-3	±	19
6	Port sink area	-24	±	40	10	±	15
7	Center benchtop	-15	±	25	15	±	15
8	Port benchtop aft of sink	-15	±	25	1	±	68
9	Deck outside Enviro Room	-10	±	18	-2	±	16
10	Deck in front of sink	-16	±	26	8	±	15
	Main Lab (Figure 1)						
11	Deck inside forward entrance	17	±	29	-6	±	40
12	Port sink area	-41	±	70	0	±	3
13	Benchtop inside laminar flow hood	-28	±	48	8	±	16
14	Deck inside aft entrances	-15	±	26	8	±	15
15	Deck in front of water sample rack	-42	±	72	-2	±	24
16	Inside Frigidaire freezer	-16	±	28	6	±	15
17	Inside Whirlpool freezer	-5	±	100	12	±	14
18	Deck in font of Whirlpool freezer	-10	±	17	-5	±	36
19	Port benchtop forward of sink	-4	±	10	-9	±	62
20	Center benchtop	12	±	34	-9	±	56
	Aft Lab (Figure 1)						
21	Deck inside forward entrance	-5	±	12	-11	±	11
22	Port benchtop	-41	±	69	11	±	17
23	Inside -80 freezer #2	-6	±	15	6	±	14
24	Inside fume hood	-10	±	18	-13	±	13
25	Port sink area	-17	±	30	5	±	16
26	Deck inside starboard aft entrance	-1	±	3	-3	±	21
27	Center benchtop	-7	±	18	-4	±	27
28	Inside dead Cospolich refrigerator	-4	±	9	-6	±	41
29	Inside dead Cospolich freezer	-6	±	14	-15	±	16
30	Inside live Cospolich refrigerator	-16	±	28	-22	±	23

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		^{3}H dpm/m^{2} error	^{14}C dpm/m^{2} activity		^{14}C dpm/m^{2} error
31	Inside live Cospolich freezer	-16	±	28	13	±	15
32	Deck in front of -80 freezer #2	-31	±	54	9	±	16
33	CTD Bay port benchtop	7	±	22	1	±	8
	Radioisotope Van #2408-04 (Figure 2)						
34	Benchtop adjacent to sink	3	±	7	-16	±	17
35	Benchtop adjacent to fume hood	**28**	**±**	**23**	9	±	12
36	Inside fume hood	-6	±	14	7	±	14
37	Top of LSC	**64**	**±**	**31**	-5	±	32
38	Inside freezer	-19	±	33	-17	±	18
39	Inside refrigerator	**91**	**±**	**33**	1	±	3
40	Benchtop adjacent to LSC	**84**	**±**	**31**	**13**	**±**	**11**
41	Deck in front of fume hood	**91**	**±**	**31**	**22**	**±**	**12**
42	Sink area	-25	±	42	3	±	21
43	Benchtop across from sink	-26	±	45	-4	±	25
44	Deck in center of van	**59**	**±**	**29**	7	±	10
45	Deck inside entrance	-19	±	32	5	±	17
46	Final bucket blank	-9	±	15	2	±	17

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 sampled inside the ship and in the Rad van free from contamination requiring cleaning.

STRAZA TOWER MOON POOL
DECK CRANE HATCH
DN
STACK (M)
UNOLS VAN LOCATION
DKGEAR OIL S.R
QAWTH
HPU
MACH (BLOWER)
MACHINERY (POWERPACK FOR CRANE)
UP
WORK BENCH
AFT LAB
REEFER
ENVIRO. ROOM
FWD LAB
FBWTH
ESCAPE
STORES
INFIRMARY STORES
INFIRMARY
FREEZER
CHILLER
DISHWASHER
WSH/DYR
BUNK (2)
DESK
2-MAN SR
LKR
5 MAN
4 MAN
CHAIN LKR
MESS AREA
01 DECK (OVER)
CTD GARAGE
CTD PATH
WATER SAMPLE RACK
MAIN LAB
REEFER
A/C
LOUNGE
PANTRY
GALLEY
2 MAN
T.O.

PLAN 2–5C
MAIN DECK
3/32"=1'–0"

FWD HYD OIL TK
AFT HYD OIL TK
NO. 3 FUEL TANK
FUEL OIL DAY TANK
OILY BILGE TANK
NO. 2 FUEL TANK
NO. 1 FUEL TANK
NO. 1 BALLAST TANK
SEWAGE TANK
FORE PEAK BALLAST TANK
AFT PEAK BALLAST TANK
NO. 3 BALLAST TANK
NO. 2 BALLAST TANK
RUDDER ROOM
MOON POOL
AUXILIARY MACHINERY SPACE
FRESH WATER
STORES
A/C
CHIEF ENGINEER 1 MAN S.R.
ASST ENGINEER 2 MAN S.R.
BUNK (1)
BUNK (2)
LKR
BOW THRUSTER ROOM
ENGINE ROOM
ENGINEER SPACE
2 MAN S.R.
1 MAN S.R.
DESK
POTABLE WATER TANK
DIRTY OIL TANK
NO. 1 LO TK
NO. 2 LO TK

PLAN 2–5A
HOLD LEVEL
3/32"=1'–0"

Figure 1
SWAB #1102
2 October 2024

BIOS
ST. GEORGE'S, BERMUDA

R/V ATLANTIC EXPLORER
GENERAL ARRANGEMENT
HOLD LEVEL AND MAIN DECK PLANS

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Drawn	Checked	Approved	Date
TGA	CSC	DHK	05/30/2014

Scale	Drawing Number	Sheet	of	Revision
AS NOTED	12146-070-01	2	4	A

UNOLS Rad Van 2408-04

Figure 2
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