



Tritium Laboratory
10 July 2024

SWAB REPORT #1099

SWAB DATE: 3 July 2024

R/V Atlantis

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Distribution:
SWAB Committee
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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 #1099

LOCATION: Astoria, OR
VESSEL/LAB: *R/V Atlantis*

DATE: 3 July 2024
TECHNICIAN: Alison Heater

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	21 ±	21	-13 ±	20
	<u>Bio-Analytical Lab (Figure 1)</u>				
3	Benchtop across from forward sink	-5 ±	10	23 ±	13
4	Benchtop adjacent to aft sink	-4 ±	9	*125 ±	19
5	Starboard benchtop	19 ±	12	23 ±	13
6	Benchtop adjacent to forward sink	9 ±	18	-6 ±	9
7	Inside fume hood	0 ±	0	*149 ±	20
8	Deck between benches & port benchtop	-24 ±	5	*455 ±	30
9	Forward sink	15 ±	20	-8 ±	13
10	Aft sink	-7 ±	15	8 ±	13
11	Port benchtop	12 ±	7	*51 ±	15
12	Benchtop across from aft sink	19 ±	5	*224 ±	23
13	Deck in front of refrigerator	15 ±	5	*116 ±	18
14	Deck in front of fume hood	16 ±	5	*166 ±	20
15	Deck in front of aft sink	-8 ±	1	*541 ±	32
16	Deck in front of starboard benchtop	-3 ±	1	*135 ±	19
17	Deck in front of forward bench & inboard door	-3 ±	1	*191 ±	22
18	Deck in front of aft door	37 ±	10	*143 ±	19
19	Deck in front of forward sink	-32 ±	10	*245 ±	24
20	Inside Frigidaire refrigerator.	8 ±	3	*111 ±	18
21	Final bucket blank	11 ±	16	-4 ±	7

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. These samples were collected after the lab had been cleaned from the contamination found in SWAB #1096. Cleaning has reduced the counts in most places. However there still appears to be minor contamination in the ¹⁴C channel, but this is very likely to be ³⁵S. The sample from the refrigerator in SWAB 1096 had 39,007 dpm/m². It was recounted 16 days later and had a value of 34,394 dpm/m². If the original contamination was ³⁵S it would have decayed to 34,359 dpm/m². This strongly implicates ³⁵S as the source of the contamination. Based on this information more cleaning is not needed.

KEY

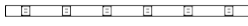
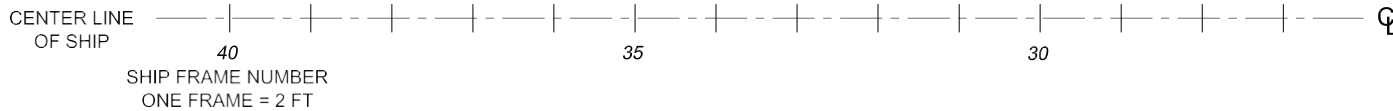
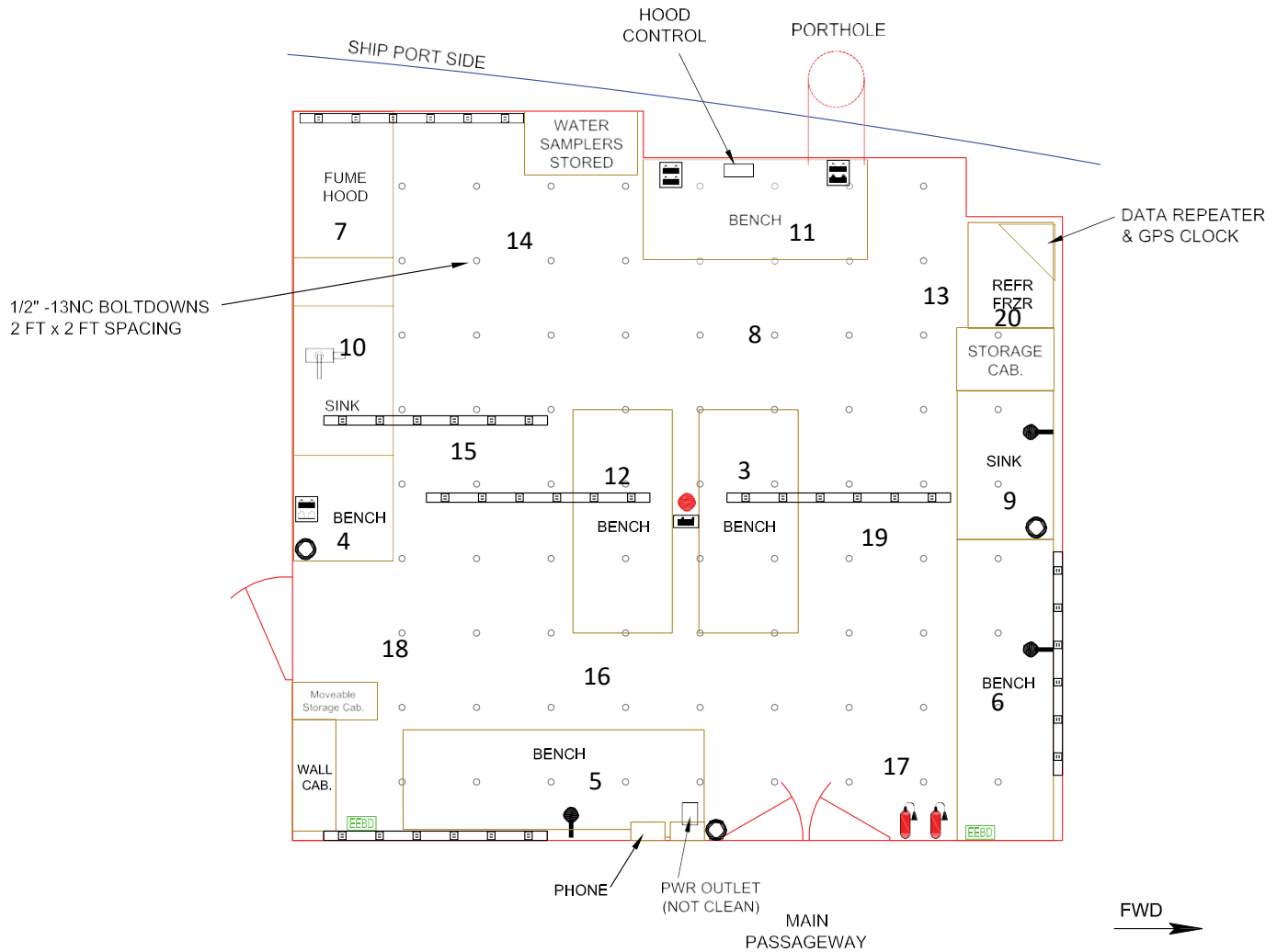
-  COMPUTER HUB
-  SHIP EQUIP -KEEP CLEAR
-  EMERGENCY ESCAPE BREATHING DEVICE
-  72" POWER STRIP, 6 PLUGS
-  FIRE EXTINGUISHER
-  SCIENCE SEA WATER
-  CABLE PASS THRU
-  COMPRESSED AIR

Figure 1
SWAB 1099
3 July 2024

UNISTRUT:
 BULKHEADS
 2 FT SPACING
 OVERHEAD FORE/AFT,
 FULL LENGTH OF LAB
 ALL POWER CLEAN UNLESS NOTED



BIOLOGICAL/ANALYTICAL CLEAN LABORATORY

