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Tritium Laboratory
18 August 2025

SWAB REPORT #1125

SWAB DATE: 11 August 2025

R/V Neil Armstrong & UNOLS Rad Van #625.5.02

James Happell Digitally signed by James Happell
Date: 2025.08.18 11:23:26 -04'00'

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Sarah Fuller
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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 # 1125

LOCATION:Woods Hole, MA
VESSEL: *R/V Neil Armstrong*

DATE: 11 August 2025
TECHNICIAN: Jim Happell

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	22	±	519	-46	±	49
	Rad Van 625.5.02 (Figure 1)						
3	Benchtop across from sink	**135**	±	**34**	-27	±	29
4	Benchtop next to LSC	**80**	±	**27**	-21	±	22
5	Sink area	**80**	±	**27**	-23	±	24
6	Benchtop next to sink	**283**	±	**46**	-20	±	22
7	Benchtop next to fume hood	**310**	±	**47**	2	±	2
8	Inside fume hood	**75**	±	**28**	-31	±	33
9	Inside refrigerator	**306**	±	**48**	-11	±	49
10	Inside freezer	**66**	±	**26**	-22	±	24
11	Deck near fume hood	**222**	±	**41**	5	±	6
12	Deck in center of van	**233**	±	**42**	1	±	1
13	Deck near entrance	**210**	±	**40**	-12	±	17
	Wet Lab (Figure 2)						
14	Port aft benchtop	**47**	±	**25**	-29	±	31
15	Aft port sink area	24	±	38	-37	±	39
16	Fume hood	**34**	±	**24**	-28	±	30
17	Deck in front of fume hood	12	±	28	-16	±	23
18	Deck in front of port aft bench	**27**	±	**26**	-28	±	30
19	Forward starboard benchtop	**36**	±	**21**	-15	±	22
20	Deck in front of pH CBI freezer	12	±	77	-23	±	25
21	Benchtop across from port sink	**-1**	±	**32**	-22	±	23
22	Deck in front of science freezer	**21**	±	**29**	-25	±	27
23	Forward port sink area	**82**	±	**29**	-38	±	40
	Main Lab (Figure 3)						
24	Deck in front of sci	**30**	±	**21**	-19	±	27
25	Inside starboard fume hood	1	±	26	-19	±	27
26	Aft starboard sink area	16	±	473	-35	±	37
27	Inside port fume hood	**37**	±	**27**	-31	±	33
28	Aft section of center benchtop	**25**	±	**24**	-24	±	26
29	Forward section of center benchtop	**31**	±	**27**	-27	±	29

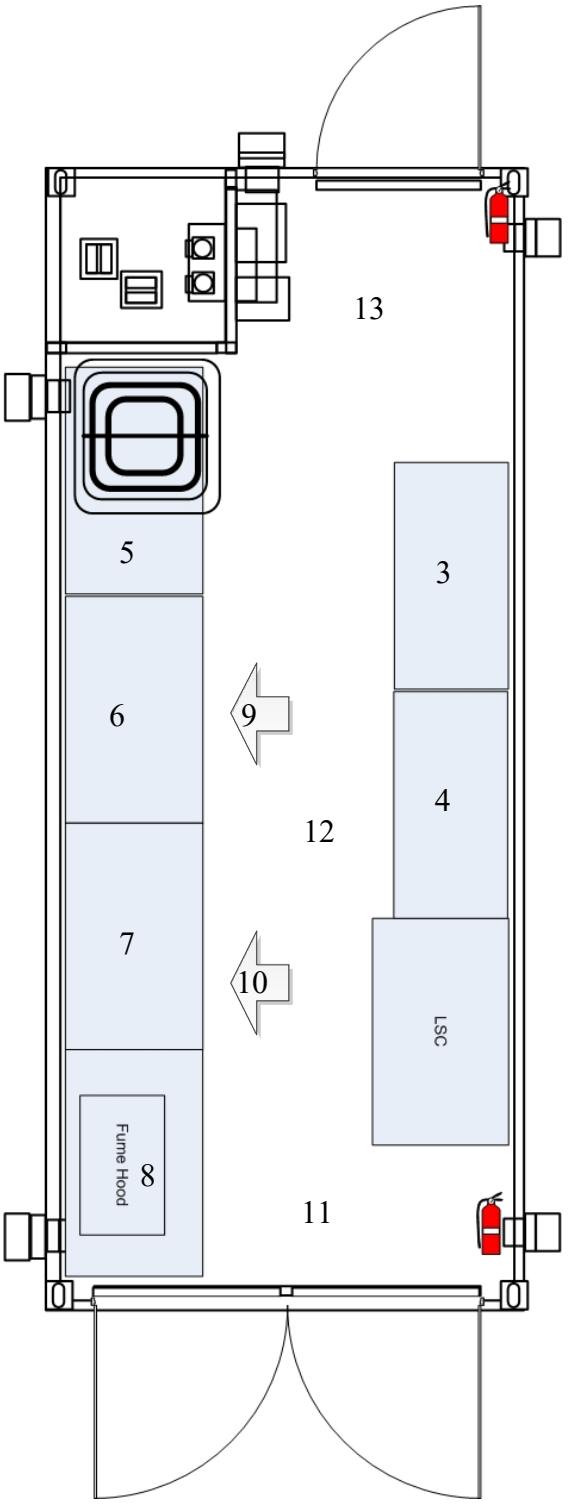
Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
30	Deck in front of port fume hood	17	±	28	-21	±	22
31	Top of Kenmore refrigerator	**56**	**±**	**25**	-29	±	30
32	Deck inside starboard entrance to Wet Lab	**37**	**±**	**27**	-36	±	39
33	Deck inside forward entrance	**29**	**±**	**24**	-26	±	28
34	Deck inside port aft entrance	**37**	**±**	**23**	-19	±	27
35	Deck in front of starboard sink	**53**	**±**	**25**	-26	±	28
36	Forward port benchtop	19	±	46	-32	±	34
37	Center port benchtop	27	±	28	-30	±	32
38	Aft port benchtop	13	±	32	-18	±	26
39	Aft benchtop under Milli Q	**44**	**±**	**28**	-41	±	43
40	Final bucket blank	7	±	17	-26	±	28

Comments

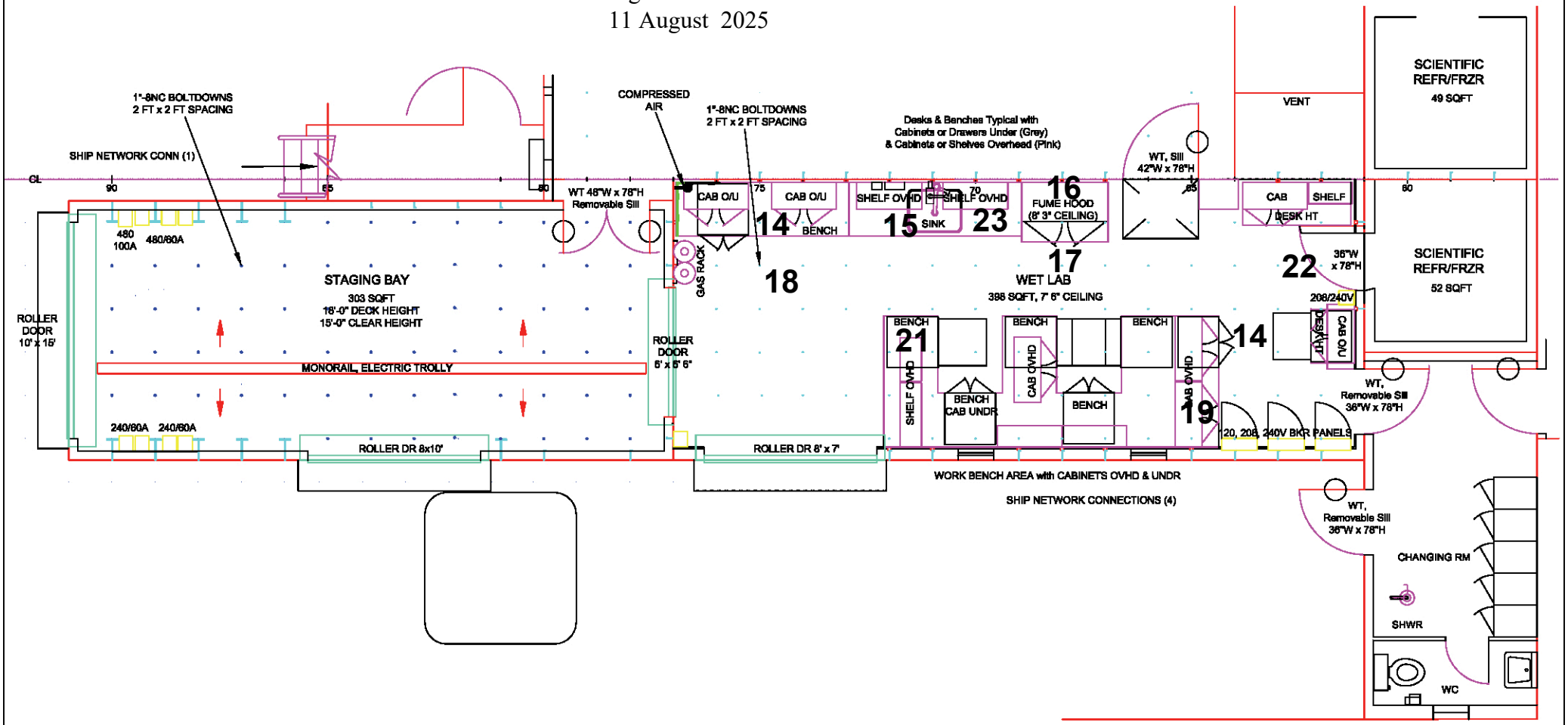
Please note that the error reported for each isotope is the two-standard deviation counting error. Reports may now contain values less than zero. Decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded the 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 in the rad van and ship were free from isotope contamination that requires cleaning.

UNOLS Rad Van #625.5.02

Figure 1
SWAB #1125
11 August 2025

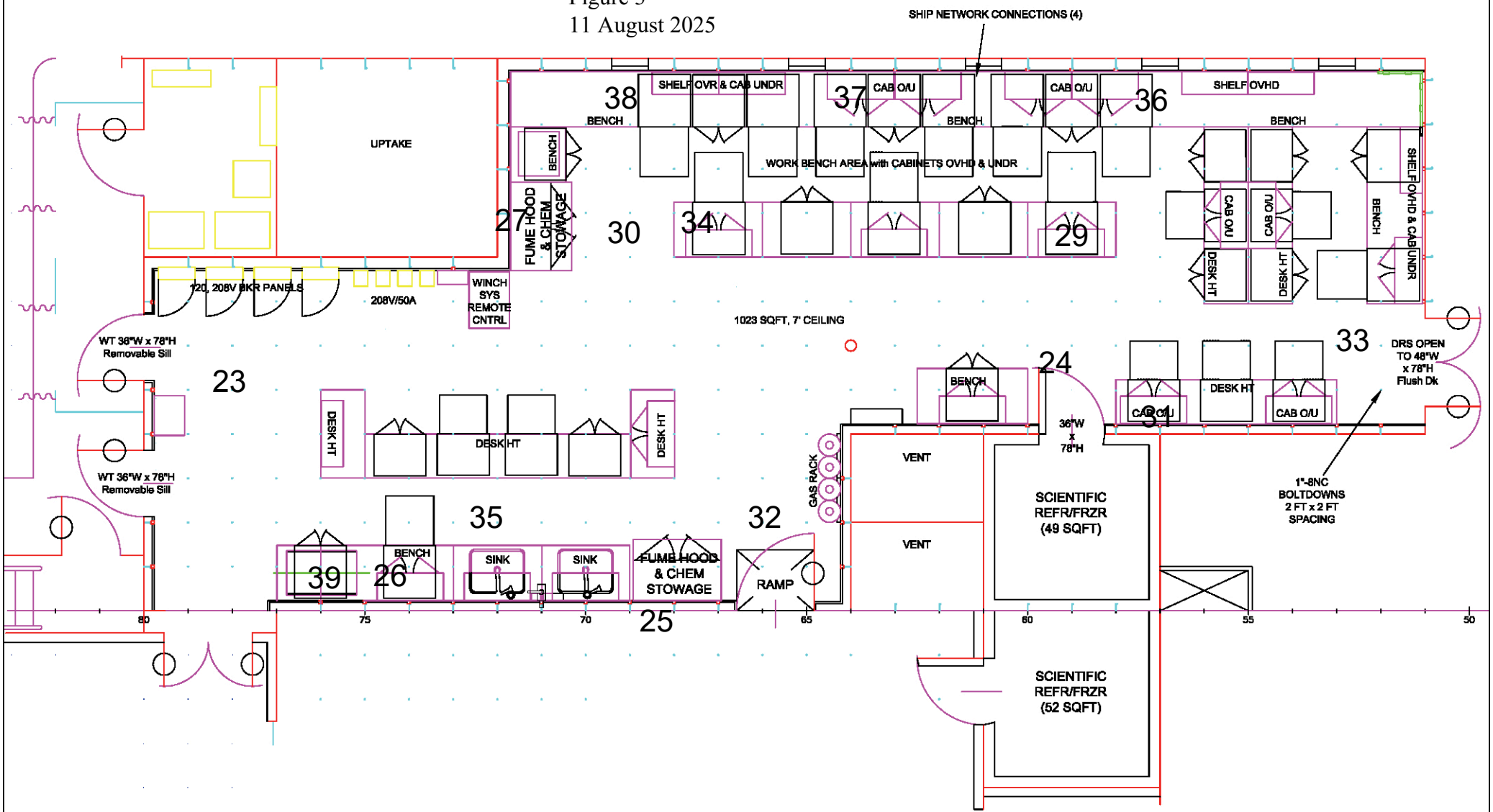


SWAB # 1125
Figure 2
11 August 2025



WET LABORATORY & STAGING BAY ARRANGEMENT

SWAB #1125
Figure 3
11 August 2025



MAIN LABORATORY ARRANGEMENT