UNIVERSITY
OF MIAMI

**Rosenstiel School of Marine, Atmospheric, and Earth Science**
Tritium Laboratory

4600 Rickenbacker Causeway
Miami, FL 33149-1031

P: 305-421-4100
F: 305-421-4112
tritium@miami.edu

23 June 2025

SWAB REPORT # 1119

SWAB DATE: 9 May 2025

Palmer Station

James Happell Digitally signed by James Happell Date: 2025.06.23 12:52:32 -04'00'

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Jamee Johnson
Hannah James
Nora Jackson

**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 # 1119

LOCATION: Palmer Station, Antarctica DATE: 9 May 2025
VESSEL: Labs TECHNICIAN: ?

| 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 |
| 17 | Initial bucket blank | 9 | ± | 25 | -4 | ± | 6 |
| 18 | Lab 10 island | -38 | ± | 49 | -8 | ± | 13 |
| 19 | Lab 10 floor in front of mini fridge | **20** | ± | **18** | **15** | ± | **14** |
| 20 | Lab 10 entrance floor | 22 | ± | 29 | -11 | ± | 12 |
| 21 | Grey cart | -45 | ± | 58 | **22** | ± | **16** |
| 22 | Aquarium vestibule floor | **42** | ± | **31** | -8 | ± | 13 |
| 23 | Lab 1 hallway by freezers | 1 | ± | 4 | -16 | ± | 18 |
| 24 | Lab 2 hallway in front of Lab 2 | -3 | ± | 18 | 4 | ± | 14 |
| 25 | Lab 3 hallway in front of Lab 3 | -1 | ± | 6 | 1 | ± | 15 |
| 26 | Lab 4 hallway | **26** | ± | **21** | 7 | ± | 12 |
| 27 | Instrument tech office hallway | -15 | ± | 17 | 4 | ± | 17 |
| 28 | Lab 5 hallway in front of Lab 5 | **21** | ± | **20** | 8 | ± | 13 |
| 29 | Lab 10 hallway in front of Lab 10 | 10 | ± | 28 | -6 | ± | 21 |
| 30 | Bucket blank 2 | -7 | ± | 8 | -1 | ± | 4 |
| 31 | Floor in front of Lab 4 | 4 | ± | 8 | 13 | ± | 14 |
| | Lab 4 Rad Lab | | | | | | |
| 32 | Clean benchtop | 3 | ± | 16 | 2 | ± | 13 |
| 33 | Left side of right benchtop | -4 | ± | 5 | 47 | ± | 17 |
| 34 | Right side of right benchtop | **84** | ± | **19** | 176 | ± | 22 |
| 35 | Left side of floor in front of right benchtop | 19 | ± | 22 | 3 | ± | 11 |
| 36 | Right side of floor in front of right benchtop | **39** | ± | **29** | -1 | ± | 7 |
| 37 | Left side of left benchtop | **148** | ± | **39** | -6 | ± | 75 |
| 38 | Floor in ftont of LSC | 4 | ± | 18 | 2 | ± | 13 |
| 39 | Left side of floor in front of left benchtop | ***543** | ± | **76** | 23 | ± | 8 |
| 40 | Center of floor in front of left benchtop | **30** | ± | **29** | -11 | ± | 12 |
| 41 | Floor in front of fume hood | **73** | ± | **32** | -8 | ± | 9 |
| 42 | Fume hood sill and inside countertop | ***819** | ± | **85** | ***276** | ± | **24** |
| 43 | Inside ASC Dry debris waste bin | **53** | ± | **5** | ***1638** | ± | **55** |
| 44 | Inside C-019-P Schofield Dry debris bin | **100** | ± | **35** | -6 | ± | 10 |
| 45 | Floor under ASC bench left benchtop | **220** | ± | **46** | 8 | ± | 6 |
| 46 | Back plexiglass table | **31** | ± | **27** | -4 | ± | 6 |
| 47 | Under yellow secondary containment tray | **60** | ± | **31** | 7 | ± | 10 |
| 48 | Yellow secondary containment tray | ***785** | ± | **79** | ***1446** | ± | **55** |
| 49 | Final bucket blank | -4 | ± | 0 | -14 | ± | 0 |

## 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. Minor $^{3}H$ and $^{14}C$ contamination was detected in the Rad Lab . No action is needed.

# SWAB Map Test Locations, 9 May 2025