



Tritium Laboratory  
2 July 2026

SWAB REPORT # 1143

SWAB DATE: 26 June 2026

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

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Distribution:  
SWAB Committee  
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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  $^3\text{H}$  &  $^{14}\text{C}$ . 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<sup>2</sup>. Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m<sup>2</sup>. 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 | $^3\text{H}$ (dpm/m <sup>2</sup> ) | $^{14}\text{C}$ (dpm m <sup>2</sup> ) | 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 <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:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : 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.

$^{14}\text{C}$ : 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  $^3\text{H}$ .

### 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 institution promptly by phone or email.

## REPORT FOR SWAB # 1143

LOCATION: St. Georges, Bermuda  
VESSEL: *R/V Atlantic Explorer*

DATE: 26 June 2026  
TECHNICIAN: Yudy Mendoza

| 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       |
| 1        | 1st Vial Bkgnd                     | 0                                 | ± 0   | 0                                  | ± 0         |
| 2        | Initial bucket blank               | -11                               | ± 41  | -15                                | ± 6         |
|          | <u>Forward Lab (Figure 1)</u>      |                                   |       |                                    |             |
| 3        | Forward benchtop                   | -7                                | ± 10  | 12                                 | ± 13        |
| 4        | Port benchtop forward of sink      | -34                               | ± 44  | 10                                 | ± 15        |
| 5        | Deck inside stbd entrance          | -30                               | ± 67  | <b>24</b>                          | ± <b>14</b> |
| 6        | Port sink area                     | -30                               | ± 40  | <b>29</b>                          | ± <b>14</b> |
| 7        | Forward section of center benchtop | -33                               | ± 43  | <b>23</b>                          | ± <b>14</b> |
| 8        | Port benchtop aft of sink          | -18                               | ± 49  | <b>14</b>                          | ± <b>13</b> |
| 9        | Deck outside Enviro Room           | -4                                | ± 20  | <b>18</b>                          | ± <b>13</b> |
| 10       | After section of center benchtop   | -29                               | ± 11  | <b>34</b>                          | ± <b>14</b> |
| 11       | Deck in front of sink              | 0                                 | ± 1   | <b>18</b>                          | ± <b>13</b> |
|          | <u>Main Lab (Figure 1)</u>         |                                   |       |                                    |             |
| 12       | Deck inside forward entrance       | 9                                 | ± 18  | 5                                  | ± 11        |
| 13       | Port sink area                     | -24                               | ± 32  | 13                                 | ± 14        |
| 14       | Deck inside aft entrances          | 13                                | ± 17  | 9                                  | ± 11        |
| 15       | Deck in front of water sample rack | 2                                 | ± 2   | <b>33</b>                          | ± <b>14</b> |
| 16       | Inside live freezer                | 9                                 | ± 23  | -1                                 | ± 2         |
| 17       | Benchtop inside laminar flow hood  | -20                               | ± 38  | <b>14</b>                          | ± <b>13</b> |
| 18       | Deck in front of laminar flow hood | -28                               | ± 33  | <b>15</b>                          | ± <b>14</b> |
| 19       | Deck in front of stbd refrigerator | -25                               | ± 32  | -2                                 | ± 2         |
| 20       | Port benchtop after of sink        | -15                               | ± 19  | 6                                  | ± 13        |
|          | <u>Aft Lab (Figure 1)</u>          |                                   |       |                                    |             |
| 21       | Deck inside forward entrance       | -24                               | ± 31  | 13                                 | ± 14        |
| 22       | Port benchtop forward of sink      | -5                                | ± 43  | <b>14</b>                          | ± <b>13</b> |
| 23       | Inside -80°C freezer # 1           | 6                                 | ± 18  | 2                                  | ± 10        |
| 24       | Inside fume hood                   | -15                               | ± 19  | -2                                 | ± 2         |
| 25       | Port sink area                     | 11                                | ± 23  | -1                                 | ± 1         |
| 26       | Inside -80°C freezer # 2           | -20                               | ± 27  | <b>14</b>                          | ± <b>13</b> |
| 27       | Center benchtop                    | -8                                | ± 50  | 9                                  | ± 13        |
| 28       | Inside after Live refrigerator     | -14                               | ± 37  | -8                                 | ± 7         |
| 29       | Inside forward Live refrigerator   | -9                                | ± 11  | 12                                 | ± 13        |
| 30       | Inside forward live freezer        | -21                               | ± 32  | <b>14</b>                          | ± <b>13</b> |
| 31       | Deck in front of fume hood         | -16                               | ± 33  | <b>16</b>                          | ± <b>13</b> |
| 32       | Deck in front of -80°C freezer #1  | -9                                | ± 29  | -7                                 | ± 5         |
| 33       | Deck in front of port sink         | -11                               | ± 16  | <b>16</b>                          | ± <b>13</b> |

| 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 |
|          | <u>Radioisotope Van #2408-04 (Figure 2)</u> |                                   |       |                                    |       |
| 34       | Benchtop adjacent to sink                   | <b>184</b>                        | ± 41  | <b>32</b>                          | ± 11  |
| 35       | Benchtop adjacent to fume hood              | <b>135</b>                        | ± 34  | <b>*58</b>                         | ± 14  |
| 36       | Inside fume hood                            | <b>46</b>                         | ± 21  | <b>42</b>                          | ± 14  |
| 37       | Top of LSC                                  | <b>53</b>                         | ± 21  | <b>*56</b>                         | ± 15  |
| 38       | Inside freezer                              | -11                               | ± 17  | <b>*51</b>                         | ± 15  |
| 39       | Inside refrigerator                         | <b>148</b>                        | ± 32  | <b>*124</b>                        | ± 18  |
| 40       | Benchtop adjacent to LSC                    | <b>8</b>                          | ± 2   | <b>*204</b>                        | ± 22  |
| 41       | Deck in front of fume hood                  | <b>6</b>                          | ± 6   | <b>34</b>                          | ± 14  |
| 42       | Sink area                                   | <b>42</b>                         | ± 19  | <b>*50</b>                         | ± 14  |
| 43       | Benchtop across from sink                   | -7                                | ± 12  | <b>40</b>                          | ± 14  |
| 44       | Deck in center of van                       | <b>78</b>                         | ± 27  | <b>25</b>                          | ± 12  |
| 45       | Deck inside entrance                        | <b>102</b>                        | ± 32  | <b>31</b>                          | ± 12  |
| 46       | Final bucket blank                          | 7                                 | ± 12  | 11                                 | ± 12  |

### 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 inside the ship were free from isotope contamination that requires cleaning.

Minor <sup>14</sup>C contamination was found in the Rad Van. No action is necessary.

