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Tritium Laboratory
15 April 2024

SWAB REPORT # 1088

SWAB DATE: 17 February 2024

*R/V Thomas Thompson*

James Happell Digitally signed by James Happell
Date: 2024.04.15 13:06:25 -04'00'

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Brandi Murphy
Craig Carlson

**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 #1088

LOCATION: Fremantle, Australia
VESSEL: *R/V Thomas Thompson*

DATE:17 February 2024
TECHNICIAN: Jim Happell

| 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 | ± | 9 | **35** | ± | **12** |
| | Main Lab (Figure 1) | | | | | | |
| 3 | Port benchtop center | **1** | ± | **1** | **20** | ± | **11** |
| 4 | Port benchtop forward of #3 | -39 | ± | 76 | **32** | ± | **13** |
| | Forward Climate Control Room (Figure 2) | | | | | | |
| 5 | Aft bench | -9 | ± | 26 | **29** | ± | **13** |
| 6 | Port Benchtop | -26 | ± | 51 | **29** | ± | **13** |
| 7 | Forward benchtop | -12 | ± | 36 | **37** | ± | **13** |
| 8 | Final bucket blank | -5 | ± | 16 | **24** | ± | **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 abouve background will now be in bold. All areas tested on the ship were free from isotope contamination requiring cleaning.

Figure 1
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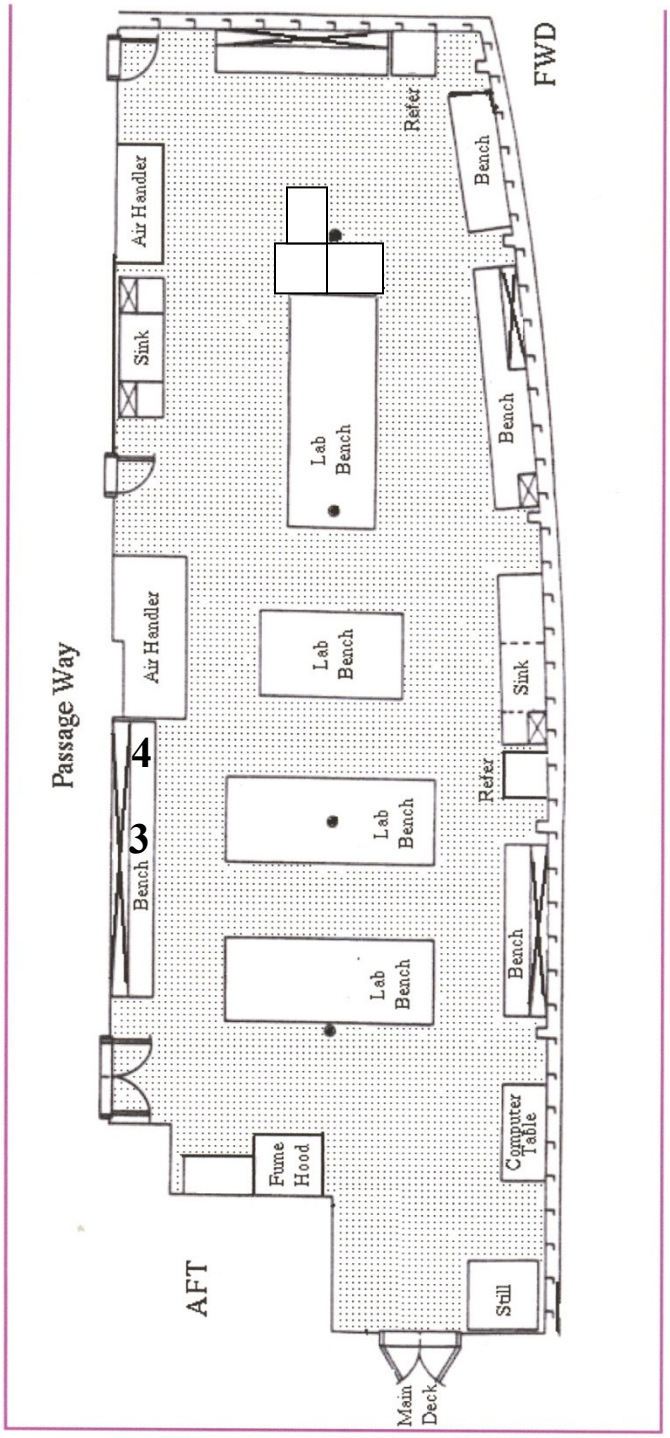
# Main Lab Layout



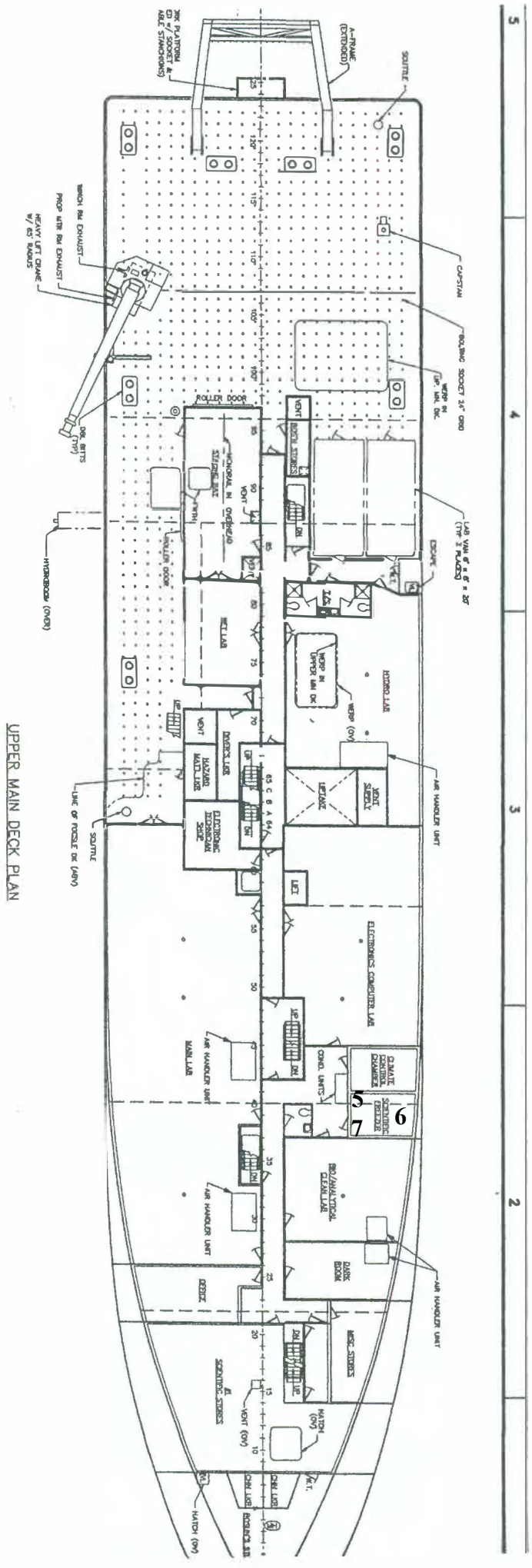



Figure 2
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