

Core Lab Technician Guide

This guide is provided to supplement the Core Lab Cookbook, and familiarize lab technicians with general maintenance needed to keep the lab running smoothly and efficiently. It is organized into general tasks to perform throughout the day, an end of shift checklist, and helpful tips when preparing equipment and materials needed throughout the expedition.

The core lab can become a very fast paced environment that requires flexibility and ability to quickly prioritize and change tasks. It is important to understand what needs to be done immediately, what can wait, and how to predict what will be needed if things become busy. There are a few priorities you should keep in mind.

1. RECEIVING CORE ON THE CATWALK

- *First and foremost, your primary responsibility is to receive core on the catwalk. Unless the ALO or LO tells you otherwise, you should make this your utmost priority.*

2. LABELING AND ENGRAVING SECTIONS

- *The second priority is making sure the cores are labeled and engraved properly. Without proper labeling, the cores are basically useless.*

3. WHOLE ROUND ANALYSIS

- *Certain whole round (unsplit core) analysis might need to be done urgently after the core is labeled. Assist where possible to facilitate running these measurements in an expedited manner.*

4. SPLITTING CORE

- *Splitting core when the scientists are ready is high on the priority list. To maintain an efficient core flow, technicians and scientists must communicate to minimize waiting time and create a steady flow of productivity.*

5. BOXING

- *During high recovery days, boxing urgently may be necessary if space is limited on the racks. Keep an eye on the racks to assure boxes don't back up and become unmanageable to pack and store at the end of your shift. Remember to always check with the ALO/Curator on what can/cannot be boxed.*

During very busy times, certain tasks can be slightly postponed. For example, labeling D-tubes, taking the trash out, cleaning, making storage room runs, etc. can wait until there is a free moment to spare or the task becomes necessary. Take advantage of small windows of time to take care of small tasks like taping d-tubes, writing on boxes, supply runs, or a quick sweep.

Technicians assigned to specific labs will need to work in their daily lab related activities into the daily work flow. If a situation arises in the lab that needs more attention and time to resolve, let the ALO know what is going on. If the problem will influence core flow in any way, let the ALO know immediately so the information can be communicated to the appropriate people and core flow can be adapted if necessary.

I. General things to check throughout day

- A. Empty drains
 - a. Outside
 - a. Aft of core stations, drain under the grating
 - b. Inside
 - a. Sediment trap in core splitting room
 - b. Floor drains in core splitting room
 - c. Under the sampling table (weekly)
- B. Quality control
 - a. Check the cores for accurate labeling (working engraving with working label, etc.)
 - b. Check working and archive box records for consistency
- C. Circulate through lab to see if scientists need anything
- D. General cleaning
 - a. Clean working and archive sampling tables
 - b. Vacuum/Sweep around base boards, sampling tables, scientist work space, and core racks
 - c. Tidy lab area (throw away trash, organize supplies)
 - d. Take trash to incinerator area
- E. Restock core lab if needed (don't overstock)
 - a. Yellow, blue, and clear liner caps
 - b. Red and black D-tube caps
 - c. D-tubes/Core Boxes
 - d. Foam rods
 - e. Paper towels
 - f. Sample bags
 - g. Glad wrap (don't substitute with anything else!)
 - h. Permanent markers
 - i. Restock drawers (d-tube tape, electrical tape, labels, ribbons, pens, post-its, etc.)
- F. Boxing Core and Preparing to Box
 - a. Tape D-tubes closed when all samples or analyses are completed
 - b. Fill out core box inventory
 - c. Label core boxes. Staple them shortly before boxing
 - d. Box Core and take to reefer

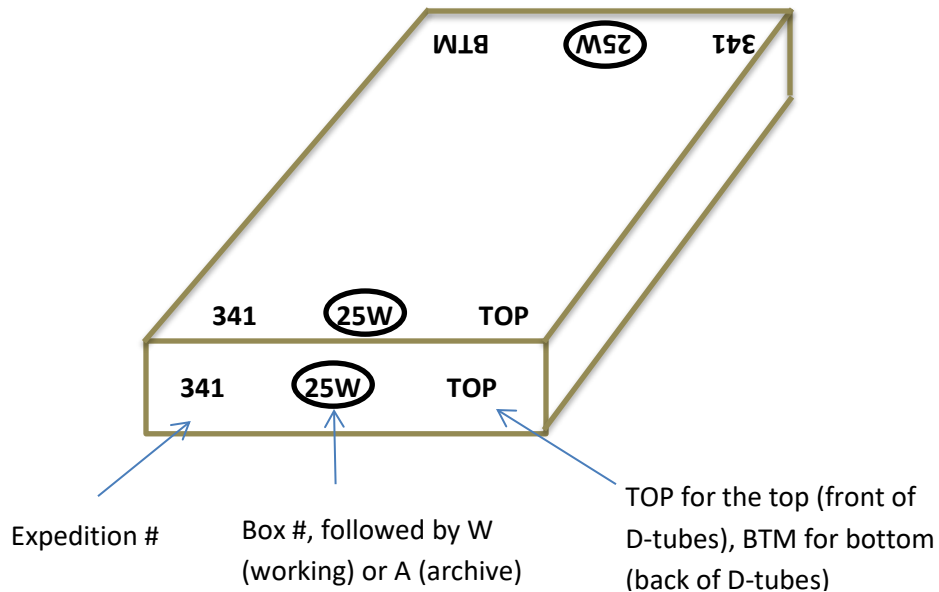
If you are in charge of extracting the core catcher, you will most likely be responsible for tidying the catwalk after each core comes on deck. Here is a general checklist to follow when doing so.

- G. After core clean up
 - A. Clean off spatulas on catwalk
 - B. Hose/wipe off core cutters
 - C. Replace core cutter blades if necessary
 - D. Organize catwalk (2 spatulas, 1 red marker, one rag per station minimum)
 - E. Check required supplies (core catcher liners, caps, acetone, rags, expansion liners, liner patches, etc.)
 - F. Power hose catwalk if there is mud on grating

Toward the end of your shift, you will want to get everything ready for the next shift. Cores may come on deck right at crossover, so make sure all supplies are filled and ready to go for the next 12 hours!

II. End of Shift Checklist

- A. Fill acetone
 - i. Core station acetone bottles at least ½ full
 - ii. Fill acetone drum
 - iii. Replenish acetone stock in cabinet (check out more from chemical storage room if necessary)
- B. Replenish core cap supply
- C. Freshen rags at catwalk stations
- D. Power hose down catwalk
- E. Sweep/vacuum lab
- F. Take plastic liner trash to the alligator box
 - i. Note: no plastic bags of trash, only liners!
- G. Take cardboard/trash bags to incinerator
- H. Box cores
 - i. Make sure all parties are finished with core
 - ii. Check with ALO's and/or curator before boxing
 - iii. Make sure core (including core catcher!) is wrapped in glad wrap
 - iv. Tape D-tube shut (make sure label is covered) with D-tube tape
 - v. Record cores to be boxed on inventory
 - vi. Label boxes on each end (on the front/back and top) as shown below. Use RED permanent pen for archive boxes and black for working boxes.



- vii. Fill boxes starting from bottom right with last core in sequence, work to top left
- viii. Double check inventory (the archive inventory should match the working inventory)
- ix. Staple shut (4 to 5 staples)
- x. Carry complete boxes down to reefer
 - a. Keep archive boxes and working boxes on separate pallets
 - b. Stack boxes on pallets in an orderly fashion (stack straight!)
 - c. Make sure there is enough clearance at the top of the pile for the pallet jack to lift the bundle
- I. Refill wax box and D-tube supply

III. Supply Preparation

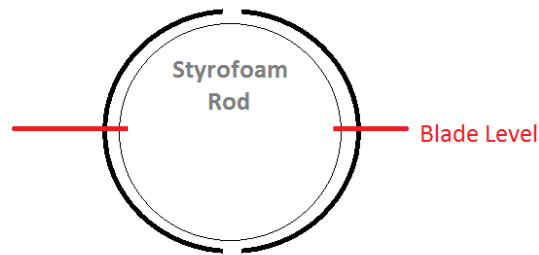
If a core liner is damaged beyond repair during core retrieval, all or parts of the core will have to be transferred to new liner. It is beneficial to have 150cm sections of split liner prepared for these unpredictable events.

- A. Preparing liners for damaged cores ("Split Liners")
 - a. Cut 149cm pieces of liner (ends up being about 150cm with caps)
 - b. Add a blue and clear end cap with acetone to the ends
 - c. Split liner lengthwise using core splitter WITHOUT the wire attached
 - i. Note: This will not cut the caps. Keep the cap sides intact until the liner is needed on the catwalk. Caps can be cut carefully before use with a box cutter.

If a core liner has minor damaged during core retrieval, it may need additional support (without fully replacing the liner) so the sections stay intact. "Liner patch" is sliced into ½ and ¼ circle pieces for this purpose.

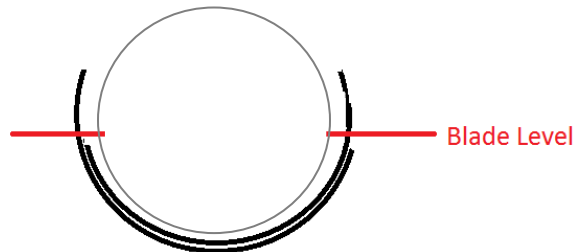
B. Preparing core liner patches

- a. Remove wire from core splitter, you will slice the patch with only the blades
- b. $\frac{1}{4}$ patches
 - i. Split the liner patch in half
 - ii. Wrap half pieces around a full Styrofoam rod
 - iii. Place in splitter so that the blades will split each half into fourths
 - iv. Secure the liner patch and foam with dropbar



c. $\frac{1}{2}$ patches

- i. Split the liner patch in half
- ii. Note: these patches actually need to be less than $\frac{1}{2}$ to fit properly around the core liner
- iii. Lay one patch inside the other, offset so that about a half inch will be taken off each side with the blades
- iv. Place a Styrofoam rod in the end of the liners (farthest from the blade) for stability while splitting
- v. Secure the liner patch and foam with dropbar



In gassy sediment, the core can expand beyond the length of the liners when sections are cut of the core. Core extenders should be prepared to accommodate for expanding cores.

C. Preparing core extenders

- a. Cut liner patch into ~10-15cm pieces
- b. Make slits in sides of caps (clear, blue, and yellow caps)
- c. Drizzle acetone on the outside rim of the caps
- d. Slide the cap inside the liner patch to close one end
- e. Note: Since liner patch is slightly larger than actual core liner, these extenders should slide right over the core liner containing the expanding core.

Core catchers typically have a 5cm sample taken off on the catwalk for paleo analysis. 5cm is left empty in the core catcher liner to represent this sample. Once the core catcher is split, a 5cm foam spacer is added where the sample was taken to secure the core. These should be prepared regularly and stored in the splitting room.

- D. Preparing foam PAL spacers for split core catcher
 - a. Cut foam rods into half cylinders using the band saw or table saw in the upper tween
 - i. Bring another tech with you for safety
 - ii. Be sure to vacuum after using the saws!
 - b. Cut ½ cylinder foam into 5cm pieces using ceramic knife
 - i. Note: a guide board with 5cm marks is stored with the ceramic knives in the splitting room PAL drawer

Label "PAL" on flat surface in red (archive) and black (working)

Core catcher liners need to be prepared and always available. Keeping an adequate stock of various sizes of liners will be helpful and useful during busy days.

- E. Preparing core catcher liners
 - a. Use discarded liners from previous cores (or a fresh liner for the first core on the cruise)
 - b. Cut the pieces into a variety of lengths
 - i. Core catcher sediment/rock can range from a few centimeters to almost a meter in length
 - 1. Piston core (APC) and rotary core (RCB) catchers are typically smaller, extended core (XCB) catchers are typically longer
 - ii. Use the hack saw, the core liner splitter, or the band saw
 - iii. Rinse the liners out before use

IV. A few helpful hints

Here are a few helpful hints to situations that you might find yourself in while working in the core lab.

- A. What to do if a scientist needs a core that has already been packed
 - a. Check with ALO or Curator to see if it should/can be retrieved
 - b. Bring a screw driver and another technician with you to remove the staples (place staples in sharps container)
 - c. Use hook to gently slide the core out (leave the D-tube in the box if it is easier than removing the D-tube)
 - d. Take the cap with the core if the D-tube is left in the box
 - e. Leave the box open unless ALO/LO/Curator instructs you to re-staple it
- B. Storage Room Advice: Supplies are stored in various locations around the ship. Here is a quick guide on the different storage locations.
 - a. Checking supplies out

- i. ALWAYS check out supplies on the inventory sheet
 - ii. Careful to check the inventory unit for that item (box, piece, etc.)
 - iii. If a box has “free” marked on it that means the box of supplies has already been checked out. Items in a “free” box can be taken without marking the inventory.
 - iv. If asked to do inventory on an item, count the items in storage and write “PC” and the number of items in stock (ie. PC 120) on the inventory sheet.
- b. Upper Tween Deck
- i. Storage Room (most supplies you will need are here)
 1. Familiarize yourself with this room during transit at the beginning of the cruise.
 2. If you can’t find something by just looking around, look on the inventory sheets. There is a location column that guides you to where that item is stored.
 - a. D= drawer
 - b. S= shelf
 - c. C= cabinet (located to the right when you walk in)
 - d. F= floor
 - e. Ropes (located to the right when you walk in)
 3. Inventory sheet located to the right when you walk in, on the door
 - ii. Racks above the gas bottles
 1. Large boxes of supplies are typically found here
 2. Common items
 - a. End caps
 - b. Styrofoam rods
 - c. P-mag cubes
 - d. Liner patch (also typically in reefer)
 - e. Some sampling materials (scoops, tubes, etc.)
 3. Inventory sheet is located by the saws near the industrial lift
 - iii. Cage
 1. Common items
 - a. Paper towels
 - b. Boxes
 - c. Core liner dividers (for hard rock curation)
 - d. Rags
 - e. Kimwipes
 2. The same inventory sheet (TBULK) near the industrial lift is used for supplies in the cage.
- c. Reefer
- i. Common items
 1. D-tubes
 2. Liner patch
 3. Blue and grey cabinet around the corner to the left as you exit the elevator
 - a. Glue/Epoxy/Adhesive

- b. Tape
 - 4. Inventory sheet is located nearby, usually on the cabinet door.
- d. Chemical Storage Rooms
 - i. Common Items
 - 1. Acetone
 - 2. Hydrogen Peroxide
 - ii. Inventory sheet is near the door of each chemical storage room
 - iii. Keep door latched open when in a chemical storage room
- e. BLO (Tech Office/ALO/LO Office)
 - i. All Batteries, Brass picking plates, Munsell color charts and hand lenses