Guide to Gravity Coring on R/V Atlantis

Inventory and storage locations of gravity core pieces

As of December 2019, *Atlantis* has two boxes of coring gear labeled and located in the Science Hold middle shelf next to the treadmill. This includes core catchers, cutter noses, guide pieces, and various tools and hardware to assemble the core.

The core liners (3" ID PVC) and two bags of plastic end caps are stored in our shared Alvin/SSSG van on the 02 deck forward next to the rad van.

The bomb(s) and core stand are usually stored on the 02 deck near the hydro winches and can be bolted to the deck for use on the ¼" hydrowire as pictured here.

Assembling the Core

Cut the core liner out of 3" ID PVC that is kept in the SSSG/Alvin van. These can be sized to 2 meters in length simply by cutting off the coupled end piece of the PVC. A 2-meter-long liner will still clear the bulwarks when extended out on the ¼" hydrowire via the starboard hydroboom.

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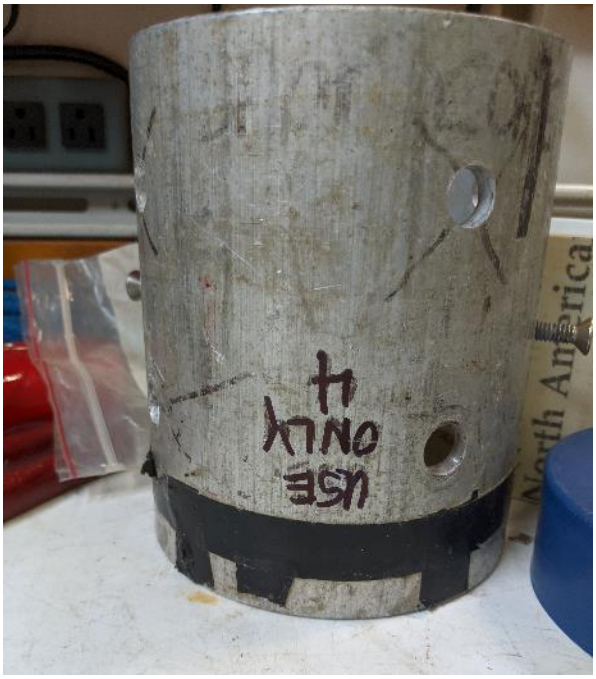
With the PVC cut to the desired length, use the metal guide piece to drill out the 4, ¾" bolt holes that will attach the core liner to the base of the bomb.



The metal guide piece has retaining bolts you can tighten down that will help keep the guide in place on the PVC during this process. As a recommendation, use the punch in the kit to mark the middle of each of the 4 holes, which will also provide a groove for the 5/8" spade drill bit when you are starting the hole.

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Clean out the plastic debris from the core liner and proceed to the opposite end. This end of the core liner will have the core catcher inserted and the cutter nose attached on the outside. With the cutter nose on, drill/tap each hole into the PVC using the supplied 10-32 NF tap in the kit.

Stick the core catcher inside and whack it into place as needed so that the rim is completely flush with the PVC.

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Place the cutter nose on and secure it with the bolts you tapped holes for.

Now use the wide electrical tape to tape up this end.

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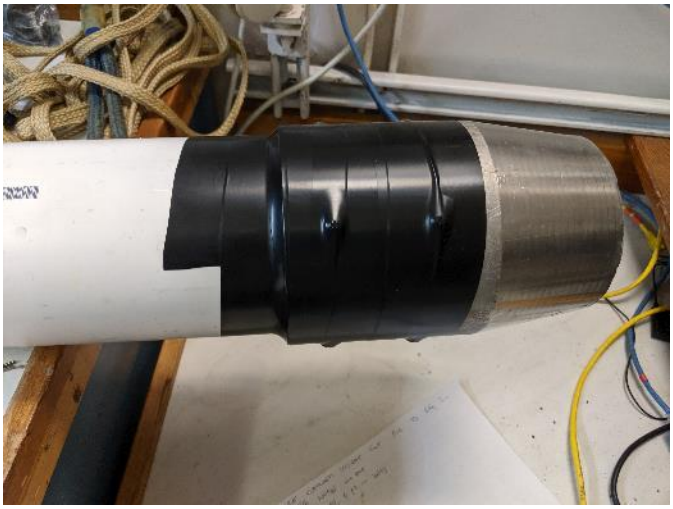
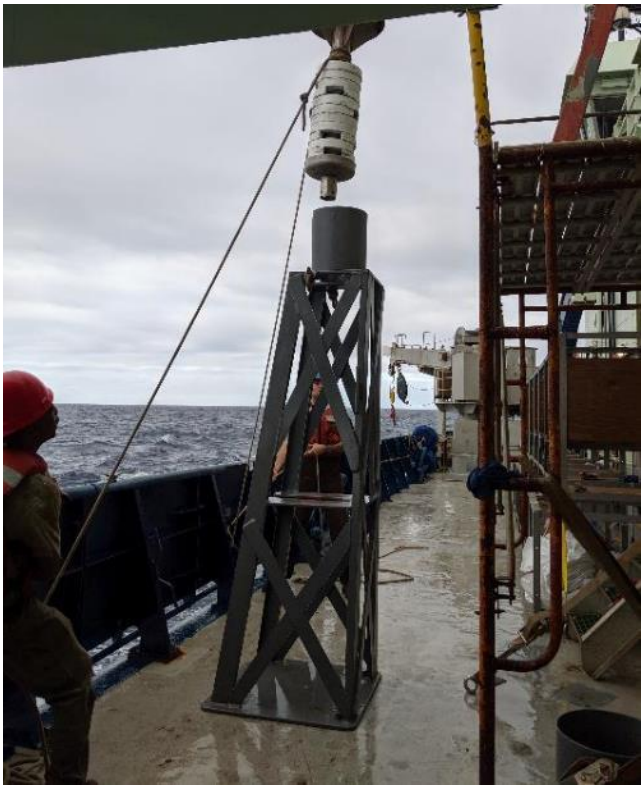


Deployment, Release, and Recovery

Prior to operations, the gravity core stand should be positioned and secured to the deck under the starboard hydroboom. The bomb and weight stack assembly will fit into the semicircle bucket at the top of the stand.



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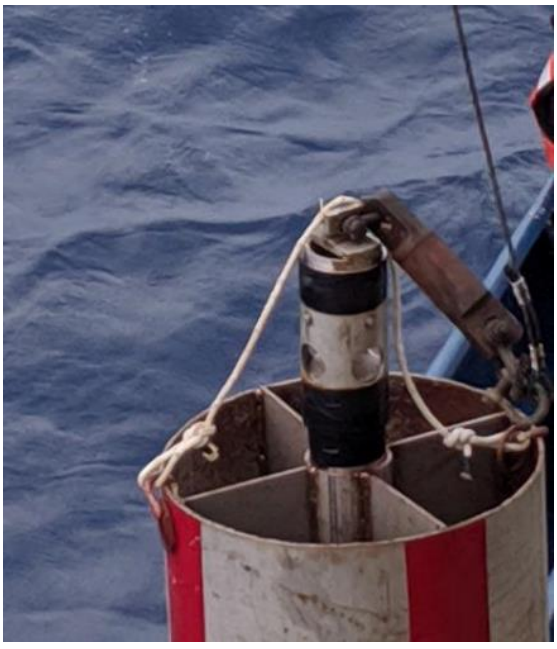
At the bottom of the assembly are 4 threaded holes for securing the top of your prepared core liner to using ¾" bolts. Once bolted, use wide electrical tape and make a few wraps over the bolts like you did for the core cutter end piece.

The thimble of the hydrowire can be attached to the gravity core bomb by a shackle. We did one deployment with a swivel (pictured below) and the rest without. It did not seem necessary but check in with the Bosun on what they would prefer.



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Descent speeds can follow the SOP for the hydrowire located at the Computer Lab winch station. Control is changed from the outside winch station to the Computer Lab at 100 meters depth. After passing 200 meters, speed up to a maximum of 60 meters/minute. About 100 meters from the bottom you will want to have slowed your speed and then stop for a few minutes to let the wire and gravity core assembly settle out. Record the average tension at this depth to be referenced when confirming you have pulled the core out and are off bottom after the hit.

When you are ready, call the Bridge and let them know you are going for the hit. Speed up on the payout until about 85-90 meters/minute or maximum when you see the tension on the display screen trending flat indicating slack wire. This is the speed that you want to hit the bottom at. You will know you have made contact by the sharp decline in tension as pictured below.

Stop paying out and inform the bridge you have hit the bottom and are coming up slowly. Try to keep speed around 10 meters/minute until you are sure you have cleared the bottom and your tension is about what you saw when you stopped to let the package settle. When bringing the core back on deck, take special care to line up the PVC within the tall stand and use the plastic end caps as needed when slicing and/or storing cores in the science reefers.