Overview

The Fugro Jumbo Piston Core (JPC) system is designed for the recovery of seabed soil samples from penetrations of 30 to 80 ft. in water depths up to 10,000-ft. The JPC weight stand and core barrel assembly allows for sampler makeup in both vertical and horizontal modes. The JPC configurations are customized to the soil conditions revealed by seabed PCPTs performed prior to deployment. This allows for the highest quality sample recovery in a variety of soil conditions.

Equipment

- Trigger release mechanism contains a hydrostatic safety trigger stop, to prevent premature triggering.
- Segmented weight stand with weight capabilities between 5,000 and 10,000 lbs, at 250-lb increments.
- 85-ft segmented core barrel made of 5.75-in.-OD, 4.625-in.-ID, high tensile strength internal flush well casing. The core barrel is equipped with core catcher and a nose cone.
- Liner consisting of standard schedule 40 PVC (4.0-in.-ID) connected by threaded couplings.
- An internal piston with sealing rings aid in high quality sample recovery.

Deployment

The standard JPC suite can be mobilized onto either a Fugro owned vessel or a vessel of opportunity (including Mobile Offshore Drilling Units). During Mobilization a deployment system will be selected, including a track and stinger system in conjunction with a deepwater winch and A-frame, a side mounted pivoting structure system, or with a deepwater crane system.
Jumbo Piston Core

Deployment

Track and Stinger

A small winch is used to pull the stinger, holding the JPC, to the end of the vessel. The trigger system is then attached to a heavy lift cable connected to a deepwater winch. The JPC is then lifted out of the stinger by the A-frame and lowered over the stern of the vessel.

Side Mounted Pivot

The JPC system is pivoted from a horizontal to vertical position using a system of A-frames and small winches along the side of the vessel. The trigger mechanism is then attached to the JPC along with the heavy lift cable. The entire system is then lifted, the pivot assembly is pulled away, and the JPC is lowered along the side of the vessel.

Deepwater Crane

The JPC is assembled on deck, including the trigger system. The entire system is lifted by the crane and lowered over the side of the vessel by the deepwater crane.

Operation

All deployment systems lower the JPC until a trigger weight comes in contact with the seafloor. The JPC then free falls to its final penetration depth. A piston inside the JPC stays at the same depth relative to the trigger position, increasing sample quality as the core is cut. The JPC and core are then brought back to the vessel and the deployment steps are reversed to recover the tool. The JPC can be outfitted with a beacon to determine the position before triggering if placement and water depth is important.

Sample Collection

Depending on the deployment method, the core is either removed from the top (track and stinger) or bottom (side mounted pivot) of the JPC. The core is then cut into manageable sections (usually 3 ft or 1 m), capped and transferred into the lab for testing.