

GEOLOGICAL SURVEYS – CORING AND GRAB SAMPLING

WHAT ARE GEOLOGICAL SURVEYS USED FOR?

Geological surveys are used to obtain physical and/or chemical information about the seafloor and subsurface sediments. Physical analyses are used in engineering studies or geotechnical evaluations for

- placement of platforms,
- construction of pipelines,
- siting of renewable energy facilities, and
- evaluation of sediments for beach and coastal restoration.

Chemical analyses are used to evaluate compounds and elements to determine potential hydrocarbons or sediment characteristics.

WHAT IS CORING AND WHAT ARE THE DIFFERENT CORING METHODS?

Cores are used to retrieve a cylindrical “core” sample of the shallow subsurface sediments. Typically, these may be 20’ to 30’ long.

Gravity Coring and Piston Coring: Basically, both methods rely on a heavily weighted hollow tube that uses the force of gravity to penetrate the seafloor for sediment samples.



*These cores were recovered during cruises by the R/V Hakuho-Maru, Ocean Research Institute, University of Tokyo.

(TDI-Brooks International)



Vibracores: A core tube is attached to a mechanical vibration source and lowered into the sediment. The vibrations allow the core tube to move down through the sediment layers.



(Kinnetic Laboratories Inc.)

(Gregg Marine)



WHAT IS GRAB/BOTTOM SAMPLING AND HOW DOES IT WORK?

This sampling method is used to retrieve soil samples from the seabed surface. These samples are used for

- bulk sampling for seabed minerals,
- marine sand and gravel prospecting,
- environmental sampling,
- pre-dredge investigations, and
- ground truth for morphological mapping and geophysical surveys.



The rectangular box on the bottom takes an undisturbed sample of the topmost sediment on the seafloor. Then the arm on the right is pulled up by cables which swings the cover on the left under the box to preserve the core on the way back up to the ship. (www.polar trek.com: International Continental Shelf Survey Journals: Bill Schmoker)



(Wessex Archaeology)



Box Core Sample (USGS)