

DEEPWATER SEACALF®



The DEEPWATER SEACALF® is a further development of the SEACALF® systems that have been in use for offshore geotechnical investigations since 1972. It is a seabed rig for performing continuous static cone penetration tests (CPTs) and in-situ vane shear tests from the seabed in water depths up to 3,000 metres. To date, over 30,000 tests have been performed by Fugro's seabed CPT systems such as the SEACALF®, SEAROBIN and SEASCOUT to investigate sites for jack-up rigs, production platforms, pipelines, telecommunication cables and other offshore structures.

THE SEABED UNIT

The penetration force for the DEEPWATER SEACALF® is provided by the Fugro WHEEL-DRIVE system in which two wheels grip the test rod and, when rotated, move it up or down. The wheels are driven from a powerpack mounted on the seabed frame. The common frame configuration is a 3 m by 3 m base with a height of 3.4 m. The unit weighs approximately 120 kN and provides 50 kN of penetration thrust. The unit can accommodate 36 mm or 55 mm diameter test rods. Test penetration can be up to 40 m for CPTs and 20 m for vane shear tests, subject to local soil conditions.

Geotechnical vessel Explorer

PERFORMING A TEST

An electric cone penetrometer, connected to a string of rods, is pushed into the seabed at a controlled rate. As it penetrates the seabed, the variations in cone resistance, sleeve friction and pore pressure (or other parameters) are continuously recorded. Signals from the sensors pass through a control and data transmission module on the seabed frame and are then transmitted, in digital form, to the surface via a communications and control cable. The results are displayed graphically on the screen of a micro-computer, and simultaneously recorded on disk as the test proceeds. The operator has complete control of the seabed unit through the computer.



SENSORS

The DEEPWATER SEACALF® can deploy a range of cone penetrometers with cone base areas of 10, 15 and 33 cm²:

- friction cone penetrometer
- piezo-cone penetrometer
- triple element piezo-cone penetrometer
- temperature friction cone penetrometer
- In addition the “T-bar” penetrometer can also be mounted to perform T-bar test up to 40 m penetration.
- The DEEPWATER SEACALF® can also accommodate Fugro’s IN-SITU VANE shear test device. This allows the performance of a series of undisturbed (and remoulded) tests at any test depth to penetrations as deep as 20 metres, subject to local soil conditions.

INSTRUMENTATION

Standard instrumentation incorporated on the seabed frame includes a dual axis inclinometer and a water pressure transducer.

DEPLOYMENT VESSELS

The DEEPWATER SEACALF® can be used from specialised geotechnical vessels including the Bucentaur, Bavenit, or Uncle John. Alternatively it can be modified for deployment from other suitable vessels. It can be deployed on twin lines through a moonpool or via an ‘A’-frame over the stern or side of the vessel.



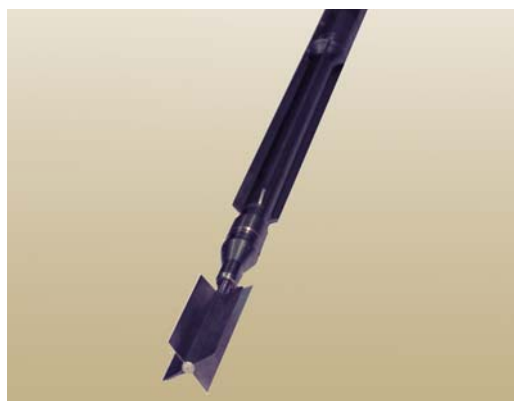
Geotechnical vessel Bucentaur



DEEP WATER SEACALF® on vessel Bucentaur



Cone penetrometers



IN-SITU VANE

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