

Geotechnical Drilling Rig GMTR150



Introduction

Geoquip Marine designed and built the Twin Ram Drilling Rig (GMTR150) in 2013. The GMTR150 complements Geoquip's existing fleet of drill rigs by enabling the completion of projects in the demanding and highly specialised deep water market.

The twin derrick design and automated features of key operations also ensures that the GMTR150 is extremely time efficient at completing boreholes in water depths typically found across large wind farm sites. This efficiency is enhanced through the operation of a remote tool handling system and an iron rough neck.

Time efficiency when performing multiple boreholes, not only reduces overall contract durations, but also allows the exploitation of short weather windows for productive operations. The GMTR150 incorporates a 22t seabed frame and a top drive unit capable of handling 5½" or 6¾" API drill string.

Capabilities

Safety is a performance indicator and the GMTR150 drill rig design has removed operational risks where possible.

The GMTR150 drill rig is suitable to conduct operations in water depths up to 3,500m (water depth plus borehole depth). The GMTR150 drill rig has the capability to recover high quality samples and record accurate *in situ* data in all soil types.

Sampling and Downhole Testing

The GMTR150 series is compatible for operations with a wide range of downhole tools including wireline sampling and wireline cone penetration testing (PCPT). Each of the downhole tools are fully interchangeable within the drill string set up and can therefore be alternated in turn to suit changing soil conditions / type. This gives Geoquip geotechnical engineers the increased flexibility to meet and exceed the requirements of a Client.

- Push / Piston sampler (1m length thin, medium and thick walled Shelby tubes)
- Triple tube lined coring system (80mm diameter core and maximum 2.8m length)
- Hammer sampler (2" and 3" diameter split spoon)
- PS wireline logging

The GMTR150 is also capable of running Logging While Drilling Bottom Hole Assemblies to provide detailed geophysical, geomechanical, petrophysical and geological borehole data.

‘Real-time Data and Reporting’

The technical capability of the GMTR150 series drill rig in the field, is further enhanced through the provision of a dedicated soil and rock testing laboratory. This facility allows the ‘real-time’ classification and testing of high-quality samples and the QA / QC of recording in situ data.



Drilling Rig GMTR150	
Power Swivel	Top drive / power swivel Ocean Hydraulics design 35,600N.m ⁻¹ @ 50rpm 9,900N.m ⁻¹ @ 250rpm 150t load capacity Dando 1000 twin motor with dual speed setting for high torque / high rotation
Drill String	5½" or 6½" API drill string
Seabed Frame	22t, with hydraulic clamps
Heave Compensation	Effective drill string compensation 0m to 6m. Seabed frame and seabed CPT unit heave compensation with an effective stroke from 0m to 7m
Mud	Project specific modular mud systems installed as required
Downhole Sampling	Wireline piston / push sampler, percussion / hammer sampler
Downhole <i>in situ</i> Testing Tools	WISON-APB PCPT cone penetration testing with pore water pressure and seismic velocity measurements PS wireline logging
Downhole Coring	Traditional and leading shoe core barrel
Drill Control Cabin	Control cabin for remote control via hydraulic / electric interface of all drilling and sampling operations. Allows driller, assistant driller and PCPT operator coordinated control of all drilling /sampling operations. Rig specific DMS recording
Drill Rig Workshop	ISO 20ft container sized fully equipped workshop, tools and equipment. 220v supply
Equipment Winches	Seabed Frame: 3,500m, 36mm wire rope; SWL 32t / Head Line: SWL 3t, Tail Line: SWL 3t / Sampling: 3,000m, 10mm wire rope; SWL 1.5t
Seabed CPT Unit	20t deep push CPT system. Straight rod push thrust mechanism allows recording of in situ data to 40m below mudline, or greater, depending on soil conditions.