

Geotechnical Drilling Rig GMTR120



Introduction

Geoquip Marine designed, built and commissioned the Twin Ram Drilling Rig (GMTR120) in 2013, which complements the company's existing fleet of drillrigs and enabled the expansion into deep water markets.

Sampling, Testing and Downhole Surveying/Logging

The GMTR120 is compatible with a wide range of wireline, downhole sampling, testing and logging equipment. This includes Piezo-Cone Penetration Testing, push / piston and percussive sampling, rotary coring and P-S Logging tools. All can be run interchangeably without recovering the drill string. The GMTR120 is also capable of running Logging While Drilling Bottom Hole Assemblies to provide detailed geophysical, geomechanical, petrophysical and geological borehole data.

Capabilities

The GMTR120 is suitable for drilling, coring, sampling and testing in all soil conditions in water depths plus borehole depth of up to 2,500m with an option to extend to 3,000m.

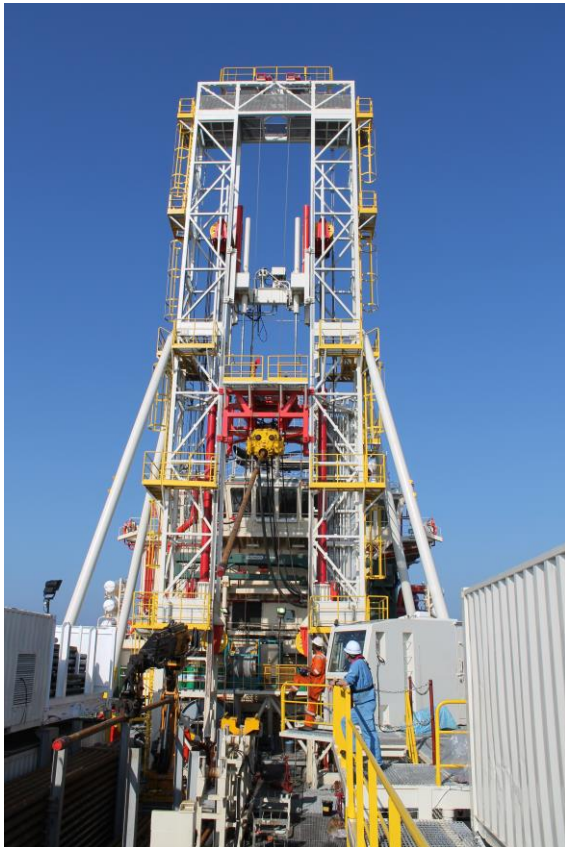
Mobilisation

The Geoquip Marine GMTR rigs are a series of modular ram hoist type rigs designed to be easily mobilised onto vessels of opportunity. The parts are designed for shipping in standard open top containers.

Technical Features

The rig has an automatic pipe handling system, ram hoist system with twin wire suspension for safe and controlled handling of in-hole tools and six metre passive stroke compensation (improved sample recovery and quality).

The seabed frame can clamp onto the drill string and enable *in situ* testing with the downhole CPT. Furthermore the GMTR120 is capable of lowering and hoisting the GMCPT200 seabed CPT, which enables rapid execution of CPT surveys, especially for offshore wind farm projects.



GMTR120	
Drilling System	Ram hoist system with twin wire suspension giving safe, efficient and compensated handling of all in hole tooling
Heave Compensation	6m stroke passive heave compensation (semi active under development) using nitrogen gas as compensation buffer with Olmsted valve slingshot protection. Seabed frame compensation 0.0 to 7.0m
Top Drive/Power Swivel	Top Drive / Power Swivel-Edeco swivel 19,400 N/M 0-120 rpm and 5,000 N/M 400 RPM breakout torque 22,500 N/M. Load capacity 120t capacity
Pipe Handling	Single range two drill pipe handling using a proprietary mechanical handling system utilising pipe handling crane and pipe grabble; remote operated iron rough neck and spinner; proprietary catwalk system. Handles pipe with minimum manual intervention and hence improved safety
Hydraulic System	2x electro hydraulic power packs of 310kW each. Hydraulic distribution from a control module beneath the centralised control cabin
Mud System	Project-specific modular mud systems installed as required
Rig 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 1.5 t
Drill Control Cabin	Proprietary designed control cabin for remote control via hydraulic/electric interface of all drilling and sampling operations. 3 man cabin for driller, assistant driller and PCPT operator giving coordinated control of all drilling/sampling operations. Rig specific DMS recording
Transport	Derrick sections and modular components designed to be transported within standard open top shipping containers
Capability	Utilising a standard geotechnical drill string of BHA, drill collars and 5½" API drill pipe the 120t SWL gives a combined bore hole and water depth capacity up to 2,500m. Use of a aluminium drill string would increase this capability
Sampling in situ Testing	Can utilize 6½" API drill string to allow large diameter coring. Fitted with AP v. d. Berg downhole PCPT / push/piston sampling equipment and wireline coring equipment. Presently 1,200m PCPT umbilical and winch capacity, can be extended to 1,600m
Soil Testing Laboratory	Installed on board as per project requirements
200kN Seabed CPT	As an option Geoquip's GMC200 or 201 20t seabed units can be deployed through the vessel moonpool using the rig derrick and compensation system