

Introduction

The Geoquip Seehorn is a DP2 vessel, upgraded and converted in 2015 to an integrated geotechnical site investigation vessel to perform deep seabed testing and boreholes. The oversized GMR602 single derrick has been specially designed to allow the safe operation of wireline coring, specialist oversized coring equipment, and high-quality piggyback coring, as well as traditional sampling and in situ testing techniques. The heave compensated GMR602 drilling rig is installed over the 5.2m x 4.8m midship moon pool. At 83.5m length and 18.0m beam she also comfortably operates deep push seabed PCPT equipment with casing to achieve maximum penetrations.

Key Features:

- Class 2 Dynamic Positioning
- Fully integrated 20t seabed CPT and drilling capability
- 102mm wireline coring and Geobore S piggyback coring
- Heave compensated offshore geotechnical drilling rig
- Combined water and borehole depth of 350m
- Comprehensive on-board soil and rock testing laboratory

Positioning

The vessel uses a Kongsberg Simrad SDP-21 dynamic positioning (DP) system for station keeping. The system consists of a dual DP controller unit and operator stations. The DP system provides a direct interface to the CPP propellers and bow/stern thrusters (two of each), and includes the necessary interfaces to power plants, position-reference systems, and sensors. This provides accurate and precise station-keeping during all borehole and seabed testing operations.



Drilling Monitoring and Downhole Tools

The GMR602 drill rig is fully instrumented for the electronic display of drilling parameters: torque, bit weight, mud pressure, mud flow rate and rotation speed. However, the rig does not have DMS. A comprehensive range of wireline downhole sampling and testing tools is available, including PCPT (Piezocone Penetration Test), piston sampling, push sampling, wireline core barrel, and percussion (hammer) sampling. All downhole tools (coring, sampling, PS logging) are fully compatible within the 5 1/2" API drill string. Additionally, a range of drag and specialised coring bits are provided. Large diameter drill pipe can also be used to allow large diameter cores to be taken.

DRILLING RIG GMR602	
Power Swivel	Fraste R41D150 6,900N.m ⁻¹ 160rpm and 13,800N.m ⁻¹ 90rpm Load capacity 30t.
Drill String	5 ½"API drill string Pipe handling system installed
Seabed Frame	Up to 16t submerged, with hydraulic clamps
Heave Compensation	4m stroke
Mud	Project-specific modular mud systems installed as required
Downhole Sampling	Wireline piston / push sampler, percussion / heavy duty percussion sampler
Downhole <i>in situ</i> Testing Tools	A.P. van den Berg – WISON cone penetration testing with pore water pressure and seismic velocity measurements. PS wireline logging
Downhole Coring	80mm 1.5m to 3.0m triple tube core barrels Geobore S piggy back coring 102mm
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	draw-works winch, seabed frame winch, AH Winch (BSL 300wx / SI30 wx Hydraulic), Tow works Winch (BSL 300wx / SI30 wx Hydraulic)
Seabed CPT Unit	20t deep push seabed CPT system. Straight rod push thrust mechanism allows recording of <i>in situ</i> data to 40m below mudline, or greater, depending on soil conditions. Repeatedly greater test penetration depths can be achieved through use of CPT rod casing, installed simultaneously as test is performed.

GEOQUIP SEEHORN	
Flag, IMO, Call Sign	Cyprus, IMO 8406470 Call Sign: 5BSW5
Class	Bureau Veritas Offshore Support Vessel, Unrestricted Navigation, Green Passport EU, AUT-UMS, DYNAPOS AM/AT R, SDS
Built	Converted 2015 (built 1985)
Tonnage	GRT 3,364 NRT 1,009
Principal Dimensions	
• LOA	83.5m
• Breadth (moulded)	18.0m
• Draft (Summer)	5.58m
• Draft (max)	6.0m
Tank Capacity	
• Fuel Oil	798m ³
• Fresh Water	527m ³ Reverse Osmosis Plant installed
Speed / Consumption	
• Standby	10m ³ /24h
• On DP	18m ³ /24h
• Economic (transit)	21m ³ /24h at 10 knots
Endurance	>28days
Machinery	
• Main engine	13,452bhp
• Bow Thrusters	2 x 1,500bhp
• Stern thrusters	2 x 1,200bhp
DP System	Kongsberg Simrad SDP-21 2 x Seatex MRU-M 2 x DGPS (Veripos LD900) 1 x HIPAP 501
Moon Pool	5.2 m x 4.8 m
Cargo Deck	598m ²
Accommodation	43 x berths