DINA POLARIS

Introduction

The Dina Polaris is a 2017 build, DP2 vessel, specially designed for offshore installation services in harsh weather conditions. Certificated Clean Design she was designed and built to minimise her working footprint on the environment. Geoquip's twin derrick fully heave compensated GMTR120 drilling rig is installed over the 7.2m x 7.2m midship moon pool. At 98.9m length and 21.0m beam she is one of the largest geotechnical vessels currently available in the industry, creating an extremely stable platform, allowing seabed PCPT equipment and ROV to be mobilised alongside the GMTR120.

Key Features:

- Class 2 Dynamic Positioning
- Iron roughneck and remote tool handling
- Clean design vessel minimising carbon footprint
- Heave compensated offshore geotechnical deep water drilling rig
- Combined water and borehole depth of 2,500m
- Comprehensive on board soil and rock testing laboratory
- Built in hangars for WROV, port and starboard
- Starboard deployment option via A-Frame

Positioning

The vessel uses a Rolls Royce ICON 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 azimuth propellers, and bow thrusters, 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.

Drilling Monitoring and Downhole Tools

The GMTR120 drill rig is fully instrumented for the electronic display of drilling parameters; torque, bit weight, mud pressure, mud flow rate and rotation speed. 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 5½" API drill string. 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.

info@geoquip-marine.com

DRILLING RIG GMTR120	
Power Swivel	Top Drive / Power Swivel-Edeco swivel 19,400N.m^{-1}· 0rpm to 120rpm and 5,000N.m^{-1} 400rpm breakout torque 22,500N.m^{-1}. Load capacity 120t.
Drill String	5½" or 6⅝" API drill string Iron roughneck and pipe handling systems installed
Seabed Frame	Up to 20t submerged, with hydraulic clamps
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 0m to 7m
Mud	Project-specific modular mud systems installed as required
Downhole Sampling	Wireline piston / push sampler, percussion / hammer sampler Remote tool handling system
Downhole *in situ* Testing Tools	WISON-APB PCPT cone penetration testing with pore water pressure and seismic velocity measurements Calliper and natural gamma wireline logging 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	Braden draw-works winch, seabed frame umbilical winch, 2 x piston sample winch (electro mechanical), 2 x headline tugger winch, tail line tugger winch.
Seabed CPT Unit	20t deep push seabed CPT system. Straight rod push thrust mechanism allows recording of *in situ* data to 40m below mudline, or greater, depending on soil conditions.

DINA POLARIS	
Flag, IMO, Call Sign	Portugal, IMO 976031, Call Sign: CQOF
Class	DNV (Offshore Service Vessel, Clean (Design), Ice (1A))
Built	2017
Tonnage	GRT 6,986 NRT 2,089
Principal Dimensions • **LOA** • **Breadth (moulded)** • **Draft (max)**	 98.9m 21.0m 7.1m
Tank Capacity • **Fuel Oil** • **Fresh Water**	 3,000m^3 1,060m^3
Speed / Consumption • **Standby** • **On DP** • **Economic (transit)**	 3m^3/24h 6m^3/24h 11m^3/24h at 12 knots
Endurance	>28days
Machinery **Main Engines** **Generators** **Harbour Generator** **Bow Thrusters** **Azimuth Propellers**	 4 x MTU-16v 4000 M63L-2240kW, 900rpm to 1800rpm, Total 8960kW-12185bhp 4 x 2240kW 575v/690v 1 x 350kW 2 x Tunnel 97 kW-CPP 1 x Azimuth 883kW-FP 2 x Azipuli 120 CPP 2,200kW, Ø3,000mm
Electrical Supply System	**Ship Power Connections** are reliable and seamlessly integrated **1600A Air Circuit Breakers (ACBs)** ensure safe and controlled electrical flow **690V to 440V 500KVA** Transformers, step down voltage to optimise for HPU operation. Stable and efficient power handling
DP System	Rolls-Royce Icon
Moon Pool	7.2 m x 7.2 m
Cargo Deck	1,000m^2
Accommodation	94 crew capacity

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