

'Pelican' class drillships

Technical specification



GustoMSC is the designer of the 'Pelican' class dynamically positioned drillships. Since the launch of the 'Pelican' in 1972, a total of 5 units have been built at IHC Gusto's shipyard in Schiedam. A further 5 units were built under license, two at Scott Lithgow UK in Scotland and three at Rauma Repola Oy in Finland. The 'Pelican' class design has been the market leading design for more than 20 years, performing in various harsh environments all over the world to the satisfaction of the drilling contractors as well as the oil companies.

'Pelican'

The first dynamically positioned drillship, the 'Pelican', went into service in 1972.

This revolutionary vessel was designed and elaborated in close co-operation between Total, Foramer and GustoMSC. In comparison with earlier drilling units, the 'Pelican' is able to operate in deeper water (up to 320 m), under worse conditions (arctic and tropical) and is self-supporting for a longer time (2 average 3,000 m wells). Moreover, the mobilization time of the vessel is improved due to its minimum sailing speed of 12 knots.

The vessel is propelled by two controllable pitch main propellers running at a constant speed. The dynamic positioning is effectuated by the two main propellers (in longitudinal direction) generating 60 tons thrust, and five transverse propellers (in lateral direction). Three transverse propellers generate 45 tons of thrust at the bow; two transverse propellers generate 30 tons of thrust at the stern. The installed power allows the vessel to

maintain its heading within 2 degrees even while subjected to 45 knot winds, 4.9 m waves and surface currents running at 2 knots. The recorded fuel consumption in DP mode is between 15 and 27 tons per day.

The accuracy of the positioning management system is largely independent of the percentage of water depth. The position reference measurement system is a short baseline, passive acoustic system. Two tautwire inclinometer systems are used as a back-up system, later complemented with additional dual riser angle sensors.

The behaviour of the vessel was recorded during a 554-day drilling campaign offshore Labrador between 1973 and 1975. Wind exceeded 45 knots (design wind speed for DP) during 2.1 percent of that time and waves exceeded the 4.9 m - 12 seconds design wave spectrum about 6 percent of the time. Heave is the main limiting factor for the progress of work aboard the 'Pelican'. The overall percentage of idle time due to weather was recorded at 6.5 percent. This is a very low figure for a ship-shaped floater. The maximum allowable rig offset before disconnecting is 6 percent of the water depth. The recorded maximum offset did not exceed 3 percent during 93 percent of the time. The only disconnections were prescheduled due to excessive weather or icebergs. The assigned heading variation was kept within 4 degrees for 94 percent of the time.

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Operating limits

	Heave (significant)	Sea conditions
Drilling	2.5 m	5 m - 8.5 s
Tripping	3.0 m	6 m - 9 s
Running casing/logging	1.5 m	3.5 m - 7.5 s
BOP handling/diving/reconnection	1.0 m	2.5 m - 7 s
Riser disconnection	4.5 m	8 m - 10 s

Most of the drilling equipment and systems were supplied by renowned manufacturers. GustoMSC designed and built the riser tensioning and heave compensating device. The riser tension is controlled by a hydro-pneumatic system. The vessel's heave is compensated by vertical adjustment of the derrick crown block. This hydraulic system is controlled by a patented GustoMSC Unicode device. The operational success of the 'Pelican' has paved the way for expanding the water depth capability of dynamically positioned drillships. The design water depth range for the other 'Pelican' class vessels was extended to:

- Havdrill 400 m
- Petrèl 600 m
- Pélerin 1,200 m
- Polly Bristol 1,500 m
- Ben Ocean Lancer 1,200 m
- Pacnorse I 1,200 m

The design of the 'Pelican' series drill ships has evolved over the years with progressing client requirements. The first units, 'Pelican', 'Havdrill' and 'Petrel' laid the foundation for the enhanced design of the next series of 'Pelerin', 'Polly Bristol', 'Ben Ocean Lancer' and 'Pacnorse I'. In the early 1980's the 'Pelican' design was further enhanced to construct the ice-class drill ships 'Valentin Shashin', 'Mihail Mirchink' and 'Viktor Muravlenko'. This demonstrates the versatility of the original 'Pelican' design, not only for new build but also for subsequent upgrades of each of the units in later years.

Noble Leo Segerius (ex-Polly Bristol)



PÉLERIN (EX-PEREGRINE III, NOW ABAN ABRAHAM) AND POLLY BRISTOL (EX-KINGFISHER, NEDDRILL I, NOW NOBLE LEO SEGERIUS)

Classification

The 'Pelerin' and the 'Polly Bristol', (delivered to K.C.A. Drilling of London in 1981) were designed by GustoMSC and built by IHC Gusto Shipyard and Boele Shipyard to the requirements of Det Norske Veritas for Class IAI Drilling Vessel and Ice Class IB. The propulsion machinery meets the society's requirements for Class E0.

The vessel also conforms to the rules and regulations of the Norwegian Maritime Directorate, the Norwegian Petroleum Directorate and the Norwegian Ministry of Industry.

Principal particulars

Dimensions

Length overall	147.70 m
Breadth	27.00 m
Depth to main deck	12.50 m
Maximum draught	7.50 m
Size of moon pool	7.20 x 8.20 m

Deadweight

Deadweight	7,764 t
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Capacities

Fuel	3,183 t
Drilling water	730 t
Fresh water	424 t
Potable water	190 t
Ballast water	6,000 t

Speed

Transit speed	12 knots
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Propulsion

Twin screw, total	2 x 3,500 hp
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Accommodation

97 persons in single, twin and 4 berth cabins; 4 berths in hospital. Cabins, mess room and recreation room are all air-conditioned.

Operating capacity

Water depth	30 - 1,000 m +
Drilling depth	20,000 ft
Capacities sufficient for 3 months of autonomous operation without supplies	
Temperatures	-20 to +35 °C

BEN OCEAN LANCER (NOW SCHAHIN CURY LANCER) AND PACNORSE I (EX-PEREGRINE II, EX-FRONTIER DEEPWATER, NOW NOBLE PHOENIX)

Classification

Lloyds + 100 A I Drilling Ship, Ice Class 2 + LMC UMS

Principal particulars

Dimensions

Length overall 504 ft overall; 450 ft bp
 Breadth 77 ft
 Depth 41 ft

Draft and displacement

Operating draft 26 ft
 Operating displacement 17,230 t

Machinery

Main power
 5 x SACM Mulhouse AGO-16 diesel engines, rated 3,400 hp each at 1,200 rpm each driving a 2,600 kW alternator

Power distributor: LSE SCR system

Emergency power:

1 x emergency generator, 150 kVA

Propulsion

2x main variable pitch propellers, 3,000 hp each; 5x variable pitch Schottel tunnel thruster (3 bow, 2 stern), 1,750 hp each

Operating Parameters

Water depth 4,000 ft on DP
 Maximum drilling depth 20,000 ft
 Transit speed average 12.8 knots

Survival conditions

capacities sufficient for approximately three months of autonomous operation.



VALENTIN SHASHIN (NOW DEEP VENTURE), VIKTOR MURAVLENKO (NOW NOBLE MURAVLENKO) AND MIHAIL MIRCHINK (NOW PEREGRINE I)

Classification

The 'Valentin Shashin', delivered at the end of 1981 to the Ministry of Gas of the USSR, was built to the requirements of the USSR Register of Shipping under class notation: KM ULI FA2 Drill ship - Super Ice class.

The design, including adaptation to meet the specific requirements of the various USSR Authorities, was created by GustoMSC in close co-operation with the builder Rauma Repola and the owner.

Principal particulars

Dimensions

Length overall 149.40 m
 Breadth 24.00 m
 Depth to main deck 12.65 m
 Maximum draught 7.30 m
 Size of moon pool 7.20 x 8.00 m

Deadweight

Loading capacity 3,300 t
 Drilling water 600 t
 Fresh water 600 t
 Potable water 170 t
 Ballast water 2,100 t

Speed

Maximum speed 13.6 knots at 7.15 m draught
 Average service speed 12.0 knots at 7.15 m draught

Propulsion

Twin screw, total 7,500 hp

Accommodation 100 persons in single and twin-berth cabins and 2 berths in hospital. Cabins, mess room and recreation room are all air-conditioned

Operating capacity

Water depth 30 - 300 m
 Drilling depth 21,400 ft
 Capacities sufficient for 100 days of autonomous operation

PELICAN (SCRAPPED), HAVDRILL (EX-CANMAR EXPLORER III, EX-NORTHERN EXPLORER III, NOW JASPER EXPLORER) AND PETREL (NOW ACERGY FALCON)

Classification

The 'Pelican', delivered in 1972 to Somaser, Paris, was built by IHC Gusto Shipyard to the requirements of Bureau Veritas for a Class I.A.I - ICE B - AUT-Drilling vessel. The propulsion machinery meets the Society's requirements for Automatic Class. All international regulations and recommendations applying to this category of vessels have been complied with.

Principal particulars

Dimensions

Length overall	149.32 m
Breadth	21.35 m
Depth to main deck	12.50 m
Maximum draught	7.32 m
Size of moon pool	7.20 x 8.20 m

Deadweight

Deadweight	7.700 t
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Capacities

Fuel	3,000 t
Drilling water	790 t
Fresh water	190 t
Potable water	190 t
Ballast water	1,600 t

Speed

Maximum speed: 14 knots at 7.15 m draught
Average service speed 12.5 knots at 7.15 m draught

Accommodation

89 persons in single, twin and 4 berth cabins; 2 berths in hospital. Cabins, mess room and recreation room are all air-conditioned.

Operating capacity

Water depth	320 m
Drilling depth	5,000 ft

Capacities sufficient for 3 months of operation

Dynamic Positioning

Automatic position control system. Manufacturer: C.I.T. Alcatel. Main positioning system, with back-up systems consisting of two tautwires and a dual riser angle system. Two digital computers and one analog computer calculate the ship's position and operate five thrusters and two main propellers to keep the ship in position above the wellhead. System accuracy 6% of water depth

with maintenance of heading within 2 degrees under the following environmental conditions.

Wind

Constant wind speed	45 knots
Gust during 1 minute up to	65 knots

Waves

Significant height	4.9 m
Significant period	12 s

Current

Velocity	2 knots
Operating water depth	50 - 320 m

Drilling Equipment

Derrick substructure

Size	22.6 x 12.0 m
Height above main deck	7.35 m
Height above cellar deck	10.70 m

Derrick and derrick equipment

- Pyramid 147' Dynamic derrick; base: 44' 4" x 36'
- Hook load: 1,330,000 lbs gross nominal capacity
- Gusto-Unicode crown block heave compensator: hook stroke 15'
- National traveling block type 660 H500 and swivel BJ Dynaplex hook
- National 1,625 DE draw works 1,600/2,400 hp and National C-375 rotary table
- Pipe set-back for 174 stands of 5" O.D. drill pipe, 8 stands of 8" O.D. and 3 stands of 9 1/2" O.D. drill collars

BOP and riser system

- Dual stack BOP system including Cameron marine risers 24" and 16" for 320 m water depth
- Cameron BOP stack fitted with Koomey electro-hydraulic and Matra multiplex and acoustic (back-up) controls
- GustoMSC riser tensioners: 3 pairs with 6 support lines
Maximum plunger stroke 3.00 m, allowing approximately 12.0 m wire line travel
- Max. line tension each 68,000 lbs

Mud pumps, mud tanks and accessories

- 2 Nation 12-P-160 triplex mud pumps
- 3 Active mud tanks, total capacity 130 m³ mud
- 2 Reserve mud tanks, total capacity 125 m³ mud
- 2 Mixing tanks, total capacity 25 m³
- 2 Swaco super screen shale shakers
- 1 Swaco vacuum de-gasser and 1 vertical de-gasser
- 1 Picenco desander
- 1 Picenco desilter
- 2 Mission Belly transfer pump
- 1 Possum Belly transfer pump

Cementing installation

One twin compact Dowel Schlumberger R-708-J cementing unit consisting of 2 triplex pumps; one for 5,500 psi and one for 10,000 psi.



Data presented in this product sheet is for information only. Unit specific specifications as provided by the Owner shall prevail.

