

## GPO GRACE --- SHIP OF THE YEAR 2018 in Taiwan



Taiwan SNAME



GPO GRACE has been designed and built by CSBC with more advanced features compared with the previous generation “Blue Marlin”, the 56,500 DWT semi-submersible deck cargo/heavy lift carrier, delivered in 1999, also shows the achievements and abilities for special purpose vessels in Taiwan.

The three tiers and three rows of division form 76 individual water ballast tanks arranged under cargo deck area, and one gigantic forecastle deckhouse/compartment forward and two removable buoyancy towers abaft is located above upper deck. Numerous water ballast tanks determine the key performance of the vessel’s operations during loading/unloading and submerging/transit. Electric motors driven propulsion have been adopted instead of traditional diesel engine, and it helps the carbon dioxide emission being reduced largely for environment. The ice class notation ICE-1C has been considered which provides more flexible operation in ice zone for this type of vessel.

GPO GRACE has the first controllable pitch propellers (CPP) designed by CSBC which work well with full spade rudder, well proven by model tests resulting good propulsion efficiency and low resistance in the twin skeg stern asymmetrical flow field. CSBC compromise the hydrodynamic performance and structure strength and fine tuning the feasible geometry hull form from production point of view, the guarantee speed has been predicted by CFD, verified by HSVA, and finally been confirmed during sea trial successfully. It shows that “what we design is what we build”, the ability of CSBC is second to none and ranking as the first class shipyard in the world for this kind of semi-submersible vessel.

The ballast console is located at the wheel house abaft in order to provide good visibility during cargo loading/unloading operation. With one man bridge design, it is more convenient for monitoring the operation with integrated system and equipment on navigation console. Two removable buoyancy towers are located at stern which provide sufficient reserved buoyancy for submerged condition. These towers can be shifted to forward cargo deck

location with temporary rails and rollers devices by crews onboard, which can provide more flexible operation while cargo rolling on/off from stern or skidding on/off from quay side.

The vessel installs dynamic position system (DP system – DP2), which can smartly distribute the necessary power from two main propulsion, two stern thrusters, two bow thrusters to maintain the vessel in the precise position as required. In addition, the redundant propulsion system (RPS) requires separation of two independent propulsion, electrical power and steering system at sea, which ensures even one unit fails, the vessel can still remain in safe operation and maintain a speed of not less than 6 knots at BF 8 weather conditions, and it has been well examined by failure mode and effect analysis (FMEA) for all possible faults affecting the processes.

GPO GRACE has been well demonstrated in all aspects to meet the requirement such as seakeeping, maneuvering, hydrodynamic performance, safety, redundancy, operation etc., and successfully delivered on July 2017 with excellent performance and satisfaction to the client.

### PRINCIPAL PARTICULARS

Length, oa	225.00m	Deadweight, scantling abt.	65,000MT
Length, bp	218.36m	Gross tonnage	abt. 49,000
Breadth, moulded	48.00m	Endurance	25,000 NM
Depth, moulded	13.80m	Design speed	14.50 kts
Draught, design	10.64m	Classification	DNV-GL
Draught, submerge	28.80m	Flag	Marshall Islands

Shipbuilder : CSBC Corporation, Taiwan (Kaohsiung shipyard)

