

# ***Bourbon Trieste***

Deepwater Intervention Vessel



**BOURBON TRIESTE**

BUILDER  
OWNER  
YARD NO.

Shipyards De Hoop Lobith  
Bourbon Offshore Greenmar  
422





*Thursday 27th September witnessed the delivery of the 85 m diesel-electric multi purpose offshore vessel Bourbon Trieste by Shipyard De Hoop Lobith. A modern, diesel-electric driven, twin-screw multi purpose offshore service vessel suitable for world wide deepwater intervention services.*

The brand new ROV intervention vessel has entered a long-term charter with Sonsub. Headquartered in the UK Sonsub belongs to the Saipem Group and is a leading provider of remote subsea technology to the offshore oil and gas industry. Based on specific job requirements, Sonsub will install one or two Innovator Heavy Work Class ROV systems with full 3,000 m water depth operating capacity on the vessel. The spread will be dedicated mainly to light subsea construction and IRM activities in deepwater. Sonsub will deploy the new vessel off the coast of West Africa.

In general the vessel can be deployed for offshore maintenance support, ROV support as well as for oil recovery and standby-rescue activities. The vessel features a large open work (main) deck aft protected by a bulwark and at forward side by the vessel's forecastle and deckhouses containing stores and workshops.

### General

The multi purpose offshore vessel has been designed and built in order to support an active heave offshore knuckle boom deep water crane of 100 t lift with machinery above deck, and an auxiliary crane with 24 tons lift. The aftship has been designed and built with sufficient strength for future installation of a 100 t A-frame.

Machinery and accommodation sections are located forward. The main engine room is protected by a double hull construction. The hull is subdivided by longitudinal bulkheads and a number of transverse bulkheads. Wing tanks are utilized for storage of liquids. The centre part contains a workshop in the hold. A double bottom section has been fitted in the centre part of the vessel and a raised double bottom has been fitted aft.

The vessel features a DP Class 2 diesel-electric







propulsion system with two azimuthing thrusters fitted aft arranged in a thruster room also containing the electric motor drives. The duplex dynamic positioning system controls all thrusters forward and aft and consists of two computers interfacing to all thrusters, the two main switchboards and the main generators. Two tunnel thrusters and a retractable thruster are fitted forward. The hull form has been optimized for both speed and station keeping featuring a U-shape fore ship, a U-shape aft ship with skeg and pram type stern, and a round bilge with high bilge keels.

### Hull Construction

The hull is of all welded construction. The main engine room is encompassed by a double bottom and a double skin. The double bottom runs the full length of the vessel in the centre part. The wing tanks are used for liquids and feature a single bottom construction. A centre skeg has been fitted aft. The transom is of double skin construction.

The main deck is suitable for a uniformly distributed load of  $5 \text{ t/m}^2$ . The open part of the working area on main deck is protected from weather and sea forward by deckhouses and aft, at sides, by removable handrails. The main deck aft is suitable for a uniformly distributed load of  $10 \text{ t/m}^2$ .

The aft ship accommodates the spaces for propulsion machinery and frequency converters. In order to protect these machinery spaces the transom

features a double executed bulkhead.

The fore ship contains the spaces for the two tunnel thrusters and drive motors. The forecastle consists of two tiers containing accommodation spaces. The retractable thruster space is fitted in a bottom well. Double skin has been arranged facing the engine room section.

Below deck the hull has been strengthened for a future helicopter deck.

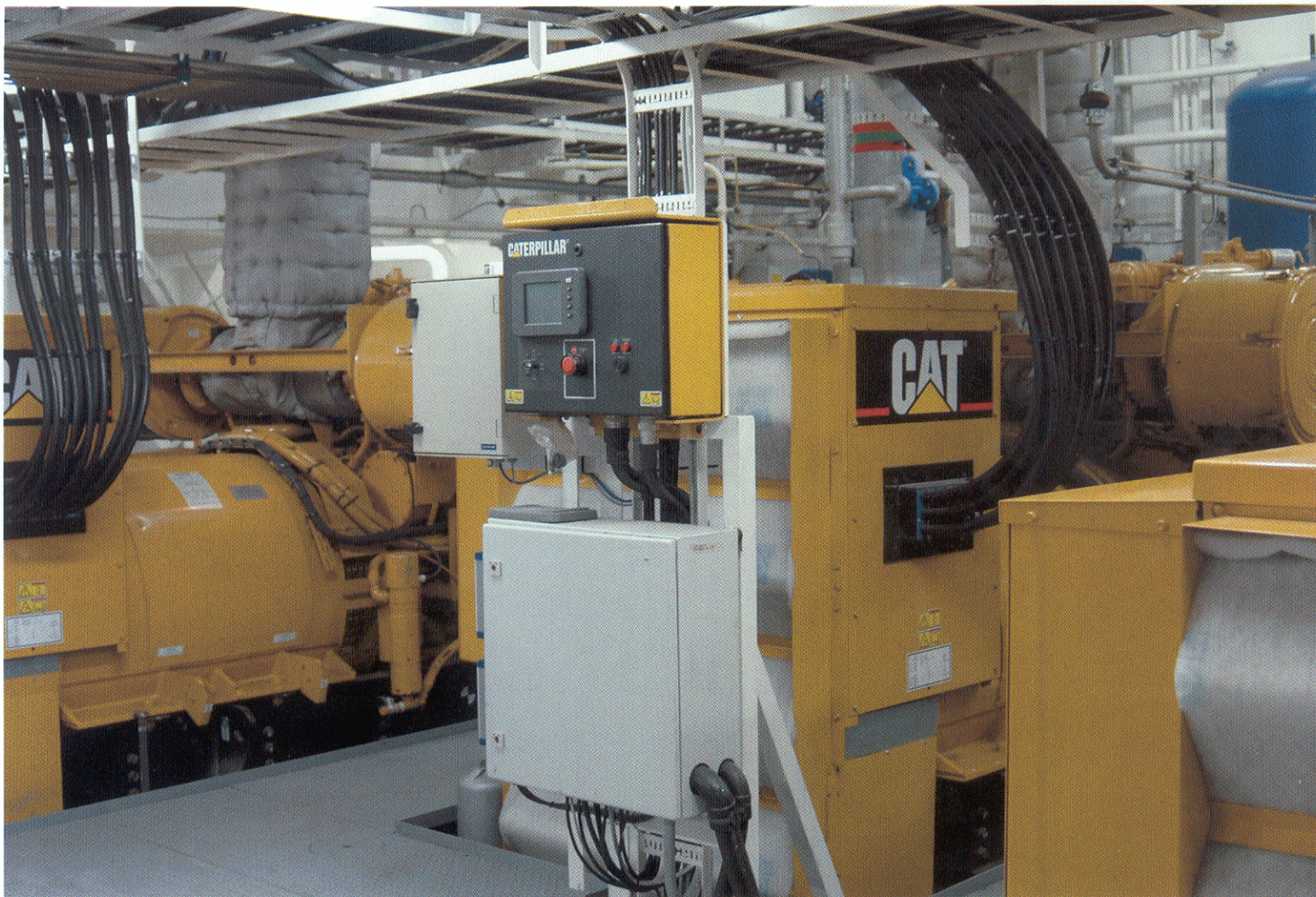
### Superstructure

The forecastle carries a full width three-tier deckhouse containing the accommodation with the wheelhouse on top. The wheelhouse features the control areas for navigation and communications. The bridge equipment is compliant with GMDSS regulations for area A3. The wheelhouse features a false floor of angle bar with a void space (doghouse).

The accommodation has been designed for a complement of 70 persons accommodated in 38 single, double and triple cabins. The accommodation section features a galley and cafeteria for food preparation and food handling service for the ship's personnel, and a laundry.

The superstructure features inside casings strengthened to avoid structural born noise transmission. All spaces of the accommodation are fully air conditioned. The air conditioning plant consists of two compressor units and one air handling unit. The





central air conditioning unit is installed in the doghouse below the wheelhouse. Recirculation takes place with fan coil units.

On aft side of the accommodation deckhouse on main deck are two deck stores situated. A workshop has been provided below the mezzanine deck. The mezzanine deck has been designed to carry two deepwater work ROVs. The counter foundations for these ROVs have been integrated in the belowdeck construction.

## Moonpool

The main deck is fitted with a moonpool measuring approximately 8.40 x 8.40 m with closed off bottom and top for subsea operations. The free opening of the working moonpool is 7.40 x 7.40 m. The moonpool is not in operation at this stage but is sealed off with closure plates at bottom and top side. These closure plates have been designed in such a way that they can be cut away at a later stage without having any effect on the vessel's structural integrity. The forward and aft bulkhead of the moonpool have not been fitted yet. The total construction has been executed in such a way, that these bulkheads can be easily fitted at a later stage. For the time being the moonpool has been fitted with a double bottom designed as water ballast tank with a connection to the bilge/ballast system. A vertical pipe with an internal diameter of 300 mm – sufficient for passing a single line main crane hook – has been

## Shipyard De Hoop

Lobith is situated on the spot where the ancient Batavii, famous for their courage and tenacity as well as for their trustworthiness, landed on Dutch soil. Here, ships have been built continuously throughout the centuries. In 1886, the first shipyard was established. Today Shipyard De Hoop has a history of almost 1,500 build vessels and more than 3,000 designs. Although the shipyard specialises in inland passenger vessels and offshore markets, virtually any ship can be completely engineered and built by De Hoop. Examples of this expertise are the transport vessels Brion and Breuil built for Airbus, the cable layer Sea Spider built for Wagenborg, the semi-submersible diving platform Amethyst and the more recently completed Bourbon Trieste.

De Hoop Lobith operates two slipways measuring 200 x 60 m and 120 x 22 m. The two cranes alongside the slipway have a hoisting capacity of 30 t each; the crane alongside the outfitting quay has a capacity of 10 t.

The design engineering and production departments (steel piping, engineering, steel pre-manufacturing, piping and machinery, carpentry and outfitting) are manned with a highly skilled and certified staff in these various disciplines.







provided through the closed moonpool, with opening in the main deck and the bottom of the ship.

## Propulsion Plant

The vessel features a redundant electrical power generation and distribution system. The diesel-electric propulsion plant consists of four Caterpillar SR4 diesel generator sets, each with a maximum output of 1,425 kW at 1,800 rpm. Fitted aft the two fixed pitch Azimuth propellers are driven by horizontal shaft 1,800 kW induction motors controlled via frequency converters.

Position keeping is enhanced by two vertical shaft 780 kW controllable pitch propeller tunnel thrusters supported by a retractable azimuth bow thruster unit of 600 kW. The propulsion plant provides the vessel a speed of 12 knots. All electrical motors are of marine type with enclosed squirrel cage. All diesel generator sets are resiliently mounted on a common frame.

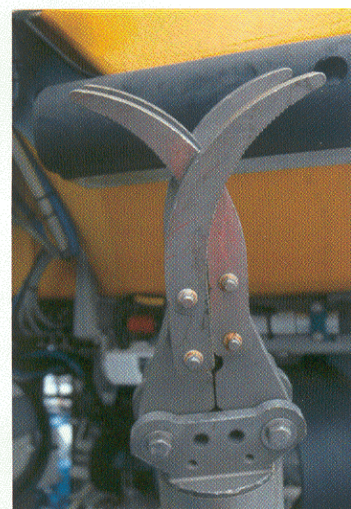
Emergency power is generated by an emergency/harbour Caterpillar generator set with a capacity of 375 kVA. The emergency generator is not able to run in parallel with the main distribution system. In harbour mode, the generator set is suitable for running in parallel with the main generating sets for a short period, enabling switching-over to port operation mode without black-out. The emergency set is completely self sufficient with separate fuel system, starting system, day tank and water cooler.

## Deck Equipment

The forecandle carries a combined mooring and anchor winch handling two 2,295 kg high holding power anchors fitted with Q3 anchor chain cables of 44 mm diameter and a length of 495 m. The vessel features a 100 t AHC knuckle-boom crane and a 10 t auxiliary crane, both with fast deepwater deployment capabilities. Situated on port side of the aft deck is the large 100 t Natoil active heave offshore knuckleboom deck crane. The second auxiliary deck crane, with a hoisting capacity of 12 t at an outreach of 10 m, is fitted forward on the same deck on starboard side. An active anti-heeling system consisting of two wing tanks has been installed to counteract inclination caused by crane operation. The wing tanks are connected through a crossover with two reversible pumps with a capacity of approximately 1,300 m<sup>3</sup>/h. The pumps are automatically controlled from the bridge from a central control unit with automatic/manual mode.

Deck equipment further includes two ROVs supplied by the owner, a high-speed rescue boat Seabear 23 MK II, and eight 25-person inflatable life rafts (four on either side).

The vessel is also fitted with an oil spill recovery system incorporating two submerged deepwell pumps, each with a capacity of 150 m<sup>3</sup>/h. The oil recovery equipment includes: a dispersant spray system including 6 m spray booms, a 10 m<sup>3</sup> dispersant tank, a dispersant pump unit, a skimmer, floating hose, oil







boom with storage reel, and a power pack for the oil recovery pump and hydraulic pipelines.

### Rescue Arrangement

In order to be able to assist in case of offshore calamities Bourbon Trieste has been fitted with dedicated rescue facilities. The rescue zone is marked on each side of the hull amidships. These parts of the hull are completely obstacle-free down to 2 m below the (summer) waterline. A helicopter winching area has been arranged on aft deck. Rescue appliances include two scrambling nets, removable seats for 150 survivors situated on the tweendeck in the foreship. The tweendeck further facilitates two toilets and three showers/washbasins for survivors, and a morgue for fifteen corpses. Personal life-saving appliances further include thirty-five immersion suits and 190 life vests.

### Fire-Fighting Equipment

A fire-fighting platform has been fitted between the vessel's funnels with fi-fi monitors. The vessel has been fitted with a fire-fighting installation complying with the requirements of a Fire-Fighting Vessel Class 1. The installation includes two 2,400 m<sup>3</sup>/h fire-fighting monitors, two powerful fire-fighting pumps, and a water spray pump. The vessel is also equipped with a fixed water spray system with supply from the water spray pump. The combined water/foam monitors are fed by the two fire-fighting pumps. A third pump is used for the deluge system. The pumps are connected to the generator by a flexible coupling and gearbox.

The foam system consists of two 12 m<sup>3</sup> foam tanks fitted in the engine room, a mixing unit and with connection to the fi-fi lines. The complete fi-fi system is controlled by a PLC-based control system located on the bridge forward.

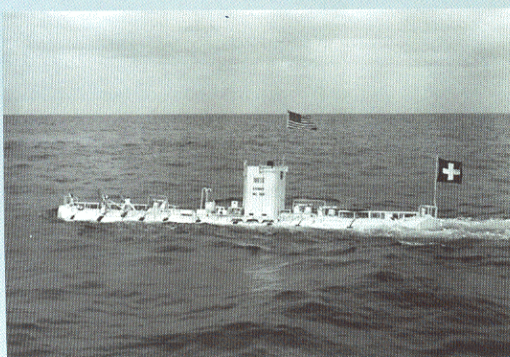
### Alarm & Monitoring System

Praxis Automation Technology delivered the Mega-Guard Alarm & Monitoring Systems consisting of two operator work stations, an extension alarm system and a total number of 552 I/O points, including 312 hardware I/O points, and 240 serial I/O points. The extension alarm system, as installed on the bridge and in the accommodation areas, is a reliable engineer calling system, which extends the alarm, and monitoring system for unmanned machinery space operation.

i. [www.dehoop.net](http://www.dehoop.net)

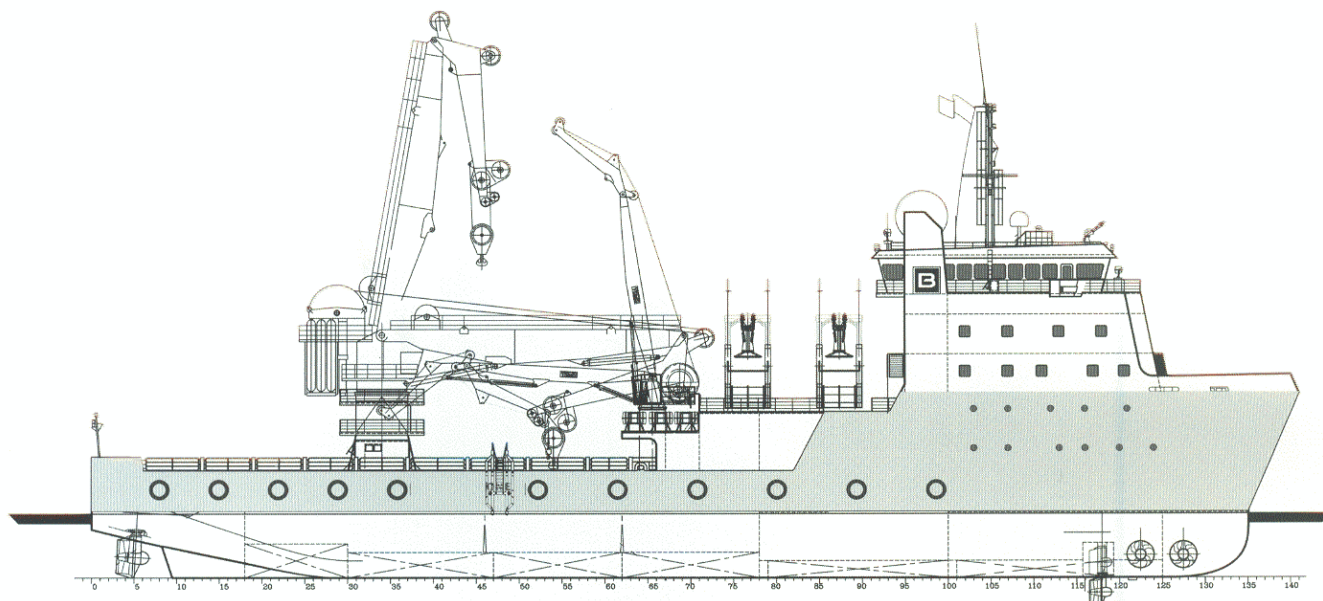
### What's in a Name

The deepwater intervention vessel Bourbon Trieste has been given this name in honour of the famous bathyscaphe that holds the world record for deepest dive. Trieste was a Swiss designed deep-diving research bathyscaphe (deep boat) with a crew of two people, which reached a record-breaking depth of about



10,900 m (about 35,760 ft), in the deepest part of any ocean on earth, the Challenger Deep in the Mariana Trench, in 1960. The dive has never been repeated, and presently no manned or unmanned craft exists capable of reaching such depth.





## Main Suppliers & Subcontractors

**Alfa Laval Benelux** Fresh water generator, separators | **De Boer Staal** Plates, bulb flats, pipes and profiles | **Bovi** Curtains | **Bureau Veritas** Classification | **Converteam** Dynamic positioning, motors, drives, transformers propulsion | **Droste Elektro** Electrical installation | **Econosto** Valves | **FFS** Fire fighting system | **Frank Mohn** Anti-heeling system, deep well cargo pumps | **GTK Groot Keuken Techniek** Galley inventory | **Hawboldt Industries** ROV winch | **Hendik Veder** Mooring ropes | **Huvema** Workshop machinery | **Imtech Marine & Offshore** Chiller | **Inexa** Modular bulkheads | **Kraaijeveld** Anchor handling & mooring winches | **Kroon** Alvedoor fire doors | **MacGregor** Lashing equipment | **Machine support** Re-alignment of the generators, measuring and on-site machining | **Marioff Corporation** HI-FOG® water mist fire protection system | **Materiaal Metingen Europe (MME)** Gangway | **National Oilwell Varco** Deck cranes | **Nautische Unie Hunfeld** Life-saving appliances | **Nicoverken Marine Services B.V.** Blücher Marine pipes, fittings, drains and channels | **NRF** Coolers | **Pon Power** Caterpillar engines & generator sets | **Praxis Automation Technology** Alarm & monitoring system | **Qua-Vac** Sewage plant | **Radio Holland Netherlands** Radio equipment | **Reikon** Azcue pumps | **Roden Staal** Sections | **Rolls-Royce Marine** Thrusters | **Saipem Innovator** ROV | **Ship's Equipment Centre (SEC)** Bollards, fairleads and chocks | **Smits Neuchâtel** Upper floors | **Snijder Filtertechniek** Separ fuel filters | **Sperre** Air compressors | **Sterling fluid System** Bilge water separator | **Theunissen** Pesch Seematz searchlights | **Titan Hydraulic Systems** ROV winch control | **Transport & Offshore Services** Compass adjusting | **Trinox** Portholes & windows | **VDI** Insulation | **Veld** Provision cooling | **Vets-Davit** Davits & MOB boat | **Jac de Vries** Hot water boiler | **Wesco Navi** Laundry equipment | **Winel** Sliding doors | **De Wolf Products** DSB life rafts | **Wortelboer** Anchors & anchor chain cables

## Facts & Figures Bourbon Trieste

### Principal particulars

Length o.a.	85.25 m
Length waterline	81.70 m
Beam moulded	18.00 m
Depth moulded	7.40 m
Draught design	4.50 m
Draught (summer freeboard)	5.75 m
Draught (scantling)	6.00 m

Gross Tonnage	4,150 t
Deadweight (design draught)	1,815 t

### Tank capacities

Potable water	370 m³
Diesel oil	770 m³
Ballast water	1,640 m³
Recovered oil	300 m³

### Performance

Installed power	2 x 1,800 kW
Speed	12 knots

