

## 19.33 M OFFSHORE SERVICES CATAMARAN BV CLASS



### 0.-GENERAL SCOPE

Catamaran designed for maritime works with symmetrical hulls, built in aluminum, 19.33 m length overall. Dynamic positioning system (not classified), propelled by means of line shafts and fixed pitch propellers. Spade rudders which receive the full streaming of propellers in order to improve the dynamic positioning, two bow thrusters of 70 Hp each one ensure as well that dynamic positioning.

Design speed max. 20 Knots without load on deck (19 Knots loaded with 3 Tones on deck)

Bureau Veritas Class  $\boxtimes$  HULL • MACH - WIND FARMS SERVICE SHIP S1, Sea area "X" – SPECIAL SERVICE, WORKBOAT main tasks , aside from others:

- Harbour services
- Sub sea aid works
- Buoying , bathymetric and scientific surveys, etc
- Offshore services (oil rigs . marine wind farms . fish farms ,etc)
- Surveillance and control of submarine facilities as gas and oil pipelines ,com cables ,etc, by means of ROBS operated from deck equipment as deck winch and an hydraulically collapsible davit

## I – MAIN CHARACTERISTICS

Length overall	19.33 m
Registered length	18.27 m
Length between perpendiculars	18.45 m
Moulded breadth	7,28 m
Max breadth	7,45 m
Construction depth	3,00 m
Registered draught	1,35 m
Displacement at registered draught	72 T
Lightship weight	39 T
Lightship draught	0,90 m
Max displacement	72 T
Max draught	1,35 m
Propulsion engines power	2 x 700 mhp
Rpm	2300 rpm
Engines brand and model	VOLVO PENTA D13-700
Gross Tonnage	69,9 GT
Gross registered tonnes	99,2 GRT
Passengers	3 crew + 12 PAX
Max speed	20 knots
Fuel capacity	8000 L
Hydraulic oil capacity	780 L
Fresh water	800 L
Oily waters	250 L
Sewage waters	400 L
Load capacity on deck	20 T



## II - SPECIFICATIONS

### 1) HULL:

Vessel's Layout is showed on "General Arrangement" drawing.

The vessel is a multihull design built in aluminum welded, main deck, superstructure centered that includes; mess room, galley, crew transfer sitting area, and upper wheelhouse on the second level.

On aft section and below the main deck are placed the steering rooms and machinery spaces containing main engines, tanks and auxiliary equipment.

Located on bow section of machinery room there are a Technical room and one storage room bow section comprises accommodation spaces:

- Starboard hull: dual cabin, bathroom with shower, dual cabin, forepeak.
- Port hull: workshop, dual cabin, bathroom with shower, dual cabin, forepeak.

The superstructure located above the main deck includes sitting area for crew transfer, mess room, bathroom and galley.

The Wheel house is located on the second level and comprises Steering, navigation and communication systems.

On bow and below the crew access ladder will be placed a non structural ballast tank capacity 1,4 tones in order to keep the right trim when the load on working deck exceed 10 tones.

Fuel will be stored inside non structural tanks located in machinery spaces as it is shown in "General arrangement" plan.



### 4) HULL ELEMENTS

## 2.1) ANCHORING

- FOB anchor 60 kg BV type approved, 110 m of chain 10mm DIN 766 stored inside a chain box placed on bow tack.
- Maxwell windlass MAXWELL RC-10, force 8500 N, 24 V cc, mounted on forecastle.
- Hawse pipe vertically mounted, electrically insulated placed inside tunnel on fore.

## 2.2) MOORING AND TOWING

- Four mooring bits.
- Four towing and mooring bollards in open sea.

## 2.3) NAVIGATION MAST

- Navigation, communication antenna and lights mast built in aluminum placed over the Wheel house.

## 2.4) BULWARK

- Entire perimeter bulwark, with bulwark rail on bow and forecastle, safe passenger onboard access with stanchions.
- Removable stanchions to allow crane operations on both sides of working deck.
- Two air supply and exhaust ducts for engine room.
- Removable handrails placed between air ducts, stanchions and bulwark.
- Removable handrails on the aft side.

## 2.5) METAL LADDERS

- Aluminum ladders placed below deck hatches.
- Stairs with handrails for access to accommodation spaces on hull and wheel bridge

## 2.6) METALLIC DOORS

- Weather tight door placed on Wheel bridge port side (Type approved)
- Weather tight door double leaf placed on aft side of main deck cabin (Type approved)
- Two Watertight and A60 fire resistance doors on engine rooms . (Type approved)

## 2.7) WINDOWS AND SIDE SCUTTLES

- Fixed Windows on main deck cabin and Wheel bridge (BV Type approved)

## 2.8) HATCHES ON DECK

- Six weathertight hatches for access to forepeak, steering room, and engine room emergency exits. Freeman or Hercules (Type approval).
- Two bolted hatches placed over the engine room area on deck to allow the removal of engines for overhauling.

## 2.9) CATHODIC PROTECTION

- By means of sacrifice anodes Al-Indio placed into boxes in order to reduce water resistance and improve speed.

- Measure and display galvanic current gauge with difference electrode, display on wheel cabin.

## 2.10) FLOOR FRAMES

- Engine room floor frames

## 2.11) FENDERS

- Two fenders glued on both sides, made of high density Polyethylene foam covered with high abrasion resistance Polyurethane and polyester fabric and placed along working deck.
- Four fenders, same material, two on board side and two on starboard side, diagonally placed.
- Special fender on forecastle to push forward, allowing passengers embarking on oil rigs and offshore wind turbines

## 3) MACHINERY

### 3.1) MAIN ENGINES AND GEAR-BOXES

- Two propulsion diesel engines with electronic control VOLVO PENTA model D13-700, 700 mhp each one at 2300 rpm.
- Elastic engine supports, wet exhaust with wet exhaust spray ring, silencers and exhaust outlet on transom.
- Two ZF gear-boxes, model MGX-5145-RV, ratio 2,50:1 bolted on bed plate.
- Two elastic couplings VULKAN-L 4115 SERIE 1640/2B mounted between engine flywheel and universal joint.
- Two universal joints VULKAN GEWES mounted between engine and gearbox.
- Electronic marine engines steering controls

### 3.2) SHAFT LINES AND PROPELLERS.

- Two tail shafts built in carbon steel  $\varnothing 95$  mm, oil stern tube welded on hull, watertight seal type MANEBAR and sealing inside the stern tube by means of lip seals and friction jacket.
- Two fixed pitch propellers built in bronze-manganese, four blades and specially mechanized hub with maze chambers.

### 3.3) STEERING EQUIPMENT

- Two rudders BV type approved full streaming type, in order to reach maximum performance working on DP mode, hydraulically driven by means of equal chambers serial connected in free navigation mode and independently in DP mode.
- Hydraulic system driven by two pumps, one per propulsion engine.
- Independent hydraulic tank shared and hydraulic drive equipment.

### 3.4) GENERATOR SET

- Soundproof generator set SOLE DIESEL model 25GT/30GTA three-phase 25 KVA 360V AC.

- Wet silencer, muffler, and goose neck discharge on hull side.

### 3.5) PORTAL MAST DAVIT

- Hydraulically driven Portal mast davit, collapsible by means of hydraulic cylinders. The portal mast can be removed easily when are no need of its use, lift capacity 5 Tones.
- Cargo lead block, with full degree of movements.

### 3.6) WINCH

- Hydraulic winch, cable storage drum with capacity for 1000m of cable of 10mm, and 5 Tones lift capacity at max. reel diameter, bolted on deck and removable when are no need.

### 3.7) WINDLASS

- Reel with cable storage drum with capacity for 300 m of cable of 14 mm, and 350 kg lift capacity at max, reel diameter. Davit for collecting samples from deep sea or similar tasks. Removable when are no need of its use.

### 3.8) DECK CRANE

- Marine deck crane PALFINGUER PK-18500MA S2.5 with winch 2.5 Tones lift capacity, two hydraulic driven extensions, full extension 8.2 meters, LS hydraulic control and radio frequency command. Max, lift capacity with winch 1890 Kg.

### 3.9) RETRACTABLE BOW THRUSTERS

- Two retractable bow thrusters (not classified) 75 mhp each, placed on bow. Hydraulic drive, aiding Dynamic Position System.

### 3.10) ENGINE ROOM VENTILATION SYSTEM

- Six electric fans 24 V DC mounted inside hull's ventilation chambers located on both sides of the vessel.

## 4) AUXILIARY EQUIPMENT

### 4.1) BILGE, BALLAST AND FIRE FIGHTING SERVICES

- Two sea water self-priming pumps AZCUE CA-50/2A 2" working interchangeable through manifolds and sea water inlet valves. Bilge service for space vessels, filling ballast tank, fire fighting and hosing down.
- Eight 24 V DC electric bilge pumps with float switch located into each watertight compartments, bilge water discharged outlet, but engine room spaces which discharges into oily tank .
- Oily tank with electric level gauge, filling pipe, overflow pipe and drain pipe.

### 4.2) FUEL SERVICE

- Two non structural tanks placed into engine room spaces with filling pipes, engine supply pipe, return, visual and electric level gauges and cut off valves remotely deck operated.

- Fuel strainer and fuel water separator.

#### 4.3) FRESH WATER SERVICE

- Two 390 L capacity tanks with electric level gauges 24V DC .
- Water pressure group for two bathrooms in accommodation spaces, one in passage space bathroom and galley.
- 45 L water heater.
- Cevimar watermaker 2250 SW, supply capacity 3 m<sup>3</sup>/24h with pumps and accessories.

#### 4.4) SEWAGE SERVICE

- Black waters tank, 335 L capacity inside starboard hull, for passengers cabin and accommodation spaces, and another one of 170 L capacity, inside board hull. Equipped with macerator and discharge pumps, anti-odour filters and 3 ways valves to discharge on port or in open waters.

#### 4.5) HYDRAULIC SYSTEM

- Two hydraulic pumps, variable displacement, open circuit and Load Sensing, driven by means of power take-offs from main engines through elastic couplings.
- Two hydraulic tanks placed into each hull and connected by pipes and valves.
- Hydraulic installation components needed to drive the deck equipment; portal mast, cylinders, winch, windlass, deck crane and two bow thrusters for DP.

#### 4.6) HEATING AND AIR CONDITIONING

- Heating and air conditioning system by sea water, service to wheel bridge, four cabins, and air extraction from bathrooms. The system comprises five fancoils, two chillers, circulation and sea water pumps

### 5) ELECTRICITY SYSTEM

380 V/50 Hz AC installation powered by gen set or shore connection, and 24V DC powered by battery charger alternators from main engines or by gen set through rectifier current.

The electric wire will be BV type approved.

#### 5.1) ELECTRICITY BOARDS

- Main electric control board located on Wheelhouse divided between 24V and 380V.
- Lights, communications and navigation control board located on wheelhouse console.
- Emergency board placed in port hull.

#### 5.2) BATTERIES

- Battery set for services ( 2 batteries 214Ah / 24V DC) located in port engine room.
- Battery set for engine starting (2x2 batteries 100Ah / 24V DC) located in each engine room.
- Emergency battery set (2 batteries 100Ah / 24V DC ) located inside a ventilated case on deck.

- Emergency battery set (2 batteries 65Ah /24V DC) for communications systems located on wheelhouse.

### 5.3) LIGHTNING SYSTEM

- LED lamps on accommodation spaces and common spaces.
- Technical areas fluorescent lamps, 24V or 220V.
- Two manual spotlights placed on navigation mast.
- Six LED spotlights pointing to deck working area.
- Emergency lights as per rules.

### 6) ELECTRONIC EQUIPMENT

- Radar series JMA 3300-6 - No IMO
- VHF DSC class A SAILOR 6222 GMDSS
- VHF SAILOR 6215 DSC class D No GMDSS
- Auto pilot IMO NAVITRON NT-888G
- Satellite compass JRC JLR-21
- Sounder SOLAS JRC JFE-380-25
- GPS IMO/SOLAS JRC JLR-7500
- Signal amplifier NMEA ACTISENSE NFB-2
- Display multifunction STANDARD HORIZON CP-500 con antenna
- Navtex GMDSS JRC NCR 333 con antenna
- EPIRB GMDSS JOTRON – TRON60GPS+FB60
- Transmisor receptor AIS class S A EM-TRAK –A100AIS
- VHF portable GMDSS JOTRON TRONTR20
- Radar transponder SART GMDSS JOTRON TRONSART20
- Antenna and wires

### 7) ACCOMODATION

- Crew cabins and bathrooms with thermal and acoustic insulation.
- Deck main cabin and wheelhouse with thermal and acoustic insulation
- Furniture , sits , bunks , storage , etc construction materials will be a combination of phenolic planks and 4 mm 5083 aluminum sheets.

### 8) PAINTING AND PROTECTION

- Below waterline primer layer and antifouling
- Main deck covered with non slip paint.
- Above waterline polished without treatment and rescue area with glued vinyl

### 9) ENGINE ROOM ISOLATION

A60 Isolation with rock wool panels covered by aluminum sheet and supported by metallic pins. Engine room protected area, deck and bulkheads from waterline up to deck included.

## 10) FIRE FIGHTING , RESCUE , NAUTICAL EQUIPMENT , AND LIGHTNING EQUIPMENT

### 10.1) FIRE FIGHTING

- Fire fighting hydrant on deck
- Fire fighting hoses ,one on deck and the one in machinery spaces , 18 meters long with nozzle.
- Fixed fire extinguishers system in machinery spaces operated from outside
- Fire detection and alarm system
- Foam fire extinguisher on each engine room.
- Fire extinguisher on each cabin , galley and wheelhouse
- Fireman axe
- Three water buckets for fire fighting

### 10.2) RESCUE

- Two life rafts SOLAS, 15 passengers capacity with its launching system.
- 12 flares and 2 smoke floating signals
- 4 life buoys, two with rope and two with auto switch lights.
- 15 life jackets
- 1 inflatable boat CE equipped with an outboard engine, crane launched.

### 10.3) NAVIGATION EQUIPMENT

- 1 Compass
- 1 Log clock
- 1 5 kg hand held sounder, 50 m length rope.
- 1 Divider
- 1 Angle transporter
- 1 Rule of 40 cm
- 1 Megaphone
- 1 Daylight binoculars (6x30)
- 1 Night binoculars (7x50)
- 1 Manual fog horn
- 1 Barometer
- 1 Thermometer
- 1 Fog bell
- 1 Code of rescue signals.
- 1 International code of signals