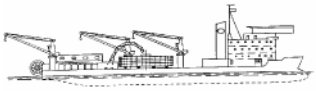
Appendix G

Giulio Verne Cable Laying Ship Specification

GIULIO VERNE CABLE LAYING SHIP SPECIFICATION

October 2008



1 SHIP GENERAL CHARACTERISTICS

1.1 IDENTIFICATION

NAME:	GIULIO VERNE
INTERNATIONAL CALL:	IBPU
FLAG:	ITALIAN
PORT OF REGISTRY	NAPLES

1.2 BUILDERS

Hyundai Mipo Dockyard Company Limited
Ulsan 682/20
Korea
Construction year 1983
CLASSIFICATION

R.I.NA.	100-A-1.1-Nav IL; Pcv
Special notations	IAQ-1; IPD-3; Special Purpose Ship
IMO Number	8302014

1.3 MAIN DIMENSIONS AND PERFORMANCES

- Length Overall 133.18 m
- Moulded Breadth 30.48 m
- Draft at max load (operating four thrusters) 8.836 m
- Moulded Depth 7.62 m
- Loaded Draft Summer Freeboard 5.336 m
- Summer Freeboard 1.79 m
- Deadweight Tonnage 9100 tons
- Gross Tonnage 10,617 tons
- Net Tonnage 3,185 tons
- Deck Strength Uniform Loading 9.28 tons/m²
- Max speed 10 knots
- Bollard pull 100 tons
- Light weight 8,004 tons

1.4 MACHINERY

The vessel is powered by five Daihatsu diesel gen sets running on gasoil.

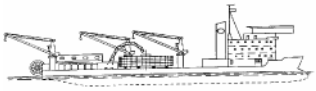
- Diesel Engines : Daihatsu 6 DV 22A V12 (2,300) BHP at 1,000 RPM
- Generators : Fuji 1500 KW 600 Volt GFV 563ZB-6Z

Emergency/Harbour Generator

- Engine type: Caterpillar 3508 DITA (Marine) 1500 RPM
- Generator: Hyundai Electrical Engineering HFC (5)-454-4 500 KVA

Power Supply

600 Volt - 50 Hz for Propulsion
440 Volt - 50 Hz for General Board Network
220 Volt - 50 Hz for user supplies



1.5 PROPULSION

Aft: Two Schottel Lips Azimuth Fixed Pitch Thrusters with Propellers in Nozzles.
Type: 1500/1000 ZS driven by Fuji Electric Motors 1000 RPM, 1250 kW, 600 Volt direct current. Speed control by SCR type

Forward: Two Retractable Schottel Lips Azimuth Fixed Pitch Thrusters with Propellers in Nozzles.
Type: S 1000 LSV driven by Fuji Electric Motors 720 RPM, 1250 kW, 600 Volt direct current. Speed control by SCR type.

Bulb: Tunnel thruster
Type Kamewa TT 1650 K/BMS-CP 710 kW, 380 V, 50 Hz.

1.6 DYNAMIC POSITIONING SYSTEM

Giulio Verne is equipped with a DP system: SIMRAD SDP 21.
Sonardyne 8021 USBL Transceivers.

1.7 SPEED AND FUEL CONSUMPTION

- Transit Speed: 9 knots in good sea and wind conditions
- Maximum Speed: 10 knots
- Consumption in transit: 15 - 20 tons/day
- Consumption in DP operations: 7 - 11 tons/day
- Consumption in port: 2 tons/day

1.8 CARGO CAPACITY AND AVAILABLE DECK AREA

Total cargo capacity is approximately 8,000 tons.
The turntable has a maximum capacity of 7,000 tons of cable.
On the main deck, ahead from the turntable, an area of about 500 m² is available, in which a cable coil of maximum diameter 19 m can be placed: the relevant maximum capacity is approx. 2,500 tons of cable.

1.9 TANK CAPACITY

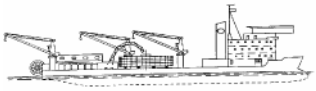
- Fresh water: 1060 tons
- Gas Oil: 840 tons

1.10 REFRIGERATION STORAGE

- Freezer Room -18°C 26 m³
- Vegetable Room +4°C 17 m³
- Dry Provision 50 m³

1.11 ACCOMMODATION

- Crew 18 - 40
- Technicians and Representatives 50 max.
  Total 90
  The ship is anyway certified for 96 people
- Hospital with two beds
- Two Clients offices
- One Officer lounge



- Two Crew/General lounges

1.12 HEATING AND VENTILATION

Accommodation and laying-testing control rooms are air-conditioned.

1.13 NAVIGATION EQUIPMENT

- One - Radar (also A.R.P.A.) Kelvin Hughes 3 cm (Band X) Nucleus 6000 A
- One - Radar Kelvin Hughes 10 cm (Band S) Nucleus 5000 T
- One - Hydrographic Echo Sounder SIMRAD EA500
- One - Echo Sounder JRC Type NJA 178 S
- One - Echo Sounder Kelvin Hughes Type MS 50
- One - Doppler Log JRC type JLN 203
- One - GPS Satellite Navigator Furuno GPS GP 80
- One - GPS Satellite Navigator Furuno GPS GP 30
- Two - VHF Radiotelephone Sailor Type RT 144B
- One - VHF Radiotelephone Furuno VHF FM 8500 (DSC)
- One - Weather Facsimile JRC Type Jax 9A
- One - Autopilot Incorporated into DP System
- Two - GPS Trimble 4000 DS
- Two - Gyro Compass Sperry Type SR 220
- One - Gyro Compass SG Brown TSS Meridian Surveyor
- Bridge thruster panel Schottel

1.14 COMMUNICATION EQUIPMENT

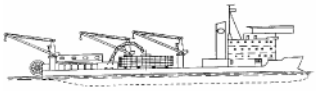
- One - VHF Transceiver Furuno FM 8500 (DSC)
- One - SSB Transceiver Sailor HC4500 B
- One - MF DSC terminal receiver Furuno MF DSC-6A
- One - Satellite tel/facsimile Canon Fax-B-155
- Two - Inmarsat C Furuno Type IB581
- Two - Inmarsat C teleprinter Furuno PP-510
- One - Inmarsat B Furuno Felcom 81
- One - Inmarsat B teleprinter Furuno PP-510
- One - Navtex Receiver jrc NCR-330
- One – VSAT – C band for internet communications

1.15 BRIDGE, SAFETY AND OTHER EQUIPMENTS

Three GMDSS Emergency VHF Sailor SP 3911
One Sarsart Cospas (Epirb) Jotron Tron 30S MK2
One Fire Detection System Autronics
One Fire Detection System Notifier AFP 200
Two Radar Trasponder Jotron
Wind Measurement System (2 Sets incorporated into DP System)
Doppler Log
Electronic Fog Bell and Gong System

1.16 LSA EQUIPMENT

Four totally enclosed lifeboats, 50 persons each.



Maker: Watercraft (totally enclosed, equipped in accordance with Solas)

Four liferafts
Type: Viking DK (for 12 persons with emergency pack)

Four liferafts
Type: Pirelli Londra 86 (for 16 persons with emergency pack)

116 Lifejackets
Type: Plastimar S.p.A. model “Artico 1”

1.17 CAPSTANS AND MOORING WINCHES

1.17.1 Three electric capstans of 6 tons capacity with line speed 15 meter per minute.
1.17.2 Mooring winches

Forward
Four single drum waterfall winches with 50 tons pull on step 1, 25 tons pull on step 2.
Up to 1200 meter of 52 mm wire. One winch each side classed as a windlass.

- Winch type: Norwinch 1S-50-1T
- Static load Max: 150 ton
- Total Brake Torque: 52,650 kgm
- Winch pull, step 1: 50 tons 1st wrap - 16.25 ton·m
- Winch pull, step 2: 25 tons 1st wrap - 8.125 ton·m
- Winch barrel dimensions: Drum diameter 650 mm
  Drum width 1250 mm
  Flange diameter 2000 mm
  Flange depth 675 mm
- Nominal capacity: 1200 meter of 52 mm wire

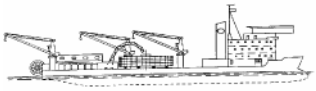
Aft
Two double drum waterfall winches with 80 tons pull using both motors onto one drum, 40 tons pull using one motor on each drum. 1200 meter of 52 mm wire.

- Winch type: Norwinch 2S-80-2T
- Static load maximum: 150 ton - 1st wrap
- Total Brake torque
  Winch pull (2 into 1): 80 ton 1st wrap - 28.4 ton·m
  Winch pull (1 into 1): 40 ton 1st wrap - 14.2 ton·m
- Winch Barrel dimensions: Drum diameter 710 mm
  Drum width 1500 mm
  Flange diameter 1850 mm
  Flange depth 570 mm
- Nominal capacity: 1200 meter of 52 mm wire

1.18 CRANAGE

Four Asea cranes:
Hook capacity 25 tons at 22 metres; revolving capacity on 360°
One Electric 2 tons Store Davit next to accommodation starboard side
One Sormec crane 13 tons at 6 m

1.19 ANCHORS



Eight Flipper Delta Anchors of 7 tons each.

2 CABLE LAYING EQUIPMENT

2.1 STARBOARD LAYING LINE

Pick-up arm
- Fitted with motorised wheels
- 3 m bending radius

DOHB machine
- Caterpillar type
- Maximum pulling tension 5 tons at 2 knots in laying mode

Capstan
- 6 m diameter
- Laying performance:
  55 tons at 2 knots
  20 tons at 5 knots
- Recovering performance
  55 tons at 0.5 knots
  20 tons at 1 knot

Auxiliary machine
- Caterpillar type
- Maximum pulling tension 2 tons (seaward)

Stern sheave
- 6 m diameter fitted with dynamometer

2.2 PORTSIDE LAYING LINE

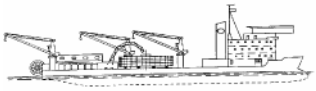
Pick-up arm
- Fitted with motorised wheels
- 3 m bending radius

Linear machine
- Maximum pulling tension 10 tons in laying/recovering

Stern sheave
- 6 m diameter
- Fitted with dynamometer for max 20 tons

2.3 7000 tons TURNTABLE

- Carousel outer diameter 25 m
- Carousel inner diameter 6 m
- Carousel height 4 m (extendible to 4.5 m)
- Maximum linear speed at inner diameter: 2 knots



2.4 FIXED CABLE STORAGE AREA

Ahead from the turntable an area is available where a fixed platform for coilable cables can be located.
The maximum diameter is 19 m; the maximum capacity is approx. 2500 tons of cable**.**

2.5 CABLE BURIAL EQUIPMENT

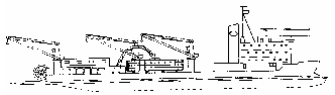
One of the Pirelli ploughs is usually on board, positioned on a suitable structure in the aft area of the ship.

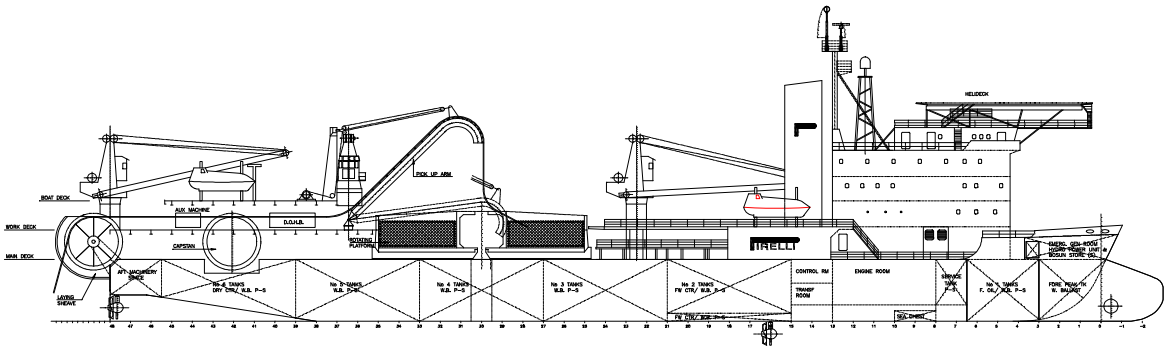
2.6 MISCELLANEOUS

- Rubber boats for cable pulling and landing
- Stoppers - ropes, wires, etc.
- Cable jointing equipment
- Electrical test equipment
- Measuring system for optical cable (power meter, back scattering, etc.)

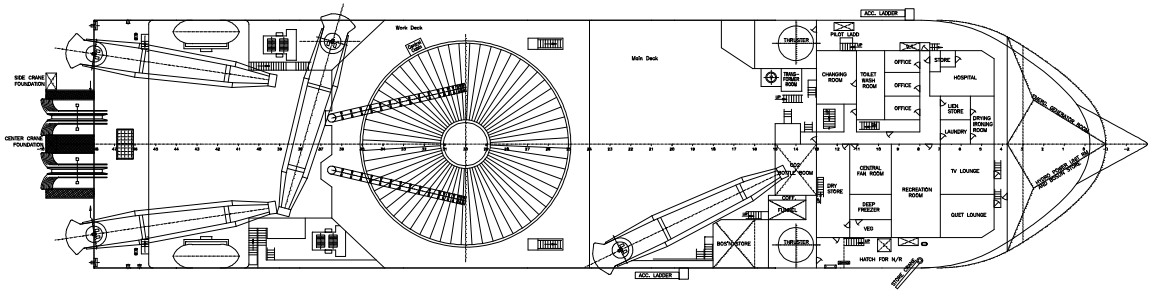
3 HELIDECK

The Helideck is mounted forward on top of the bridge and has been approved suitable for a helicopter having a maximum take-off weight equal to 5080 kg.





PROFILE



BOAT & MAIN DECK (FWD)

MAIN DATA

LENGTH (O.A.)	133.18 m
LENGTH (B.P.)	119.48 m
BREADTH (MLD)	30.48 m
DEPTH (MLD)	7.62 m
DRAFT (max.)	6.00 m
THRUSTER	4x1250kW Azimutal

M/S GIULIO VERNE
GENERAL ARRANGEMENT

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