



Photo by Henk Zuur-Delfzijl, The Netherlands

# VLISTDIEP

BODEWES DELIVERS VERSATILE GENERAL  
CARGO / CONTAINER SHIP WITH CARGO GEAR

*Builders: Bodewes Shipyards, Hoogezand, Netherlands  
Owners: Hartmann Logistik GmbH, Leer, Germany*

After successful seatrials on 18 September 2007, Bodewes shipyard has delivered the general cargo vessel 'Vlistdiep' to her owners on the 21st of September. Three sections of the hull and the superstructure were built in Poland and towed to the shipyard in Hoogezand. The sections were fully painted at the construction yard.

The superstructure was simply transported inside the hold of one of the sections. After arrival in Hoogezand, the ring sections were welded together with the two Dutch-built ring sections and the superstructure was placed on top. The outfitting took place in the shipyard in Hoogezand.

The 'Vlistdiep' is a 7750 DWAT General Cargo Multi Purpose vessel equipped with two cranes on deck allowing her to load or unload her cargo in ports without facilities.

The owners are Hartmann Logistik GmbH from Leer, Germany, and the ship will be managed by Groningen-based Feederlines B.V. which is part of the Hartmann group.

The vessel was launched into the local river "Oude Winschoterdiep" on July 12th 2007, causing the customary tsunami on both sides of the river. The yard has a particularly busy time this fall, with a delivery approximately every third week.

## Layout

The 'Vlistdiep' has a bulbous bow which is used as the forepeak ballast tank. Between the fore peak tank and the deep tank, which is also used for ballasting, we find the bow thruster room and the anchor chain lockers. Above main deck, the 'Vlistdiep' has a raised forecastle deck which also houses the ventilation machinery for the forward cargo hold. Between the forward and aft cargo hold, a 1.5 m long transverse structure houses the cargo hold ventilation ducts, the air drying equipment and a pump room for the framo anti-heeling tanks which are located on port and starboard side of the forward cargo hold.



Two 28 m long cranes are installed for handling the cargo

Twelve pontoon hatch covers are manoeuvred by a travelling gantry crane, which can roll besides the narrow crane pedestals.

The side tanks next to the aft cargo hold are used for water ballast and, in the aft, for HFO fuel. The entire double bottom is used for ballast tanks. There is no pipe tunnel in the double bottom. On deck, aft of the cargo holds, there is space for two 10-foot containers, the bunker station, and a large hatch giving access to the engine room.

### Main characteristics

The 118.55 m long vessel has a deadweight of approximately 7750 ton. The 'Vlistdiep' is classed by Bureau Veritas and will sail the Maltese flag. The Class notation is BV I #+ HULL ✱ MACH General cargo ship / Container ship, Heavy cargo, Unrestricted navigation, ✱ AUT-UMS, MON-SHAFT. There is no ice-class rating. The ship is made of grade A steel with longitudinal framing amidships and transverse framing in the bow and stern sections.

The hull is protected with an Impressed Current Cathodic Protection System (ICCP) supplied by Corrosion & Water-Control.

A bulbous bow minimises the resistance at cruising speed and gives the vessel a top speed of about 14.7 knots.

The 'Vlistdiep' has the following main compartments:

- Forepeak/ bowthruster room
- Deeptank
- Cargo holds 1 and 2
- Deckhouse and engine room
- Aft peak

### Principal particulars

Length o.a. ....	118.55 m
Beam moulded ....	15.20 m
Depth to maindeck ....	8.45 m
Design Draught ....	7.05 m
Deadweight ....	7750 ton
Gross Tonnage ....	4950 GT
Trial Speed ....	14.7 knots

### Tank capacities

Water ballast ....	3322 cu.m
Fresh water ....	88.7 cu.m
Fuel oil ....	524.1 cu.m
Gas oil ....	71.2 cu.m
Lubricating oil ....	36.6 cu.m

### Container capacity

In hold ....	162 TEU
On hatch covers ....	186 TEU
14 tons containers ....	240 TEU

### Accommodation

The main deck in the aft ship is fully enclosed and houses several stores, a repair shop, the laundry, the CO<sub>2</sub> room and the auxiliary engine room. The aft mooring deck is located one level above, on the poop deck. The accommodation tower and the funnel are also placed on this deck. At poop deck level, we find the galley, the mess room, the cook's cabin and a spare cabin. On either side of the funnel, there are a tally office and a paint store.

On deck above, on the boat deck, we find 4 crew cabins, each with an ensuite bathroom. The emergency generator room and the rescue boat are also located at this level. The officer's deck above has cabins for the chief engineer, the second mate and the second engineer. The captain's deck houses the captain's cabin, the captain's office and the chief mate's cabin. On top of the accommodation, we find the wheelhouse, with open bridge wings on either side. In general, the living spaces onboard the 'Vlistdiep' are equipped with air conditioning, while the technical spaces are equipped with mechanical ventilation. The air conditioning is designed for a maximum of 50 % return air and can maintain 20 degrees inside with outside temperatures ranging from -25 degrees to +35 degrees Celsius. The air conditioning plant was supplied by NR Koeling.

The windows and portholes were delivered by Trinox, while Winel has supplied steel and GRP weather-tight musketeer doors. Alvedoor fire doors were supplied by Kroon, along with manhole covers and some of the ship's hardware and tools.

### Versatile holds

The ship has two very versatile cargo holds.

A gantry crane is used for moving the cargo hatches and the tweendeck





The superstructure was transported inside one of the hull sections

The division is not at the centreline, but around the pedestal of the forward crane. This creates a very large box-shaped aft hold of 51.3 m long by 12.65 m wide, very suitable for odd-sized cargo. The forward hold is 27.75 m long and is not box-shaped due to the shape of the foreship. The ship is wide enough for 5 rows of containers. 3 levels of containers can be stacked inside the holds, while another 3 to 5 levels can be stacked on the cargo hatches, depending on the sight line from the bridge. When the ship is not loaded with containers, both of the cargo holds can be fitted with a tweendeck. When the tweendeck is not used, in "container mode", the tweendeck sections are stored in the aft cargo hold, taking up the space for 15 containers. The aft hold has a removable strong beam at about the middle of its length.

The cargo holds are equipped with seven bilge wells for drainage with a remote-controlled suction plant. The holds are suitable for carriage of dangerous goods and are thus equipped with explosion-proof fans, a CO<sub>2</sub> fire extinguishing system and a smoke sampling system.

Eftefing Engineering supplied the HFO booster module



### Economic propulsion

The source of propulsion power onboard the 'Vlistdiep' is a single MaK 8M32 engine, which runs on HFO and provides 3840 kW at 600 rpm. The engine fulfils the IMO Nox regulation of 12 gram/kWh. The cooling is with two fresh water circuits (HT and LT) connected to boxcoolers in the seachests. In the exhaust line, a silencer tops off 38 dB(A) from the exhaust noise. The main engine is coupled to a Renk Tacke reduction gear type HSU 800 which reduces the 600 rpm input revolution to a more appropriate 158.6 rpm for the propeller. The gearbox has a power take-off for a shaft generator running at 1500 rpm. Both the main engine and the shaft generator are connected to the gearbox with flexible couplings from Vulkan.

The controllable pitch propeller (CPP) has a Berg propeller with a diameter of 3900 mm and four blades. The stern tube is oil-lubricated. The main engine runs on IFO 380 which is kept on temperature with a hot water heating system. No thermal oil system is installed, so in extreme winter conditions, the vessel will most likely sail on IFO 180.

The shaft generator is from Leroy Somer



### Manoeuvring

The 'Vlistdiep' is equipped with a free-hanging BENES high lift flap rudder with a surface area of 10.25 m<sup>2</sup>. The rudder is 4.1 m high and 2.5 m long. It is controlled with a Barke steering gear type BST-150-45 based on two independent hydraulic pumps and rams.

A 300 kW electrical bow thruster is located in a tunnel in the bow.

The bowthruster propeller is delivered by JASTRAM and has 4 fixed blades a diameter of 1000 mm. This arrangement gives a transverse thrust of 41 kN.

### E-power

De Ruyter Dieseltechniek has been chosen as the partner to compose the generating sets for onboard electrical power. The set-up is composed of three auxiliary generating sets of 330 kVA and an emergency generator rated at 81 kVA. All of these gensets are composed of Cummins engines and Stamford alternators. Each is equipped with an exhaust damper. The power plant is sized to cope with the strong electrical power demand of 20 reefer containers. Additionally a 348 kW shaft generator provides an economical source of power while the vessel is underway. The CPP system allows a setting of continuous rpm, which maximises the usability of the shaft generator. A shore connection of 125 A at 400 V/50 Hz provides an environmentally friendly alternative when in port.

A 2000 W searchlight on the wheelhouse top with manual wheelhouse operation was delivered by Theunissen Technical Trading.

### Heat recovery

The engine room installation was carried out by Wolfard & Wessels from Foxhol. The central heating system is driven by an oilfired hotwater boiler running on Marine Diesel Oil and is connected to the main engine cooling water heat exchanger for heat recovery and for preheating the main engine. All ballast tanks are fed by a single ballast line and have remote-operated valves inside the tanks. The ballast line draws its water from the seachest in the engine room. Two Azcue ballast pumps

The electrical installation was done by Alewijnse

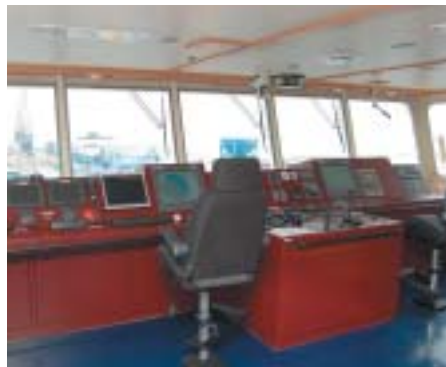




Water treatment is with Hatenoer equipment



A MaK engine provides propulsion power



A view of the bridge

are provided with a capacity of 200 m<sup>3</sup>/h each.

Eefting Engineering was contracted to install the hydraulic piping and to supply the HFO booster module and the tank sounding cabinets.

### Deck gear

Two NMF deck cranes are provided for the cargo handling. Each of these has a SWL of 34 tons at the maximum outreach of 28 m, and a SWL of 60 tons at 16 m. The gantry crane for the hatch covers has a SWL of 19 tons.

The forecastle deck carries two electric/hydraulic combined anchor & mooring winches. Two chain stoppers of RKR type prevent the anchoring force to act onto the winch. On the aft deck we find another two winches: one electric mooring winch and one electric/hydraulic anchor drum winch. The bow anchors are of the Pool-TW type (High Holding Power) and each weigh 2295 kg. The stern anchor weighs 970 kg and is attached to a 28 mm thick steel wire of 130 m long.

### Integrated Navigation System

The navigation and communication equipment was supplied and installed by SAM Electronics Nederland. The 'Vlistdiep' has

been equipped with a highly sophisticated Integrated Navigation System. The MULTIPLOT-1100 represents a unique navigation system combining ARPA (AIS) Radar, ECDIS and Conning facilities as the most compact solution available in the marine market. The main components of the navcom equipment include Anschuetz compasses, Inmarsat satellite terminals and various DEBEG items. The GMDSS radio station fulfils the requirements for sea areas A1, A2 and A3.

### SOLAS equipment

The life-saving appliances onboard 'Vlistdiep' include:

- two 12-persons liferafts in the aft ship
- one 6-person liferaft on the forecastle deck
- one rescue boat
- one freefall lifeboat for 12 persons

MX Brandbeveiliging has supplied the CO<sub>2</sub> fire extinguishing system for the engine room and the cargo holds, as well as the local protection with watermist in various high-risk areas in the engine room. They also supplied the smoke detection system for the cargo holds. This "sample extraction smoke detection system" is based on permanent air suction through detection lines from both cargo holds.

The emergency fire pump is electrically driven and is located in the bowthruster room.

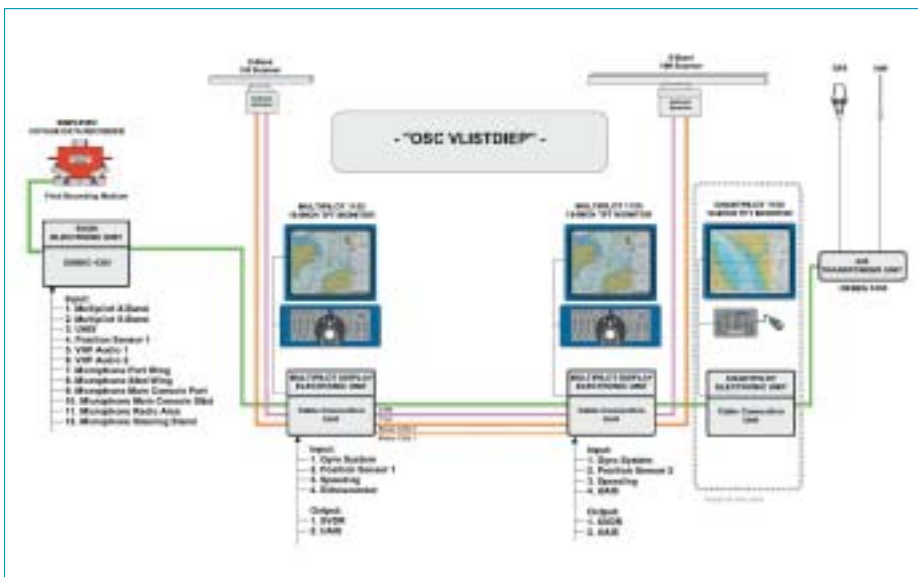
### Conclusion

With the 'Vlistdiep', Bodewes shipyard has concluded another successful delivery. Its strategy of internationalization and standardization certainly pays off, as the yard has a well-filled order book. According to Bodewes shipyards, the biggest challenges in these "golden years" are finding qualified personnel, the rising steel prices and the stiff competition from Chinese shipyards. The 'Vlistdiep' is already the third ship in the same series for owner Hartmann Logistik, an excellent proof-of-concept.

### Subcontractors and suppliers of equipment fitted on board the 'Vlistdiep' (partial list)

- ACV Nederland, Ridderkerk .....: central heating unit
- Ajax Fire Protection Systems, Amsterdam .....: CO<sub>2</sub> fire fighting system
- Alfa Laval Benelux, Breda .....: fuel- and lube oil separators; freshwater generator
- Alewijnse Noord, Drachten .....: electrical installation
- Ambi, Lelystad .....: greasing unit; automatic lubrication system for rudder; rudder automatic greasing pump (lubricator)
- Atlas Copco Ketting Marine Centre, IJmuiden .....: compressors
- Benes Machinefabriek, Hoogeveen .....: rudder with easy flap system
- Behrens, Werkendam .....: pumps
- Berg Propulsion, Sweden .....: controllable pitch propeller
- Blohm Voss, Germany .....: bilge separator
- Bloksma, Almere .....: boxcoolers & oilcoolers
- Bosch Rexroth, Rotterdam .....: complete control air system
- Bureau Veritas, Rotterdam .....: classification
- Bureau voor Scheepsbouw, Bloemendaal .....: naval architecture: pre design
- Caldic Techniek, Rotterdam .....: Stamford generators
- Chugoku Paints, Fijnaart .....: painting
- Coops & Nieborg Konstruktiebedrijf, Hoogeveen .....: hatch covers
- Corrosion & Water-Control, Moerkapelle .....: impressed current cathodic protection (ICCP) system
- Cummins Holland, Dordrecht .....: Cummins auxiliary engines
- Econosto Nederland, Capelle a/d IJssel .....: valves & fittings
- Eefting Engineering, Kolham .....: HFO booster module, tank sounding cabinet; installation hydraulic piping system
- Fassmer & Co, Germany .....: gangway
- Global Davit, Bassum, (G) .....: combination crane

The layout of the Integrated Navigation System from SAM Electronics



Haan, v/h Gebr. De, Oogezand : air conditioning & ventilation  
 Hatecke, Ernst, Drochtersen (G): rescue boat  
 Hatenoer-Water, Rotterdam : fresh water treatment equipment  
 Helder & May, Europoort RT : Nautec & Tefrolith subfloors; tilework  
 Intersona Adviesbureau, Heerde : noise and vibration measurements  
 Janssen, Rolf, Germany : alarm panel  
 JVS Scheeps- en Industrie-techniek Papendrecht : Jastram bowthruster  
 Kroon Technische Groothandel, Hoogezand : TNF accommodation systems; Alvedoor fire doors; ship's hardware; engine room tools; manhole covers & rings  
 Leroy-Somer, Soesterberg : electric motors; Stamford alternators  
 Lubrafil, Barendrecht : automatic fuel filter  
 MacGREGOR, Kaarine (FIN) : container equipment  
 MaK (Nederland), Dordrecht : main engine  
 Miele, Vianen : laundry equipment

Mx Brandbeveiliging, Almere : CO<sup>2</sup> extinguishing system for engine room & cargo holds; smoke detection cargo holds; local application watermist several objects engine room  
 Noordhof Schilderwerken, Kropswolde : painting  
 NRF, Mill : boxcoolers  
 N.R. Koeling, Krimpen a/d IJssel : main AC for accom, AC for control room & provision plant  
 Ocean Air-Sea Trading Group : DSB liferafts  
 Radio Holland Netherlands, Rotterdam : nautical systems  
 Reikon, Spijkenise : Azcue pumps  
 Renk Tacke, (G) : gearbox  
 Ruyter Dieseltechniek, De, Slidrecht : generating sets with Cummins Diesel engines; Stamford generator  
 SAM Electronics Nederland, Rotterdam : navigation equipment; Gyro package; GMDSS Radio station

Scheen, Hoogezand : carpentry  
 Ship's Equipment Centre (SEC), Groningen : deck machinery  
 Sigma Coatings, Uithoorn : (protective) coating systems  
 Theunissen Technical Trading, Malden : Pesch Seematz searchlights  
 Trinoox, Hardinxveld-Giessendam : windows & portholes  
 VAF Instruments, Dordrecht : ViscoSense<sup>®</sup> viscosity control system  
 Velden<sup>®</sup> Marine Systems, van der, Krimpen a.d. Lek : Barke<sup>®</sup> steering gear  
 Vulkan Benelux, Hendrik Ido Ambacht : couplings  
 Wineel, Assen : Bolero tank vent check valves; GRP & steel waeter tight musketeerdeors  
 Wolfard & Wessels Werktuigbouw, Foxhol : components & piping of the engine room installation  
 Wortelboer, Rotterdam : anchors & anchor chains  
 Wouter Witzel Eurovalve, Losser : valves & fittings

### GENERAL ARRANGEMENT

