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# NOORDHOEK PATHFINDER

## Third Noordhoek Offshore Support Vessel

*Builder:*

*De Hoop, Foxhol, The Netherlands*

*Owner:*

*Noordhoek, Zierikzee, The Netherlands*

**O**n the 29th of March 2010, the Noordhoek Pathfinder was handed over by Shipyard De Hoop to the Dutch Subsea Contractor Noordhoek from Zierikzee, the Netherlands. The 62 meter long vessel is the first offshore vessel for Noordhoek specifically designed for efficient Survey and ROV operations in North West Europe and will sail under the Dutch flag. The addition of the diesel electric driven and survey dedicated vessel will not only give considerable flexibility to the existing fleet of Noordhoek but also increases the comfort and working conditions for the operational staff. With the Noordhoek Pathfinder operational, Noordhoek is currently employing three subsea support vessels. The other two vessels are the Noordhoek Constructor and the Noordhoek Singapore. All three vessels are equipped with Dynamic Positioning Grade 2 (DP2) systems.

### **Dutch Build**

The hull, wheelhouse and living quarters

are built at De Hoop shipyard in Foxhol The Netherlands. This yard has a long history in shipbuilding and has so far built almost 1500 vessels. Final assembly and outfitting took place at the De Hoop Shipyard, with de Hoop being responsible for the vessel related systems, and Noordhoek for the state of the art survey systems. The vessel was launched according to the schedule in November 2009.

The classification was entrusted to Lloyds Register of Shipping which provided the vessel the following class notation: X 100A1, X LMC, DP (AA) / Class II.

Shipyard De Hoop operates from two different yards: De Hoop Lobith, on the eastern side of The Netherlands, employing 130 people, and De Hoop

Foxhol, in the north of Holland, which employs 65 people. Both shipyards are responsible for the engineering and construction of a whole range of custom-build offshore and inshore vessels. Inland operations focus on cruise and large passenger vessels, while the offshore vessels come under the categories of dredgers, offshore support vessels, semi-submersibles, tugs and pushboats, chemical tankers and container vessels. Because Shipyard De Hoop carries out all the design and building in-house, the yard is able to offer fast service and a high level of flexibility and quality.

### **Characteristics**

The vessel is characterized by the possibilities for flexible use. The vessel's main functions are analogue/digital geophysical surveys, geo technical investigation, hydrographic surveys, pipeline and cable inspections, and inspection, repair and maintenance. The u-shaped hull sections ensure a spacious engine room, thruster room and various cargo and storage

#### **Principal particulars**

Length o.a.....	61.87 m
Length b.p.p.....	57.27 m
Breadth mld.....	12.80 m
Depth.....	5.50 m
Draught max.....	4.65 m
Deadweight.....	1500 t
Propulsion power.....	1800 kW
Trial speed.....	11 kts



*Communication and navigation systems delivered by Alphatron Marine*

spaces providing sufficient space for the diesel generators, azimuth pod thrusters and storage facilities. Under the engine room, thruster room and cargo and storage spaces a double bottom provides tank storage for diesel fuel (in the middle), ballast water (mainly aft and a little bit fore ship) and fresh water (fore ship). The A-deck offers a 360 m<sup>2</sup> open work deck area, an enclosed wet lab (100 m<sup>3</sup>), a enclosed workshop (100 m<sup>3</sup>) and a galley, messroom, dayroom and changing rooms for the crew.

### **Accommodation & offices**

Accommodation for 40 persons is divided over two decks, B and C deck and provides various cabins for four, three and two persons and single cabins. Each cabin has its own en suite bathroom and toilet. One office, spacious online and offline survey rooms are situated at the

B-deck and a second office is situated on the C-deck. All offices and survey rooms are fully equipped with the latest computer and remote survey technology. The wheelhouse is situated at the E-deck with a helm console and a single pilot seat. A second seat for Dynamic Positioning purposes is situated at the aft part of the wheelhouse overlooking the open A-deck through a large glass window. Accommodation, offices and wheelhouse are fully air conditioned and heated according to the standards of the Dutch supplier Heinen & Hopman. Interior is made by De hoop in close cooperation with the company Bovi from Tubbergen.

### **Propulsion & Electrical installation**

The diesel electric propulsion consists of four caterpillar generators. Two 950 kW

generators and two 500 kW generators. All generator sets together provide a maximum electric power of 2900 kW for propulsion and domestic use.

Furthermore one emergency / harbor generator of 105 kW is provided and situated on the A-deck. All Caterpillar generators are supplied by Pon Power and the installation of the diesel electric systems are executed in close cooperation with the company Droste Electro BV from Tolkamer. A Westfalia diesel oil separator treats the diesel oil for the generators in order to ensure a high quality fuel. The available electric power supplies two 900 kW Veth azimuth pods and two 350 kW Veth bowthrusters for main propulsion and high maneuverability of the vessel. The diesel electric propulsion ensures a vessel service speed of 14 knots and an economical speed of 12 knots. In full loaded condition the vessel has a range of 14000 nautical miles at 48 days of transit. It can stay at sea for 72 days on Navis DP11 system.

The DP11 system is controlled by a console that automatically manages the position and orientation of the ship through its propellers and thrusters.

The system is supported by reference systems including two DGPS references, gyro compasses, an ultra-short base line system, vertical reference units, and wind sensors. Alphatron Marine from Rotterdam supplied all communication and navigation equipment. The outfit included: two radars displayed at the DP console, a 200 kHz Echo sounder, a bottom & water Track Doppler log and two Immarsat Satcom C's with SSAS system. One Immarsat Satcom F33 and a V-Sat telephone is also part of the package.

*Pon Power supplied the main and auxiliary engines and generator sets*





Workclass ROV spread for visual inspections



MacArtney focus-2 ROTV vehicles

### Tank capacities

The ship has a tank capacity of 600m<sup>3</sup> fuel oil, 150m<sup>3</sup> of fresh water, 400m<sup>3</sup> of ballast water and 8m<sup>3</sup> of lubricant oil. It will also have provisions to produce 7500 liters of fresh water in 24 hours by means of a reverse osmosis plant from Gefico supplied by Reikon. The installation includes a UV treatment facility for fresh water. Novec was the chosen fire protection system and is supplied by Viking life saving equipment. Engine room installation is executed by De Hoop Shipyard in close cooperation with Marine Service Noord.

### Deck equipment

The Noordhoek Pathfinder is well equipped for her various tasks and her work deck contains one 25 ton Sormec offshore crane which is designed to operate till SWH of 5 to 8 meter, located at portside in the middle of the work deck. Furthermore there are several lashing points (12x10 ton) and 10 times

20 ft container fittings at the work deck and three moon pools. The main moon pool is incorporated in the fore part of the work deck with a rectangular size of 3 x 3,6 meter. On each side of the main moon pool a Circular auxiliary moon pool is situated close to the port and starboard hull side. Both are 1 meter in diameter. The three moon-pools will be used to deploy ROV's and/or survey related systems. On the foredeck two anchor winches are installed, supplied by Kraaijeveld Machine en Lierenfabriek. One Ned-Deck Rescue boat davit system is situated at the starboard aft part of the C-Deck together with four life raft containers, two on each side of the vessel.

### ROV and Survey Equipment

The vessel is equipped with two ROV's: One Work Class ROV and one Inspection Class ROV. The ROV spreads can be launched either through the moon pool and/or over the side and provide the

bases for the performance of visual underwater inspections.

Furthermore, the vessel is equipped with two MacArtney Focus-2 ROTV vehicles, a L3 Klein 3000, an Edgetech 4200 and a hull mounted Reson SeaBat 7125. These systems will enable full, site survey, pre-lay / as-layed route and cable / pipeline inspection requirements and are highly efficient tools to acquire high quality and high resolution geophysical data. The features of these vehicles include advanced interfacing options to meet the majority of geophysical survey such as multibeam sonar, side scan sonar, sub bottom profiler, magnetometers, etc.

Dedicated Launch & Recovery systems with oceanographic winches and load latches, 2000 meter double armored fiber optic tow cables and a survey suite facility with multiple channel communication ensures the required data bandwidth and comfort and control for the operating crew.



## Conclusion

The Noordhoek Pathfinder has finished her sea trials and first assignment near the northern coast of Netherlands successfully and has been remobilized to continue on her next assignments.

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

**Alphatron Marine**, Rotterdam ..... communications & navigation systems  
**Bovi**, Tubbergen ..... interior  
**Datema Delfzijl**, Delfzijl ..... life saving and fire fighting equipment, and nautical equipment  
**Deno Compressors**, Krimpen a/d IJssel ..... compressors

**Droste Elektro**, Lobith-Tolkamer ..... electrical installation, data network  
**Econosto Nederland**, Capelle a/d IJssel ..... valves  
**Heinen & Hopman Engineering**, Spakenburg ..... HVAC/chiller  
**Kraaijeveld Machine en lierenfabriek**, C, Papendrecht ..... anchor winches  
**Kroon, Technische Groothandel**, Hoogezaand ..... *Alvedoor* fire doors, locks & hardware  
**Lemans Nederland**, Halsteren ..... bollards and chocks  
**MacGREGOR**, Kaarine (FIN) ..... lashing equipment  
**Marine Service Noord**, Westerbreek ..... engine room installation  
**Ned-Deck Marine**, Barneveld ..... rescue boat Davit system and rescue boat  
**Observer Instruments**, Ridderkerk ..... window wipers  
**Pon Power**, Papendrecht ..... *Caterpillar* generator sets; main & auxiliary engines  
**Reikon**, Spijkenisse ..... *Azzue* pumps

**Smits Neuchâtel**, Utrecht ..... floating floors, *Solvolan* rubbermortar floors  
**Sormec**, Alcamo, Italy ..... Offshore crane  
**Theunissen Technical Trading**, Malden ..... *Pesch Seematz* searchlight  
**Toekomst J.J. Loose, De**, Waspik ..... gangway  
**Trinox**, Hardinxveld-Giessendam ..... internal doors, walls and ceilings  
**Viking Life-Saving Equipment**, Zwijndrecht ..... fire protection system  
**Veth Propulsion**, Papendrecht ..... *Veth* tunnel thruster, Z-Drive  
**Vries, R.J. de**, Delfzijl ..... mooring ropes  
**Westfalia Separator**, Cuijk ..... separator  
**Wimel**, Assen ..... water- and weathertight *Musketeer* doors  
**Wingerden en Zonen, H.K. van**, Vuren ..... windows & portholes  
**Wortelboer**, Rotterdam ..... anchors & chaincables

## GENERAL ARRANGEMENT

