

## THE "TER STREEP" A NEW SURVEY VESSEL FOR THE BELGIAN CONSHSELF

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### INTRODUCTION

As the only survey vessel, *Paster Pijpe* of the Coastal Hydrographic Office, built in 1949, needed urgent replacement, the Belgian Ministry of Transport (Marine Department) placed an order on 2nd January 1984 for the new survey vessel *Ter Streep* (\*\*) (Fig. 1) for the Ministry of Public Works, the authority responsible for the hydrographic offices of the coast and the river Scheldt.

The delivery date was determined by contract 18 months later (excluding times of leave, periods of frost, etc.) so that on the 14th October 1985 the vessel was ready for essential operational use.

In order to perform adequate comprehensive surveys in or near the Belgian continental shelf, a more modern type of survey vessel was designed by the Ministry of Transport in close cooperation with the Coastal Hydrographic Office in Ostend.

The m/v *Ter Streep* was built at the N.V. Scheepswerven van Langerbrugge shipyard in Ghent, Belgium.

### DESIGN PRINCIPLES AND PRIORITIES

Based on tasks to be performed, the Coastal Hydrographic Office in Ostend established the following essential criteria for the designers of the new vessel :

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(\*\*) Where does the name *Ter Streep* come from ? "Testerep" or Ter Streep originally was an unprotected and desert island between Nieuwpoort and Ostend alongside the Flemish coast (Belgium). The first traces of its existence date from the 10th century and probably the birth of this stretch of land originated from the early mediaeval transgression of the North Sea (4th - 8th Century). Inundated during the Dunkirk III-transgression in the first half of the 11th Century, the first human inhabitation of this island seems to have been about 1065, when some villages appeared. Later on, Ostend was in fact the east end of the island, while Westende was situated on the west end and Middelkerke in a more central position (i.e. the church in the middle).

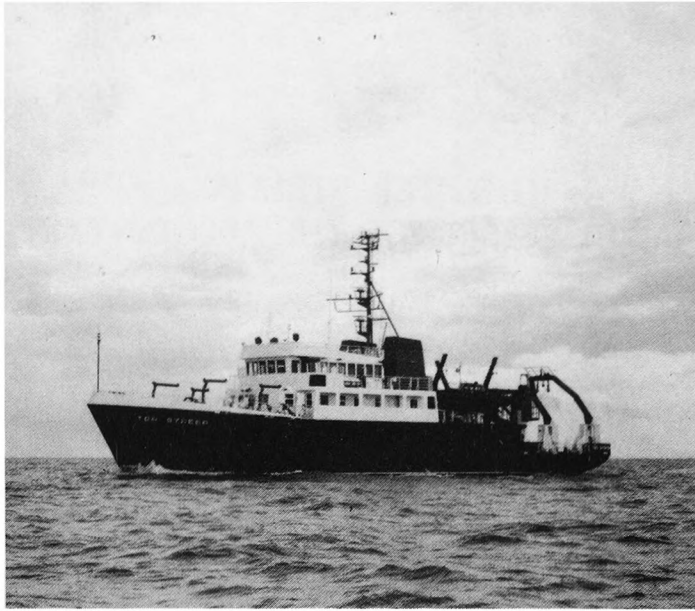


FIG. 1.— Survey vessel *Ter Streep*.

1. The dimensions of the vessel to guarantee a high degree of stability, taking into account the working conditions along the Belgian coast.
2. The draught and the squat to be limited to a minimum, because of the presence of many shoal areas near the coast.
3. A maximum cruising speed of 13 knots, but for survey operations a speed of 9 to 10 knots was considered sufficient.
4. The work area for the surveyors to be integrated into the bridge in order to facilitate communication with the captain and the helmsman.
5. Because most of the survey work is done in restricted waters of the river Scheldt, the ship to have excellent manoeuvrability at low speeds in order to facilitate drift sweeping on wrecks with provision of a bow-propeller.
- 6.(a) As the drift sweep is lowered along the starboard side, the vessel to be supplied with seven winches alongside, so that a drag of nearly 40 m can be used for sweeping activities on wrecks.
  - (b) As the vessel, when anchored, has to perform current measurements in the vertical, it is also to be supplied with two more winches of the same type near the bow on the port side.
7. The vessel to be equipped with a centre-well or moonpool of approx. 1 x 1 m, located in the fore-part of the ship at roughly 2/5ths of the length.
8. A large working deck area aft with the necessary hoisting equipment to be constructed in order to moor and to recover oceanographic instruments from the seabed.
9. For surveying beach areas two launches to be provided with the same automatic survey system as the main vessel, i.e. Autocarta II.

10. The hydrographic equipment to run on separate power supply systems.
11. Noise levels to be reduced to a minimum on the bridge and in the cabins.
12. Accommodation for 18 people, either in single or in double cabins, to be installed in the vessel.

All these conditions were met in the final design of the vessel.

## LAYOUT

The layout of the *Ter Streep* is shown in Figure 2.

### Main dimensions and characteristics

Length overall . . . . .	49.550 m
Length P.P. . . . .	44.900 m
Moulded breadth . . . . .	9.600 m
Moulded depth . . . . .	4.800 m
Draught at underside keel . . . . .	3.250 m
Displacement . . . . .	647 m <sup>3</sup>
Gross tonnage . . . . .	643 GRT
Net register tonnage . . . . .	193 NRT

### Engines and propulsion

The ship has twin 4-stroke piston type supercharged diesel engines each developing 596 kW (810 HP) - 750 rpm, manufactured by Anglo Belgian Corporation N.V. (ABC).

By highly flexible VULCAN-RATO-S rubber couplings, the two engines are linked to a gear box in order to drive either the propeller or the hydraulic pumps of some deck equipment.

Propulsion is provided by a single, four-bladed variable pitch LIPS propeller, with a diameter of 2.200 m, placed into a fixed nozzle and developing a maximum speed of 13 knots.

### Steering devices

A flap rudder JASTRAM has been installed, together with a JASTRAM bow propeller, developing 150 kW (204 HP) - 1800 rpm.

### Power supply

Common electric power is supplied by two identical, fully automatic generating

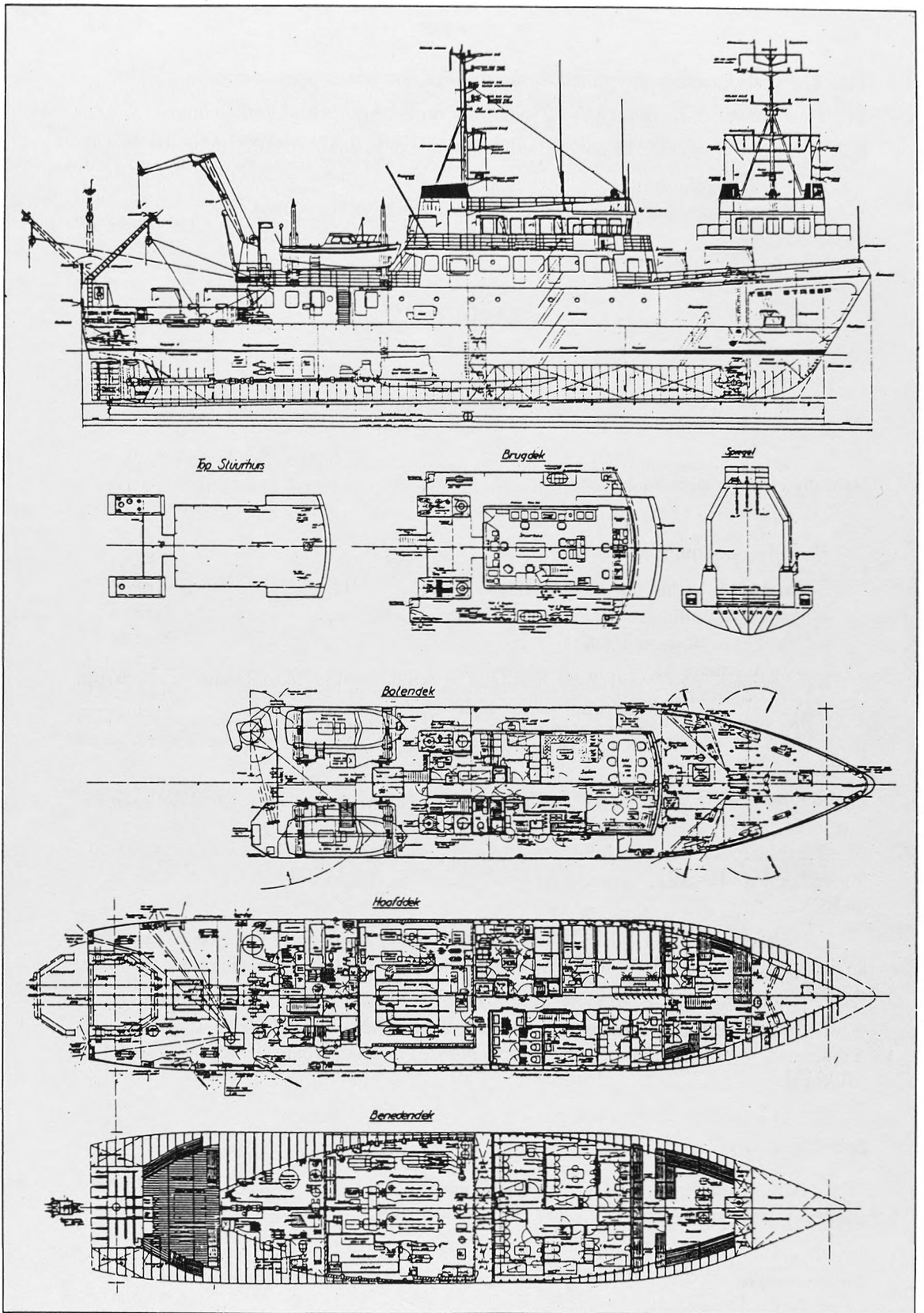


FIG. 2.— Plan of the New Belgian Hydrographic Vessel *Ter Streep*.

sets. Each set consists of a diesel engine SCANIA, developing 178 kW (242 HP) - 1500 rpm and a generator of 190 kVA - 3 x 380 V - 50 Hz.

The hydrographic equipment can run on one of the two separate 15 kVA - 3 x 220 V - 50 Hz alternators, each of which is fed by a diesel engine LISTER developing 16 kW (22 HP) - 1500 rpm.

#### Capacity of the tanks

Fuel capacity : 49 m<sup>3</sup>  
 Water capacity : 42 m<sup>3</sup>  
 Water ballast capacity : 36 m<sup>3</sup>.

#### Craft and deck equipment

The two launches MULDER EN RIJKE, type SPURT 25, are constructed of fiberglass-reinforced polyester : the propulsion is provided by a diesel engine SABB of 18 kW (24 HP) - 1500 rpm.

The deck equipment consists of the following :

- 9 oceanographic winches (two to port and seven to starboard) with SWL of 5 kN at 15, 30 and 60 m/min;
- 1 BRUSSELLE anchor-winch;
- 1 A-frame of 50 kN with 2 REXROTH hydraulic cylinders at the stern, combined with 2 BRUSSELLE hydraulic winches;
- 1 HATLAPA hydraulic crane with SWL of 30 kN, covering the whole free aft deck;
- 1 BRUSSELLE hydraulic capstan of 30 kN and 1 DAVID BROWN electric capstan with a nominal tractive force of 10 kN;
- 2 DAVIT COMPANY HLC 3500 davits for the launches, each with SWL of 40 kN.

#### Communication equipment

- 1 SKANTI radio telephone station type TRP/6000/ER 4800 transmitter and 1 SKANTI watch receiver type WR/6000/R 6020;
- 2 SAILOR VHF radio telephones type RT 144 C;
- 1 SAIT master communicator;
- 1 SPT installation.

#### Navigational equipment

The major items are :

- 1 ANSCHÜTZ Standard 12 gyrocompass;
- 1 JRC doppler log model JLN 203;

- 2 sets of radars : 1 RACAL DECCA marine radar, type RM 1290, 1 RACAL DECCA colour radar, type 970 BT;
- 1 JRC echosounder type JFE-570 S;
- 1 DECCA NAVIGATOR Mk 21.

### **Hydrographic equipment**

The major hydrographic equipment for the main vessel and for the two launches comprises :

- 3 ATLAS Deso 20 echosounders;
- 1 DATAWELL Hippy 120, version B, heave compensator, which corrects for heave and roll directly on one of the three Atlas echosounders;
- 2 TORAN receivers;
- 2 SYLEDIS receivers (will be installed before long);
- 2 Decca AUTOCARTA II automatic sounding systems;
- 1 HP 217 personal computer;
- 1 sector scanning or SECTASCAN sonar of Polytechnic Marine;
- 1 Mittellodar - ELAC - sonar type LAZ 400;
- 1 WAVERLEY 3000 side scan sonar;
- 3 OTT current meters;
- 5 SEATRACKS current meters;
- 5 AANDERAA water level recorders model WLR-5;
- 7 DATAWELL wave rider buoys (wave height measurements);
- 1 DATAWELL Wavec buoy (wave direction and height measurements).

Though the Autocarta-II system is capable of processing also the hydrographic data on board (Fig. 3), most often this work has to be done in the Autocarta charting center II at the office (Fig. 4 and 5) : as the survey vessel sails only on a daytime basis, the day's survey records are available for the operators in the hydrographic office.

Besides the automatic data handling of the survey work, this small computer center is also capable of processing quite a number of other cartographic, statistical and oceanographic data.

### **Special features**

As mentioned earlier, a centre well of 1 x 1 m has been built into the vessel for the lowering and hoisting of the transducer array of the Sectascan Sonar. In a later stage, this feature could also be interesting for other applications.

If necessary, the vessel, in a minimum of time, can prepare to perform drift sweeping over wrecks for which a small number of surveyors are needed.



FIG. 3.— The Autocarta II-system on board the *Ter Streep*.



FIG. 4.— The Autocarta charting center II in the Office.



FIG. 5.— The Autocarta charting center II in the Office.



FIG. 6.— Survey vessel *Ter Streep* : view of the stern.



## CONCLUSION

From the experience of the first few months, the new survey vessel *Ter Streep* seems very promising, even in mid-winter conditions. By fully utilizing the operational capabilities of this vessel and its modern hydrographic tools, the Coastal Hydrographic Office in Ostend is now ready to continue its task of surveying the Belgian continental shelf and surrounding areas in an even more efficient manner.