Agenda Item 14.5.1

Implementation of the ASCOBANS Triennial Work Plan (2007-2009)

Review of New Information on Pollution, Underwater Sound and Disturbance

High Speed Ferries

Document 24

Information Submitted by Parties in Response to the High-Speed Ferry Questionnaire
c) Belgium

Action Requested

- take note of the information submitted
- comment

Submitted by

Parties

NOTE:
IN THE INTERESTS OF ECONOMY, DELEGATES ARE KINDLY REMINDED TO BRING THEIR OWN COPIES OF DOCUMENTS TO THE MEETING

ASCOBANS Secretariat
Questionnaire on High Speed Ferries* 2007 **Reporting country: BELGIUM**

Please return to the Secretariat (preferably by e-mail) before 29 February 2007

Name/type of craft	Route (return)	No. of round trips per day	Speed (kph/knots)	Capacity (passengers/cars)	Size/tonnage	Engine power
For some years now, there have been no more high speed ferries operating from/to a Belgian port.						

* All types of vessels (including hovercraft) capable of travelling at speeds in excess of 30 knots (cf. AC7 Report, item 5.3, page 8)

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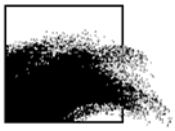
Tel. +49 228 815 2416, Fax +49 228 815 2440 or preferably to ascobans@ascobans.org

ROYAL BELGIAN INSTITUTE OF NATURAL SCIENCES

MANAGEMENT UNIT OF THE NORTH SEA
MATHEMATICAL MODELS (MUMM)

SECTION 15
MARINE ECOSYSTEM MANAGEMENT



Shipping traffic in Belgian waters

Report to ASCOBANS, 2007

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Shipping traffic in Belgian marine waters

1. Shipping in Belgian waters

The southern North Sea has a very dense shipping traffic, with the Traffic Separation System (TSS) through the Dover Strait having amongst the densest shipping traffic in the world. Through this TSS approximately 150.000 shipping movements (excluding leisure craft and fishing vessels) occur per year (or 400 per day), with an additional 600 ships crossing this TSS daily (data from Goffin *et al.*, 2007). Towards the east of the Dover Strait TSS, and continuing from it, lies the Noordhinder TSS. All the eastbound shipping in this TSS, and part of the westbound shipping crosses the Belgian EEZ (figure 1). Most of this traffic is 'transit' traffic, not bound for any Belgian port. Therefore an analysis of data on the density or the numbers of ships in waters under Belgian jurisdiction is not straightforward.

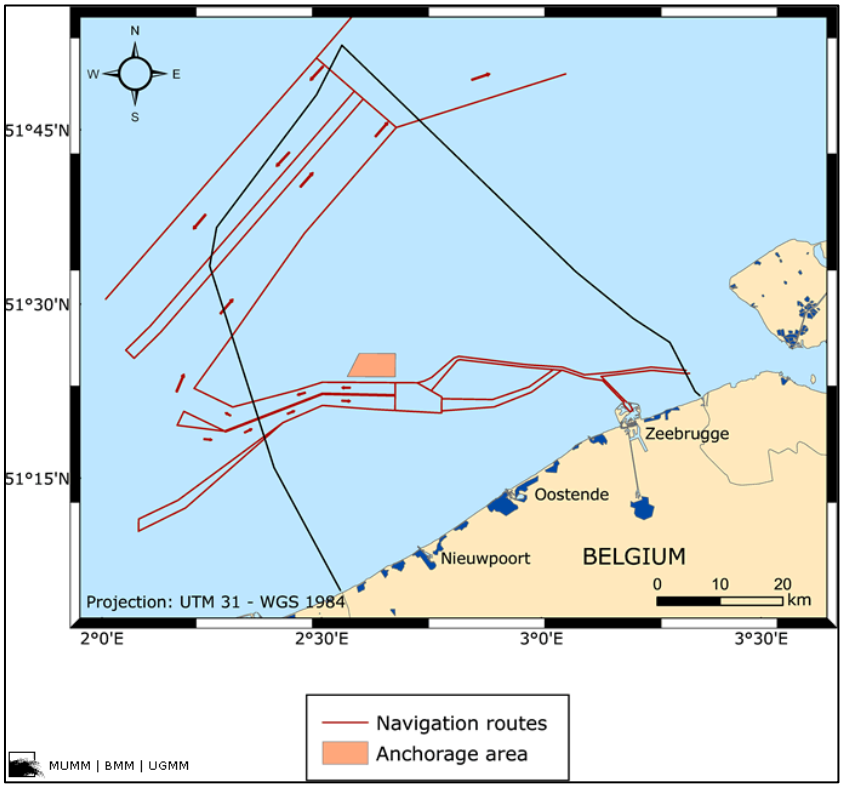

Figure 1: Shipping lanes in waters under Belgian jurisdiction. Large ships are bound by these shipping lanes; smaller ships with a more limited draught can navigate outside these lanes.

2. Shipping traffic to and from Belgian seaports

Below two tables are given. Table 1 gives an overview of the ships arriving/departing from the most important Belgian seaports in 2005 (from Merckx & Neyts, 2006). This gives an idea of the number of ships (excluding fishing vessels and leisure craft) present at one time in Belgian waters, and having a Belgian port of call or origin. Table 2 indicates the origin of goods arriving in those ports, and the destination of the goods departing from them (from Merckx & Neyts, 2006). The tables give an idea of the level of the marine (merchant and passenger) links of Belgium within Europe, and across continents.

Table 1: Overview of the number of merchant and cruise ships arriving in Belgian marine ports in 2005 (Merckx & Neyts, 2006).

	Antwerpen	Gent	Zeebrugge	Oostende
Number of ships arriving	14,195	2,794	8,555	4,843
Total GT (in M GT)	259.1	30.2	83.67	35.5
Average size of ships (GT)	16,257	10,795	9,778	7,330
Number of passengers (ferry)	0	0	702,486*	214,794*
Number of cruise ships	0	0	53	18
Number of passengers (cruise ships)	0	0	128,977	7,651
* Exclusively between Belgium and the UK				

Table 2: Data (where available) on the origin and the destination of goods (calculated on the weight) in 2005 (Merckx & Neyts, 2006).

	Antwerpen	Gent	Zeebrugge	Oostende
Origin of goods				
Europe	37%	31%	63%	99%**
North-America	15%	16%		
South-America	10%	36%		
Asia	20%	7%	11%	
Africa	15%	7%	12%	
Destination of goods				
Europe	28%	81%	73%	99%
North-America	19%	11%	3%	
South-America	0%	1%		
Asia	33%	1%	15%	
Africa	10%	6%	2%	
** Predominantly UK; 17% originates from sand and gravel extraction offshore				

3. Using AIS data to estimate shipping density

The Automatic Identification System (AIS) used on board ships was originally developed as an aid for Vessel Traffic Services (VTS), by using VHF channel 70. Shortly after its development, it was taken on board by the International Maritime Organisation (IMO) and extended towards a universal system working with VHF channels 87B en 88B. Every AIS system on board a ship has its own Maritime Mobile Service Identity (MMSI) code, that exists of 8 or 9 numbers.

An AIS system on board a ship consists of one transmitter, and one or two receivers. The system can send information (such as name of the ship, type of ship, size, call sign, position, speed, heading,…), and receive similar information from surrounding vessels. Transmission intervals depend on the speed of the ship and course changes. The intervals range from every 6 minutes for static ships, to every 2 seconds for ships with a speed of 23kts or more, or 14 kts or more when changing course. AIS systems are required on board of most ships, and from from the 1st of July onwards on all ships larger than 300 GT. For more information on AIS, see http://www.aislive.com.

With respect to the request by ASCOBANS to collect shipping data from national waters, a short investigation was made into the usefulness of AIS data. MUMM has at its offices at Ostend an AIS receiver. In a year time, over 150.000.000 (150 million) records of over 4.500 different ships

were collected of ships navigating in part of the southern North Sea and eastern Channel. An illustration of the amount of information collected in just 3 hours time (information collected from the oceanographic vessel Belgica) is given in figure 2 (from Backers, 2005).

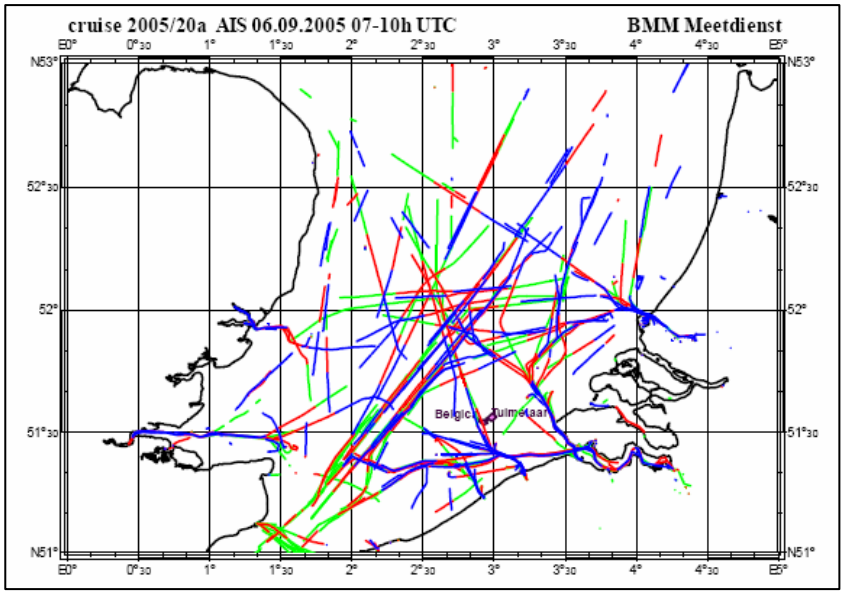

Figure 2: AIS data collected in 3 hours time by the BELGICA (ship's position indicated on the map); the green, red and blue lines represent respectively the tracks of ships equipped with AIS during the first, second and third hour of recording (from Backers, 2005).

In figure 2 the shipping lanes can be clearly distinguished. In 3 hours time AIS signals were received from 324 vessels, and 96.594 (valid) records were kept after filtering. The traffic not related with a Belgian port is obvious. In the southern part of the map tracks of cross-channel ferries are visible. An ad hoc image of the presence of ships transmitting AIS data is given in figure 3. It was recorded on board the Belgian pollution control aircraft OO-MMM.

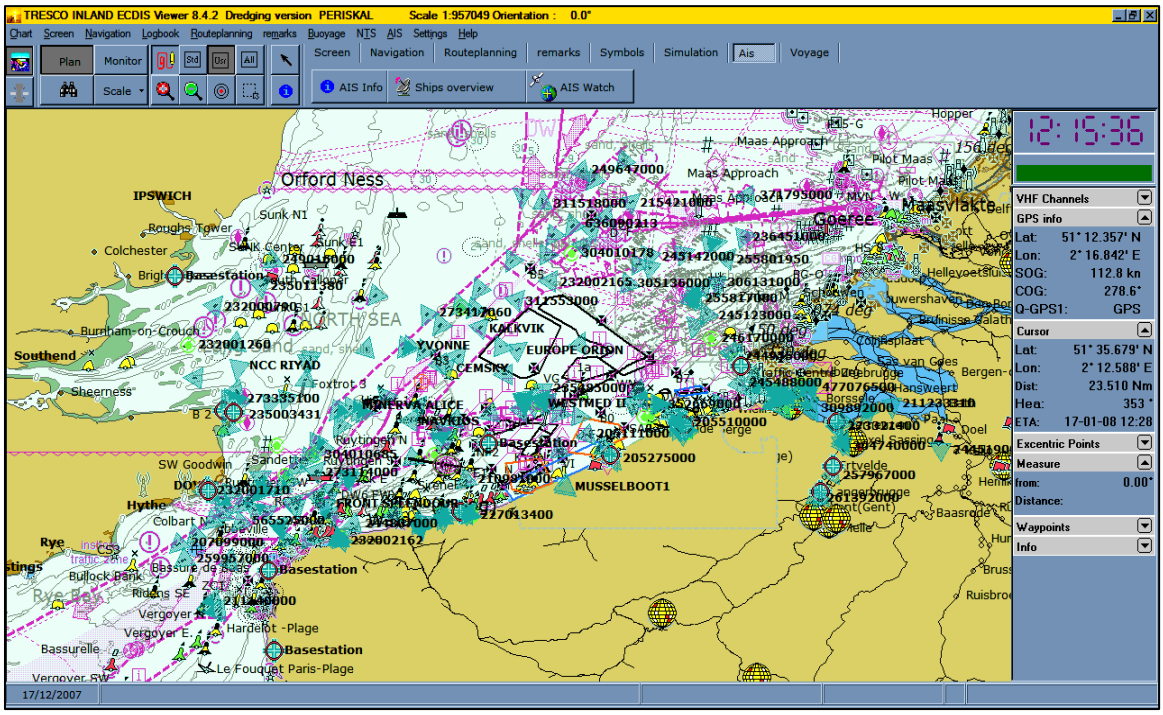

Figure 3: Ad hoc AIS image of the presence of ships in the southern North Sea and eastern Channel, as recorded from the aircraft OO-MMM on 17 January 2008, 12:15h UTC. The green/blue triangles indicate ships transmitting an AIS signal (the signals include their heading); for some ships the MMSI code is given, for others the name of the ship. The position of the aircraft is approximately 12 NM off the (shore) border between France and Belgium.

4. Conclusions

A report on shipping traffic in Belgian waters is not straightforward. Data on ships entering and leaving Belgian ports is readily available, but give no indication or measure of shipping densities in Belgian waters. Moreover, collecting data on shipping on a national basis does not seem to be useful, given the international aspect of shipping in the ASCOBANS area. For ASCOBANS purposes data collection should be standardised.

The most promising source of information on shipping, not taking account of national boundaries, lies in the use of AIS data. AIS data indicate in a highly detailed way the real tracks of ships, and offer the possibility to have an ad hoc view of traffic density, create an integrated mapping of shipping density in a certain area over a chosen timeframe. Also a selection of certain types of vessels is possible. As such an assessment of AIS data contains more relevant information than e.g. a list of ports in which high speed ferries arrive and depart, as has been reported to ASCOBANS in the past.

AIS data only cover part of the shipping. Most fishing vessel, recreational craft, military vessels, etc. do not have an AIS transmitter on board, or do not (always) transmit AIS signals.

Acknowledgements

We would like to thank Ann-Katrien Lescrauwaet, Kathy Belpaeme, Ronny Schallier and Thierry Jacques for their contributions to this report.

Sources

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