

Baltic strained by oil traffic

Maritime traffic on the Baltic, already one of the world's most intensively travelled seas, is continually increasing. The risks of accidents are growing as the limits of what the Baltic can handle seem to be in sight.

by Reiner Galermann

'The Baltic is one of the most highly monitored seas in the world,' says Monika Stankiewicz, Professional Secretary on maritime and response issues at Helcom, an organisation of the Baltic Sea states, in Helsinki. There is good reason for this: it is also one of the most heavily used seas. So far, there has not been any major oil spill from a collision, or from a boat capsizing or running aground – fortunately, because this would have catastrophic consequences for this almost completely enclosed sea, which is no deeper than 100 metres in the eastern area. It was with good reason that the International Maritime Organization (IMO) classified the Baltic, together with the Canary Islands and the Galapagos Islands, as a Particularly Sensitive Sea

Area (PSSA) a few years ago. But the ever-growing shipping volume, which increases by more than 5% each year, is a major challenge for the countries that border the Baltic. 'To make sure that everything is safe, we always have to be a step ahead of developments,' says Per Sönderstrup, a senior staff member at the Danish Maritime Authority (DMA).

In a nondescript building located at the quay wall of one of Helsinki's ports, three to five people monitor shipping traffic in the northern part of the Gulf of Finland, constantly watching several computer screens. The mandatory Gulf of Finland Reporting System (Gofrep) has been fully operational since 2004. Together with the

Estonians in Tallinn, who monitor the southern part of the Gulf, and the Russians in St Petersburg, who monitor the eastern part, a comprehensive monitoring system has been created which, according to an earlier study, should reduce the likelihood of two ships colliding by around 80%. All ships over 300 GT (Gross Tonnage) that enter the approximately 400 km long Gulf are not only registered by the international Automatic Identification System (AIS), but must also notify Gofrep of their name, owner, size, draught, flag country and cargo, as well as their position, route and speed. Upon leaving one sector, they call the headquarters of the next. The information can be accessed by all three monitoring stations.

But do the ships observe the rules? ‘On the whole, yes, but ships with flags of convenience are sometimes a little more generous in their interpretation of the rules,’ says Tomi Lahtinen of the Finnish Maritime Administration (FMA). The pilots are ready to intervene at any time.

The key to ensuring smooth operations, however, has been the strict separation of shipping flows. The southern half of the “highway”, which is up to 11 kilometres wide in parts, is reserved for ships travelling from west to east. At the narrowest parts, ships which are approaching each other may be less than two kilometres apart. ‘With ships this big, that is not a great distance,’ says the shipping navigation expert. The most difficult passage is that between Helsinki and Tallinn, where traffic flows not only from east to west but is criss-crossed by the intensive ferry traffic between the two capital cities, with more than 40 crossings a day. Approximately six million people journey to and fro on this route annually.

According to one statistic, based on AIS figures, there are approximately 2,000 ships on the Baltic at any one time. In 2007, the total was 56,000. At least 60% of the ships transport goods (amounting to a hefty 15% of the world’s cargo transportation, according to Helcom), while 17% carry oil and 18% are passenger vessels.

The growth rates in the oil traffic are expected to be substantial. In 2003, just under 80 million tons of oil was transported in the Gulf of Finland. A year later, one Finnish forecast (VTT) predicted a volume of 150 million tons for 2010, but 170 tons had already been reached by 2007, with the volumes now expected to reach almost 250 million tons by 2015. Primorsk, Russia’s largest oil exporting port on the Baltic, has been experiencing rapid growth, along with St Petersburg, Batareynaja and Vysotsk. Goods transport is also growing: according to Helcom, the volume of goods being transported will double by 2015, from 500 million to 1 billion tons. All these predictions were made before the economic crisis of course.

Innocent passage |

Despite this huge increase in transport volumes, accident statistics have shown a steadily declining trend since 2004. The fact that the number of accidents recorded in 2004 was dramatically higher than the previous year, increasing from 71 to 142, was due primarily to the introduction of Gofrep, which led to improved registration of accidents. Nevertheless, there were 120 accidents in the Baltic in 2007, although only four of these led to minor contaminations.

The statistics show that most accidents occur in the south-western part of the Baltic. Freighters were involved in 55% of the accidents, passenger ships in 20% and tankers in 13%. Stankiewicz feels that the number of accidents is ‘unacceptably high’, although she is glad that the number of ship-to-ship collisions is continually decreasing despite the increase in traffic. Only 15 collision accidents of this type were recorded in 2007, which was half the previous year’s figure. The most frequent cause of accidents (45%) is grounding, followed by collisions (33%) with fixed or floating installations. The Helcom report also notes that ‘human error’ (32%) still seems to be the main factor, followed by technical factors (20%).

The Gulf of Finland may be a choke point for shipping traffic, but the real bottleneck is between Denmark and Sweden, where the Öresund (known as the Sound in English) and the Great Belt connect the North Sea with the Baltic. The Belt is hugely significant to international shipping, as ships with a draught of up to 15 metres can pass through it, whereas the Sound can only accommodate ships with a draught of up to 7.7 metres. Both waterways, even though they lie in Danish – and partly Swedish – territory are considered international waters on the basis of an 1857 agreement, whereby they are classified as Straits and come under the authority of the IMO. For Denmark, this means that not only must it allow ships from all countries “innocent passage”, but it requires IMO approval before making its own rules and regulations. Denmark would like piloting to be mandatory for

ships above a certain size, but they have not been able to convince the majority of IMO members of this. Thus there is only a recommendation that captains of ships with a draught of more than 11 metres should take a pilot on board. Fortunately, says Per Sönderstrup, ‘98% of ships keep to the recommendation.’ For those that do not, the only option open to Denmark is to send a letter to the competent authority in the flag country.

Sönderstrup believes Denmark provides good conditions for passage, with a comprehensive management plan in which most of the routes through the Danish Straits are kept separate. A Vessel Traffic Services System (VTS) provides crucial navigational assistance. But he observes that ‘the Great Belt, in particular, is extremely difficult to navigate. At some places, ‘ships have to change course significantly and exactly at the right time in order to avoid groundings.’ Wind and tidal conditions, and the fact that the fairway is narrow although on the surface the Belt seems wide, make navigation difficult.

A major oil spill would have catastrophic consequences for this almost completely enclosed sea

One of the most difficult bottlenecks is the Hatter Barn and Angersoe Flak.

Bottlenecks |

From 2001 to 2008, shipping traffic through the Great Belt increased by 25%, to 29,293 passages. The tonnage of the ships increased by a huge 70% to 535.9 million dead weight tons (dwt). Developments with tankers were even more spectacular: the number of tankers registered was 8,301, or 60% more than in 2001, and tanker tonnage doubled to 331.78 million dwt. Developments were less dramatic in the Öresund. Here, the number of ships

passing through dropped in 2008 by 14.5% compared to 2001, to 32,332 and tonnage increased by 11.5% to 240,956 dwt. The situation with tankers was similar, with the number of tankers decreasing by 5.3% since 2001, to 4,931, while tonnage increased by 65% to 76.35 million dwt.

that it is becoming unsafe. 'The shipping channels are actually already used to full capacity. By 2015, there will be too many ships.' Extending the shipping channels has been under consideration for some time, 'but that is a decision for the IMO to make.' And, it should be added, a decision

Watch Alarm System (BNWAS), which is designed to prevent officers on watch from falling asleep or overindulging in alcohol, will also be introduced from next year. Lastly, from mid-2012, there will be sweeping changes in navigation. The IMO plans to introduce the Electronic



Photo: Theo van Pelt / Hollandse Hoogte

Sönderstrup does not foresee any bottlenecks in the Danish Straits: 'An increase in the oil transport of 100 million tons will add up to 1,000 additional oil tankers per year or 3 per day. This will not cause a problem in the Great Belt and 200,000 dwt tankers will probably be able to transit as well.' But he concedes that having more and larger ships increases the risk, and the DMA is concerned about the way things may develop. If a noticeable change in transport structures were to occur, 'we would have to think about new measures.'

His Finnish colleague, Lathinen, sees definite limits to the current system in the Gulf of Finland. There are already signs

that directly concerns the countries that border the Baltic, because they are the ones who will have to pay for most of it.

Appreciable changes are already in sight. These are supposed to contribute to further improving safety in the Baltic, but whether they will also apply to the 200,000 dwt tankers that are on the horizon remains to be seen. Initially, from 2010, the only tankers that will still be allowed to enter the Baltic will be those with a double hull. The vast majority of tankers in the current fleet already have a double hull, although Kari Kosonen, a Baltic expert from the Finnish Maritime Administration (FMA), is worried that, 'unfortunately, there are exceptions.' The Bridge Navigational

Chart Display and Information System (ECDIS) with electronic charts that replace hydrographic charts on paper, over a six-year period, posing a challenge for the industry, according to Captain Harry Gale of The Nautical Institute, London. 'Important bridge procedures are significantly affected, and these require careful analysis and consideration if ECDIS assisted groundings are to be avoided.' Nautical Institute experts believe that the new way of doing things, which has been welcomed by those in Helsinki and Copenhagen as being a very positive development for the Baltic, will have the following advantages: easier voyage planning, simpler chart correction, continuous monitoring of depth safety

contours and soundings, and readily available information when approaching busy ports or navigating areas.

But Gale identifies just as many pitfalls: too much information on the screen can be distracting, sub-menus can be very complex, the size of the charts displayed on the screen monitor is very much reduced compared with the paper charts, some symbols are open to misinterpretation due to unfamiliarity, and automatic position plotting can lead to complacency.

Around the Baltic, amongst shipping authorities and in the transport sector, particularly those involved with oil, one question surfaces with increasing frequency: when are the 200,000 dwt tankers going to be here? They have been under discussion for several years, and Swedish shipping company Stena Bulk has already made plans to build them. The company has already made a name for itself with its Stena Max concept (a wide-body VLCC – Very Large Crude Carrier – with a relatively small draught) and is currently developing the Stena B-Max

concept (the “B” stands for Baltic). The Baltic tankers of the future, according to Stena, will be 307 metres long, 64 metres wide with a draught of 15 metres, making them just able to pass through the Danish Straits. And they will be able to carry between 200,000 and 250,000 tons of crude oil. The company describes these Baltic “giants” thus: ‘In addition to having mandatory double hulls, the B-Max will feature double main engines in two completely separate engine rooms, double rudders and steering gear, two propellers and double control systems like that of commercial aircraft’. So when will we see them ploughing through the Baltic? Apparently the Russians have not yet given the project their full support, so Stena Bulk in Gothenburg are cautious when it comes to details, saying only that plans have been ‘put on the back burner’ for the time being.

Without the 200,000 ton tankers, there will definitely be a noticeable increase in the number of 100,000 and 150,000 ton oil transporters and the number of LNG tankers. ■



Source: Ministry of Defence/COWI

‘The shipping channels are actually already used to full capacity. By 2015, there will be too many ships’

Number of ships passing through the Great Belt:				
	2001	2006	2007	2008
Total	23,524	24,722	25,769	29,293
Dwt total 1,000 tons	315,419	473,648	513,842	535,940
Average dwt per passage	13,533	19,158	19,640	18,296
Of which tankers:				
Total	5,166	6,247	6,865	8,301
Dwt total 1,000 dwt	165,229	287,850	322,405	331,780
Average dwt per passage	31,983	46,078	46,946	39,969
Source: Great Belt Vessel Traffic Service (VTS)				
Number of ships passing through the Öresund/Sound:				
	2001	2006	2007	2008
Total	37,806	36,187	35,433	32,332
Dwt total, 1,000 tons	216,185	288,213	254,070	240,956
Average dwt per passage	5,718	7,964	7,170	7,269
Of which tankers:				
Total	5,191	5,645	5,380	4,931
Dwt total, 1,000 tons	46,202	89,810	81,148	76,351
Average dwt per passage	8,900	15,909	15,083	15,706