

# Safety of Vessels' Traffic, Bound for Polish Ports

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**ABSTRACT:** Vessels' traffic in the area of Southern Baltic has not been organized yet. Therefore a risk of potential grounding or collisions is imminent. Organization the traffic by means of passive methods like determination the ships' routes or traffic separation schemes is one of the better measures to improve navigation safety. Although such activities should take into account interests of coastal countries. The whole area should be considered, and the needs arising from traffic at present and in the future should be met. Due to complexity of above problem, solutions that are fragmentary may lead to deterioration of existing situation and cause new threats for all Baltic countries.

## 1 INTRODUCTION

Vessels' traffic rules are specified and well known. During last decades the number of ships, their size and quantity of hauled goods significantly grew. At present, the global tendency is to increase the dimensions of vessels. In the light of navigation safety, those global changes force incorporation of new patterns of vessels' traffic regulation. The aim of above is to prevent from navigational accidents like collisions and grounding. Vessels are becoming deeper and deeper, but in many cases the natural depth of waterways are to shallow to accommodate them. At the entrance to Baltic Sea, south of Gedser Point, due to shallows, maximum vessels' draft is set to 15 meters. Although the draft is limited, those carriers with hazardous goods on board are huge enough to be treated as a potential source of ecological disaster for Baltic Sea, which is relatively small and closed sea. The quantity of cargo that is being carried over Baltic Sea nowadays, and plans for future transit of crude oil and LNG, force to establish new regulations that ensure acceptable level of navigation safety. Taking into consideration vessels' traffic towards and from Polish harbors, one

may not forget about ships in transit, fisheries activities and recreational activities. At present the term "freedom of movement", which means that navigator may choose the route according to his subjective preferences, seems to get retired. The traffic separation schemes, recommended routes or vessels' surveillance system force the navigators to follow the specified routes. At the moment, not all the traffic across Baltic Sea is organized. While there is an interlude between era of free movement and mandatory routes, there comes questions about present level of safety. The questions concern mostly areas where organized traffic meet freedom traffic. Above problems concern vessels bound for and from ports on Polish coast. The more serious is it the more LNG and gas carriers are planned to put into service to and from Polish and Russian ports. Partly organization of traffic in the area of Western Baltic, by establishing the traffic separation schemes in Bornholmstrait, seems to decrease the level of navigation safety of vessels bound for and from Polish ports. The number of dangerous rendezvous situations for those vessels raised up.

## 2 VESSELS' TRAFFIC PATTERNS

### 2.1 Vessel traffic pattern at present

New regulations concerning vessel traffic across Baltic Sea, were adopted by International Maritime Organization, and came into force at 01<sup>st</sup> July 2006 [2]. The aforementioned resolution established new traffic separation schemes (TSS) in Bornholmstrait, north of Ruegen and new inshore traffic zone off German coast, south of Gedser Point (Fig. 1).

The main argument for adopting such vessel traffic organization on area in question, was collision between m/s Gdynia and m/s Fu Shan Hai, which took place at 31<sup>st</sup> May 2003 [7]. However, implementation of TSS Bornholmstrait did not solve problem of similar dangerous rendezvous situations. Vessel m/s Gdynia was heading course 280 bound from port of Gdynia, while m/s Fu Shan Hai was heading course 280, bound from port of Ventspils. Courses of both vessels and position of collision is shown on Fig. 2.

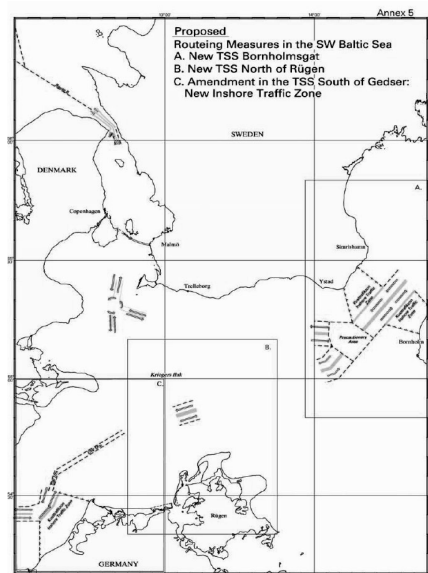


Fig. 1. Present vessel traffic systems layout on Western Baltic [2]

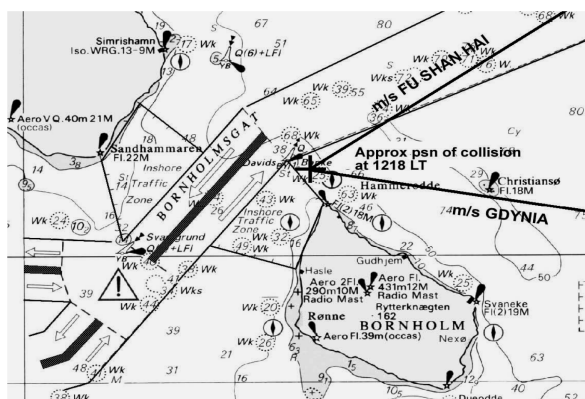


Fig. 2. Position of collision m/s Gdynia and m/s Fu Shan Hai

At present, after TSS Bornholmstrait was adopted, both vessels on convergent courses would be forced to head more to north, what could cause additional dangerous rendezvous situation, if they crossed south-west leg of TSS. Assuming that such a meeting scenario would go down with part of huge crude oil tanker or gas carrier, every meeting situation cause threat of collision and ecological disaster over whole area.

### 2.2 Vessel traffic pattern – plans

On the fifty second session of Sub-Committee of Safety of Navigation, Poland submitted the document concerning planned new routing measures in the southern part of the Baltic Sea [8]. The purpose of ships routing is to improve the safety of navigation in converging areas and in areas where the density of traffic is great or where freedom of movement of shipping is inhibited by restricted sea-room, the existence of obstructions to navigation, limited depths or unfavorable meteorological conditions. The new routing measures under consideration shall be seen as protective measures which help to minimize the risk of groundings, collisions and finally of environmental pollution of the southern part of the Baltic Sea [8]. The preliminary framework of the proposed routing measures includes:

- a new traffic separation scheme between the Słupsk Bank and Polish coastline,
- a new area to be avoided on Słupsk Bank,
- a new recommended route D in Polish EEZ and the existing traffic separation schemes in the Gulf of Gdańsk.

Presented document poorly refer to routing measures in area south of Bornholm, in Pomeranian Gulf or on approaching to ports of Świnoujście and Szczecin. The proposed routing measures in area of Słupsk Bank should be acknowledged as favorable. Słupsk Bank is an off coast area, where vessels' freedom of movement is heavily restricted, therefore proposed traffic separation schemes would significantly increase level of safety of navigation. Although, dimension of maximum allowed vessel, should be restricted with vessel's draft, which should not exceed 8-8,5 meters. Vessels which do not comply with that restriction should pass north of Słupsk Bank.

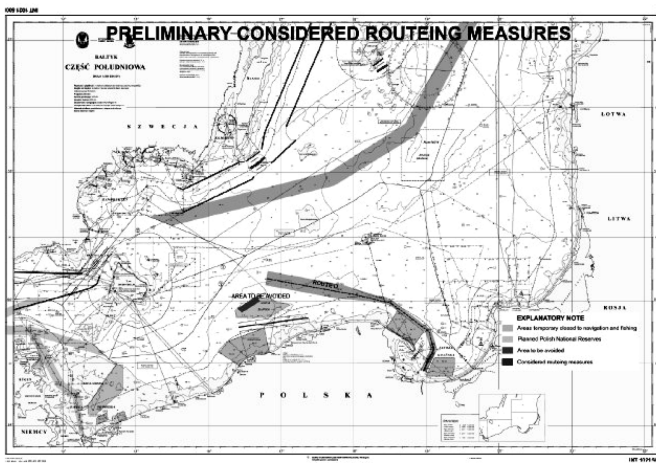


Fig. 3. New routing measures on southern Baltic Sea, submitted by Poland [8]

However, the Route D, which has been being build for several years, may not be configured good enough with introduced TSS Bornholmsgat. Such composition of Route D with TSS Bornholmsgat may cause a lot of complications and many dangerous rendezvous situations, especially for deep draft vessels.

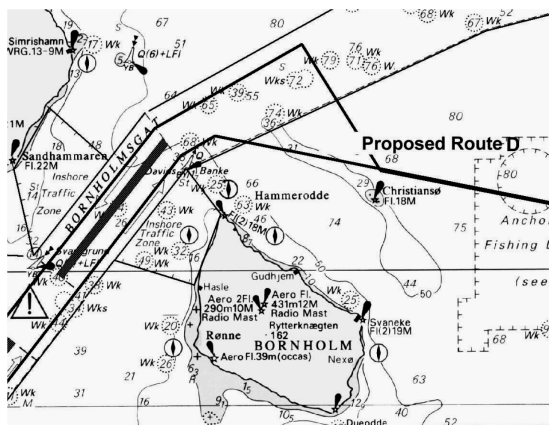


Fig. 4. Composition of planned Route D and existing TSS Bornholmsgat

### 3 SUGGESTIONS

It is justified to foresee the increase of traffic intensity across southern Baltic Sea, especially LNG carriers, tankers and container vessels transiting along Polish coast and bound for Polish harbors. Therefore a complex regulation of vessels traffic all over the Baltic Sea should be taken into consideration. Existing and planned ships' routes should be well communicated with traffic separation schemes, to avoid situation where establishing one element (route, TSS) would worsen the situation in the whole area.

In a close future, a freedom of movement for ships navigating across the Baltic Sea will be highly restricted. Vessels will follow the determined routes and separation schemes, small fishing boats and leisure boat as well as coastal vessels will use inshore traffic zones. Vessels which call small harbors along coast, will navigate within inshore traffic zones, under permanent shore based surveillance. It may look like a faraway future vision, but it is a matter of time and there is no way back. Therefore it is a great challenge for coastal countries to work out the regulations, based on compromise and complex analysis, that ensure proper level of navigation safety taking into consideration permanent grow of dangerous goods shipping. It is within Polish interests to organize vessels' traffic south of Bornholm, and ensure safety navigation for vessels bounding for and from Polish harbors. To accomplish that task a high level of international activity is required. While the predominant winds over Baltic Sea are northerly, every disaster on the Baltic Sea will affect Polish coast, no matters what is the distance from the shore. Fig. 5 shows a preliminary conception of organization vessels' traffic across southern Baltic Sea, it shall consist of:

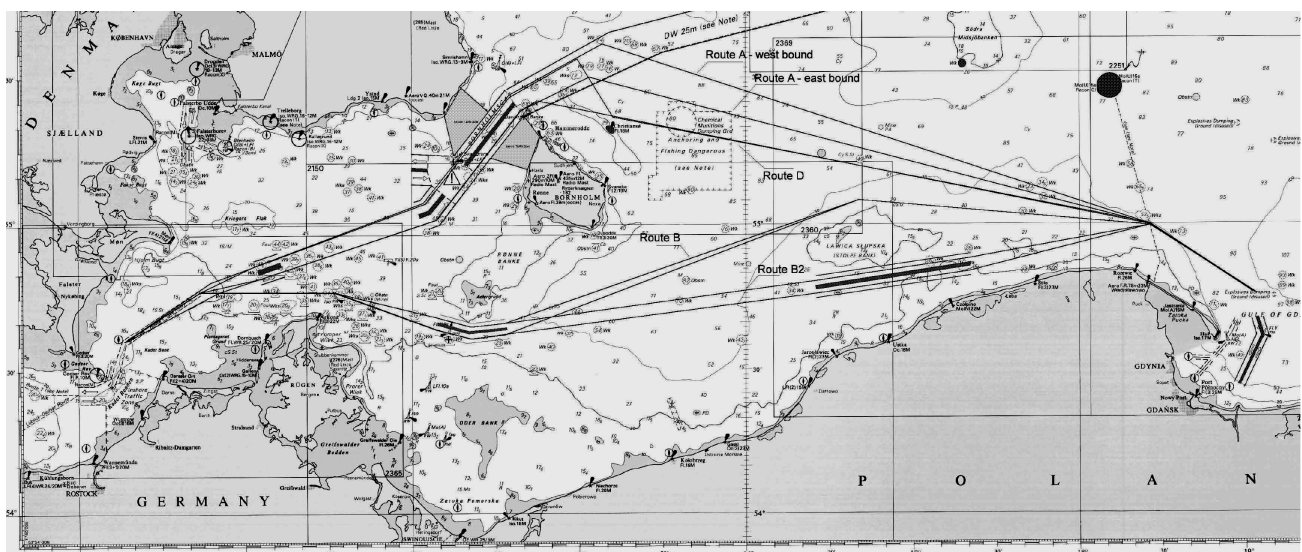


Fig. 5. A suggestion for organization vessels' traffic across southern Baltic Sea

- a new traffic separation scheme between the Słupsk Bank and Polish coastline,
- a new route north of Słupsk Bank, with opportunity to establish new TSS north of Słupsk Bank,
- a new traffic separation scheme between Odra Bank and Orla Bank,
- a new area to be avoided on Słupska Bank,
- a new recommended route D in Polish EEZ and the existing traffic separation schemes in the Gulf of Gdańsk, properly communicated with existing and planned TSS,
- a alternative recommended route D, which would proceed more to north that vessels bound from ports of Gdańsk and Gdynia would easier pull out to Bornholmstgat TSS.

Fig. 6 shows a suggestion for organization vessels' traffic bound for and from ports of Świnoujście and Szczecin. The aim is to build two routes for vessels with draft up to 13,5 meters. Those routes must be communicated with existing TSS north of Arkona and proposed TSS between Odra Bank and Orla Bank. The layout of the routes must also ensure vessels safety pull out between Arkona and Gedser.

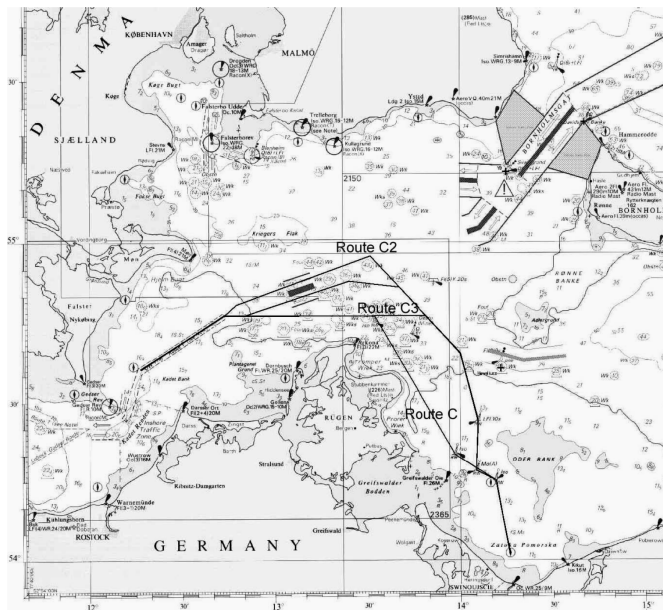


Fig. 6. A suggestion for organization vessels' traffic bound for and from ports of Świnoujście and Szczecin

#### 4 CONCLUSIONS

Organization of vessels traffic is on a significant importance for navigation safety. Every activities

concerning traffic organization must be correlated and agreed between all interested parts. The partly solutions, concerning only selected area, may paradoxically deteriorate the situation and increase risk of accidents. Organization vessels' traffic across southern Baltic Sea, should include:

- a new traffic separation scheme, south of Bornholm, between Odra Bank and Orla Bank,
- a new traffic separation scheme between the Słupsk Bank and Polish coastline, with restriction for deep draft vessels,
- a new recommended route D in Polish EEZ and the existing traffic separation schemes in the Gulf of Gdańsk, properly communicated with existing and planned TSS,
- new routes for vessels bound for and from Świnoujście and Szczecin properly communicated with existing and proposed TSS. The layout of the routes must also ensure vessels safety pull out between Arkona and Gedser.

Moving away the vessels routes from the coast, is not a proper solution, especially in case of winds from the sea. Therefore more important is the complex analysis which take into consideration specification of the whole area in question, not only part of it.

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