

The lesson to be learnt would be that any close quarters situation cannot be taken for granted until the other vessel is finally past and clear.

The screen shots were taken off the following URL - <http://gcaptain.com/incident-photos-containership-bulk-carrier-collide-in-denmarks-great-belt/>

### Guest column

## Navigating the Baltic Ice - by Mario De Silva

The 20<sup>th</sup> of February is an important day for the shipping industry. It is the P&I insurance renewal date for most of the world's tonnage each year, and coincides with the traditional first day of the operating season of the Baltic. It was considered the first day of the year when vessels could sail into the Baltic Sea, safe from ice. Gone are those days, when vessels had to wait till the warmth of spring to thin the ice, before venturing into Baltic waters. Now, with sturdy, purpose built vessels designed to brave the hash ice conditions, we trade the Baltic throughout the year.



Photo - Navigating in ice

Most of the Baltic winter trade is done by specialist operators utilizing purpose built ships. "Baltimax" is the naval architecture term for the maximum dimensions of vessels capable of entering the Baltic Sea, where the Finnish-Swedish Ice Classification applies. Traffic restrictions in the Baltic Sea during winter months are based on the Finnish-Swedish ice class. These restrictions, imposed by the local maritime administrations, declare the minimum requirements for ships that are given icebreaker assistance.

Ships of the highest ice class, '1A Super', are designed to operate in difficult ice conditions, mainly without assistance. Ships of ice classes '1A', '1B' and '1C', while built with thicker hulls, propellers and more scantling, still assumed to rely on icebreaker assistance. Most of the commercially operated vessels in the Baltic during winter, carry '1A' notation, as these are cost effectively designed vessels with minimum assistance needed when navigating first year ice.

Unlike polar navigation, Baltic ice trade does not require long endurance vessels, since trade is within known passages and most Baltic ports provide full services such as Supplies, Bunker and Ice breaker assistance when required. This, paired with the high freight rates paid for year around cargo trade, makes the Baltic Sea an attractive market for vessel operates.

To come back to the subject topic, I board a brand new 'A1' classed vessel, operated by the prestigious Bulk operator Oldendorff Carriers. Joining in the month of September at Immingham, UK, I was advised to prepare for a full winter contract. My first impression of this Baltic beauty was that she is a slim lady with a stump nose and cranes fitted on one side. A bit uncharacteristic for a large bulk carrier. Later, I was

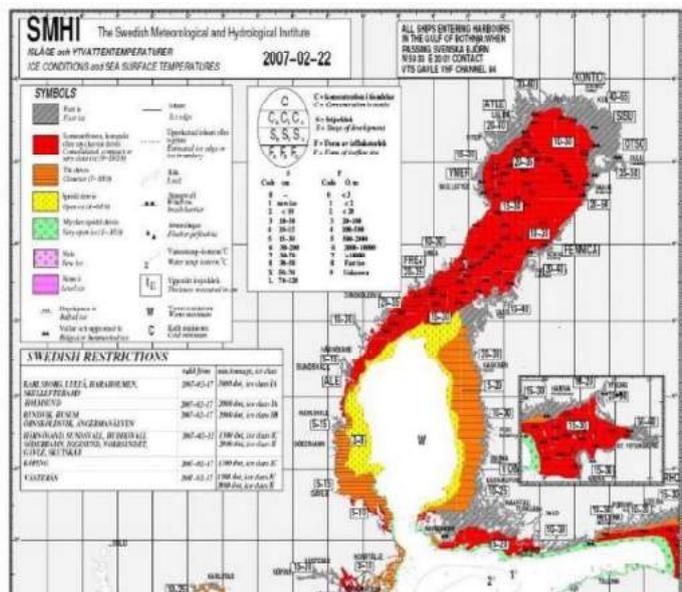
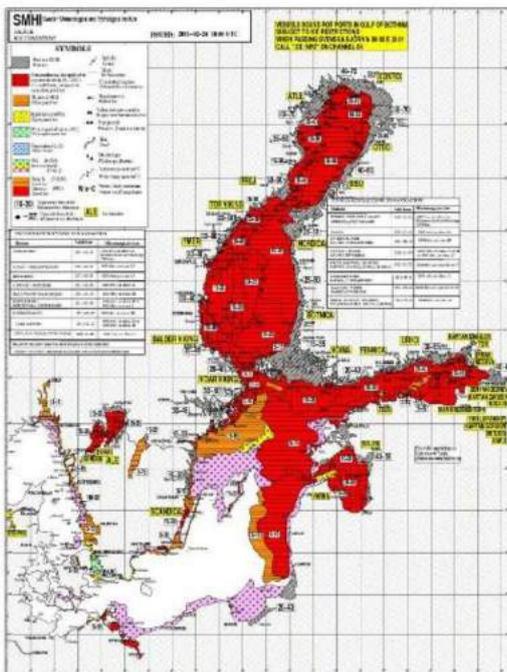
educated that it is specifically constructed for operational requirements in the Baltic Sea. The vessel was amply powered for her size, unlike the underpowered big bellied bulkers I used to navigate. The power plus her shape gave her good maneuverability, quick speed gaining ability and ramming power.

Our main trade routes were between the ports of Immingham, Ghent, Narvik, Ust Luga, St. Petersburg, Riga and Nordenham, which are all major ports situated within the Baltic sea and the adjacent North Sea. Our vessel was contracted by one of the largest steel producers in Europe to supply Coal and Iron ores to their steel mills.

There are 3 passages to the Baltic sea via Great belt and Sound passages which entwine between the islands of Denmark and Sweden, and via the Kiel Canal in Germany, of which the deepest is the Great Belt passage, where the maximum draft restriction is 15.5 meters. Further restrictions of about 65 meters air draft and 40 meters width are applicable due the limitations of Great Belt East Bridge passage in Denmark. The Kiel Canal, while reducing the voyage length into Baltic by more than one day, is a restricted dredged channel allowing larger vessels of only up to 7 meters draft and smaller vessels up to 9.5 meters draft, due to the squat effect experienced in the narrow river. All three passages include complex reporting procedures to the authorities governing each area, combined with sharp, precise navigation both during ice season and summer.

Baltimax vessels are unable to utilize Kiel Canal due to their size, so they usually proceed via the Sound channel if in a ballast or partly loaded condition, due to the shorter distance. They navigate using the Belt passage when fully laden. Fortunately, this area is usually ice free throughout the year. However, we frequently experience heavy, unexpected and unpredictable tidal streams which occur during the winter season, as the water is pushed out of the Baltic sea by first year ice expansion. The navigator must keep a close look out on the off- track motion and check for the speed changes between Doppler and ground.

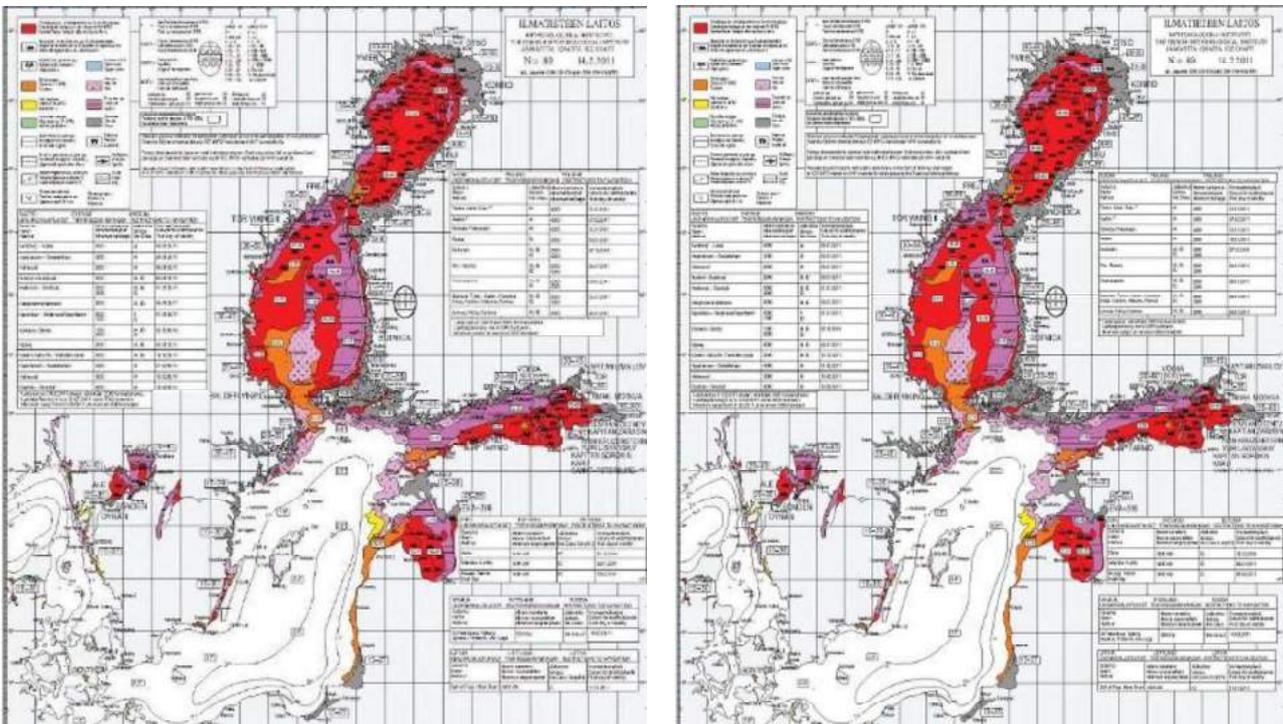
While fully adhering to the SMS ice navigation procedures, it is paramount that the vessel obtains frequent 'Ice reports' by all available means. We have noted that there are many occasions where open waters in an afternoon ice analysis has changed to hard ice in the night report. This change was also physically noted many a times on our log book, during anchorage stays. The freezing winds from the northern land can easily



turn the relatively stationary Baltic waters into thick ice layers, sometimes within just a few hours. It is noteworthy to say that the Baltic nations have taken all precautions to provide vessels with frequent 'up to date' and accurate ice reports, using all available communication platforms. It is up to the navigator to utilize this information for safe navigation.

Sea ice pilotage service is available from Belt / Sound passages up to all navigable ports within the Baltic, but the service must be booked few days earlier. This service is utilized by new vessels and new commands for the area, but it is very costly. The pilotage services for restricted passages are more frequently used. All major winter operators have nominated ice breaker service agreements. The major routes are plowed by ice breakers (*free of charge to vessels*) daily, and the information is updated on ice charts. Therefore, the ECDIS or paper charts need to be updated and the passage plan amended accordingly.

There are times when TSS and other recommended routes become inapplicable due to the simple reason that most of the sea is frozen solid and thus not navigable. The navigator must always use extra caution when amending the passage plan, considering not only the ice-free route, but also the available depth and width of water and the movement of ice. We have observed the plowed navigable passage shifting 2-3 cables with the ice shelf. Navigational aids, both floating and fitted on land, are near non-existent during the winter season. Most of them are removed by local authorities to avoid damage by ice. The rest are non-functional or unreliable, due to shifting with the ice shelf. Sometimes, the most accurate information and guidance may be from the Ice Breakers in escort positions. As such, it is paramount that we collect all data and access them before heading towards ice.



An 'A1' Classed vessel is strengthened to break first year ice, but this must be done with utmost consideration. Done at slow speeds, ice is more likely hammered or plowed than direct hitting. This creates a headlong crack in the shelf, which the vessel can cut through. Arranging for proper forward spotlighting to see the ice, with competent persons stationed forward to monitor and communicate to the bridge regarding the ice thickness and breaking of ice, is a must. If going astern and ramming is required, the safety of the propeller must be ensured, as it is quite easy for the ice astern of the vessel to re-connect and freeze within minutes of passage. During my tenure onboard, we came across two vessels which needed assistance or required repairs due to propeller damages by ice. When navigating through a plowed passage, a vessel can easily cut through the ice as it is already broken by the ice breaker and perhaps a few more times by vessels using the passage. It is advisable for each vessel taking the passage to use the lee side of the track to minimize sideward push by the ice shelf and avoid damaging the ship side shell plating.

Another difficult scenario is when the vessel is advised to anchor and await her turn to berth. A stationary vessel can naturally and easily become trapped in the ice, with the hull becoming a part of the ice shelf. Most of the sea bed becomes a poor holding ground during iced condition. Once the ice shelf starts drifting, the strain on the anchor chain becomes tenfold. As dragging of the anchor becomes unavoidable, the vessel's engine needs to be ready at all times. Further, the engine should be run for a few minutes every hour to keep it warmed and to keep the propeller free of ice. The anchor chain must be monitored and the vessel may have to pick up her anchor more than a handful of times whilst at anchor. If a vessel is unable to be free from the ice shelf, an Ice Breaker on duty should be contacted without delay. On one occasion, we

all felt a great sense of relief on bridge when we saw the lights of the ice breaker coming to free our ship which was stuck firmly in ice whilst dragging anchor and drifting towards shallow waters. The bright red-hulled Russian Ice Breaker which came to our rescue, simply acknowledged us by VHF, did a close leisurely circle around our stranded beauty to separate us from the ice shelf and we were free once more. Due consideration must be given to the fact that when navigating in ice, the speed and time taken to reach a certain position may not have any relationship. Although assistance may be within a 12nm radar range, it may take half a day to reach through the ice. Therefore, all planning must be done in ample time.

There are many human factors to be considered when navigation in Baltic winter. With a mixed or Asian crew, cold temperatures do not agree well, along with the dark gloomy weather conditions preceding the winter months. Shore leave is hardly considered by anyone, due to the persisting cold and snow. The increased workload and responsibilities, coupled with harsh conditions, create a lethargic and negative attitude towards work and life on board. Boredom sets in as each day passes with cold, wet and the grey skies. These conditions must be avoided and planned early on. Good quality winter clothing, indoor games, entertainment, new movies, library updates, frequent BBQ parties, evening get-togethers, satellite communication, re-stocking of provisions with due consideration to fruits and vegetables, and supply of internet connection were some of the things our owners had thoughtfully pre-arranged to kept the crew morale high.

The Coal and Ore trade in winter, create its own added difficulties. The snow on deck up to 2 meters may accumulate within a half hour blizzard, effectively immobilizing hatch opening or any other deck work. To have everyone on deck, shoveling the snow, is the only way to clear up the hatches for cargo operations. Most of the cargo loaded will be frozen solid, adding to the cargo weight, moisture content etc. Hydraulically operated equipment tends to fail when the oil gets too cold and its viscosity changes. Reading the draft becomes a near impossibility as the ice sludge piles up over the water. Ballast water which cannot be pumped becomes an issue due to freezing inside the tanks. Mooring lines become frozen and brittle, making it impossible to tighten or slack the lines. In the Baltic sea, the temperature variation is large and frequent, thus liquefying the accumulated snow and flash freezing into hard ice, time and time again. The deck machinery fitted on Baltic class vessels are made for these conditions and require specific maintenance and training for crew.





I do not recall a single day in which I was not wearing multiple layers of clothing. Running noses and mild colds were a daily occurrence with the crew. Fortunately, our medicine chest was stocked with additional medicine for cold related symptoms. Basic navigation prevails, where our eyes become the sole assessor of the conditions ahead. The engine room is continually manned and the gentlemen down below make sure that we are aware of the fact by countless calls to the bridge with various warnings, advise and instructions to treat the engines gently. Comradeship and patience is needed in large doses. The navigation bridge becomes a communal location with at least 3-4 persons continually on duty. The Master, who rarely sees his own bed takes most of his meals when at the helm. The auto-pilot system never gets to show off its course-maintaining abilities, and the Able Seamen and even the Deck Cadets, have to handle the wheel continuously.



All in all, the Baltic winter trade is a total new experience for a navigator. It is an experience filled with new knowledge and the polishing of time tested basic navigation skills. An experience which I enjoyed and recommend for all navigators to experience at least once in their career.

*Mario De Silva was invited by the Editor of "8 Bells" to write about his experience navigating through Baltic Ice. Mario is a vibrant Chief Officer who started as a Cadet with MSTI - OTC in 2006 and has accumulated a lot of knowledge and experience while climbing up his career ladder with the world renown Bulk operator Oldendorff Carriers. With expertise in vessel integrated systems, Mario routinely works both as a vessel trainer and a maritime lecturer in addition to his regular service at sea.*