

Navigation Risks In Narrow Channels

On 23rd of March 2021, one of the largest container ships ever built, EVER GIVEN, had run aground at marker 151 km during Suez Canal transit and caused a delay and cost at a level effecting to global trade. She has lodged in the channel against both banks of the canal due to sandstorm and gust wind exceeding 40 knots in the early morning on March 23.



It is estimated that the costs to global trade is about \$400 million for hour, based on the approximate value of goods that move through every day, according to Lloyd's List. The vessel is being held by Suez Canal Authority at Great Bitter Lake and a fine with an amount of 916 million USD was imposed against the vessel.

On the opportunity of this incident that actually interrupted world trade, we would like to brief about the risks of navigation in narrow channels and straits which are located at different parts of the world and enables reducing the costs of sea trade by shortening the sea trade routes.

Factors to be Considered in Narrow Channel Navigation:

- **Traffic Density:** During transiting a narrow channel, the dense traffic is obviously should be expected much more than that in open seas. Eventually, this will bring higher risk of collision particularly in confined waters with relatively sizeable vessels. During entire transit, utmost attention against the vessels in the vicinity has to be drawn by Masters, navigating officers and lookouts.

- **Navigation and Conning Practices:** As practically as possible, all available means of electronic equipment for safe navigation such as ARPA, ECDIS, AIS, echo sounder, etc. have to be in use all times. That has to be born in mind that the devices are of no use without knowledge and experience of operators. During transit, plotting at very short intervals is very important to determine exact position of the vessel as it helps in finding out the available depth, obstructions and such similar aspects while in transit.

Another challenging aspect of transiting a channel is at the points of turning, which require maximum application of navigating skill and experience in such vicinities with lesser room. The Master must also check on the right timing to initiate the turning, even though the pilot is generally familiar with local waters. The vessel should always maintain safe speed considering characteristics of the channel. Engines must be ready at all



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times for maneuver. In other words, it must be ensured that the vessel adheres to the COLREG at all times but particularly rule nos. 6 (Safe Speed) and 9 (Narrow Channels) while transiting a narrow channel for the safety of vessel as well as to avoid any legal implications, in case an adverse situation arises.

- **Communication:** Another best practice to be implemented to avoid any misfortune during transiting a narrow channel is to have a crystal-clear communication with the Vessel Traffic Services (VTS) as they have full of knowledge and clear idea on all vessels transiting the channel. Obeying their instructions and meet the requirements will ensure a smooth transiting operation. Likewise, bridge-to-bridge communication has also vital importance to clarify and understand intention of surrounding vessels, particularly those stand to pose a danger to the safe transit of your own vessel.

Apart from external communication with VTS and other vessels in the vicinity, communication between Master / navigating officer and pilot must be loud and clear all times. Any language barrier, lack of communication or misunderstanding may easily conclude with an incident.

- **Environmental Factors:** Local currents in the channel must always be taken into account as the vessel's precise positioning is greatly deviated by effect of current. A head current, flowing against the vessel's course causes reducing the vessel's speed but, in most cases, enables better steering. On the contrary, a following current on the other hand might bring in lack of steering. Such critical points ought to be kept in judgement while transiting a narrow passage.

The wind forces affect vessels both during sailing conditions and berthing operations. In general, the vessels with larger windage areas such as cruise ships, container carriers etc. is effected with large side forces and large yawing moment. Therefore, wind force and direction has always to be taken account particularly while transiting of such vessels.

Besides, there are also some hydrodynamic phenomenas such as, bank effect, suction and squat. Simply, bank effect and suction are encountered when transiting in close proximity to a bank, especially when the depth isn't sufficient and the vessel is relatively sizeable. Combination of these effects cause the vessel's bow to move away from the bank and the stern to move towards it. Squat also cause decreasing the vessel's aft draft while navigating with higher speed, correspondingly may cause errors in maneuvering which can lead to grounding or collision.

Although the pilot on board is (supposedly) well aware of the local conditions, the vessels are the ones that must bear the responsibility along with the pilot to ensure such effects do not jeopardize safe navigation in the channel.