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To	All Surveyors/Auditors. All flags
Title	Global overview of navigation incidents
Reference	Incident analysis

An overview of navigation incidents

In a navigation incident, the human element plays a significant role.

The majority of the investigation reports tend to conclude that “human error” is the root cause of navigation incidents. Among the findings, human error generally entails; lack of situational awareness, poor lookout and competence of the mariners involved. The human error may well be just one of many factors contributing to the incident. There may be other factors which may not have been paid attention to during an investigation, such as geographic areas of high frequency of navigation incidents, or “navigation hot spots”.

There are a few variables that we need to bear in mind when ranking areas with high numbers of collisions and/or groundings.

Mariners normally consider the areas of high traffic density as high risk for navigation. However, looking at the incidents over a time it is evident that areas such as the Singapore and the Malacca Straits facilitate the highest traffic flows in the world yet rank low for incident rates. We see a very similar picture for the Ningbo and Shanghai approaches which facilitate some of the busiest trade flows in the world yet rank amongst the lowest when we look at the incident rates.

When looking at the above rankings, it is evident that some areas are more vulnerable to groundings whilst others present a higher risk of collision. In general, ports with high traffic density which may be largely unregulated could contribute to high rates of collisions. Similarly, ports with significant annual and/or diurnal tidal variations may well increase the risk of groundings.

Grounding

The following are some of the high-risk behaviors found for grounding incidents:

- a. **Max speed** relative to service speed: This risk factor is the maximum observable speed (AIS speed) during the year preceding the incident, measured as a percentage of the vessels’ service speed. “Service speed” is the highest speed the vessel is designed to maintain in

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service at sea while underway at the deepest seagoing draft (summer draft). The higher the observable speed as compared to the service speed, the higher the likelihood of a grounding incident occurring.

- b. River traffic: Out of the total operating time, the percentage of time the vessel is operating in a river. The higher the amount of time, the more likely the vessel is to have an incident.
- c. Unique ports called: Out of all port calls, this risk factor evaluates the number of unique ports visited by the vessel in the year preceding the time of the incident. The risk of the unknowns when calling a port for the first time is much higher especially if the bridge team is unfamiliar with the port infrastructure.

The above risk factors can give a better understanding of grounding incidents beyond the traditional approach of human error.

Collisions

The below list highlights the risk factors that show a strong correlation with collision incidents.

- a. Time anchored: Out of the total operating time, the percentage of time the vessel is at anchor. The longer a vessel stays at anchor the higher the risk of a collision.
- b. Max speed relative to service speed: The maximum observable speed is measured as a percentage of the vessel's service speed. This is a common factor between grounding and collision claims.
- c. Calls to large ports: The higher the traffic in a port, the higher the risk factor associated with the port. This may be considered by measuring the size of a port by the number of vessels calling the port each year.
- d. Accelerations: Out of the total operating time, the share of time the vessel spends accelerating more than 1.2 km/minute. Movement data provides clear correlation between frequent accelerations and collisions.
- e. Mileage: The higher the total nautical miles travelled by a vessel in a year, the lower the risk of collision.

REFERENCES:

- Incident analysis

ATTACHMENTS: No

Kindest Regards,

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