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Solutions to overcome the sea accidents

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Abstract

The year 2017 led to an increasing number of maritime mishaps involving fishing and cargo ships in the seas around Vietnam, highlighting the perils seafarers face. According to the Maritime Search and Rescue Co-ordination Center Region III, in charge of the sea area from south of Ninh Thuan Province to Kien Giang Province, in 2017 the agency received 183 distress signals, 1.5 times more than in 2016. The agency had to dispatch rescue ships 37 times to support and rescue a total of 537 people, an increase of more than three times year on year. Despite these efforts, 96 seafarers died or are still missing. The situation was made worse by poor quality of fishing vessels that could not withstand rough waves or gusts of wind. During Typhoon Tembin that hit the southern provinces in late December, the center rescued 10 fishing ships in the seas of Khanh Hoa and Binh Dinh provinces with either their engines broken or structures broken by the pounding sea. Of the 49 vessels that sank in the southern sea last year, 46 were fishing boats - three time more than the previous year. Advocating the Government's strategy to develop offshore fishing, many fishermen have switched from near-shore fishing to off-shore fishing. However, a large number of fishing vessels were still traditional small, wood-clad vessels, raising the risk of accidents when they are fishing thousands of nautical miles offshore. According to the Department of Agriculture and Rural Development of Ba Ria-Vung Tau Province, in 2017, more than 49 per cent of fishing vessels in the province switched to offshore fishing. The transformation to large steel-clad or new-material ships suitable for offshore fishing was lower than expected, despite strong support from the government policy with the birth of Decree 67 in 2014. Until 2017, three years after the decree was issued, only 63 ships were completed in Ba Ria-Vung Tau Province. A major reason was that fishing ports and ship sanctuaries have become seriously overloaded, so not many fishermen dare to invest in new vessels.

Keywords: sea accidents, solution, maritime industry

Introduction

Maritime is highly internationalized, with many complex activities involving people, ships, ports, goods and the environment both domestically and internationally. Maritime disputes often involve many countries and territories. This requires each country's maritime legal system to be fully developed, ensuring that all activities in the maritime domain are in compliance with the Convention's provisions and international practices. To meet that requirement and serve the development of the marine economy, Vietnam's system of maritime legal documents has been paid attention, researched, amended and supplemented promptly. The maritime industry has completed the study and proposed the Ministry of Transport, the Government and the National Assembly to amend the Vietnam Maritime Code with amendments and supplements in line with the actual operations of the maritime industry and treaties. , international practices, approved by the National Assembly in 2015; actively develop and submit to competent authorities for promulgation of Government decrees, Prime Minister's decisions, and Ministerial Circulars detailing the implementation of Vietnam's Maritime Code. On the other hand, to support the development and integration with the world, the maritime industry has advised and proposed to the Government to accede to 26 conventions, international agreements and protocols, and sign 26 agreements. bilateral maritime and 27 Agreements on recognition of professional certificates with countries in the region and the world; is a member of international organizations with important roles in the world maritime industry such as International Maritime Organization (IMO), International Labor Organization (ILO), Association of Management Agencies International Maritime and

Lighthouse Assistance (IALA), International Maritime Satellite Organization (INMARSAT). Develop strategies, plans and policies for the development of the maritime industry. With 3,000 km of coastline and many convenient ports is a strong point for the Vietnam Maritime industry to develop. However, in the past years, the situation of marine accidents caused by collisions or incidents related to ships damaged, sunk, polluted the environment and caused relatively deadly consequences. Finding causes and proposing measures to prevent sea accidents is a scientific and practical job.

According to the Vietnam Maritime Administration, the situation of maritime accidents in 2017 and 2018 is still very complicated. In 2017, Vietnam had 17 maritime accidents in which 2018 had 15 accidents. Most of the

causes of accidents are due to human factors. In addition, there are some other reasons such as transporting goods, big waves, high winds, currents impacting on the ship's rope system that can cause the ship's rope to be broken, the ship moves out of position. It can lead to collisions. These accidents will affect the marine economy and marine environment of Vietnam as well as the world. Therefore, the study to provide solutions to ensure maritime safety is an essential task and it will meet the demand for marine economic development that Vietnam has set out. In the marine economic development strategy, the maritime industry plays an important role, in which the seaport is the development nucleus, the focal point of receiving, transporting import and export goods and circulating to all regions of the country.

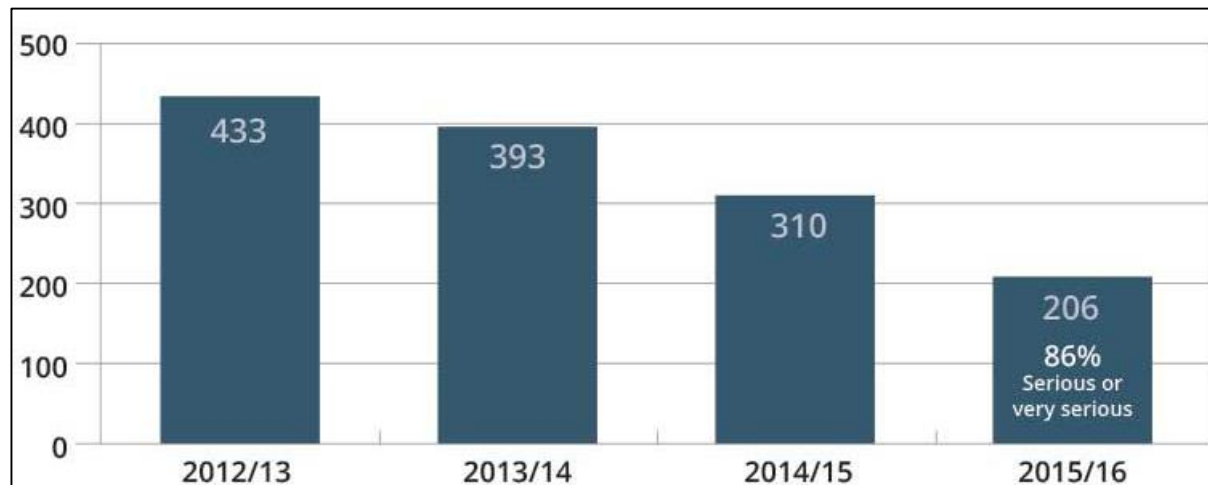


Fig. 1: Maritime incidents data by 2016

Shipping currently accounts for 90% of import and export cargo and a part of cargo to regions, which is the main artery in the economy's transportation and distribution system. Determining the importance and necessity of studying and developing a sea development strategy to take advantage of and exploit the potential of the sea to serve the development of the country and to bring our country to become a strong nation on the sea, enriched from the sea, on the basis of promoting the potential from the sea, to comprehensively develop marine industries and trades with a rich and modern structure, creating a fast and durable development speed. Firm, effective with long-term vision, with specific goals and orientations. Build and comprehensively develop economic, social, scientific and technological fields, strengthen national defense and security, make the country rich from the sea and protect the marine environment. To develop, break through and strive to bring the maritime economy second in 2020 (after oil and gas exploitation and processing) and first after 2020. Strive to 2020, the maritime economy and coastal areas contribute about 53 to 55% of the national GDP. The average income per capita in coastal areas is 02 times higher than the national average income. Developing the national seaport system, building a number of regional international trade ports; to build synchronously a system of international-standard ports, paying special attention to deep-water ports in the North, Central and South regions, creating large open gates to reach the international sea. Develop shipbuilding industry; focus on building shipping fleets and maritime services. Early complete, effectively

exploit the coastal airport system, build coastal routes and the North - South highway in the sea. To build a system of electricity and fresh water supply to ensure the process of developing the marine economy and serving the activities of coastal, sea and island population. In order to develop the marine economy in the right direction, goals and plans of the Vietnam Sea Strategy to 2020 set by the Party and the Government, in recent years, the maritime industry has actively implemented and played a role. Important in Vietnam's marine economic development strategy, which is evidenced by the following works.

The reasons for marine accidents

When one uses any mode of transport, accidents are bound to happen. Accidents occur because of negligent mistakes but the effects of the same are lasting and lingering. There have emerged and are emerging so many accident cases, that it has become to keep track of them. Road accidents, rail accidents and aircraft crash landings are accidents that everyone today has become accustomed hearing about. In a similar manner, even maritime accidents occur, casualties are caused and damages have to be borne. However, unlike in the former three cases, there are several possible types of maritime accidents. The oceanic area is very vast and therefore the variations in accidents are also numerous. The effects of the occurrences of marine accidents include not just humans but also the marine creatures and the marine environment and ecosystem. We have brought to you 12 main known types of maritime accidents can be listed down as follows:

1. Offshore Oil Rig Mishaps

The recently occurred oil spill in the Gulf of Mexico is an offshore oil rig accident. Offshore oil rigs constitute great danger in terms of their heavy machinery and the complexities of the processes involved. Even a minor error by way of negligence of a simple process or overlooking in the working of a machinery part can lead to immense damaging consequences across the world.

2. Cruise Vessel Mishaps

Cruise vessels form a very important part in the vacation itinerary of people. However, a major type of maritime accident occurs in cruise vessels. Cruise vessels could capsize or face tough weather conditions causing the ship to develop major problems. Another important case of accidents in cruise ships is because of the negligence on the part of workers. As per statistical data nearly 75% of fires are caused because of a mere mistake by people working on the cruise ship.

3. Commercial Fishing Mishaps

Even fishing for commercial purposes can lead to fatal incidents being caused. Inexperienced fishermen – sometimes even experienced ones – can fall overboard. Harsh weather conditions can also cause severe damages to a commercial fishing expedition

4. Accidents on Tugboats

Tugboats are those which help move huge ships to enter docks. They are small in nature but are powerful to ensure that the large vessels are handled safely. But sometimes because of the blockage of the visibility of tugboats by the larger vessels, maritime accidents occur. Also human error on the part of the pilot of the tugboat can also lead to unwanted and unexpected tugboat mishaps.

5. Accidents on Crude Oil Tankers and Cargo Ships

The major cause of accidents on cargo tankers is explosions. Since the very nature of the materials these tankers transport is dangerous and highly flammable, even the most minor of explosions can cause enormous losses. According to statistics, one of the main reasons for oil tanker accidents occurring is because of workers' negligence – nearly 84-88%.

6. Grounding of Ships

Ship grounding occurs when the bottom of the ship's hull scrapes through the ocean-bed. This type of maritime accident has a lot of impact on the ship's hull and more on the overall oceanic area where the grounding has started to occur and has finally culminated. The danger to workers aboard the ship is another important consequence because of the mishap.

7. Maritime Accident because of Drugs and alcohol

Drug or substance abuse is a major problem across the world. Even in the marine world, substance abuse can cause irreparable damage. If the workers of a particular ship engage in substance abuse or alcohol, the addiction-induced frenzy could cause the worker to behave erratically and thereby lead to an unwanted maritime accident on board ships.

8. Crane Mishaps

Just like crane operations on the land, marine crane operations on ports and on ship are also risky. The risk is further stressed because of the oceanic operations where the cranes are required. Because of faulty wires or winches, crane workers can lose their life or in a worst case scenario, be alive but with irreparable physical handicap. Alternatively, accidents because of crane operations are

also caused because of negligence and inexperience on the part of the worker.

9. Accidents in Shipyards

The shipyard is the place where the ship is assembled and constructed in its entirety. Fitting and welding accidents are common in the shipyard which could spare the worker his life but hamper the worker's overall working abilities. Similarly constant inhaling of poisonous fumes also becomes another shipyard accident cause.

10. Maritime Accidents on Diving Support Vessels: People who want to explore the mysteries of the deep sea use a diving support craft to take a plunge into the water. However if the diving support craft is unfit and if the crew also happens to be really unfit to oversee and manoeuvre the whole operation effectively, a major accident can be caused.

11. Accidents on Barges: Barge mishaps occur mainly because of the overall build of the barges themselves, which allows them limited movement on the water and because of the problems of the barge-towing equipments. These problems could be caused due to inexperience on the part of the person at the helm of the towing boats or due to usage of faulty towing cables.

12. Cargo Hauling Accidents: Cargo hauling maritime accidents are those accidents caused to workers who work as cargo haulers. However, according to several maritime accident investigations, it has been reported that cargo hauling workers overstate their cargo-hauling injuries. The maritime accident investigation, consequentially reports that because of this, this profession has one of the most severe rate of work-place absenteeism.



Fig. 2: One of maritime accidents

It can be seen from the above mentioned types of maritime accidents, that mistakes on the part of the workers and operators play a major role in the accidents being caused. But in order to find out what was the actual cause of the marine accident, a maritime accident investigation is necessary. Maritime accident investigation will help to narrow down on the actual cause of the accident which will help the injury claimants to claim their rightful due with absolute clarity.

The equipment to help ship safely

According to t Sumwalt, the health of the U.S. economy is tied significantly to the safety of maritime transportation. It is estimated by the NOAA that over \$ 1.5 trillion cargo

traveled through U.S. seaports in 2016. Taking steps to reduce the number of maritime accidents as explained by the Safer Seas Digest is beneficial for the safety of human life and equipment and the prosperity of the nation's economy. Below is a brief review of the various contributed factors determined in the Safer Seas Digest report to have caused one or more of the maritime accidents investigated.

1. **Fatigue:** The NTSB report indicates that fatigue is one of the most common reasons for transportation accidents, and reducing this cause is a top priority for the Safety Board. The publication emphasizes the fact that mariners should be aware of how sleep loss affects their performance and should refrain from accepting a watch while in a state of fatigue that renders them unfit for duty. In such instances, mariners should prearrange for another qualified individual, i.e. a watchstander, to serve in their place when possible. If this is not possible, mariners should refuse duty until they are adequately rested and able to safely execute their responsibilities.

2. **Standard Maintenance and Repair Procedures:** Very often the NTSB investigates accidents that are simply caused by the failure of one or more individuals to operate according to standardized procedures involving testing, repair and maintenance of equipment. Individuals, These procedures must use the correct parts and tools and also ensure system integrity and safe equipment operations according to the appropriate specifications.

3. **Use of Medication While Operating Vessels:** Using medication in an unsafe manner as a member of a maritime crew can have disastrous results. The NTSB cautions that mariners should consult with an appropriate medical professional prior to using any type of medication, whether over-the-counter or prescribed. Also, the use of certain medications by credentialed mariners may disqualify them from operating a vessel.

4. **Operational Testing Procedures:** Standardized procedures should always be used when testing equipment. Optimally, the testing should be performed at normal operating pressures and loads - this can help verify the reliability and quality of the repair or maintenance work performed. All sensors and alarms within vessels should be tested routinely to verify the reliability of their operation and their capability of providing adequate warning to crew members.

5. **Familiarization with Local Recommendations:** It is important for vessel operators to have familiarity with and heed the recommendations of local specialists in the maritime industry as well as pertinent publications, including the United States Coast Pilot and others. Failure to do so can result in unnecessary accidents.

6. **Underestimating Strong Currents:** Mariners can face significant challenges when operating in high water with currents that are more powerful than normal. Under such conditions, the ability to maneuver may be diminished significantly and the risk of parting lines or dragging anchor may be increased. Concern vital for operators and owners to encourage their mariners to properly assess

dangers, and remain aware of prevailing conditions. As well, they must take into consideration the guidance of authoritative entities such as the Coast Guard - and from this information takes steps to minimize risks. In particular, the "downstreaming" maneuver often performed by inland towers is risky when strong currents are present.

7. **Bridge Resource Management:** When pilots are faced with limited reaction times and hazards are close at hand, importantly important to have all possible resources available for use in order to help ensure the safe operation of vessels, including human resources and equipment. The utilization of these resources falls under Bridge Resource Management.

8. **Proper Safety Equipment:** It is vital that that owners, operators and crewmembers of a vessel do their part to ensure the proper maintenance and functioning of safety equipment on the vessel. As well, they should ensure the vessel is equipped with the necessary safety equipment to handle emergencies and provide the best chance of survival for all on board.

9. **Distractions:** A very high priority by the NTSB as it concerns safety improvements involves the minimization of distractions. Although it is necessary for operators to communicate with dispatchers and crewmembers as well as conduct other work duties involving the checking of equipment and instruments, anything that hinders proper vessel operation can result in tragic outcomes.

10. **Access to High Risk Spaces:** The NTSB emphasizes the importance of high risk spaces, in particular those with hull penetrations, remaining freely accessible. If these spaces are blocked, a safety hazard exists and operators may be hindered from responding to flooding and other

Most of the causes of fishing vessels collided on the sea are due to increasing density of vessels circulating on the sea, increasing the number of fishing vessels, and a longer period of seagoing vessels. While the majority of fishing vessels lack radar to detect obstacles, prevent collisions. Especially at night when the foresight is limited, in the conditions of fog, rain or thunderstorms ... the risk of crashing is very large because boats do not see each other.

Conclusion

Under international regulations, large cargo ships have marine radar equipment and collision avoidance equipment. However, when cargo ships enter Vietnamese waters, because fishing vessels are often made of wood shells, radar reflections are very poor, some small ships have lower height than the wave so radar of cargo ships is difficult to detect. Warning. Besides, some fishing boats do not have improper signal lights or signals, during the night, many foggy sky ships cannot detect remotely with the naked eye. Fishing vessels become "invisible" and easily lead to crashing at sea. To minimize accidents at sea, fishing vessels need to use marine radar to detect targets during the night and in bad weather, to ensure safety for ships and people at sea. Marine radar is a device that uses radio waves to detect obstacles, helping fishermen determine the direction of the surrounding targets and adjusting the direction accordingly. In addition, marine

radar mounted on fishing vessels can also be used in fishing nets by fishermen. With a range of up to 32-72 knots, the radar can detect and display buoys that hold nets on the screen, making it easier for fishermen to detect unknown ships and monitor and manage their gold nets, term the grid status is lost or broken due to collision with other ships. Implement well the coordination mechanism with specialized forces to strengthen inspection and patrol activities to improve traffic order and safety on maritime routes; supervise and inspect the anchoring and updating of small vehicles; strictly handle violations according to law provisions and study to demarcate small vehicles at navigable channels which need to create the most favorable conditions for the navigation of large seagoing vessels. Customs and international treaties that Vietnam has signed or acceded to, gradually raising the awareness of safety, maritime security and protection of the marine environment by ship owners and crew members.

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