

Safe Navigation for Fishing Vessel

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SUMMARY

The sea has been used by many types of vessels for different purposes. One of the purposes is catching fishing at sea. Fishing at sea is a dangerous task and it involves many hazards at sea. The fishing vessel navigates into deep-seas, stays for number of days and carries out fishing activities. For efficiently catching fish and return to port safely, the crew carries out all the tasks which supports the fishing activities safely and efficiently. One of the functions of the fishing vessel when doing fishing at sea is navigation of the vessel. The fishing vessel when at sea is subject to perils of the seas. The perils related to the navigation of the vessel are collision and grounding. During recent years, the number of fishing vessel involves with collision incidents is on a rise, making the navigation at sea unsafe. Watch- keeping, works on chart and complying with the collision regulations are forming part of the navigation of the fishing vessel. For the vessel to return to the safely after completion of the fishing, the above navigational activities shall be carried out efficiently. In this paper, safe navigational practices for the fishing vessel is discussed with the aim of reducing navigational related incidents at sea.

INTRODUCTION

Marine fishing is an activity carried out at sea with the help of a fishing vessel. Marine fishing is being carried out from coastal water to high seas. The duration of the fishing varies from a day to over a month. The fishing vessel uses different gears like, long line, gillnet, trawl, purse seine etc. for catching fish and the fish is stored in the fishing hold and transported back to port. The sea is a very vast area of water over which the fishing activities are carried out with the help of different types of crafts. The sea is seldom calm and it is dynamic in nature. As the sea is very vast, it makes anyone to lose their position and direction when they are outside the sight of the land. Navigation is an art of knowing one's position and direction and moving from one place to other place at sea. The navigation can be considered safe when the vessel does not lose its position at any time and does not involve in any collision and grounding incidents.

When the fishing vessel is at sea the location of the vessel can be identified with the help of celestial objects when at mid seas and terrestrial objects when close to shore. However, satellite positioning is very often used by the fishing vessels due to the advancement of technology in navigational sector. The available satellite positioning system for the vessels are United States Global Positioning System (GPS), Russia's GLONASS, China's BeiDou Navigation Satellite System (BDS), European Union's Galileo and India's NavIC (Navigation in Indian Constellation).

The vessels used for catching fish at sea are of different sizes and types. These vessels must be well constructed, fitted with good machineries, stable and seaworthy at all times at sea. The vessel must be fit to encounter ordinary perils at sea such as weather conditions and wear and tear of the machineries. Moreover, the vessel must be always prepared to tackle the perils of the sea at any time. The crew should be mentally and physically fit for the work at sea. The crew is going to operate the vessel over the dynamic seas, stay and sleeps over the vessel and operate the vessel safely, efficiently and fishing sustainably. Therefore, the crew should be having sound knowledge on operating the vessel efficiently and ensuring occupational safety, security at sea, handling of emergencies, providing assistance during emergencies, environmental care, maintaining the vessel's working culture, hygiene and health condition in a good manner. In overall, for efficient and safe fishing operation to be carried out at sea, the crew working onboard the vessel, understand these environments very well and carry out fishing activities safely, efficiently, responsibly and sustainably. In this paper safe navigation of the fishing vessel, its navigational procedures and collision regulations are discussed.

Navigation

Navigation is an art of taking a vessel from one point to another point safely knowing the position of the vessel and the direction of the movement at any point of time. It is important that the navigation should be safe

always which means the vessel should not involve in any collision, grounding and loss of position or any other movement related incidents at sea. To ensure safe navigation, the crew of the vessel shall have sound knowledge and able to operate and maintain the navigational equipment properly, keep a good lookout and move the vessel very efficiently with a good knowledge on the sea and weather condition of the sea.

There are 2 components for the navigation.

- **Position**
- **Direction**

Position can be obtained from celestial object based calculations, satellite based positioning system, Radio based positioning system and terrestrial object based calculations. Satellite based positioning system is very commonly used positioning system, terrestrial based position calculations are used in coastal navigation, radio based positioning system such as Decca, Loran, Omega are not replaced with the satellite positioning system. Celestial based positioning systems are used as backup methods when satellite systems fail.

Direction can be obtained from primarily magnetic compass; however, the compass cannot be used in higher latitudes. Gyro compass is another option for getting the direction, this too in higher latitudes, may not be reliable and for smaller fishing vessels it is impracticable to use it. The latest compass is the GPS based compass which has been used by many pleasure yachts and small vessels in many part of the world. In spite of all these, traditional fishermen use the sun and star system for determining direction and time at sea when fishing beyond the land visibility areas.

General Navigational Practices

Good navigational practices ensure safe navigation of the vessels at sea. Vessel's speed is one of the most important factors when considering the safe navigation of the vessel. When proceeding at safe speed, the fishing vessel is able to take appropriate action to avoid collision and bring the vessel to stop within the required distance. The safe speed is set by the skipper of the vessel which will be based on the traffic condition, visibility status, vessel's manoeuvrability, weather conditions and background lights at night. When proceeding at safe speed, the vessel shall determine if risk of collision exists with another vessel by using all available means such as the compass, radar if fitted, automatic identification system, binocular etc.

Compass bearing of an approaching vessel is another important factor which will decide the other vessel passing clear or not. If the compass bearing of an approaching vessel does not appreciably change, then the vessel concludes that risk of collision exists. Even if sufficient bearing change is observed, still the collision may be possible if approaching vessel is very large and when passing close to towing vessel and tow. Care must be exercised to avoid collision in such a situation.

Once the risk of collision is determined, then action must be taken to avoid collision or close quarter situation. Any action taken to avoid collision shall be passing at a safe distance. The action should have been taken well in time and should be substantial and does not result in another collision or close quarter situation. The effectiveness of such action shall be checked until the other vessel is finally passed and clear (COLREG, 1972). When the visibility is good and vessels are in sight of one another, the action to avoid collision can be taken based on the vessel's aspect and relative location and movement of the vessel. However, when the vessel is not in sight of one another and the visibility is restricted, the action to avoid collision can be taken based on the identification of the vessel by radar equipment and sound signals.

Watch-Keeping and Lookout

Watch-keeping is an activity carried out from the bridge and keep a good watch on the surroundings and own vessels for its efficient navigation and other activities. The person who is carrying out this activity is called as watch-keeper. The watch-keeper understands the route plan and ensures the vessel is kept on the track by ensuring the vessel's position at regular interval (STCW-F, 1995). The watch-keeper also keeps watching the navigational equipment for their proper functioning and keeps a track of the activities happening within the vessel (STCW-F, 1995). The watch-keeper shall understand the situation around the vessel and determine whether there is a risk of collision exists with other vessel or not. The watch-keeper shall not undertake any other duty which will interfere with the navigation of the fishing vessel.

Lookout is an activity of keeping a look outside the vessel for the happening around the vessel by sight, hearing as well as all available means. The person who is keeping a lookout is called as lookout. Lookout shall be maintained in accordance with the International Regulations for Preventing Collision at Sea – 1972 (COLREG – 1972) rule number 5. It is necessary for the lookout to have a full appraisal of the situation and risk of collision and detect if any crafts are in distress and wreck and debris (STCW-F, 1995) and reports to the watch-keeper. Composition of the navigational bridge is important which can be determined based on the visibility condition, traffic density, operation of the autopilot, weather condition and nature of the work on the bridge.

When in clear visibility and not much of traffic, the watch-keeper alone may be the look-out. However, in traffic condition and poor visibility, they can be of different personnel. When the vessel is being steered by hand steering, the person who is steering the vessel may not be able to carry out look out duties efficiently. In this case an additional person may be employed as lookout for carrying out lookout duties. The watch-keeping and lookout duties are the primary duties carried out for safe navigation of the vessel. Those personnel shall have a sound knowledge on the navigational procedures of the fishing vessel. Sufficient rest for the watch keepers is necessary as per the Standardisation of Training, Certification and Watch-keeping conventions F 1995.

Chart Work

Poor chart work practices of the watch-keeper leads to grounding of the vessel. When the vessel touches the seabed, it is said to be grounded. As long as the vessel is at sea, every owner or skipper of the vessel wants the vessel to safely afloat. The grounding can be avoided only when the navigation of the vessel is carried out with the help of the charts. Earlier days, the paper chart was used for plotting the position of the vessel and plan for the further passages. However, nowadays electronic charts are mostly used in fishing vessels. Moreover, these electronic charts units are fed with GPS (Global Positioning System) or any other position reference system, thus the vessel's position and direction of the movement are known every second. The watch-keeper keeps a good watch on the vessel position on the chart and ensures, safe passage is followed always. In addition, good manoeuvring technique of the watch-keeper and the skipper also helps the vessel to avoid any grounding incidents when navigation near shores and approaching ports.

Classifications under Colreg – 1972

International convention for preventing collision at sea – 1972 classify vessels based on the condition of the vessel and the work being carried out by them. The classifications of the vessels are,

- Power driven vessel
- Sailing vessel or vessel under oar
- However, due the disability of the vessel or nature of the work the vessel involved with, the classification can further be defined as below,
- Vessel not under command (NUC Vessel)
- Vessel restricted in her ability to manoeuvre (RAM Vessel)
- Vessel constrained by her draft (CBD Vessel)
- Vessel engaged in fishing

Based on these classifications of the vessel, responsibilities to avoid the collision and close quarter situation have been defined. As per the COLREG-1972 the condition for collision and close quarter situation between two or more vessels can exists under the following situation.

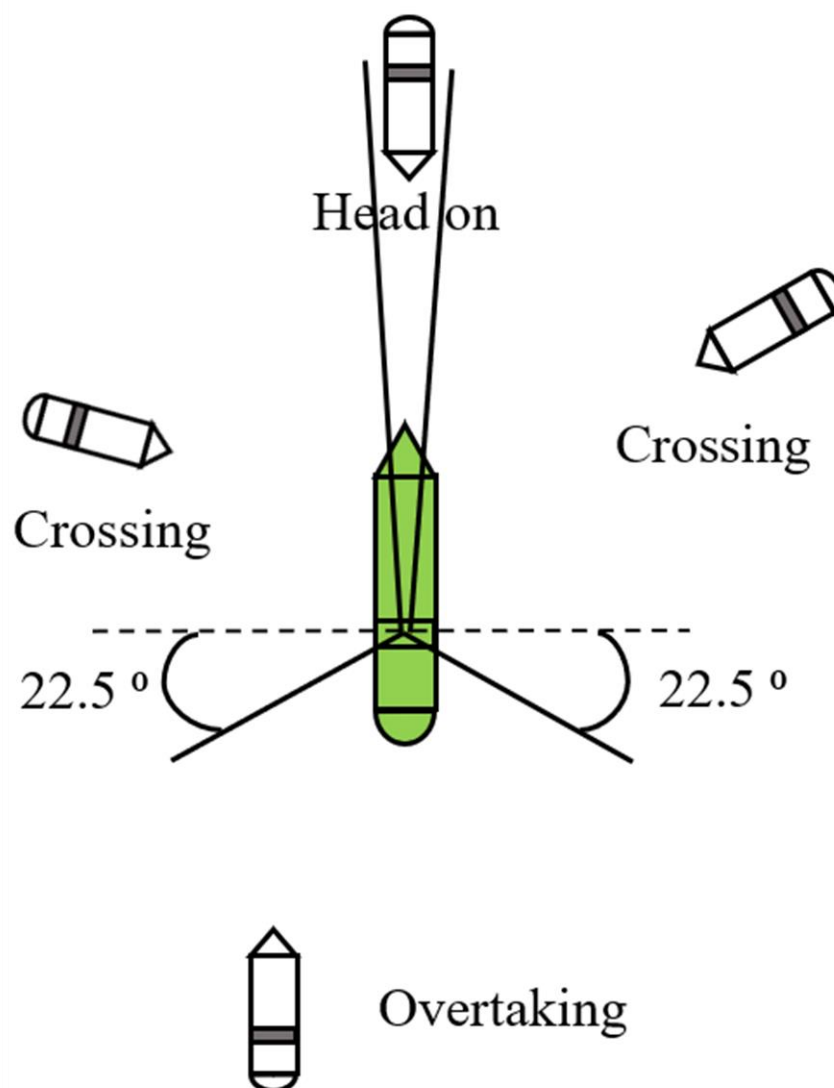
- Head on situation – when meeting at opposite or nearly opposite courses.
- Overtaking situation – when coming from 22.5 deg abaft of the beam on either side.
- Crossing situation – when meeting from 22.5 abaft to right ahead on either side other than head on.

Navigation Enroute to and From Fishing Ground

Fishing vessel is a power driven vessel which is propelled by machinery. The navigation to and from the fishing ground is going to be on normal speed of the fishing vessel. Thus the vessel shall comply with the collision regulations and takes necessary actions to avoid collision and close quarter situation in accordance with

the responsibility for the power driven vessel. During this period the fishing vessel shall display navigational lights appropriate to her length, uses manoeuvring and warning signals when in sight of one another and in restricted visibility uses the sound signals for the power-driven vessel (COLREG, 1972). Moreover, the vessel shall keep out of the way of all other vessels such as sailing vessel, NUC vessel, RAM vessel, vessel engaged in fishing and CBD vessels.

When on passage, if the fishing vessel encounters a major machinery failure and unable to take action in accordance with the rule, she shall display day and night signals for the not under command vessel (NUC) and uses fog signals when in restricted visibility as required. In this condition, in accordance with the collision regulation, all other vessels shall keep out of the way of NUC vessel (COLREG, 1972). In rare cases, the smaller fishing vessel, when having engine failure, may use sail or oars for propelling the vessel. In this case, the vessel shall display day and night signals for the sailing vessel and vessel under oars and in restricted visibility, use appropriate fog signals as given in the COLREG-1972.



Navigation when Engaged in Fishing

When the fishing vessel reaches the fishing ground and gets ready to catch fish, the vessel will come under the classification for vessel engaged in fishing. The vessel engaged in fishing means, the vessel is fishing with lines, nets or any other fishing apparatus which restricts the manoeuvrability of the vessel (COLREG, 1972).

So, the fishing vessel when fishing with the lines, gillnets, trawls, purse seine etc. is called as vessel engaged in fishing. In these conditions, the vessel shall exhibit day and night signals for the vessel engaged in fishing and when in collision course with power driven vessel and sailing vessel, it is the responsibility of the power driven and sailing vessel to keep out of the way of vessel engaged in fishing. However, when taking action to avoid collision and or close quarter situation with RAM and NUC vessels, the vessel engaged in fishing shall keep out of the way of RAM and NUC vessels(COLREG, 1972).

When the vessel engaged in fishing is in close proximity with other vessels, additional lights shall be displayed to indicate the nature of work of the vessel. These signals are flag signals for day and all-round light signals for night. These signals are displayed when shooting, hauling nets and when the nets has come upon an obstruction. If two vessels are engaged in pair trawling or vessel involved in purse seining, then appropriate night signals for such vessels shall be displayed. In clear visibility, when encountering a situation with other vessels, where the vessel engaged in fishing is in doubt of other vessel's action, she shall make 5 short and rapid blasts on the whistle and this may be supplemented by light signals(COLREG, 1972). When the vessel engaged in fishing is encountering restricted visibility, she has to sound the fog signal for the vessel engaged in fishing.

Navigation in Narrow Channel

When the fishing vessel is navigating through the narrow channel, she has to follow the rules for the power driven vessel and if the vessel's length is less than 20m, then she shall not to impede the safe passages of the other vessel which can only navigate through the channel(COLREG, 1972). However, when the vessel is engaged in fishing with in the narrow channel, then she shall not impede the passage of any vessel following the narrow channel(COLREG, 1972). The vessel engaged in fishing shall also display the day and night signals as required and use sound and light signals as prescribed by the rules.

Navigation in Traffic Separation Scheme

When the fishing vessel is navigating through the traffic separation scheme, she has to follow the rule for the power driven rules. If the vessel's length is less than 20m, then she can navigate through inshore traffic zone and when navigating in traffic lane, she shall not impede the safe passage of the power driven vessel which is following the traffic lane(COLREG, 1972). Moreover, if the vessel is engaged in fishing, she can do so in the inshore traffic zone, separation zone and traffic lane and when doing so, shall not impede the passage of any vessel following the lane(COLREG, 1972). The vessel engaged in fishing shall also display the day and night signals as required and use sound and light signals as prescribed by the rules.

Importance of Communication in Navigation

Marine communication is one of the functions of the vessel and it is carried out by the skipper and watch-keepers while navigating the vessel. As per the COLREG-1972 rule 5 (look out), all available means must be used for determining risk of collision. The communication with the other vessel can be established with the help of light and sound signals, flag signals and voice communication. When the light and sound signals are effectively used by the vessel to avoid collision, the voice communication devices such as VHF (Very High Frequency) Radios can further be used to enhance the effectiveness of the communication. When using the VHF, caution must be exercised to use the SMCP (Standard Marine Communication Phrases) as it will simplify the voice communication procedures. The voice communication will further help to transmit the vessel's fishing gears location to other vessels and ensures safe navigation for other vessel by keeping a safe distance from the gears.

CONCLUSION

The sea is being used by many types of vessels. One such vessel is the fishing vessel. These fishing vessels use different types of fishing gears at sea for catching fish. The fishing activities at sea are hazardous in nature and these vessels encounter perils at sea. The maritime perils related to navigation of the vessel are collision and grounding. Collision of the fishing vessels with other vessels occur when the vessel does not execute safe navigational procedures properly and grounding occurs when the watch-keeper does not carry out the duties related to the chart work properly. To carry out the safe navigation of the vessel, the watch-keeper and skipper

must have sound knowledge on the COLREG-1972, watch keeping procedures, chart works and operating procedures of the navigational equipments. Moreover, the above activities relate to the navigation of the fishing vessel must be effectively executed. Sufficient knowledge and skill on safe navigational procedures must be imparted to the fishing vessel personnel through various training methods at shore based training centre and onboard vessels. Their knowledge must be assessed, sufficient onboard training must be allowed to these personnel before their final assessment and issued licence to work onboard vessel in different ranks. The authorities responsible for the marine fishing must ensure this training system is set up and proper training procedures to these personnel are provided. This will reduce the number of navigational related accidents at sea and enhance the safe navigation of the fishing vessels.

REFERENCES

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