Collision Prevention Through The Implementation of The Use of Electronic Navigation Equipment on The KMP. DLN Oasis at The Time of Entering The Shipping Channel Surabaya

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Abstract. In carrying out navigation guard service in narrow shipping channel requires high attention to maintain security and safety during navigation. The challenge of sailing in the narrow shipping channel is crowded traffic activities such as traditional fishing boats which also do not use lighting devices so that they are not visible, at night the navigation lights in the channel are dim and some do not operate properly, so the risk of collision is very large. Therefore, navigating in narrow shipping lanes requires great skill and vigilance. This study was conducted to determine the utilization of electronic navigation tools in KMP. DLN Oasis in particular the use of ARPA Radar during the author's practice of sailing on the ship. ARPA Radar (Automatic Radar Plotting Aid) is a very important navigation aid in sailing, especially during bad weather, foggy and sailing at night. The effective use of Arpa Radar can help reduce the risk of collisions at sea. Therefore, all duty officers on board must understand how to use this tool well. This study was conducted using radar-ARPA observation method and the current situation of the ship in the narrow channel whether according to standard procedures or not and documentation of taking pictures of the object under study.

From the results of the study it was found that during the ship navigated in the narrow shipping channel, the duty officer did not optimize the use of features in the Arpa Radar that can help him navigate safely and safely during the narrow shipping channel when going out and entering the port in Surabaya. Important features in the Arpa Radar such as distance and direction measurements of an object using VRM (variable Range Mark) and EBL (Electronic Bearing Line) as well as features to calculate the CPA (Closest Point of Approach) and TCPA (Time to Closest Point of Approach). These features in the Arpa Radar are very important to use during navigation in both free waters and narrow waters such as in Surabaya. Therefore, to optimize the utilization of electronic navigation tools in KMP. DLN Oasis, especially Arpa Radar for collision prevention at sea when entering the Surabaya shipping channel, there are several things that can be done by the company and the captain on the ship, namely the company really conducts recruitment by taking into account the competence of the crew who will work on the ship, the captain of the ship must ensure that when there are, and the presence of supervision and assistance from the captain when the ship sailed in the narrow shipping channel.

Keywords: collisions, electronic navigation devices, and navigational grooves

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1. Introduction

To navigate is to sail a ship from a port to a port of destination. Along with the times, the modernization of navigation equipment greatly helps ships sail safely to the port of destination. Indonesia as the largest archipelago in the world. ships are the most efficient means of transportation to reach all the islands. Currently, the development of sea transportation is increasing rapidly. The background to the development of sea transport, among others : the need for a larger transport fleet. Ship as a means of transport that can reach remote areas. But in essence, in sea transport there are three aspects that are very closely related, namely ships, cargo and ports. Electronic navigation tools are very helpful for sailors to sail ships efficiently and safely. Especially on narrow Cruise Lines, night time, and limited visibility. In the narrow shipping channel is needed electronic navigation tools, especially at night. At night in the narrow shipping lanes sometimes the ships rely only on the ship's navigation lights to be able to see each other.

But sometimes the lights are dim so that they are not visible to the eye. Plus the existence of traditional fishermen who also do not use much lighting equipment so it is not visible in the narrow groove. That could lead to a potential collision with another ship. Therefore, observations are needed using electronic navigation tools such as RADAR-ARPA. In this study, the authors found that in some situations at night and in narrow shipping lanes, the duty officers are less optimal in using the VRM (Variable Range Marker) and EBL (Electronic Bearing Line) buttons to determine safe positions to pass and the use of CPA & TCPA features. This shows that the use of RADAR-ARPA is less than the maximum, so in some cases the ship almost hit the traditional fishermen who do not have lighting equipment. VRM is used to measure the distance of a target more accurately. EBL to lay a target and can be used to draw the boundary line. These two features are used when the ship is in a narrow and dense groove in search of a safe passage.

2. Research Methodology

The approach used in this study uses a qualitative approach. This method is used as an explanation for certain behaviors and attitudes (Creswell, 2017). Data collection techniques that will be used in this study include observation, and documentation. Data can be photos of activities. The data obtained by the authors in the form of data about the object information on the RADAR. This study was conducted in a descriptive manner with cases that occurred from the results of observation, then presented and concluded the condition of the position of the object and the ship researchers in this case based on the findings in the field.

3. Analysis and Discussion

The Surabaya channel is a busy shipping channel, based on PELINDO III records in 2017 more than 2,500 ships per year entered and out of the surabaya channel. Surabaya shipping channel has a groove width of 100 meters and a length of 24.2 NM pestle with a depth of 8.5 LWS. Although the Surabaya channel is quite wide, there are several factors that cause navigation hazards, namely sedimentation in the shipping channel, crossing pipes, shipwrecks, and ships. Narrow shipping channel is a body of water that in terms of depth, width, and other shipping obstacles are considered safe and safe for navigation by ships in the sea, river or lake. Narrow shipping lanes often have dangerous characteristics, such as strong currents, shallow waters, and heavy traffic activity and the large number of fishing boats. During sailing in a narrow shipping channel, the duty officer should have known the overall condition of the shipping channel by obtaining information from the navigation map used, nautical publication books such as Sailing Direction where the ship is sailing which provide information about the current state, depth of Water, information about regulations when sailing in that place, navigation signs in the area and so on. Furthermore, the duty officer must also ensure the condition of the existing navigation equipment on board, the limitations of the equipment and so on. The most important thing is the skill and competence of the duty officer in using all the data obtained from such publications and navigation equipment.

In this study is more centered on the use of electronic navigation tools, namely ARPA Radar for collision prevention on KMP ships. DLN Oasis when entering the Surabaya shipping channel. During the authors carry out the practice of the screen and follow the duty of duty with the duty officer, the authors observed that the state of Surabaya shipping flow is very crowded traffic, as well as the presence of traditional fishing boats that sometimes do not use lighting and sometimes not detected on Radar. In addition there are dim navigation signs that are not visible visually. Sailing in narrow shipping lanes should be carried out with extreme caution to avoid potential collisions, especially at night and limited visibility. Rule 5 of the Prevention of collisions at sea states that every ship must always make proper circumnavigation with sight and hearing and use all available equipment in the circumstances and conditions that exist so as to take full account of the situation and the danger of collision. In this rule, it has been explained that when carrying out proper guard and circumnavigation services wherever the ship is located, use sight and hearing and all available equipment. Using the available equipment means being able to use binoculars (binoculars), Arpa Radar and so on.

In Rule 7 P2TL also states that each ship must use all available equipment in accordance with existing circumstances and conditions to determine whether or not there is a danger of collision. Use Radar precisely to get early warning of the danger of collision . Ships that have been equipped with ARPA should be able to navigate safely, as long as they can understand how to use the features in the equipment for shipping safety and avoid collisions, one of which is using the CPA and TCPA features. Compared to ships equipped with only Radar, determining the presence or absence of potential collisions requires time and a slightly complicated method and requires Radar Plotting sheets. The skills and competencies of duty officers should be continuously improved in the use of this ARPA Radar. The use of Arpa Radar must

also pay attention to the limitations of the tool in helping to navigate, such as when it rains, waves, the ability to detect ships or small objects and so on.

Therefore, to optimize the utilization of electronic navigation tools in KMP. DLN Oasis, especially Arpa Radar for collision prevention at sea when entering the Surabaya shipping channel, there are several things that can be done by the company and the captain on the ship, namely the company really conducts recruitment by taking into account the competence of the crew who will work on the ship, the captain of the ship must ensure that when there are, and the presence of supervision and assistance from the captain when the ship sailed in the narrow shipping channel.

4. Conclusion

Based on the results of research, observations, interviews and discussions, it can be concluded that the duty officer did not optimize the use of features in the Arpa Radar that could help him navigate safely and safely during the narrow shipping channel when going out and entering the port in Surabaya. Important features in the Arpa Radar such as distance and direction measurements of an object using VRM (variable Range Mark) and EBL (Electronic Bearing Line) as well as features to calculate the CPA (Closest Point of Approach) and TCPA (Time to Closest Point of Approach). These features in the Arpa Radar are very important to use during navigation in both free waters and narrow waters such as in Surabaya.

The advice that the author can give is that the company must really carry out recruitment by taking into account the competence of the crew who will work on the ship, the captain of the ship must ensure when there are new officers joining the ship to carry out familiarization with navigation equipment, hold On-Board Training in the use of navigation equipment, as well as supervision and assistance from the captain when the ship sails in a narrow shipping channel.

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