

## APPLICATION AND MAINTENANCE OF MOORING ROPES TO AVOID THE DANGER OF BREAKING THE ROPE WHILE STANDING At KMP ATHAYA IN 2022

Idhil Febriana Rahayu<sup>1</sup>, Arleiny<sup>1</sup>, Muh. Dahri<sup>1</sup>

<sup>1</sup> Nautika, Politeknik Pelayaran Surabaya, Indonesia

Email: [idhilana@gmail.com](mailto:idhilana@gmail.com)

### ABSTRACT

Mooring ropes are the most important factor in docking vessels or loading and unloading activities at The mooring rope serves to tether ships to the dock so that when the ship is carried away by currents, wind or waves. However, there are factors that can cause the mooring rope to break. Factors from the ship itself and from outside the ship. The implementation was carried out for 11 months when carrying out marine practices aboard KMP ATHAYA with a research time of July 2021 to June 2022. Data were obtained directly through interviews in research preparation, data testing, data processing, discussion of research results, conclusions and author suggestions using the method qualitative descriptive research. From the observations, it can be concluded that to prevent the breaking of the mooring line by implementing a mooring plan, urging the crew on guard to always pay attention to the mooring rope when the ship is docking, and perform proper maintenance of the mooring line.

Keywords: Mooring rope, Maintenance, Mooring plan

### 1. Introduction

Life safety at sea is highly prioritized in the maritime world. This can be seen from the great attention of the countries of the maritime world to jointly hold the International Convention on the Safety of Life at Sea (Safety Of Life At Sea) in 1974 which became known as SOLAS 1974, in London-England. This convention then produces provisions and regulations that are used as a reference for ships or shipping companies in maintaining and protecting the lives of seafarers who work on ships.

In the maritime business world, all shipping companies always expect that every employee who works on land and on board ships can work well, and knows the risks that may occur if work is not in accordance with applicable regulations. Efforts to standardize continue to be encouraged as well as possible, both in terms of increasing resources and in terms of competency through seafaring skills courses.

To support the safety of ships in the port when the ship is berthing, it is necessary to apply and maintain mooring ropes. A ship berth is a series or sequence of procedures for docking a ship to a pier with the intention of carrying out activities at the pier such as refueling for ships, unloading or loading. Because of that the correct application and maintenance of rigging when berthing is very important to avoid accidents in work that are very undesirable to occur when the ship is berthing.

Accidents at work are highly undesirable to occur, where the work is expected to run smoothly. Accidents can happen at any time and can happen to anyone without knowing anyone. In this case, there are many factors that cause accidents, among the biggest factors, namely Human Error, most of the rope work accidents are caused by Human Error factors. Where is the lack of awareness of the ship's officers and crew about rope maintenance, rope application and the use of the correct type of rope in the process of docking and undocking.

The material used for mooring ropes on ships usually uses natural materials, synthetic materials, or a combination of materials. The type of rope needed by a ship is a rope that has great strength, is waterproof and can float and has good stretchability and flexibility. Factors causing the mooring rope to break include the occurrence of sea tides, lack of maintenance, negligence of the ship's crew, the suitability of the rope that is not according to standards, and the lack of a mooring plan by the ship's officers when they want to berth.

Some things that are often ignored until the rope is damaged, the rope that is rolled up on the winch drum is not protected from the hot sun and rain. Changes in weather if the ropes are not protected, they will experience weathering, ropes that are not rolled up on the winch arranged on the deck without a protective mat will cause damage to the rope. Provision of protectors on the ropes to keep the

ropes from getting damp and provision of protectors to protect them from the hot sun and rain. The lack of knowledge and understanding of sailors regarding the ropes needed and adjusted to the needs of the ship, where the strength of the appropriate rope will be able to hold the ship if there is an external pressure force in the form of wind and currents. Very fatal accidents can occur when the ship is in the process of docking or undocking.

When the ship is anchored, the ropes start to be thrown until the ship docks when it is docked. At that time, the rope is slack and tense, even though the rope is still in good condition, it does not guarantee that the rope will not break. Likewise a rope in bad condition can cause an obstacle. So in the mooring/berthing process it is necessary to pay attention to the correct application of the mooring lines and the condition of the mooring ropes.

## 2. Facts and Problems

### 2.1. Fact

KMP ATHAYA is a Roro type ship from the company PT JEMLA FERRY, with IMO number 9114567, made in 1994. This ship has a length of 136.60 meters, width of 22.40 meters, Gross Tonnage of 13,413, maximum draft of 5.70 meters, and a cargo capacity of 728 people and 150 trucks. The following is the ship particular and crew list from the KMP ATHAYA ship.

### 2.2. Condition Facts

In this section, the author will discuss the research results obtained based on research activities that have been carried out at KMP Athaya. During the process of research activities, researchers found several facts which researchers will then discuss. Some of these problems are:

a. On September 9, 2021 the KMP Athaya ship was carrying out loading and unloading activities at the Merak port, Banten. The weather was raining heavily, sea conditions were smooth, unloading activities were carried out at 07.30 WIB. The unloading activity went smoothly until the front rope broke at 09.24 WIB one head line broke because the tension in the rope was too tight with the current condition being strong plus the condition of the rope which was no longer feasible causing the front rope to break.

b. On December 18, 2021 the KMP Athaya ship was maneuvering to resuscitate at Bakauheni Port, Lampung, the weather was sunny, the sea conditions were slight, in the process of resuscitating the ship at the time of sending the tross rope to land, the sailor on guard made a mistake sending the spring rope which should have been a tross rope so that the

tross rope pinched by the stern of the ship causing the spring rope to break.

3) On January 30, 2022, at 17.00, the KMP Athaya ship failed in the docking process at the Merak port, Banten because the winds of the stern line were damaged.

4) On February 18, 2022, at 20.00 WIT, KMP Athaya was carrying out berthing maneuvers at Merak Harbor, Banten, with heavy windy rain, in the process of sending the rope to the mooring officers, the tross rope and bow spring rope were entangled with each other causing the ship to fail to dock.

### 2.3. Problem Statement

In this section, the author will analyze the results obtained based on the analytical activities carried out at KMP Athaya. During the process of research activities the researcher found several problems which the researcher would then analyze. Some of these problems are:

1. To find out how to apply rigging on the ship when the ship is docked.

2. To find out the efforts made by the crew to prevent the rope from breaking when the ship is docked and to maintain the ship's rope at KMP ATHAYA.

## 3. Research methods

The research method used by the author in conveying the problem is descriptive to describe and describe the object under study, or an overview of the facts in the field.

### 3.1. Case Study Approach Method

In this case the author describes the Implementation and Maintenance of Mooring Ropes to Avoid the Danger of Breaking the Rope When Leaning. The author uses systematic methods in making observations, collecting data, analyzing information. As a result, you will gain a deep understanding of why things happen.

### 3.2. Data collection technique

Data collection techniques related to the problem to be discussed. In a study, the use of appropriate data collection techniques and data collection materials can help achieve accurate results or problem solving. The use of data collection techniques, namely:

#### a. Observation Method

The method used in writing this proposal is based on direct experience during the author's research when the ship is about to dock or anchor. So that the author can see and experience

firsthand the matters that need special attention and the obstacles that may arise during the implementation of berths and anchorages that are not in accordance with existing procedures or regulations.

#### b. Interview Method

In the interview method, the data obtained is sourced from an expert or competent person in their field or parties concerned with the material prepared by the author.

In its application, the author will conduct interviews with the Nahkoda, chief officer, Bosun. The interview was conducted with a tool in the form of a questionnaire. The author will submit a written list of questions to the respondent, where the answers have been provided.

#### c. Library Reset

Literature reset is a data collection system by finding sources in various books regarding the information discussed in the proposal. Likewise with writing, apart from conducting field research, it also conducts library research in order to obtain accurate information about the issues to be discussed.

## 4. Results and Discussion

### 4.1. Analysis of Causes of Problems

From the research conducted by the author when carrying out sea practice regarding the application of mooring ropes to avoid breaking the rope at KMP ATHAYA, it can be analyzed the occurrence of rope breaks as follows:

The first fact that the error occurred was due to the lack of awareness of the officer on duty in checking the list of tides, because the list of tides changes every hour, it is necessary to check every hour to avoid breaking the mooring lines. .

The second factor was the lack of focus on the sailor on watch and the helmsman on watch in carrying out guard duty because he was too engrossed in playing with his mobile phone so he was negligent in carrying out his duties and responsibilities.

The third factor is the lack of initiative of the duty officers to arrive earlier during their guard hours to check and make a mooring plan before the ship docks.

The fourth factor was too long guard hours, namely 8 hours and a short 2 hour journey, which resulted in the crew becoming exhausted, so that during the process of unwrapping the ropes became arbitrary due to the lack of rest hours.

### 4.2. Problem Solving Analysis

From what has been described in the previous chapter, the writer will evaluate the solution to the problem with the following discussion:

a. Routinely check the tidal current list for the guard officer before carrying out the guard duty to find out at what time the tide will be in order to know that it is not too fast and too loose. As well as carrying out maintenance of the berth rope by replacing the rope that is no longer feasible with a new rope.

b. Routinely carry out safety meetings, one of the objectives of which is to provide guidance on the duties and responsibilities of the guard officer and helmsman on watch when carrying out guard duty. As much as possible a safety meeting is held once a month to always refresh the duties and responsibilities to avoid mistakes when carrying out guard duty. In addition, the function of the safety meeting is also to evaluate the performance of the entire crew of the ship, whether it has gone well or not. And the function of the skipper here is to provide insight into the guard service, both from the duties and responsibilities of the officer, helmsman and sailor. So that when carrying out the next guard duty there will be no mistakes that could harm the ship or the company.

c. The officer on duty must be able to monitor the performance of the helmsman, sailor, whether he has carried out his duties and responsibilities properly or not, and carry out the orders of the pilot on duty or mate 1 properly and correctly. And for helmsmen and sailors, they must have their own awareness in carrying out their duties and responsibilities with a sense of responsibility and earnestly so as not to cause harm to the company.

d. The Chief Officer must be able to make an efficient guard system or follow STCW rules, namely 4 hours of duty, in order to avoid fatigue for all crew on duty because the guard system is inefficient, namely 8 hours of duty, so that reduced rest hours will result in crew performance in carrying out duties and responsibilities decreased due to fatigue. All crew must be able to divide their time between working hours and rest hours, not rest time is used to play mobile phones.

## 5. Conclusion

Based on the results of the research and discussion that has been carried out, several conclusions can be drawn, namely:

### 5.1. Internal factors

From the weathered condition of the mooring ropes and, the negligence of the crew members did

not pay attention to the condition of the mooring lines during guard duty, plus the crew members did not plan the mooring plan properly.

### 5.2. External Factors

Namely, the natural factor of currents and winds is quite high in November to January in the Sunda Strait, what's more, sometimes the eruption of Mount Anak Krakatu which cannot be predicted when it will come is very influential also on the waters of the Sunda Sea.

a. Efforts that can be made to prevent the mooring lines from breaking are, carrying out the mooring plan carefully just before the ship docks, always carrying out maintenance on all mooring lines on board, and also always reminding the crew members who are on guard duty to pay more attention to the situation. mooring ropes when the ship is in port. The condition of the mooring ropes when the ship is docked will affect when the ship is carrying out loading or unloading activities and is also very influential if the ship's hull is hit by currents, wind and there are tides in the waters.

b. Efforts to deal with breaking ropes when mooring are carried out by first changing the mooring lines themselves once every 1 year. In addition to changing the mooring ropes on the ship, the second method is spraying fresh water on the ropes themselves to clean the dirt that sticks to the ropes. the third way is to periodically turn the rope in the drum wire to minimize the weathering of the rope caused by exposure to sunlight.

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