Kegagalan *Heave-Up* Jangkar pada MV. Warih Mas di Teluk Palu

Anchor Heave-Up Failure of MV. Warih Mas in Palu Bay

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ABSTRAK

Keselamatan pelayaran penting tidak hanya ketika berlabuh di pelabuhan atau ketika kapal berlayar tetapi juga ketika kapal berada di jangkar. Penelitian ini bertujuan untuk mengetahui penyebab kegagalan anchor heave-up MV Warih Mas di Teluk Palu dan untuk mengeksplorasi faktor, strategi, dan praktik pemeliharaan yang berkaitan dengan peralatan jangkar di kapal. Penelitian ini menggunakan pendekatan kualitatif, dan data akan disajikan melalui analisis deskriptif. Peserta penelitian termasuk nakhoda dan awak kapal. Metode pengumpulan data meliputi observasi langsung, wawancara mendalam, dan studi dokumentasi, sedangkan analisis data terdiri dari tiga tahap: reduksi data, penyajian data, dan verifikasi. Hasil penelitian menunjukkan bahwa penyebab kegagalan adalah korosi rantai jangkar karena kontak air yang terlalu lama di loker rantai. Tiga strategi dicoba, tetapi hanya satu yang berhasil: Memasukkan besi ke dalam rantai jangkar pada drum windlass untuk memungkinkan rantai berputar. Para kru tidak melakukan perawatan pada peralatan jangkar, mungkin karena kurangnya keterampilan dan pelatihan.

ABSTRACT

Shipping safety is important not only when docked at the port or when the ship is sailing but also when the ship is at anchor. This study aims to determine the cause of the anchor heave-up failure of MV Warih Mas in Palu Bay and to explore factors, strategies, and maintenance practices related to anchor equipment on the ship. The study uses a qualitative approach, and the data will be presented through descriptive analysis. The study participants include the ship's master and crew. Data collection methods include direct observation, in-depth interviews, and documentation studies, while data analysis consists of three stages: data reduction, data presentation, and verification. The results indicate that the cause of the failure was corrosion of the anchor chain due to prolonged exposure to water in the chain locker. Three strategies were attempted, but only one was successful: Inserting iron into the chain link of the anchor on the windlass drum to allow the chain to rotate. The crew did not carry out maintenance on the anchor equipment, possibly due to a lack of skills and training.

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1. INTRODUCTION

Indonesia is a maritime country with many islands and an extensive water area. This makes ships the primary means of transporting people and goods from one island to another. Indonesia is a large country with many islands, so it has great potential in the maritime sector (Sidauruk et al., 2023). This statement is also supported by Simanjuntak (2023), Indonesia is a large country with many islands, so it has great potential in the maritime sector.

Shipping is a transportation activity that takes place both in waters and ports, and it is a system that must prioritize safety, security, and the protection of the maritime environment. Therefore, shipping activities must prioritize safety as the main factor, not only during the journey on the ship but also from the departure port to the arrival port.

Shipping safety is important not only when the ship is docked at the port or sailing but also when it is anchored. Safety and security factors should be maintained while the ship is at anchor. Every ship that anchors around the security and safety zone should maintain a safe distance that is adjusted to the skills of good seafarers.

According to Siregar (2021): "Language is very important for people all over the world because language is used to communicate with other people." In line with this opinion, it can be seen that language is very important for everyone, especially on ships, because good communication between crews is the basis for success in every work carried out.

MV Warih Mas is a container ship owned by PT Temas Tbk that operates at Tanjung Priok, Balikpapan, Samarinda, and Palu ports. The vessel carries various types of cargo, including vehicles, food, money, electronic goods, and even explosives. Therefore, safety and security factors are crucial for the operation of MV Warih Mas. However, the ship faced a problem when it tried to heave up the anchor in Palu Bay, which caused it to be unable to operate for three days. Interested in these problems, the researcher wants to conduct research entitled "Anchor Heave-Up Failure of MV Warih Mas in Palu Bay."

2. METHODS

This research uses a qualitative approach, and the data were presented through descriptive analysis. In this study, the researchers analyzed the equipment condition that experienced problems during operation, which failed. Data were also collected from other sources until a conclusion was reached about the problems experienced. The analysis is often carried out to obtain conclusions about the implementation of these activities (Magdalena et al., 2020).

The researchers collected data through direct observation in the field and conducted in-depth interviews with subjects who were directly involved in the problems that occurred. Siregar (2022) states that direct observation is conducted to observe various activities and events, while in-depth interviews are used to obtain information that describes the actual situation.

This research was conducted on the MV Warih Mas, a container-type ship owned by PT Temas Tbk and managed by PT Asia Marine Temas.

Figure 1. Location of Palu Bay on the Map of Indonesia

Siregar (2022) states that data analysis techniques in research include: 1) Data Reduction, 2) Data Presentation, and 3) Data Verification. This means that three steps must be taken in analyzing data: first, reducing data, which means summarizing and selecting the main points; second, presenting data in both tabular and graphic form; and third, verifying data, where the initial hypothesis put forward is tentative and subject to change based on the data obtained in the field.

The anchor heave-up failure of the MV Warih Mas occurred in Palu Bay while the vessel was at anchor, waiting to berth at the Palu harbor dock. Palu Bay is located in the Central Sulawesi province on the west coast of Sulawesi Island. The eastern part of Palu Bay is known as the driest area in Indonesia, receiving only 500-600 mm of rainfall per year. Despite its shallow waters, finding a suitable place to anchor in Palu Bay can be difficult due to its depth. Based on the researcher's experience during their practice on the MV Warih Mas, every time the ship anchors in these waters, it takes a long time to complete the process due to the ship's anchor being difficult to secure to the seabed.

3. RESULTS AND DISCUSSION

The main factor causing the anchor heave-up failure of the MV Warih Mas was corrosion in the anchor chain. The chain's corrosion caused the anchor chain's diameter to shrink, resulting in the anchor chain not attaching perfectly to the windlass drum. When the windlass drum rotates, but the anchor chain does not rotate, the anchor cannot be lifted from the seabed. The corrosion occurring in the anchor chain was caused by stagnant water in the chain locker for an extended period due to the ship's crew's lack of inspection and maintenance. They failed to detect the stagnant water in the chain locker.


Figure 2. Corrosion of the Chain Link

Based on the data collected, the following are some factors that are the main causes of the anchor heave-up failure of MV Warih Mas in Palu Bay: a). Human. Every crew member should understand the ship's Planned Maintenance System (PMS) to ensure proper anchor equipment maintenance. However, many crew members still do not understand the rules set out in the PMS, which results in inadequate care for the equipment on the ship, especially the anchor equipment. Consequently, they do not check the chainlocker. The ship's crew should regularly check and clean the chainlocker. In case standing water is present, maintenance should be carried out by drying it to anticipate potential corrosion of the anchor chain; dan b). Machine/Tools. Based on the researchers' observations, it was found that the starboard anchor chain at seal 7 on the MV Warih Mas was corroded and had shrunk in diameter. This caused the anchor chain to not attach perfectly to the windlass drum, resulting in the anchor chain not rotating when the windlass drum rotated, causing the anchor to not lift from the seabed. The anchoring equipment should function appropriately during use to ensure smooth ship operations. If the anchor chain is not in good condition, it must be replaced immediately and included

in the docking list for repairs to be carried out during docking. In preparing the docking list for docking preparation, the deck department is prepared by the Chief Officer, the engine department is prepared by the Chief Engineer, and the list is reviewed and signed by the Master of the ship.

The researchers found that the crew had been negligent in carrying out their duties and responsibilities, resulting in the chain locker being waterlogged for an extended period of time. This led to corrosion and shrinkage of the anchor chain, causing it to not attach properly to the windlass drum. As a result, the anchor chain did not rotate when the windlass drum rotated, making it impossible to lift the anchor from the sea bottom.

A support system is essential for heave-up anchor and let-go anchor activities to run smoothly during anchoring. Therefore, it is crucial to conduct regular maintenance and inspections of all equipment on board.

After the incident, MV Warih Mas had limited mobility due to the emergency it experienced. An emergency is a situation outside of the normal operation on board a ship and potentially threatens the safety of human life, property, and the environment. Emergencies must be resolved as soon as possible (Purwantomo & Maryati, 2018). In line with this opinion, emergencies on board must be resolved immediately, and the possibility of occurrence must be minimized so that unwanted things such as emergencies do not occur.

Afrizal (2023), safety is a condition that is safe physically, socially, spiritually, politically, emotionally, and psychologically and is protected from threats. *So work safety must be the main focus in carrying out an activity on board* (Siregar et al., 2023). In line with this opinion, (Tambunan et al., 2023) state that ship safety requirements must meet applicable materials, especially auxiliary equipment as a means of guaranteeing the safety of the crew on board.

To resolve the issue of the anchor chain not being able to lift, the crew worked together to find a solution, which will be described in detail by the researchers: a). The first experiment involved tying the anchor chain on the outside of the anchor screw using a spring rope and then pulling it using the left windlass to reduce the load of the right windlass during anchor heave-up. However, this experiment failed because the problem was not due to the weak windlass strength for anchor heave-up; b). The second experiment involved pulling the anchor chain with a chain block that was hooked onto the windlass body using a turnbuckle. However, the chain blockchain was cut due to a load that exceeded its capacity; dan c). The third experiment involved inserting iron in the anchor chain on the windlass drum so that the anchor chain rotated when the drum rotated. This allowed the crew to raise the anchor little by little over three days until it was successfully lifted entirely.

Figure 3. Inserting iron in the anchor chain on the windlass drum

Then on the Palu-Jakarta departure, the windlass drum teeth were welded to reduce the gap between the corroded anchor chain and the windlass drum. This modification was tested until the ship's docking in November 2022, when the anchor chain was repaired or replaced with a new one.

Based on the results of direct observations by the researchers regarding the problems that occurred and in-depth interviews with the ship's crew, it is known that the lack of maintenance of the anchor equipment and the absence of supervision/checking of ship parts, especially

the anchor chains, and chainlockers, are major factors.

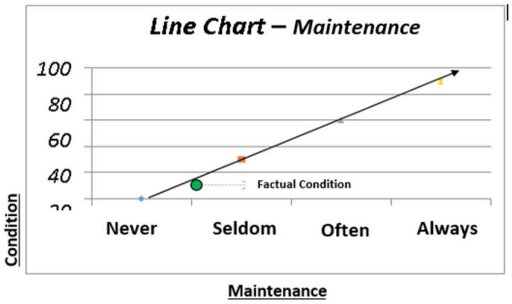

Figure 4. Line Chart-Maintenance

According to Hartati (2021): "Management is a science to regulate, control, communicate and utilize resources within the organization to achieve certain goals effectively and efficiently that have been determined by utilizing management functions, namely planning, organizing, moving/actuating, and controlling".

The above analysis highlights the need for management science to effectively and efficiently manage, control, communicate, and utilize resources within an organization to achieve common goals determined in planning and organizing. This is particularly important for controlling maintenance and repair activities of equipment on board.

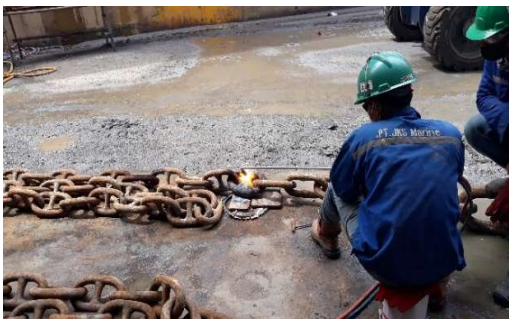

Figure 5. Replacement of Damaged Chain Links

4. CONCLUSION

The primary factor causing corrosion of the anchor chain and obstructing the heave-up process on the MV Warih Mas in Palu Bay is the lack of crew attention to equipment maintenance and inspection, particularly the chains and chain lockers that are susceptible to water damage. This accelerates corrosion of the anchor chain at the bottom of the locker, preventing it from attaching properly to the windlass drum and obstructing the heave-up process.

The strategies to overcome anchor heave-up failure are outlined as follows: a). In case one side of the windlass is unable to heave up the anchor, the anchor chain can be tied on the outside of the anchor screw using a spring rope and then pulled using the other side of the windlass to reduce the load; b). If the weight of the anchor and chain is light enough, it can be pulled using a chain block hooked on the windlass body with a turnbuckle; and c). If the first two steps fail, then iron can be inserted into the anchor chain on the windlass drum so that it can rotate when the windlass drum rotates. This allows the anchor to be raised little by little.

The lack of routine inspections and crew knowledge of maintenance and repair has resulted in the corrosion of the anchor chain and, subsequently, the neglect of maintenance and repair of shipboard equipment, particularly the anchor equipment.

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