

# Optimizing an Attitude, Discipline and Knowledge of Crew to Prevent Work Accidents on MV. Pulau Layang

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## ABSTRACT

The application of safety procedures is influenced by the level of knowledge, attitude, and discipline of crew towards the application of safety equipment. The importance of knowledge and discipline of crew on using safety equipment properly and correctly prevent the occurrence of injuries on MV. Pulau Layang. This research aims to reduce injuries due to the lack of knowledge and discipline of the crew and the importance role of the officers to supervise and provide direction as an anticipation to prevent injuries. The research method uses descriptive qualitative. Methods of data collection through observation, interviews, literature study and documentation. Researchers took the object of research that is crew MV. Pulau Layang. The results showed that the accident on the ship was influenced by the lack of attitude, knowledge and discipline of crew in using safety equipment because it underestimated the function of safety equipment. So that it causes high rates of injuries on the ships. It can be concluded that the higher level of knowledge and discipline of crew in using work safety equipment in MV. Pulau Layang can prevent and reduce injuries on the ship.

**Keywords:** *Attitude, knowledge, discipline, work accident.*

## 1. INTRODUCTION

The ship as a means of sea transportation plays an important role to smoothen the sea transportation, therefore the smooth operation of the ship certainly cannot be separated from the crews who manage it. Skills and professionalism do not guarantee in the succeed of the smooth operation of the ship without being matched by the high capabilities of the crew, therefore many accidents at sea which effects on many victims. One of the causes is the lack of discipline and knowledge of the crews in using the safety tools. The discipline and knowledge mastery in using safety tools on ship have important roles toward not only crews but also people who use sea freight service as the means of transportation. It is important to improve the quality of work and safety on ship, because there are more requests in utilizing sea freight service. It is expected that crews have discipline more in using the safety tools as a result if the sea accidents happen, they can help themselves and also others quickly and efficiently.

Accidents on ship, whether it is small or fatal, mostly are caused by human actions. The crews who do not fulfill the rules about the safety are usually caused by the lack of discipline and knowledge in using work safety tools on ship.

The lack of application of procedures on board a ship that can affect the lack of discipline of crews to the application of safety on board causes crews to be less

responsive in handling any problems or procedures in carrying out work.

Accidents on the ship also often occur due to lack of level of supervision by officers of the crew in implementing work safety procedures to prevent work accidents. Accidents that often occur are also caused by the carelessness of humans themselves in using work safety equipment on board. With the author's experience of the incidents on the ship regarding accidents caused by carelessness at work and also a lack of knowledge about work safety that can cause crews' performance to decline so that for the company this is not profitable. So the authors formulate the problem as follows:

1. How to apply work safety procedures on MV. Pulau Layang?
2. How to improve crews' discipline and knowledge in preventing work accidents on MV. Pulau Layang?

## 2. LITERATURE REVIEW

Related literature

*Optimization*

According to the Big Indonesian Dictionary Optimization is derived from the optimal basic word which means the best, highest, most profitable, making the best, making the highest, optimizing the process, ways, optimizing (making the best, highest, etc.) so that optimization is an action, process, or methodology to make something (as a design, system, or decision)

become more / fully perfect, functional, or more effective.

**Discipline**

Discipline is a feeling of being obedient and obedient to the values that are believed to be his responsibility. Discipline is an attempt to instill value or coercion so that the subject has the ability to obey a rule. According to Sudaryono (2014) discipline is an action that shows orderly and obedient behavior in various rules and regulations. In the Qur'an explained about the discipline in Surah al-Ashr verses 1-3 for the sake of time. To be honest, human is in disadvantage, except for those who believe and do righteous deeds and advice to advise them to obey the truth and advise to adhere to patience (al-Ashr verses 1-3). This letter explains that humans who cannot make the best use of their time are among the disadvantaged groups. The letter clearly shows us that God has commanded His servants to always live in discipline. Because with discipline we can live orderly, whereas if our lives are undisciplined, we cannot live in order and our lives will fall apart. From this definition, the writer concludes that what is meant by discipline is an orderly action that shows orderly and obedient behavior towards values that are believed to be his responsibility.

**Knowledge**

Knowledge is a discipline that is obtained formally or informally in an effort to increase one's insight to achieve what is desired. According to another understanding, knowledge is a variety of symptoms encountered and obtained by humans through observing reason. Knowledge arises when a person uses his intellect to recognize certain objects or events that have never been seen or felt before. For example, when someone tastes a new flavour, he will get knowledge about the shape, taste, and aroma of the cuisine.

**Crews**

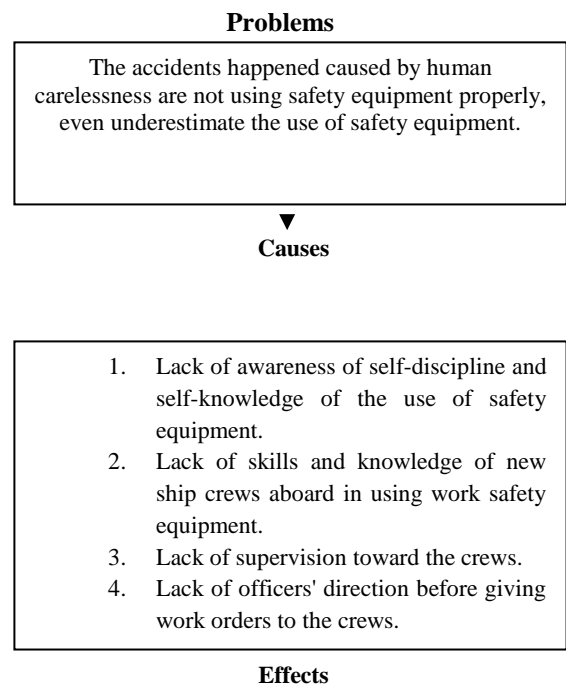
According to maritime law, crews are all people who work on the ship, whose job is to operate and maintain and maintain the ship and its cargo, with the exception of the captain. According to Law No. 17 of 2008 about shipping, crews are people who work on ship but the captain. The crew consists of 2 groups, namely the officer group and the crew group, both of which are recorded in *sijil* crews. *Sijil* crew is a list that contains the names of the ship's officers and crew. From the above definition the authors draw the conclusion that the so-called crews are all those who come to work and sail on the ship and are listed on the list of crew members except the captain. With this definition the author can find out who is called the crew on the ship.

**Work accidents**

According to Suma'mur (1989) work accidents are not expected and unexpected events. Not expected, because behind the incident there was no intentional element, especially in the form of planning. Therefore, the event of sabotage or criminal action is outside the actual scope of the accident. Not expected, because of an accident accompanied by material losses or suffering from the lightest to the most severe. In the book Personal Safety and Social Responsibility (2000) a work accident is an accident that occurs to a person due to work relationships and is most likely due to a hazardous relationship with workers and during working hours. From the above definition the authors draw the conclusion that a work accident is an unexpected and not expected event that occur to a person due to work relations and is caused due to a hazardous relationship with workers while working that causes material or immaterial losses.

**Research Framework**

According to the thesis writing guide of the Semarang Merchant Marine Polytechnic (2018: 6), the research framework is a presentation of the framework of thinking or phasing in chronological thinking in answering or solving research problems based on understanding theories and concepts. This presentation is carried out in the form of a simple flow chart followed by a brief description of the chart. This serves to facilitate the author in solving the main problem, the authors explain the explanation of the framework below:



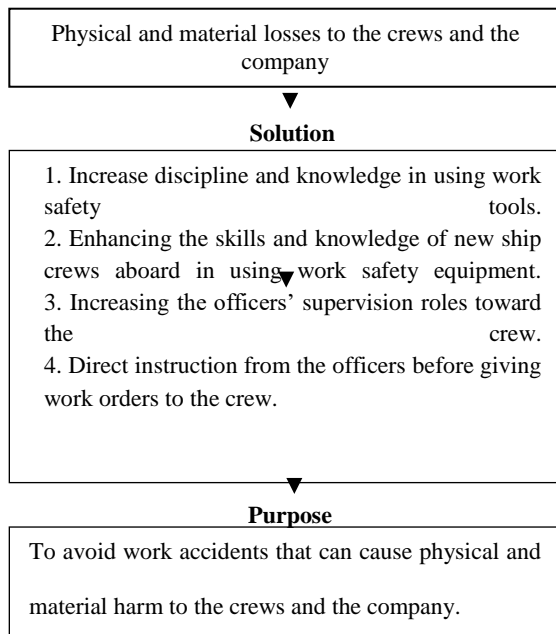


Figure 1. Research Framework

### 3. METHOD

#### Type of data

In collecting data, data is a very important part and must be presented in scientific research, because data collection techniques will influence the success or failure of researchers. To obtain data that is supported the aims and objectives of the study, and to compile existing data to be in order, according to the type of data, the data can be divided into two, namely:

#### Primary Data

Primary data is data obtained or collected by researchers directly from the main data source. According to Sugiyono (2014) primary data is a data source that directly provides data to data collectors. The data is the result of direct observation of the ship's operational activities. Interviews were also conducted in which questions were supplemented with variations and adapted to the current situation of observations and conditions.

#### Secondary Data

Secondary data is data that exists in libraries. Secondary data in this study were obtained through books related to research and archive of international and national regulations that support research.

#### Method of data collecting

Method of collecting data is an important part of research, because the main purpose of research is getting data. Without knowing data collection techniques, the researcher will not get data that meets the established data standards. Data collection

techniques are ways to collect data needed to answer the research problem statements. In this study, researchers used several data collection techniques that researchers deem appropriate, including:

#### Observation

Observation is the basis of all science or observations are observations made intentionally and systematically about the symptoms that occur to then be recorded (Sugiyono, 2014).

The author also makes observations directly on an object under study, in this case the authors make observations about how the implementation of container cargo fastening on the MV. Sinar Sumba and what causes the implementation of container load binder is not in accordance with the procedure, then the authors analyze the problems in this study.

#### Interview

According to Moleong in a qualitative research methodology book (2016: 186), interviews are conversations with a specific purpose. The conversation was carried out by two parties, namely the interviewer who asked the question and the interviewee who provided the answer to that question. Researchers conducted interviews during sea practice with the captain, chief officer, bosun, helmsman, stevedor.

#### Documentation

Documentation data as the supporting data for this research is in the form of photographs related to research objects such as the process of load lashing, bayplan, discharge and or loading. From these pictures we can examine the issues that will be raised.

#### Library study

From collecting data done by observation and documentation technique, the data obtained is not complete without doing research in literature study. Literature study is conducted to obtain information about the problem under study. In carrying out a literature study there is information taken from books that are available in various sources. Not only that, to better support this writing information and writing data are also obtained from books available at the library of Merchant Marine Polytechnic Semarang.

#### Technique of data analysis

The data analysis step is the most important and decisive stage in a study. This technique is done in analyzing the data is a qualitative analysis that produces descriptive data expressed by respondents in writing or verbally, as well as real behavior, which is thorough and thoroughly studied. In this case after all data from the research results were obtained, a data analysis technique was carried out.

In this study, the author used the Qualitative Descriptive Data Analysis method, according to Sugiyono (2014) in qualitative research, because the problems brought by researchers are still temporary, and will develop after researchers enter the field or social context. Qualitative research is a study that uses a natural background and interprets phenomena that occur and are carried out with existing methods (interviews, observations, and use of documents). This is mainly based on the assumption that humans are animal symbolic (symbolic creatures) who seek meaning in their lives. So this research requires a qualitative role to see humans in total. That is, in data analysis researchers are directly involved in explaining and concluding the data obtained by linking the theories used. Ariesto Hadi Sutopo and Adrianus Arief (2010) explained that interactive model data analysis consists of three main things namely data reduction, data presentation and drawing conclusions.

#### *Data reduction*

Data reduction is a process of selecting, focusing attention on simplifying, extracting and transforming rough data arising from written records in the field. During data collection, the next stage of reduction including summary, coding, tracing themes, creating clusters, creating partitions, and making memos.

#### *Data presentation*

Data as a collection of information that provides the possibility of drawing conclusions and taking actions.

#### *Drawing conclusions*

Drawing conclusion is the ability of a researcher to conclude from the various findings of the data obtained and also the final stage which contains the decision making process that leads to the answers to the research questions submitted and reveal the "what" and "how" of the research findings.

## **4. DISCUSSION**

### General Description of the object

The object of research is the material problems found in a study that will be discussed. MV. Pulau Layang is one of the ships managed by PT. Salam Pacific Indonesia Lines located at Jl. Rubber No. 104 Surabaya 60161. This ship is a type of container ship that sails in domestic waters. This ship was built in China in 2007. It has 20 crews from Indonesia and at the time the authors carried out sea practice on this ship the author saw most of the crew in MV. Pulau Layang has lack of knowledge and discipline in using work safety tools which can cause work accidents.

Considering that work on ships also has a very high risk of danger, so every ship is required to be safety enough so that it will be seaworthy. Likewise, crew

members are required to have sufficient competence in accordance with standards so that workplace accidents on the ship can be reduced. Due to the accidents occurred on the ship, this thesis is emphasized on accidents caused by lack of knowledge and discipline of crews in using work safety equipment when carrying out work activities and how to prevent such work accidents from happening again at on the ship. In this part of the incident the writer will reveal the accident events that are influenced by the understanding of the crews in the use of work safety tools that have ever occurred on the MV. Pulau Layang and from these facts it will be used as case study material. Some of the data found by the author where the facts are the author's experience during carrying out the sea practice tasks as a cadet deck include:

#### *Hatch manhole incident*

When the ship was on its way back from Merauke to Surabaya January 6<sup>th</sup> 2018 in the Java Sea, the two hatch manholes were full of water caused by rain the day before and the pontoons on hold two were not waterproof. A deck officer then ordered a new helmsman and deck cadet to dump sewer water in hold two using a submersible pump, because the drain pump from the engine room was broken. Soon, the helmsman did everything himself, because the cadet was still having breakfast. The cadet will go helping after he finished breakfast. When he arrived at the second hatch manhole, the cadet saw the helmsman just rising from the second hatch manhole with a pale face, intermittent breathing and cold sweating. This is because the helmsman directly enters the second hold without carrying out the airing activity first so that oxygen has not entered the hold and the poisonous air in the hold does not come out. This incident can be prevented if the helmsman carries out the procedure of entering a closed room. The crew's lack of knowledge in applying the work safety procedures causes accidents for himself.

#### *Turn buckle incident*

On April 16<sup>th</sup> 2018, when the ship finished loading its cargo at the port of Teluk Lamong at 01.03 a.m in the morning. The first chief ordered the deck officer, bosun and deck cadets to put lashing into containers that had been loaded on board. Because of the fatigue, the deck officer was lazy to use work safety equipment when installing lashing into containers. He was very tired after guarding the bridge during the ship sailing through the waters of Surabaya, open lashing containers and the send off only 5 hours, then the ship had to sail to the port of Makassar. The deck officer did not use work safety equipment when installing lashing into containers. He only used a head protector (safety helmets) and gloves. High stacked containers cause the lighting to be underexposed so that the deck officer accidentally released a turn buckle. He thought the turn buckle had been attached to the lashing bar. In fact, it

turned out that it fell to his feet that did not use safety shoes which caused the deck officer's feet become swollen. One chief and another deck officer brought him into his room to be given first aid and left to rest because it is impossible for him to continue his work. The accident could have been prevented if the deck officer had used safety equipment in the form of safety shoes.

#### *Filter turbo incident*

After unloading at Surabaya's Nilam port, the ship departs for DPL (Lamongan beach dock) to make repairs due to the ship's engine being badly damaged after sailing from Jayapura. Many ship repair agendas that have been made in the engine room such as turbo overhauls. When the turbo overhaul process, the oiler and engine foreman lift the turbo filter using a takel. When it was lifted, the straps of the takel loose so that it fell on the head of the engine foreman, who did not use a protective helmet (safety helmet) and made his head bleed. The machine foreman was evacuated and taken to the hospital. Incident like this can be prevented if the foreman uses the protective headgear (safety helmet) at work, so as to avoid a worse injury due to head collision with a turbo filter.

#### *Chipping incident*

When the ship was anchored in the waters of Surabaya, bosun and the crew of the deck descended to the deck to carry out daily work. Because of the condition of the ship's pontoon, especially in the hold of two rusts, the officer instructed the bosun and the crew of the deck to perform maintenance, knocking the rust (chipping) to remove the rust. When knocking rust on the pontoon, one crew did not use safety glasses (safety goggles) as they comply with safety standards. He did not wear it because his protective glasses was broken he was using it while working. The crew was lazy to take new safety goggles in the store. So that when he was doing the chipping, he was waering broken safety goggles which was not fully protecting the eyes. When finished knocking the rusts, brushing on the part that has been tapped to clean the remnants of the rust so that it is completely clean of rust. But while brushing the remaining rust, the debris from the rust bounces and hits the eye of the crew, so that the eye of the crew was quite irritated. The crew was given first aid and was immediately rushed to the hospital. This incident could have been prevented if the crew had taken new protective glasses at the store and the officer who had worked with the crew gave a warning about the crew's work safety equipment.

#### Problems discussion

Cooperation is required on board in using and operating safety equipment for all crew members.

Improving the knowledge and discipline of ABK is very important in preventing accidents on the ship. The high knowledge and discipline of ABK in operating safety equipment will reduce work accidents and even prevent work accidents. It is expected that ship crews can develop a sense of responsibility to deepen and improve their knowledge and discipline. For this reason, officers who have a better level of knowledge about safety equipment on board are responsible for guiding and supervising the crew in implementing work safety procedures.

From the results of the explanation above, the problem is the crew's carelessness in using safety tools in carrying out their duties. This is largely determined by how well they master the knowledge and how much experience they have in relation to their respective duties in operating safety equipment. Accidents occurred on the ship caused by crew's carelessness who do not use safety equipment. These safety devices can reduce or even prevent injury to an accident. Referring to the main problem, the author will explain the formulation of the problem and its causes:

#### *How is the application of work safety procedures in MV. Pulau Layang?*

Work safety procedures above KM. Layang Island is very clear and good but its application is less optimal, such as:

- a. Lack of awareness about discipline and knowledge in using work safety tools.

Discipline is the most important part in a job, especially on a ship that really requires very high safety. Lack of knowledge is one of the obstacles that can trigger the risk of workplace accidents. Therefore, special skills are needed to prevent accidents when doing work on the ship. The deficiency occurred in MV. Pulau Layang is that the use of safety equipment tool is not optimal.

From the above incident it can be concluded that the work accident that occurred on the ship was due to the incident when the crew in duty did not receive a reprimand from the officer for using personal safety equipment. Meanwhile, according to the provisions, if crew does not use personal safety equipment, sanctions will be imposed to provide enforcement of regulations so that crew is always disciplined in working and can avoid work accidents, but this is not applied on the ship. So that work accidents occur that harm the crew and the company. The procedure in carrying out daily work on board is that each worker is required to use personal protective equipment such as:

- 1) *Head protection* such as *safety helmet*.
- 2) *Hearing protection* is intended for all crew members who work in places that have high noise levels, for example in the engine room environment. There are three types of protectors

of this type, including: *ear plugs, disposable, and ear muffs.*

- 3) *Face and eye protection* is used to protect face and eyes such as *safety goggles.*
- 4) *Respiratory protective equipment* is used as protection when working in the environment which has high irritation, dusty and toxic areas, and in a gas and smoky environment. The tool is called *breathing apparatus and resusisator.*
- 5) *Hand and foot protection* such as *gloves and safety shoes.*
- 6) *Protection from falls* is used wherever it is outside and under the deck or wherever the risk of falling from a height of more than two meters, the tool used is a *safety harness* that is connected to the *lifeline.*
- 7) *Body protection* is used as a protector when doing a job in direct contact with goods or objects that can be contaminated or corrosive objects.
- 8) *Protection against drowning* is used when working outside the deck of the ship or the side of the hull, which is at risk of falling into the sea, crew should use a *lifejacket* or objects that have buoyancy.

- b. The lack of special knowledge and skills of crew in using work safety tools

There are a lot of work safety procedures that must be carried out by the crew in working on the ship such as when carrying out daily work and installing lashing on containers. However, due to the limited time and tight operational schedule of the ship, the safety procedures received less attention from the crew and officers on board. Therefore, with the lack of application of safety procedures on board, many unexpected events will occur.

Based on the above incident, we can see that the crew members still do not understand the procedures in the *Ship Safety Management System* regarding the provisions required to carry out daily work on board.

- c. Lack of supervision of crew

The captain and the officer in charge must really pay attention to any hazards that might occur. The implementation of work on the deck is not suitable with existing procedures, this is caused by the crew who do the work less responsible for carrying out their duties. This is due to the lack of supervision from the chief officer as the officer who responsible for the work of the crew on board.

This supervision must be carried out continuously until the completion of work on the deck and ensure the danger of accidents that may occur while work is in progress. Usually supervision on the deck is carried out by the chief officer until

midday then continued by bosun as crew leader during daily work

- d. Lack of direction by ship officers before giving work orders to crew

The lack of direction to crew will have a very large impact on the performance of crews in carrying out work on the deck both in terms of safety or danger. Safety is a very vital aspect of a job. Therefore, special instructions from officers on board are needed for crew members to prevent a risk of work accidents on board. If the officers are not able to direct the crew, there will be arbitrary feelings in the crew's thought in working on the ship so the level of risk of accidents that arises is very high.

*How to improve the crew's discipline and knowledge in preventing work accidents on MV. Pulau Layang?*

Work accidents occur due to human carelessness that does not apply work safety procedures and does not use work safety tools effectively and even underestimates the use of work safety equipment. This happens due to lack of knowledge and discipline regarding the use of safety equipment on board in carrying out work, causing accidents. Based on the cause of the problem, we provide an alternative solution, such as:

- a. Increase discipline and knowledge in using work safety tools.

The way that can be done is to encourage each crew to always follow the work safety standards on the ship. In addition, the captain can also take other actions by reminding the crew to always use existing work safety equipment so that work accidents can be prevented. If both of these disciplinary methods have been implemented but in fact there are still crew members who are not disciplined and are reluctant to use work safety equipment, then as a captain must be able to take decisive action such as the followings:

- 1) Provide sanctions that can be in the form of punishment if the crew does not carry out their work in accordance with work safety procedures that are on board. Because it can endanger himself and the people around him. The action taken by the captain is called disciplinary action.
- 2) Provide a record of discipline for the crew members who carry out work in accordance with work safety procedures. So that the sense of discipline that arises not only due to the management of the company, but because they are motivated and on the basis of the encouragement of their individual disciplines. The aim is that the company will give awards that can be in the form of promotions to every

crew who has good awareness and discipline in terms of implementing work safety.

b. Increase discipline and knowledge of ship crews in the use of work safety equipment

Improving the discipline and knowledge of the crew in the use of work safety equipment is a procedure that must be carried out so that the crew can carry out their respective duties properly and correctly regarding the use of the work safety equipment. The officers on board must provide action and motivation regarding the importance of work safety so that the new crew members are more enthusiastic and more aware of their respective responsibilities to protect themselves, the ship, others, cargo and the company. Things that can be done to improve the discipline and knowledge of ship crews in the use of safety equipment on board are as follows:

- 1) Perform actions that can be taken to improve the discipline and knowledge of ship crews in the use of safety equipment, such as:
  - a) Conduct introduction and training (familiarization).
  - b) Conduct briefings before and after work.
  - c) Conduct regular briefings and periodic safety meeting.
  - d) Display films about work safety and post posters about work safety in public places on the ship.
- 2) For crews who have just boarded the ship, the procedures to enter a closed room are as follows:
  - a) It is not permissible for a person to enter a closed room or an unknown room without permission from the captain or officer in charge.
  - b) The room to be entered must be ventilated before entering. Ventilation must be continued as long as the space is entered including during short breaks.
  - c) Make sure that the room is safe from harmful substances.
  - d) Remove gas and waste and materials that cause gas from the room.
  - e) Test the content of toxic gases and oxygen.
  - f) Crews are trained and instructed to act safely.
  - g) Complete with enough safety equipment.
  - h) Organize rescue teams and first aid kits.
  - i) The captain and the officer in charge must really pay attention to any hazards that might occur when entering a closed room.
  - j) Testing the atmosphere of the room to be entered regularly.
  - k) If the captain and officers are in doubt as to the results of testing the content of oxygen,

gas, steam and ventilation, breathing apparatus must be used.

- l) Resuscitation equipment and rescue teams must be prepared at the door of the room to be entered.
  - m) The person in charge must stay at the entrance as long as the room is entered.
  - n) Communication systems must be adequate and have been tested for the communication of people in the room with people at the entrance.
  - o) If the person inside the room feels disturbed by the vapor / gas he must immediately give the signal and immediately leave the room.
  - p) The guard officer and guard engineer must be informed if a tank or room is entered.
  - q) Before entering a closed room, make sure there is enough air in the breathing apparatus available.
- c. Increasing supervision of crew requires the role of ship officers
- Chief officer as the head of deck working on the ship must be able to spend more time supervising the crews who are working so that their duties and responsibilities not only take care of the cargo problem but also have to supervise the crew who are working on the ship, both directly and indirectly during the crew are working. They should give more attention or more time to supervise the crew in doing the daily work.
- d. Instructions by officers before giving work orders to the crews.
- 1) The substances of the instruction are as follows:
    - a) Types of work to be performed.
    - b) Tools that must be prepared.
    - c) How to work correctly and effectively.
    - d) Use of safety equipment or PPE (Personnel Protective Equipment) that is good at work.
  - 2) Provide trainings in the form of knowledge in the form of direction before carrying out work orders to the crews.

## 5. CONCLUSION

After identifying the problem and discussing the data obtained, the conclusions and suggestions are drawn as follows:

1. Safety procedures at MV. Pulau Layang is very good and clear, but it is not implemented optimally. This is due to lack of awareness about discipline and knowledge in using work safety equipment, lack of knowledge and skills of the crews in using work safety equipment, lack of direction of ship officers before giving work orders to the crews and lack of supervision of the crews.

2. Improving the discipline and knowledge of the crews in preventing work accidents in the MV. Pulau Layang can be done by encouraging each crew to always follow the work safety standards on board by increasing discipline and knowledge in using safety equipment and increasing the role of officers to supervise and direct the crew in carrying out work on on the ship.

From the conclusions above, the writer can provide suggestions regarding the problems discussed earlier to be used as guidelines in solving problems that occur:

1. Companies and leaders on board must ensure that work safety procedures are implemented properly and correctly so that the quality of education, training and skills of seafarers needs to be improved. All the crews must understand the procedures before doing the work. Then it is expected that in carrying out a job, the crews can implement good work procedures. So that by carrying out existing work safety procedures, work accidents can be prevented.
2. Companies and leaders on board need to ensure the crew has the knowledge and discipline in implementing work safety procedures. The officers must always actively remind and be a model in implementing work safety procedures. So that the knowledge and discipline of the crews can be increased, as a result, work accidents can be prevented.

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