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Research Paper

Implementation Permit To Work System As A Work Accident Prevention On Board Ship

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Abstract

A permit-to-work system is a formal written system that contains procedures, identification, and permits related to the type of work that is considered to have a risk of danger. By not applying for permits to work optimally, it will increase the risk of work accidents. This study aims to determine the causes and effects of the non-optimal application of permit to work and efforts so that permit to work can run optimally so as to prevent work accidents. The research method used in this study is a qualitative method with a descriptive pattern. Research data sources are obtained from primary and secondary data. Data collection techniques through observation, literature study, interviews, and documentation. The data analysis techniques used are by collecting data, reducing data, presenting data, and drawing conclusions. Testing the validity of data using the triangulation method. The results showed that the lack of crew knowledge about permit to work, lack of crew awareness and concern for safety, and lack of supervision and coordination between crew and officers are the reasons why permit to work cannot run optimally. The impact of not optimal permit to work is work accidents, which not only cause physical losses but also material losses. Efforts that can be made to optimize this are by carrying out familiarization, training and competence, as well as psychological approaches through motivation and sanctions, then by improving supervision and coordination between crew and management on board through toolbox meetings and safety meetings.

Keywords: *Optimal; Permit to Work; Work Accident*

INTRODUCTION

Permit to work is a formal written license to work that contains guidelines and also concerns all aspects of safety. Permit to work clearly lists procedures related to the preparation of tools, space, prevention, and even permits, where if the procedures are not carried out properly, there are incomplete aspects for safety that trigger work accidents. The procedures in the previous permit to work have been arranged in such a way as to take into account the hazards and security measures and can be implemented in an appropriate order.

The researcher finds that the permit to work has not been carried out correctly, consequently, and consistently when carrying out work on ships with a dangerous level of risk. This can be found in the lack of existing documentation, preparation of tools and space that are not in accordance with safety standards, lack of understanding of the implementation of work, a series of procedures that have not been carried out correctly, filling out forms that only copy the previous form until the risk assessment form is not made before dangerous work begins. The above is the basis of the reason why the permit to work on board ship has not been implemented optimally.

Permit to Work System is established by the company based on the regulations contained in the ISM (International Safety Management) Code Element 7: Development of Plans for Shipboard Operations. The regulations adopted by the company from the ISM (International Safety Management) Code are then elaborated in the form of Safety Management Manuals from each shipping company to meet the safety and security requirements of crew, equipment, cargo, and the environment. Another guideline, namely Government Regulation of the Republic of Indonesia Number 50 of 2012 concerning the Implementation of Occupational Health and Safety Management

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System Annex II.6.1.5.

The aims of this research are to determine the causes of non-optimal application of permit to work on board ship, then know the impact that will occur if this permit to work is not carried out optimally and what efforts can be carried out so that the permit to work can be carried out optimally on board the ship so as to create a safe work environment.

LITERATURE REVIEW

Permit to Work

Permit to Work is a formal written system that contains procedures, identification, and permits related to the type of work that is considered to have a risk of danger. In this case, permission to work or permission to work is used as one of the requirements in the form of documents or forms to prevent work accidents. The main matters discussed are safety instructions and procedures, identification of types and types of work, identification of authorities and involved, identification of task and work standards, risk assessment, and job supervision. The purpose of a permit to work is to ensure that the work authority is appropriate, that the work is carried out with safety, that all parties have understood safety standards in work and that preventive actions can be taken if something dangerous happens. The type of permit to work as per the company shipboard manual book are:

Hot Work Permit

Hot work is any work involving welding or burning and other work, including drilling and grinding operations, electrical work, and the use of non-intrinsically safe electrical equipment, which can generate heat or sparks that can ignite gases, vapors, flammable liquids or liquids or materials in or adjacent to the work area.

Cold Work Permit

A cold work permit is a work permit that must be used on non-routine work performed in hazardous areas that does not involve establishing temperature conditions that are likely to be of sufficient intensity to cause ignition of flammable gases, vapors, or liquids in or around the area involved.

Pump Room/Compressor Room Entry Permit

Is a form that must be completed before entering the pump room or compressor room.

Working Aloft Permit

According to COSWP (Code for Safe Working Practices for Merchant Seafarers) Chapter 17 – Working at Height, Working at Height means anyone working in a location where there is a risk of falling can be considered working at height. This includes doing work inside the tank, near holes such as the sides of the mouth of the tank to the fixed stairway. The minimum height is $\pm$ 1.8 meters above the surface.

Working Overside Permit

Working Overside Permit / Permit to work on the Outer Side (Ship) is working on the outside of the ship (hull) where there is a danger of slipping or splashing into the sea.

Underwater Work Permit

This is a checklist that is issued when there is underwater work related to divers, tendermen or deck crews who carry out underwater work, such as repairing, updating, installing pipes or

repairing parts of the side of the ship, which can only be reached by diving.

Permit to Work on Pipeline/Pressure System

Is a permit issued every time work is carried out on high-pressure Pipelines/ Systems?

Enclosed is the Space Entry Permit

Is a permit issued every time work will be carried out on Enclosed Space? Enclosed Space is a room that has limitations where there is minimal ventilation or even no ventilation in it and minimal oxygen or even no oxygen and is not designed to carry out continuous and repetitive work in the room so that it endangers human life. On board enclosed space such as ballast tanks, cargo tanks, etc.

Permit to Work on Electrical Circuit

The permit is issued every time work is carried out on any equipment that may pose a shock hazard or start/auto-start machines or equipment.

Work Accident

According to the ILO, the causes of work accidents are divided into human factors and work environment factors. Human error is one of the most frequent causes of work accidents. Worker behavior is dangerous habits that continue to be carried out repeatedly, which then trigger work accidents. Work environment factors can caused by the equipment factor used, work environment factors, and management factors. This equipment factor is a significant factor with respect to the tools used for work. Several categories of equipment factors that are at risk of causing work accidents are the state of machine and machine safety.

RESEARCH METHOD

The research method used in this study is a qualitative method with a descriptive approach pattern. According to Arikunto, 2019 descriptive research is useful for investigating a condition, situation, phenomenon, or event, and then the results become a research report. This research was conducted for 12 months from August 2021 to August 2022, during the researcher's sea project period of one year at MT. X. The primary data source of this research is based on experience in which the researcher participates or becomes part of the research object, which then the researcher makes direct observations related to the research being studied, supported by discussions and direct interviews with related parties with the aim of being a complement to the data obtained and making data more concrete and reliable supported by literature in the form of guides, manual books such as the Shipboard Manual Procedure, journals, articles, previous research and other sources on the internet related to permits to work. The data collection method researchers carry out by observations or direct observations of how the permit-to-work process is carried out on board the MT. X is supported by the results of interviews from several sources related to the crew's understanding of permit to work, the factors causing the non-optimal implementation of permit to work on board and how the impact and also how to handle it so that the permit to work can run optimally then supported by documentation and literature. After that, the researcher did the analysis by collecting the data that has been obtained, then carries out data reduction by sorting, classifying, and emphasizing the required data, then presenting it in the form of a description and drawing conclusions from the data so that it becomes more concise and easy to understand. The validity testing of data used a triangulation technique, which compared results based on data obtained from observations, interviews, documentation, and literature.

FINDINGS AND DISCUSSION

The research finding that the permit to work on MT.X was not implemented well because, based on research through the observation and interview, the officer and engineer actually understood the permit to work system, but the other crew, such as Boatswain, Able Seaman, Ordinary Seaman, Foreman, Oiler are still not understood about permit to work system. They do not understand what permits them to work and what is the risk assessment. They do not know where the place permit to work should be issued, and they do not know the safety procedure for dangerous work, such as enclosed space and pump room.

Figure 1. The crew did not use Safety Helmet
(Source: Personal Documentation)

Figure 2. The Crews did not carry Personal gas detectors
(Source: Personal Documentation)

The other finding is there is no documentation related to the risk assessment. There are no records related to gas testing on work that requires gas testing to be carried out before work begins. Crews who do not use personal safety equipment such as safety helmets, safety harnesses, and personal gas detectors when entering the enclosed space in this image are taken while carrying out repairs in the ballast tank and unavailability of SCBA and resuscitation in front of the pump room when carrying out periodic checks of the pump room during loading and unloading.

The cause of non optimal implementation of permit to work system on board ship

Lack of crew knowledge about the permit-to-work system. Many of the crew, such as Boatswain, Able Seaman, Ordinary Seaman, Foreman, Oiler do not understand about the permit to work. Starting from the type of work on the permit to work to which work locations require the permit to work to be issued until they do not know the right procedures of the safety work on the dangerous place of work. The other causes that is lack of crew awareness and concern related to safety as a form of application of the permit to work system. The crew still do not care about the work safety on board so they do not even care or take the safety of work seriously. Lack of supervision and coordination from the ship's officers to the crew is the one of the reason why the permit to work not running optimal. On board officers and engineers certainly have more knowledge related to permit to work so that supervision is needed related to safety from people who understand more to people who do not understand related to permit to work. Lack of motivation for the crew related to the application of the permit to work system. Motivation plays an important role in a person's mindset, where the more safety-related motivation there is, the greater the sense of awareness and concern regarding safety. The crew was still non-compliant with existing standards and procedures because they don't know what the right procedure was. Some of them said they knew, some of them said they know but it's complicated to apply.

The impact that will occur if the permit to work is not carried out optimallyon board ship.

The impact of not having a permit to work is the possibility of work accidents occurring. Bearing in mind that in the permit to work there are safety procedures that have been regulated in such a way that if one of the procedures is not carried out then it is very likely that a work accident may occur. When a work accident occurs, of course, this will have an impact on the losses suffered by the victim and the company, both in terms of material and financial. Victims lose limbs, the ability to work, and the loss of life. The company is hampered in terms of operations and financial losses.

Efforts can be carried out so that the permit-to-work system can be carried out optimal on board ship.

Some of the effort that can be carried out include adding insight or knowledge of the crew about the permit-to-work system. To add insight and knowledge to the crew, they can conduct familiarization and provide an understanding of the permit-to-work system. Familiarization is used to refresh crew knowledge related to permit to work. Starting from work locations that require permits to work to hazardous work procedures related to permit to work. The other the company or officer can organize training and competency. Many work accidents are caused by crew members who are not used to doing work safely and according to procedures. So with this, certification or training is needed, especially regarding work procedures on board, one of which is permit-to-work training. The importance of safety must be emphasized in this training, and the new crew must emphasize safety values, safe work procedures, and use of work tools, as well as company provisions related to work safety, especially locations related to hazardous work. To increasing crew awareness related to work safety that has been regulated by the company through the permit-to-work system. The officer or company can change the mindset of the individual by giving warnings if there are crew or co-workers who take unsafe actions around. With this, the crew can feel quit to do the unsafe action.

Improve supervision and coordination between crew members and ship officers. To improve it, the officer can hold the safety meeting regularly. A safety meeting is a meeting of the entire crew to discuss safety on board. In this meeting, all kinds of safety issues, complaints, and problems related to work safety can be discussed, and suggestions related to safety knowledge can be discussed. The other officer must do toolbox meetings daily with seriousness. By holding the toolbox meeting, it is hoped that the crew will also become more aware of safety procedures and instructions conveyed by officers, in this case, the acting safety officer. Toolbox meetings are held every day on board the MT. Papandayan toolbox meetings are held before work begins. The crew can do the reporting when they see something unsafe. The company has already issued a reporting form related to near-miss reports, which contains unsafe acts and unsafe conditions. The crew can report through this form if there are conditions or actions that are dangerous, which will then be evaluated by the management on board. Then, the results of this evaluation can be conveyed to the entire crew through a safety meeting or toolbox meeting. The other effort can be to Increase crew discipline regarding work safety on board.

Provide strict sanctions for safety violations. With strict sanctions, it is hoped that perpetrators of safety violations can feel a deterrent so they don't do things that can endanger safety and care more about work safety. Implementing an orderly system of documentation for each person in charge. Each department head is required to check the completeness of documents related to the permit to work so that the work safety of each department can be properly monitored. Last, the effort can do is procuring safety posters and work safety procedures on board can be one of the efforts that can be implemented. With work safety posters ranging from work safety procedures to occupational hazard warnings around the work area, it is hoped that this will

increase the crew's sense of concern regarding work safety so that they can protect themselves and others as well.

CONCLUSIONS

The factors causing the non-optimal permit to work on board a ship are the crew's lack of understanding regarding the procedures and application of the permit to work, and the lack of supervision, coordination, motivation, and firmness from those responsible for work safety on board. As a result of the non-optimal permit to work, there are work accidents. The relationship between permit-to-work and work accidents is that based on the data that the researchers have described, permits to work include all preparations, procedures, and work safety provisions which are dangerous if one of the procedures or stages is skipped or not followed will result in work accidents because it has violated the procedure that has been made in such a way based on existing rules. Efforts that can be made to optimize permit-to-work are by increasing the knowledge of the crew related to permit-to-work by conducting familiarization, training, and competency, as well as taking a psychological approach through motivation. The holding of safety meetings, toolbox meetings, and reporting systems is also believed to be one of the efforts to participate in optimizing the permit to work on the MT ship. Papandayan. Others support efforts, namely by carrying out maintenance and procurement of tools and materials as well as sticking posters of work procedures and safety in order to generate morale that is safe, comfortable, and safe.

The implementation of familiarization, training, and competencies related to permit to work must be carried out and well understood by all layers of the crew on board so that there are no crew members who lack knowledge about permit to work, Implementation of toolbox meetings and safety meetings must be carried out routinely in accordance with applicable regulations. In carrying out toolbox meetings and safety meetings, it is hoped that all crews involved will understand and carry out all forms of work procedures and safety procedures and understand their respective job desks and placement of posters and manual books on work safety in all sections that are easy for the crew to read.

LIMITATION & FURTHER RESEARCH

Names of sources cannot be displayed based on requests from sources for privacy reasons, some documents cannot be displayed because they are confidential, and the name of the ship and company cannot be displayed based on requests from sources for privacy reasons.

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