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Analysis of the Implementation of the Permit to Work System for Height Work on the Project of PT. X year 2023

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Abstract: World developments influence to all sectors, including the development sector which is also increasingly rapid and with the application of increasingly sophisticated technology, the application of Occupational Health and Safety is one of the main requirements for work that must be taken into account. is one of the contractors engaged in the construction sector where its activities cannot be separated from working at heights, So it is necessary to carry out observations and observations in the field regarding "Analysis of the Implementation of the Permit to Work System for Height Work on the Project of PT. X year 2023".

The research method used in this research is qualitative-descriptive, because this type of research is the most appropriate for analyzing the implementation of the permit to work system using interviews, observations and also document review.

From the results of research on the implementation of a permit to work system for work at height on the Project of PT. X, starting from the stages of preparation consisting of coordination, planning, assessment, isolation, prevention, validity period, signature, process stages consisting of permit, revalidation, suspension, action in emergency, monitoring and closing stages consisting of returning permit to Work, Site Inspection, Cancelation of Overrides, Return to service, Log/record it is known that the implementation of the three stages of the Permit to work System for work at height on the Project of PT. X has done quite well.

Even though the implementation is good, there are several stages that still need to be improved because they are not in accordance with the standards of MoM Regulation No. 9 year 2016 concerning safety for work at heights. The recommended to improve such as coordinating the agenda for briefings, risk assessments being distributed in the work area, work area restrictions being improved, not only police lines, PPE checks being carried out before and after work, checking first aid equipment, work permit displays being carried out even outside of building, telling workers how to process work permits for extensions and returns, having checklists for monitoring during work and after work is completed, checking equipment when it is returned, and for the rest it is good enough and hopefully it can be maintained.

Keywords: Implementation, Work Permit, Height, Health, Safety, Work

1. Introduction

Developments of world affect all sectors, including the construction sector, the implementation of occupational health and safety is one of the main requirements for work that must be considered. Because in carrying out their work, workers also want their safety to be guaranteed. This also includes workers who work at heights whose safety and health must also be guaranteed when carrying out their work (Noerfaradilla, 2018).

According to the International Labor Organization report, every year there are around 60,000 deaths due to work accidents in the world, and around 20% of them are related to falls from heights.

These accidents mainly occur during construction work (ConstructionPlus, 2020). According to data from the Indonesian Ministry of Manpower, in 2020 there were 520 accidents related to falls from heights. These accidents caused 95 deaths and 346 serious injuries (Ketenagakerjaan and Indonesia, 2022). Based on data from the Central Statistics Agency (BPS), in 2020 there were 71 accidents related to falls from heights, caused 11 deaths and 63 serious injuries. And from the Batam City Manpower and Transmigration Service in 2020 there were 14 accidents related to falls from heights, caused 4 deaths and 10 serious injuries (Kusuma, 2021).

The number of accident cases makes working at heights one of the activities that has a high risk of accidents resulting in physical loss, property and even death (Wulandhari, 2022). This is reinforced by the existence of special regulations regarding work at heights regulated by the government in the Regulation of the Minister of Manpower of the Republic of Indonesia no. 9 year 2016 concerning Occupational Safety and Health in Work at Height (Permenaker, 2016).

Work at height is one of the jobs that has a high risk of work accidents, so the government requires the implementation of a work permit system for work that has a high risk and also procedures and work instructions so that risks can be managed safely and risks identified and documented (Indonesian government requires No 50, 2012).

According to research conducted by (Trianto, 2020) the implementation of the work permit system for working at height is not carried out in accordance with applicable operational standards.

PT. X is one of the contractors operating in the construction sector whose activities involve working at heights, which of course has a risk of work accidents, according to the results of interviews with workers at PT. X We received information that in 2022 there was a work accident that fell from a height while carrying out work on a flapon which resulted in the worker being slightly injured, where this accident occurred because the worker did not install a platform as a work floor but instead stepped on a part of the pipe above the ceiling, installing the platform. as a work floor is one part of the things that are taken into consideration in a work permit for working at height. Based on the description above, both from accident data and theoretical explanations, it is necessary to make observations regarding "Analysis of the Implementation of the Permit to Work System for High Height Work on the Project at PT. X year 2023".

2. Research Methods

The type of research design that will be used in this research is qualitative-descriptive. This is because the researcher feels that this type of research is the most appropriate for analyzing the implementation of the permit to work system, in accordance with the meaning stated by (Rusli, 2019) that descriptive qualitative is a type of research in which the researcher, in investigating an event or phenomenon from an individual's life, also asks a person or group of individuals to tell about the phenomenon of their life. Then the information obtained from the informant will be retold by the researcher in the form of a descriptive chronology.

3. Results and Discussion

PT. X is a construction services company which has an office address in the Century Park Blok F No. 02 Teluk Tering – Batam, PT. X as a construction service means creating or repairing

construction buildings, both in terms of buildings or infrastructure and supporting building facilities, such as pipe networks, electrical installation and maintenance to installation or repair of supporting equipment such as air conditioning etc.

3.1 Informant Characteristics

This research will involve 7 informants as stated in CHAPTER III, consisting of 3 (three) workers, 1 (one) foreman, 1 (one) safety officer, 1 (one) safety admin, and the owner.

3.2 Preparation phase

3.2.1 Coordination

From the results of research using interviews, observations and document reviews, it is known that PT. X has procedures for working at heights and has also informed workers about these procedures, has also conducted briefings before work starts every day, while for work permits they will be informed by Safety. officer to the Foreman when it has been signed and will then be informed to the Worker.

This is in accordance with research (Novarisandy, *et al*. 2022) regarding the analysis of the application of "permit to work" in an effort to prevent work accidents at PT. X of 2021 that coordination in the work permit licensing process must clearly state the time and date of validity, the work permit must also be signed by the work implementer and the Safety officer. The results of this coordination will be in the form of filling in the work permit request attachment and approval by the Safety officer or Safety department.

This is in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in work at height which states that coordination in a work permit is the starting point before carrying out work, where this coordination is carried out by the worker and the safety officer. Coordination in the work permit licensing process must clearly state the time and date of validity, the work permit and be signed by the worker and the safety officer (Permenaker, 2016).

3.2.2 Planning

In planning, PT. X has carried out planning by creating procedures for working at heights and preparing supporting equipment such as PPE and providing training to workers, which in terms of these procedures has of course received approval from all parties.

This is in line with the International Association of Oil and Gas Producers in (Novarisandy, *et al*. 2022) Planning for work permit procedures is a joint agreement between the production, maintenance and safety departments. This is an agreement between all personnel, in the issuance of work permit attachments that are appropriate to the type of work, preventive measures against potential dangers and preparations required to carry out the work.

This is in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in work at heights where there is agreement between all parties involved in issuing work permits that are appropriate to the type of work, identification according to the type of work, preventative measures against existing potential dangers. as well as the preparations

needed to carry out work at the workplace as outlined in the procedures for working at height (Permenaker, 2016).

3.2.3 Evaluation

In terms of assessment, PT has also carried out a risk assessment of hazards related to working at heights, namely having made a risk assessment for work at heights and hazard mapping to determine locations that have high and low risk of danger.

This is in accordance with research (Haryanto, 2018) regarding the implementation of the work permit system as part of risk control efforts at PT Eastern Logistics Lamongan. An understanding of hazard risks such as the source of the hazard, the nature of the hazard and its relationship to the work environment must be understood as a whole and clearly. This is necessary in order to know the composition, type and concentration of hazard risks which include chemical, physical and biological hazards in the work area. In assessing the risk of danger for each type of work, monitoring must first be carried out on the layout of the work area and the sources of danger found.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in work at heights that companies must know the composition, type and concentration of hazards which include chemical, physical and biological hazards in the workplace. During the hazard assessment for each type of work, monitoring must be carried out first on the layout of the work area and the sources of danger found. (Permenaker, 2016).

3.2.4 Isolation

In terms of isolating work areas for work at height, PT has provided work area isolation with restrictions on using police lines for outdoor work areas, while for indoor work or buildings, such as work above ceilings, PT uses tarpaulin.

This is in accordance with research (Wulandhari, 2022) regarding the implementation of the permit to work system for high work in the steam turbine building area of the PLTGU Muara Tawar Bekasi, isolation procedures must be carried out during work with a work permit. This system ensures that the risk of danger arising from the work process can be controlled properly. The owner must implement the Log Out Tag Out (LOTO) system on the equipment, while the Safety Officer will provide warning signs in the form of barricades around the work area.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in work at height which states that this work permit system is to ensure that the risk of danger arising from work can be well controlled by providing isolation of the work area and work equipment (Permenaker, 2016).

3.2.5 Prevention

In terms of prevention, the PT. X has provided procedures for working at heights, PPE and fall prevention and arrest equipment, as well as making risk assessments for work at heights, as well as supervising workers and work areas during work at heights carried out by foremen and safety officers.

This is in accordance with research (Wulandhari, 2022) in research on Analysis of the Implementation of Safety Permits based on the permit to work system procedure, preventive

measures, namely by ensuring the safety of workers from the risks of danger in the workplace. Carrying out good inspections will ensure that all hazardous risks from work can be controlled by taking preventive measures in the workplace. One possible action is to ensure that the Personal Protective Equipment (PPE) used is appropriate, support and fall prevention equipment, installation of warning signs and safety support equipment in the event of an emergency.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in work at height which states that preventive measures are to ensure the safety of all workers from the risks of danger in the workplace. Having a good inspection will ensure that all dangerous risks from work can be controlled with preventive measures taken in the work area (Permenaker, 2016).

3.2.6 Validity Time

From the results of research on the validity period of work permits for working at heights on projects PT. X is as long as the work is carried out, but must still receive validation from the Safety Officer every day.

This is in accordance with research (Irawati, 2020) regarding Implementation of the Permit to Work System in Tug Boat Work, the validity period or time limit for carrying out work must be clearly stated. This validity period is clearly stated in the work order which is attached to the work permit attachment when the party carrying out the work requests it from the production owner and safety officer.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that a work permit should clearly state the validity period or time limit for carrying out work (Permenaker, 2016).

3.2.7 Signature

From the research results it is known that every work permit issued for work at height on the PT project. X is signed by the Safety officer before being issued by the Safety admin before being issued and forwarded to the Foreman and Workers.

This is in accordance with research (Novarisandy, *et al*. 2022) regarding the analysis of the application of "permit to work" in an effort to prevent work accidents at PT. X year 2021, verification and accountability for work is very important. This takes the form of signatures from the parties who will be involved in the work permit issuance process, including workers, owners and also safety officers.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that work permits must be signed by the parties involved in the work permit issuance process, including the Safety Officer, the Owner and the Worker (Permenaker, 2016).

3.3 Process Stage

3.3.1 Display Permit

From the research results, it is known that in high-rise work areas, work permit displays have been put up and show who is responsible for the work, but this display is only installed if the work

is inside the building, while for work outside the building only a display of the type of work and time of work is installed. and the person responsible for the work, while the work permit attachment was not attached due to fear of damage if exposed to rainwater.

This is in accordance with research (Novarisandy, *et al*. 2022) The International Association of Oil and Gas Producers in its research on the analysis of the implementation of safety permits based on the permit to work system procedure, it is important to have a work permit display. This is necessary to show the work permit to people who need it or those who will carry out work. Copies of the permit should be distributed to several places as follows:

a. Work area, if this is not possible, then the person responsible for the work should hold a copy and always ensure that the worker understands the work permit.
b. Control room.
c. Permit issuers must have a copy of the permit.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that the display permit is for people who need it or those who will carry out work (Permenaker, 2016).

3.3.2 Revalidation

From the research results, it is known that the extension of the work permit for work at high altitudes at PT. X extends by way of changes in work schedules that have been approved by several parties, such as: Owner, Safety Officer, Owner of the Work and Foreman.

This is in accordance with research (Novarisandy, *et al*. 2022) regarding the analysis of the application of "permit to work" in an effort to prevent work accidents at PT. X in 2021 revalidation or extension of permits to carry out work where work has been completed. For example, if there is work that turns out to be unfinished or inappropriate when the validity period of the work permit has expired, the work permit must be extended or revalidated.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that the work permit is extended to carry out work after the work has been completed or if there is work that has not been completed or is not suitable when the validity period of the work permit has expired (Permenaker, 2016).

3.3.3 Suspension

From the research results it is known that the work permit for work at height on the PT project. X can be suspended in the event of a discrepancy such as, work is not appropriate, bad weather (if work outside the building and emergency such as accidents or fires.

This is in accordance with research (Irawati, 2020) regarding the application of the permit to work system in tug boat work. Suspension or suspension is a time delay or slowdown in the work being carried out. Work carried out using the work permit system must be able to be postponed or stopped even though the work has not been completed. This can happen because of an emergency, for example work is carried out for only one shift but you have to wait for services or materials.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that there is a slowdown in time

or a delay in work being carried out. Where work carried out using the work permit system must be postponed or stopped even though the work has not been completed (Permenaker, 2016).

3.3.4 Action in Emergency

From the research results it is known that in terms of handling emergency conditions PT. X has procedures for handling emergency conditions when working at heights and has also provided emergency equipment such as fire extinguishers for handling fires, first aid kits and also emergency equipment for handling accidents.

This is in accordance with research (Novarisandy, *et al*. 2022) regarding analysis of the implementation of work permits at height on work accidents at PT. X Actions Emergency conditions are actions taken if there is a change in conditions that may endanger the continuation of the work (this dangerous condition will be decided by safety and operations based on consideration of equipment as well as humans).

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that there must be emergency action, namely action taken if there is a change in conditions that could endanger the continuation of work (Permenaker, 2016).

3.3.5 Monitoring

From the research results, it is known that monitoring during the work process at height is carried out by the foreman and occasionally the safety officer also monitors the work area and work of workers who carry out work at height. However, from the results of the document review it is known that PT. X does not have a checklist for monitoring, it is only limited to monitoring.

This is inconsistent with research (Wulandhari, 2022) regarding the implementation of the permit to work system for high-altitude work in the steam turbine building area of the PLTGU Muara Tawar Bekasi project, the permit to work system must be supervised during the work process, this supervision is carried out by workers and safety officers. This monitoring or control is usually by implementing a system of compatibility between the condition of workers, equipment, PPE, where if something is found that is not appropriate then repairs must be carried out immediately.

This is inconsistent with research with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that supervision must be carried out during the work process by workers and safety officers (Permenaker, 2016).

3.4 Closing Stage

3.4.1 Return of Permit to Work

From the research results, it is known that the work permit will be returned by the foreman to the Safety Admin after the work is completed, and only the foreman knows this procedure, while the workers do not know about it.

This is in accordance with research (Novarisandy, *et al*. 2022) regarding analysis of the implementation of work permits at height on work accidents at PT. X return of the work permit,

namely the foreman or worker, if the work has been completed, the work permit attachment must be returned to the K3 or Safety officer.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that the work permit attachment must be returned to the Safety Officer or Safety Department (Permenaker, 2016).

3.4.2 Site Inspection

From the research results it is known that in the PT. X Checking the work area After the work at the height is completed, this check is carried out by the foreman and also the safety officer to ascertain whether there is something dangerous after the work is done.

This is in accordance with research (Wulandhari, 2022) regarding the implementation of the permit to work system for high-altitude work in the steam turbine bulding area of the PLTGU Muara Tawar Bekasi project, the permit to work system for site inspections is carried out using a check list to check the work area. Where checking this area aims to ensure that the work area that has been abandoned is in a safe condition. This inspection is carried out by the Workers and Safety officers.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that an inspection must be carried out in the work area of the work carried out using a work area inspection checklist. Where this check aims to ensure that the work area left behind is in a safe condition. This inspection is carried out by workers and safety officers (Permenaker, 2016).

3.4.3 Cancelation of Overrides

From the research results, it is known that the cancellation of work permits for high-altitude work on the PT project. X is carried out if there are unsuitable work conditions, an emergency or accident occurs, and if work at a height outside the building, weather conditions are also a consideration for canceling the work permit, this cancellation is carried out by the Safety Officer who is notified to the Foreman who will then be informed to the Worker.

This is in accordance with research (Haryanto, 2018) regarding the implementation of the work permit system as part of risk control efforts at PT. Eastern Logistics Lamongan states that the entire process of stopping the work permit process is carried out if a fire is detected or a protection system has been used during work. Where this must be normalized again before work continues or permits close.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that the complete cessation of the work permit process with fire detection or protection systems that have been determined by the company (Permenaker, 2016).

3.4.4 Return to service

From the research results it is known that the return of equipment after work is completed on the PT project. X was carried out, but no checks were carried out to ensure that the equipment and PPE were in good condition when returned.

This is inconsistent with research (Fathona, 2019) regarding the implementation of working at height procedures at PT fertilizer Sriwidjaja Palembang that a work permit must be checked for equipment when the work has been used. This check is carried out by the Safety Officer who will then convey to the Worker that the equipment is returned to normal condition.

This is also not in accordance with the standards of MoM Regulation No. 9 year 2016 concerning occupational safety and health in work at height which states that equipment must be checked upon return when the work has been completed. This check is carried out by the Safety Officer and then the results of the check will be conveyed to the Worker that the equipment has been returned to normal condition (Permenaker, 2016).

3.4.5 Log/record

From the research results, it is known that in terms of recording and storing work permit documents for working at heights, after completion, they will be recorded and stored by the Safety Admin in scanned form, these work permit documents will be stored for 1 (one) year.

This is in accordance with research (Noerfaradilla, 2018) regarding the analysis of the implementation of work permit procedures at height on the mass rapid transit (MRT) CP 101 PT Tokyu Construction Lebak Bulus South Jakarta project in 2018 that work permits must be recorded and stored for a period of time determined by the company. This storage and recording is carried out to store work permit documents.

This is also in accordance with the MoM Regulation No. 9 year 2016 concerning occupational safety and health in working at heights which states that work permits must be recorded and stored for a certain time (Permenaker, 2016).

4. Conclusion

4.1 Conclusion

4.1.1 Preparation phase

PT. X has carried out the closing stages quite well and is in accordance with the standards of MoM Regulation No. 9 year 2016 concerning occupational safety and health in work at height, namely in terms of coordinating the existence of briefings related to dangers and work permits for workers before work is carried out, planning has created procedures for working at height and has also provided equipment for working at heights such as PPE, and fall arrest and prevention equipment, assessments have made risk assessments and hazard mapping related to work at heights, carried out isolation for work at heights by providing barriers or barricades using police lines and also tarpaulin, the validity period is stated in the work permit attachment and also the work permit is issued by the Safety admin and signed by the Safety officer before being distributed to the Foreman and Workers.

4.1.2 Process Stage

PT. X has carried out the closing stages quite well and is in accordance with the standards of MoM Regulation No. 9 year 2016 concerning occupational safety and health in work at height, namely by having a work permit display, extending the work permit if the work has not been completed while the work permit has expired, the work permit is suspended if there is a non-compliance or emergency condition, the handling of emergency conditions has an emergency

procedure and has provided emergency equipment such as APAR, first aid box and stretcher, monitoring of work at height has been carried out by the foreman (from the worker's side) and the safety officer to ensure the condition of the work area and workers carrying out work at height safely.

4.1.3 Closing Stage

PT. X has carried out the closing stages quite well and are in accordance with the standards of Minister of Manpower Regulation No. 9 year 2016 concerning occupational safety and health in work at height, namely in the case of returning a work permit for working at height it will be returned to the Safety Admin after the work is completed, checking the work area after work at the height of completion by the foreman and Safety officer, the work permit will be canceled by the Safety officer if there is something that endangers the continuity of the project, which will be informed to the foreman who will then be informed to the workers, recording and storing work permit documents by the Safety admin in scanned form for a year However, the return of equipment after work at height is completed on PT. X projects is not in accordance with the standards of Minister of Manpower Regulation No. 9 year 2016 concerning occupational safety and health in work at height, namely that there are no checks carried out when returning equipment and PPE after work at height is completed.

4.2 Suggestion

4.2.1 Preparation phase

Coordination should create an agenda related to the things that will be conveyed at each briefing so that it is more focused on what will be conveyed. Planning includes details such as checking equipment or PPE. It is recommended that this risk assessment and hazard mapping be informed at the location of high-altitude work. It would be better if the restrictions on work areas at heights are made better, not just police lines, so that work areas at heights are not easily entered by unauthorized people. It is best to check the PPE and equipment before use to ensure that the condition of the PPE and equipment is truly suitable and safe to use, while for emergency equipment it is also best to check the condition regularly, including first aid boxes and stretchers. The validity period of this work permit is made on a daily basis, to avoid forgetting to validate it. When signing a work permit, a logbook should be made so that nothing is missed.

4.2.2 Process Stage

For display work permits, you should still display them even if you are working outside. In extending a work permit, it is hoped that the procedures and requirements for extending a work permit should be known to all workers, so that when the foreman is not there, workers can also carry out the extension. In the event of a work permit suspension, a clear procedure or flow for the work permit suspension is created. In terms of handling emergency conditions, it is best to check the condition regularly, including the first aid kit and stretcher. In terms of monitoring, there should be a checklist to be more focused on what is being monitored, although things outside the checklist can also be monitored.

4.2.3 Closing Stage

In the case of returning a work permit, it would be better if the worker was also informed about how to return the work permit. In terms of checking the work area after the work is finished, it would be better if there was a checking checklist about what things were checked. In the case of cancellation, a clear cancellation procedure or flow should be made. In the case of returning equipment after work at height has been completed, it is best to check the equipment upon return after work at height has been completed. In terms of recording and storing work permit documents for work at height after they are returned, it is best if there is a data backup, namely a hard copy file which is also stored for a certain time, not only in scanned form. This section is describing the final conclusion from the summary result of the study. Do not repeat the results in this section.

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Conflict of Interest

All Authors declare no conflict of interest and agree with the content of the manuscript.

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