

ANALYSIS OF THE APPLICATION OF RISK MANAGEMENT IN PT. PERTAMINA TBBM TANJUNG PRIOK TO IMPROVE NON-FINANCIAL FIRM (CASE STUDY: TANK CONSTRUCTION X - TANJUNG PRIOK)

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Abstract

PT Pertamina TBBM Tanjung Priok - Plumpang is one of the downstream oil facilities that plays an important role in the distribution and distribution of fuel for the community. Because, about 20% of the daily fuel needs in Indonesia are supplied from TBBM Tanjung Priok - Plumpang owned by PT Pertamina (Persero). In the course of time, many incidents (fire, etc.) within the scope of TBBM Plumpang. Therefore, this research aims to examine the application of Risk Management in the company PT Pertamina TBBM Tanjung Priok - Plumpang. This research uses a qualitative approach conducted through a process of interviews and direct observation. The purpose of applying Risk Management to this company is to identify what risks are involved in Risk Management within the scope of PT Pertamina TBBM Tanjung Priok-Plumpang by measuring the risk of probability and impact, and evaluating each existing risk, according to the case study of Tank X construction within the Tanjung Priok TBBM area. This research is expected to assist management in taking actions and responses to reduce the negative impacts of the possibilities that will occur in the future and provide an assessment of the various risks that exist. The results of this study will contain risk classes ranging from high risk, medium risk, and low risk.

Keywords: Risk Management, Non – Financial Performance, Risk, Impact

Introduction

The fire case at PT Pertamina Plumpang Depot was shocking and saddening for the people of Indonesia. When viewed from the outside, security issues and safety SOPs at PT Pertamina Plumpang itself are very strict. However, with the reason for the cause of the fire which was analyzed from several sources that with the occurrence of technical disturbances that resulted in excessive pressure so that the fire occurred (Wirandaru, 2023). However, from other sources, the cause of the fire at the Plumpang depot came from the fuel inlet pipe, which is located close to the residential parapet. Pertamina's depot, which is one of the most important fuel terminals in Indonesia and is world-class, has also experienced a fire in 2009, which resulted in losses of around 17 billion. After the incident, Vice President Jusuf Kalla asked PT Pertamina (Persero) to maintain security and safety standards at the oil refinery (Yakub & Phuspa, 2019).

The experience of the above events leads to the conclusion that even though reports and checks are routinely issued, it does not mean that a company is free from risks. In today's global

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era, attention to risk assessment is fundamental. This is because in the global area, businesses are faced with an environment of very high uncertainty and complexity (Aditya & Naomi, 2017). Moreover, as we know PT Pertamina Persero is a company engaged in the oil and gas sector, so it must pay attention to occupational health and safety (Health & Safety) which is a significant problem and an important factor in determining excellence for competitiveness and must require serious attention and management of efforts in the field of occupational health and safety.

PT Pertamina (Persero) is one of the leading national oil companies in Indonesia that plays an important role in the distribution and procurement of oil and gas resources in Indonesia. In this effort, of course, facilities are needed to store and distribute these products so that people can utilize energy in meeting their needs. The Fuel Oil Depot (BBM) in Priuk, North Jakarta is one of the terminals owned by PT Pertamina Patra Niaga as one of the entities of PT Pertamina (Persero) which holds responsibility for storing and distributing production. The place commonly used to store petroleum products is a tank. Tanks in the oil and gas industry are structures that are used as storage for crude oil, LNG, and their derivative products including fuel oil (BBM). In general, the oil storage tank or liquid material is in the form of a cylinder which has a large enough diameter. The activities of PT Pertamina Persero involve all aspects of the field, from upstream to downstream. In accordance with Pertamina's aspirations to become a Global Energy Champion with a market value of US \$ 100 billion, of course, it must increase PT Pertamina's consistency in the implementation of ESG (Environmental, Social & Governance) aspects, especially those related to social aspects where occupational health and safety are the main concerns, namely by providing appropriate responses to risks that may occur. Of course, this is done with the aim of minimizing the risk costs that will be incurred and increasing company profits, increasing employee productivity and loyalty and for the sake of maintaining the company's image in the eyes (international world). The research aims to examine the application of Risk Management in the company PT Pertamina TBBM Tanjung Priok - Plumpang.

Research Methods

This research uses a qualitative method with a descriptive approach (Creswell & Creswell, 2017). In this study using qualitative methods where the results of the analysis are in the form of analysis of each existing risk. This research uses the following data collection methods:

Observation Technique

In this observation technique, information is recorded when making observations in the field, precisely on the X tank Upgrading project. This observation is carried out for later interviews/discussions together with the contractor or owner. Observations in the field also sometimes coincide with interview techniques where if at the time of observation there are things that are not understood, then questions and answers are asked with the contractor or owner. This observation is also carried out if there is data that cannot be obtained through interviews. Observation is also carried out to better understand technical matters related to the project so that it makes it easier to analyze.

Documents

In this study, document techniques were used where in this study documents were obtained in the form of Project TOR, technical drawings, material approval letters obtained from the contractor. These data are needed for the analysis needs in this study which can be accounted for because they have gone through the approval process.

Interview

In this research, interview techniques were also carried out where discussions were held with the executor in this case the contractor and owner. This interview was conducted based on the results of observations and project documents or other documents mentioned in the previous section. Information from the interview results is used as an addition to the analysis carried out.

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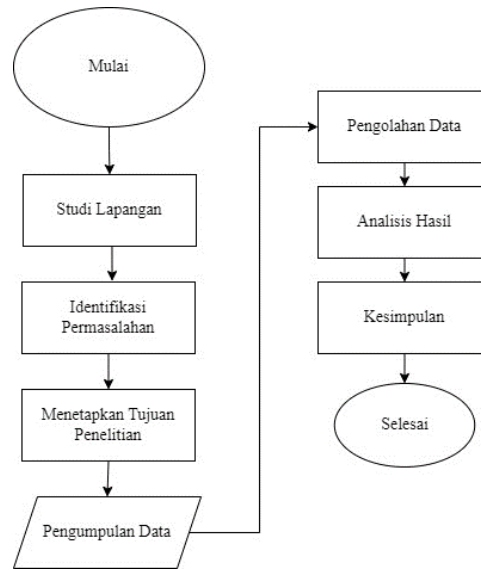


Figure 1. Flowchart

Results and Discussion

The risk analysis process involves observing the job site to obtain an initial risk identification, and then analyzing it with a probability and impact matrix. This risk identification is an iterative process where risks sometimes arise during project implementation or throughout the project life cycle. Based on PMBOK edition 6, this risk analysis is both qualitative and quantitative (Stackpole, 2013). Qualitatively, a risk prioritization analysis process is carried out to be followed up with an assessment that can show the likelihood of risk occurrence and its impact (Tavan & Hosseini, 2016). While quantitative is a numerical analysis which is a combination of risk identification. The table below shows the results of the risk management analysis on the oil tank lifting process that has been adjusted to the assessment provisions in table 1.

Table 1. Hazard Table

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
1	Crawler crane installation	Soil cannot bear the weight of the crawler crane	Crane has decreased so that when lifting the tank it is unstable until it rolls over	Multiple fatalities	Extensive damage	Local effect	International impact	4	3	High	Testing the compressive strength of the soil to determine the strength of the soil in holding the load on it	Minor injury	Local damage	Local effect	Major impact	3	3	Low
		tilt crawler crane	Load fell and caused damage to equipment and tank	Multiple fatalities	Extensive damage	Local effect	International impact	4	3	High	The use of cranes must be in accordance with the capacity requirements that have been multiplied by the safety factor so that it is safer to hold the tank.	Minor injury	Local damage	Local effect	Major impact	3	2	Low

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk			
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R	
											Crane installation must be in accordance with the worker's briefing and signage. Use PPE to reduce the risk of injury to workers Conduct a re-briefing on OHS to reduce the risk of the same accident recurring.								
			Physical injury and loss of life if the tank falls or rolls over	Multiple fatalities	Major damage	Local effect	International impact	5	3	High	Complete use of PPE in accordance with the standards where the project is carried out so as to reduce the risk of fatal injuries.	Minor injury	Local damage	Local effect	Major impact	3	2	Low	
			Loss in terms of budget and loss in terms of time	Major injury	Extensive damage	Local effect	International impact	5	3	High	Work with good concentration and focus so that there is less risk of human error when operating the crane. Re-briefing on OHS to prevent the same accident from occurring. Full PPE is used to reduce the risk of fatal injury.	Minor injury	Local damage	Local effect	Major impact	3	2	Low	

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NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Physical injury and loss of life if the tank falls or rolls over	Fatality	Major damage	Local effect	National impact	4	3	Medium	<p>Work with good concentration and focus so that there is less risk of human error when operating the crane.</p> <p>Re-briefing on OHS to prevent the same accident from occurring.</p> <p>Briefing on OHS is conducted again to reduce the occurrence of the same incident</p>	Minor injury	Minor damage	Minor effect	Limited impact	2	2	Low
		Mast fall	Loss in terms of budget and loss in terms of time	No/slight injury	Major damage	Minor effect	National impact	3	3	Medium	<p>Use full PPE to reduce the risk of injury.</p> <p>Work with good concentration and focus so that there is less risk of human error when operating the crane.</p>	No/slight injury	Minor damage	Minor effect	Limited impact	2	2	Low
			The tank becomes unbalanced and may cause the tank to topple over	Multiple fatalities	Extensive damage	Major effect	National impact	5	3	High	<p>Crane operators must be certified so that operations can be carried out properly.</p> <p>Use full PPE to avoid injury.</p>	Minor injury	Minor damage	Local effect	Limited impact	2	3	Low
		Worker slips during crane installation	Workers suffer fatal injuries and death	Minor injury	No/Slight damage	Minor effect	Minor impact	2	3	Low	Full PPE is used to reduce the risk of fatal injury.	No/slight injury	No/Slight damage	Minor effect	Limited impact	2	2	Low

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
											Work with good concentration and focus so that there is less risk of human error when operating the crane.							
			Work was temporarily suspended due to an accident	Minor injury	No/Slight damage	Minor effect	Minor impact	2	3	Low	Conduct a re-briefing on OHS to reduce the risk of the same accident recurring.	No/slight injury	No/Slight damage	Minor effect	Limited impact	2	2	Low
		Jib broke due to overload	Workers suffer fatal injuries and death	Fatality	Major damage	Local effect	National impact	4	3	Medium	Full PPE is used to reduce the risk of fatal injury. Workers are certified so they can operate the crane properly. Operators follow directions and job signs	Minor injury	Minor damage	Minor effect	Limited impact	2	2	Low
			Loss in terms of budget and loss in terms of time because the project is temporarily suspended	No/slight injury	Major damage	Minor effect	National impact	3	3	Medium	Work with good concentration and focus so that there is less risk of human error when operating the crane. Re-direction of K3 is carried out as an effort to avoid the re-occurrence of the same accident.	No/slight injury	Minor damage	Minor effect	Limited impact	2	2	Low

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NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Damage to tools	No/slight injury	Major damage	Minor effect	National impact	3	3	Medium	Conduct a re-briefing on OHS to reduce the risk of the same accident recurring.	No/slight injury	Minor damage	Minor effect	Limited impact	2	2	Low
			damage to tanks near tank 22	Minor injury	Local damage	Minor effect	Major impact	3	3	Medium	Operators who operate cranes must be certified to avoid a high risk of accidents. Analyze whether the structure is strong against earthquakes or to maintain the balance of the tank in the event of an earthquake.	Minor injury	Minor damage	Minor effect	Limited impact	2	3	Low
		An earthquake occurred during crane operation	Workers suffer fatal injuries and death	Fatality	Major damage	Local effect	National impact	4	3	Medium	Full PPE is used to reduce the risk of fatal injuries. Stay focused while working to avoid fatal injuries if the tank topples over during an earthquake	Minor injury	Minor damage	Minor effect	Limited impact	2	2	Low
			Damage to other facilities near the tank 22	Fatality	Major damage	Major effect	National impact	3	3	Medium	Evacuate or give first aid to accident victims. Analyze whether the structure is strong against earthquakes or to maintain the balance of the tank in the event of an earthquake.	Major injury	Local damage	Minor effect	Major impact	2	3	Low

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Stopping activities at the entire Tanjung Priok TBBM Installation due to accidental falling loads to avoid other risks that cause huge losses in terms of profit and also in terms of production or distribution.	Fatality	Major damage	Major effect	National impact	3	4	High	The analysis is carried out first to get the balance of the tank in the event of an earthquake so that there is no overturning of the tank due to an earthquake or overturning of the crane.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Crane toppled over and the load also toppled over															
			Workers suffered fatal injuries and even death	Fatality	Major damage	Local effect	National impact	4	3	Medium	Full PPE is used to reduce the risk of fatal injuries. Stay focused while working to avoid fatal injuries if the tank topples over during an earthquake	Minor injury	Minor damage	Minor effect	Limited impact	2	2	Low
			During slewing, the crane hits the worker or another tank.	Fatality	Major damage	Major effect	National impact	3	3	Medium	Operators who operate cranes must be certified to avoid accidents. Must stay focused while doing work so as to avoid accidents.	Major injury	Local damage	Minor effect	Major impact	2	3	Low

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				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Workers are injured to the point of permanent disability or death.	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Full PPE is used to reduce the risk of fatal injuries. Stay focused while working to avoid fatal injuries if the tank topples over during an earthquake Perform evacuation or first aid on accident victims	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Patahan Jib mengenai pekerja	Fatality	Local damage	Minor effect	Major impact	4	3	Medium	Use PPE to reduce the risk of injury to workers Stay concentrated while working to avoid being thrown by a broken Jib	Minor injury	Minor damage	Minor effect	Limited impact	2	3	Low
			Crane suffers engine failure Work was temporarily halted resulting in losses in terms of time and cost	No/slight injury	Local damage	No/Slight effect	Major impact	3	3	Medium	Regular maintenance is carried out to ensure that the crane is in optimum or good condition when operating.	No/slight injury	Minor damage	No/Slight effect	Limited impact	2	3	Low
			Crane overturned due to overload The load rolled along with the crane, which could hit other facilities at the TBBM and incur cost losses.	Fatality	Major damage	Major effect	National impact	3	3	Medium	Well analyzed for crane capacity calculation to avoid crane overload. When analyzing the crane capacity, it has been multiplied by the safety factor.	Major injury	Local damage	Minor effect	Major impact	2	3	Low

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Workers are injured to the point of permanent disability or death.	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers must remain focused while doing their work because if an accident occurs, workers can avoid it more quickly. Workers are also required to use complete PPE in accordance with applicable regulations. In the event of a victim, immediately provide help as early as possible.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Damage to equipment and other facilities at TBBM	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Operators who operate cranes must be certified to avoid errors in operation. At the time of operation must follow the signs of work at the project site. Continue to use PPE in accordance with applicable standards. provide immediate first aid if there are accident victims.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
		There was a collision between cranes	Time and cost losses due to crane collision accidents	No/slight injury	Local damage	No/Slight effect	Major impact	3	3	Medium	Operators who operate cranes must be certified to avoid errors in operation. At the time of operation must follow the signs of work at the project site.	No/slight injury	Minor damage	No/Slight effect	Limited impact	2	3	Low

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				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Injury to crane operator or injury to workers	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Use PPE in accordance with applicable standards and stay focused while working. Immediately perform first aid in the event of an accident victim	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Equipment damaged by fire	Minor injury	Major damage	Minor effect	National impact	3	3	Medium	Cranes must be maintained according to the schedule and not skip any part of the check during maintenance. Crane operations must be carried out by professional and certified operators.	No/slight injury	Minor damage	Minor effect	Limited impact	2	2	Low
	Crane on fire		Workers are injured to death	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding K3 at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			There are disadvantages in terms of cost and in terms of time	No/slight injury	Local damage	No/Slight effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding K3 at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance.	No/slight injury	Minor damage	No/Slight effect	Limited impact	2	3	Low

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Crane terguling	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Crane operation must be in accordance with the standard or initial design that has been planned and has been calculated and analyzed to avoid accidents. Operators who operate the crane must be professional and certified so that they can operate the crane properly.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
		Unsafe crane height	Crane has broken	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Crane operation must be in accordance with the standard or initial design that has been planned and has been calculated and analyzed to avoid accidents. Operators who operate the crane must be professional and certified so that they can operate the crane properly.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Dropped or rolled loads	Multiple fatalities	Extensive damage	Major effect	National impact	5	3	High	Crane operation must be in accordance with the standard or initial design that has been planned and has been calculated and analyzed to avoid accidents.	Minor injury	Minor damage	Local effect	Limited impact	2	3	Low

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NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Injury to workers or death	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Continue to use complete PPE when working and comply with other OHS requirements when at the project site. In the event of an accident victim immediately perform first aid.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Workers experience oxygen deprivation and workers experience shortness of breath and respiratory infections.	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers use dust masks when working in locations that produce a lot of dust. Workers use complete PPE and comply with other OHS at the project site. Immediately provide assistance if there are victims	Major injury	Local damage	Minor effect	Major impact	2	3	Low
		Workers breathe in a lot of dust when cleaning crawler cranes	Workers temporarily or permanently disabled due to respiratory infection	Major injury	Major damage	Major effect	Major impact	3	3	Medium	Workers use dust masks when working in locations that produce a lot of dust. Workers use complete PPE and comply with other OHS at the project site. Immediately provide assistance if there are victims to reduce the risk of disability.	Major injury	Local damage	Minor effect	Major impact	2	3	Low

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Posisi boom berubah dan berakibat fatal karena beban terguling	Multiple fatalities	Extensive damage	Major effect	National impact	5	3	High	Operator yang mengoperasikan crane haruslah telah bersertifikasi dan fokus saat bekerja. Pengoperasian harus sesuai dengan standar awal yang telah direncanakan. Gunakan APD lengkap untuk mengurangi resiko cedera parah apabila accident terjadi.	Minor injury	Minor damage	Local effect	Limited impact	2	3	Low
	Terjadi human eror pada saat pengoperasian boom		Boom broken	Multiple fatalities	Extensive damage	Major effect	National impact	5	3	High	Operators who operate the crane must be certified and focused when working. The operation must be in accordance with the initial standards that have been planned. Use complete PPE to reduce the risk of severe injury if an accident occurs and immediately provide assistance if there are victims.	Minor injury	Minor damage	Local effect	Limited impact	2	3	Low
			Loss on costs due to temporary stoppage of the project	No/slight injury	Local damage	No/Slight effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding OHS at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance. Operators who operate must be professional and certified.	No/slight injury	Minor damage	No/Slight effect	Limited impact	2	3	Low

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				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Injury to workers until death or Disability to workers or crane operators	Major injury	Major damage	Major effect	Major impact	3	3	Medium	Use complete PPE to reduce the risk of severe injury if an accident occurs and immediately provide assistance if there are victims.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Load is unstable or even toppled over	Multiple fatalities	Extensive damage	Major effect	National impact	5	3	High	Operators who operate the crane must be certified and focused when working. The operation must be in accordance with the initial standards that have been planned. Use complete PPE to reduce the risk of severe injury if an accident occurs and immediately provide assistance if there are victims.	Minor injury	Minor damage	Local effect	Limited impact	2	3	Low
		Hoist experienced an error due to incorrect operation	Damage to other TBBM facilities resulting in heavy losses in terms of costs	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Operators who operate cranes must be certified to avoid errors in operation. At the time of operation must follow the signs of work at the project site. Immediately stop other activities around the project to avoid bigger accidents due to damage to facilities.	Major injury	Local damage	Minor effect	Major impact	2	3	Low

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
3	Maintenance crane		Workers suffered permanent injuries and even died	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding K3 at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
		Worker hit by key tools for crane maintenance	Workers experience fatal injuries that cause permanent disability to death due to accidents and work is temporarily stopped so that they experience losses in time and costs.	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding K3 at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
		Worker electrocuted during maintenance	Workers suffer permanent physical injuries and even death	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers remain focused while performing work and use PPE in full accordance with regulations. Workers obey the work signs on the project and comply with other OHS regulations that apply on the project.	Major injury	Local damage	Minor effect	Major impact	2	3	Low

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NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			The mentality of other workers was shaken by the accident.	Major injury	Major damage	Major effect	Major impact	3	3	Medium	Immediately evacuate the victim and provide immediate assistance to reduce the risk of severe injury and affect other workers. Conduct a re-briefing on OHS on the project after an accident occurs.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Time and cost losses due to temporary project stoppages	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding K3 at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
4	Crane unloading	Worker falls while dismantling crane	Workers suffer permanent physical injuries and even death	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding OHS at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance. Workers comply with existing work signs on the project. Conduct a re-briefing on OHS if an accident occurs to avoid the same accident from happening again.	Major injury	Local damage	Minor effect	Major impact	2	3	Low

NO	Type Of Event	Potential Hazards	Consequences	Consequences				Initial Risk			Safeguards (Existing and Recommended Control Measures)	Consequences				Residual Risk		
				People	Asset	Environment	Reputation	S	L	R		People	Asset	Environment	Reputation	S	L	R
			Project was temporarily suspended and incurred cost losses	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding K3 at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance.	Major injury	Local damage	Minor effect	Major impact	2	3	Low
			Damage to other facilities at TBBM	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Workers or operators must comply with regulations regarding K3 at the project site and continue to use PPE in accordance with applicable standards, if there are victims then immediately provide assistance. Operation must be in accordance with the planned standards..	Major injury	Local damage	Minor effect	Major impact	2	3	Low
		Additional counterweight fell during operation	Workers suffer semi-permanent to permanent injuries or workers die	Fatality	Major damage	Major effect	Major impact	3	3	Medium	Immediately evacuate the victim and provide immediate assistance to reduce the risk of severe injury and affect other workers. Conduct a re-briefing on OHS on the project after an accident occurs.	Major injury	Local damage	Minor effect	Major impact	2	3	Low

From the results of the analysis in the table above, namely the hazards of the tangka lifting process in the tangka X construction project at TBBM Tanjung Priok, several medium and high value risks were found. The risk assessment in this analysis process is in accordance with the existing assessment requirements. This risk identification is carried out to anticipate problems on the project and analyze the actions that must be taken if the risk occurs, so that if in the process of running the project the risk occurs it will not have too much impact. The risks identified in the table above are high-value risks that must be prevented as well as possible. From the analysis

results, there are 8 risks that can occur on the project. Risk management guidelines should be made with the aim of being easy to understand and understand so that the application in the field can run optimally.

Conclusion

The implementation of Risk Management helps companies to manage risks well where the risks are identified and assessed. In the risk analysis, there are 8 risks that can occur in the project which are considered to have a high risk impact. From the analysis results, there are 5 risks with moderate levels and 3 risks that are of high value. Using the application of PMBOK in risk analysis can make risk management guidelines easier to understand and understand but still detailed in the analysis process which can help smooth the project being implemented. Therefore, the application of the Project Management Body of Knowledge in the project world is very calculated. Because as we know PMBOK can help to plan, organize, and improve from every aspect within the scope of the world of construction projects. There are 4 ways used, namely rejecting (avoid), reducing (reduce), accepting (accept), and sharing (share). Mostly, companies take action to reduce risks to reduce the negative impact arising from these risks. The implementation of Risk Management can help companies to improve non-financial performance where the main goal is to meet consumer needs. By measuring the existing risks, the company will know whether the existing risks are classified as high / medium / low risk and then the company will be able to manage risks based on their priority level first.

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