SAFETY PERFORMANCE OF ELECTRICAL UTILITY IN TENAGA NASIONAL BERHAD, DISTRIBUTION DIVISION MELAKA.

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ABSTRACT

This research is a case study research, focused on the Distribution Division in Tenaga Nasional Berhad (Melaka). There are only two technical units under the Distribution Division which comprised of the Operation and Maintenance Unit and Construction and Planning Unit. A total of 131 respondents from the technical staff of TNB Melaka were randomly selected to be involved in the survey. The reason these units were selected is because, they were the frontier who directly involve with electrical hazards between the ranges of 230 volt to 33,000 volt. The research framework is management commitment, safety training, safety rules and procedure, safety compliance, and safety participation towards safety performance. Statistical Package for Social Science (SPSS) version 19 is used to generate and analyzed data collected. In summary, from the findings, there is positive correlation on the relationship between management commitment, safety training, rules and procedure, safety compliance safety participation, and safety performance. The findings also proven that the independent variables, management commitment, safety training and safety rules and procedure did not influence safety performance. However safety compliance and safety participation do influence safety performance at TNB Melaka Distribution Division. The implication of this study is very beneficial to TNB Melaka Distribution Division in improving their safety performance level in the workplace. By improving their safety performance in their workplace, TNB Melaka Distribution Division can reduce the risk, the injury and the cost of accident which will lead TNB Melaka Distribution Division to the growth of profits.

ABSTRAK

Kajian ini merupakan kajian kes yang memberi tumpuan kepada Bahagian Pembahagian Tenaga Nasional Berhad (Melaka). Terdapat dua unit teknikal di bawah Bahagian Pembahagian TNB Melaka dan unit-unit tersebut terbahagi kepada Unit Operasi dan Penyelenggaraan dan Unit Pembinaan dan Perancangan. Seramai 131 responden yang terdiri daripada kakitangan teknikal TNB Melaka telah dipilih secara rawak untuk terlibat dalam kaji selidik ini. Sebab utama unit ini dipilih adalah kerana, mereka adalah diantara pekerja barisan hadapan yang secara langsung terlibat dengan bahaya elektrik di antara julat 230volt -33000volt. Kerangka kajian yang telah dipilih merangkumi aspek komitmen pengurusan, latihan keselamatan, peraturan dan prosedur keselamatan, pematuhan keselamatan, dan penyertaan keselamatan kearah pencegahan kemalangan. Pakej Statistik untuk versi (SPSS) 19 digunakan untuk menjana dan menganalisis data yang dikumpul. Secara ringkasnya, dapatan kajian mendapati, terdapat korelasi positif di antara komitmen pengurusan, latihan keselamatan, peraturan keselamatan dan prosedur, pematuhan keselamatan, penyertaan keselamatan dan prestasi keselamatan. Kajian juga menunjukkan pembolehubah tidak bersandar iaitu komitmen pengurusan, latihan keselamatan, peraturan keselamatan dan prosedur tidak mempengaruhi prestasi keselamatan manakala pematuhan keselamatan dan penyertaan keselamatan mempengaruhi prestasi keselamatan di Bahagian Pembahagian TNB Melaka. Implikasi kajian ini sangat memberi manfaat kepada Bahagian Pembahagian TNB Melaka dalam meningkatkan tahap prestasi keselamatan di tempat kerja. Dengan meningkatkan prestasi keselamatan di tempat kerja, Bahagian Pembahagian TNB Melaka boleh mengurangkan risiko, kecederaan dan kos kemalangan dengan ini sekaligus akan membawa kepada peningkatan kadar keuntungan di TNB Melaka.

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CHAPTER 1

INTRODUCTION

1.0 Background of the study

The DOSH report on Occupational Accidents by Sector until October 2013 has investigated and recorded over seven (7) fatal accidents and 86 cases of non-permanent disability in utility companies. For instance, an accident occurred in Petaling Jaya August 2010 that involved an arc flashover in a transformer room. Four workers were severely injured; one of them suffered burns over 50% of his body and received treatment in an Intensive Care Unit (ICU). The accident occurred when a worker who was loosening the power supply wire to the circuit breaker accidently touched a part of his body (head) in the clearance space of the 11,000 volt power system. As a result, a short circuit and flashover occurred, which caused an explosion that injured the workers. Forensic investigation discovered that the working space was not suitable for such risky and dangerous jobs, as they involved high voltage. The divider that is supposed to separate the electrical powered section and the repaired section was missing. This can cause any part of the body to be exposed and in danger of being electrocuted if the work is not being performed cautiously.

Safety performance in the workplace can be measured in various ways such as numbers of safety training courses offered by the company, the regularity of safety assessment and the numbers of training attended by the staff. Occupational safety and health performance can even be measured based on personal safety behavior and other metrics. For instance, frequency rate (FR) and severity rate (SR) are two

outstanding safety performance measurers used internationally in workplaces. (Venkataraman, 2008).

Based on the research conducted by Sawacha et al. (1999), safety performance is recognized as a measurement of an incident towards workers that lead to injuries. This has been supported by Neitzel et al. (2006),who showed that workers usually have the risk of injury and even killed in electrical hazard. From the above report, it can be seen that electrical hazards are one of the most dangerous hazards. If they are not improved in terms of safety performance, the impact of electrocution or arc flash can damage the human body up to a third degree burn.

Therefore, to avoid accidents, the improvement of safety performance in managing, operating, or installing electrical equipment is vital to assure accidents do not happen. Agwu (2012) pointed out that improving the fundamentals of safety performance can decrease accidents and can save the unnecessary cost. The workers will have a very low percentage of accident and this will motivate them to have a better performance in their workplace. These elements make safety performance very important in the utility sectors because it plays significant roles in the lives of workers who face high occupational risks in their daily work.

1.1 Problem Statement

Companies always measured standard safety performance with frequency rate (FR) and lost time injury (LTI) (Venkataraman, 2008). Without realizing it, those are lagging indicators that can only detect the control failure and do not bring any impact to risk management efforts. As mentioned above, the best safety performance indicators that are widely used are the frequency rate (FR) and severity rate (SR) (Venkataraman, 2008). *"Accident frequency rate is defined as the number of deaths and injuries in occupational accidents × 1 000 000/aggregate number of human-hours, and accident severity as the number of workdays lost rate × 1 000 000/aggregate number of human-hours".* Hence, safety performance is noted by number of incidents and percentage of lost of man – hours.

Protective equipment (PPE) and other safety tools are vital in preventing electrical hazards because with a limitation of those elements, electrical safety attempt will not be effective (Liggett, 2009). Therefore, safety performance is very vital in utility sectors. It plays an important role for the workers who face high occupational risks in their daily work. There is no compromise in handling electrical equipment, as safety performance should be taken seriously.

Farooqui (2011) stated in his study that supervisory support, including coaching, mentoring and training of employees, provides them with the right tools at the right time. These tools result in employers taking care of their personal safety, showing a commitment to safety, empowering employees to take an active part in portraying unsafe conditions, recommending solutions, and boosting the employees'

motivation. Supervisory support is a key element in developing a safe working environment that is conducive and injury free. These elements are also supported by Theodore (2001), explained that company cannot neglect the importance of management commitment because that is the key of improving safety performance in organization.

According to Vinodkumar & Bhasi (2010), management needs to focus on the importance of safety training in workplace. A well develop training course can deduce educate the workers in preventing electrical hazards. Farooqui (2011) In safety managements programs, rules and procedures are connected to safety performance.

The importance of getting employees' commitment towards their safety, to achieve and to maintain consistent incident and injury-free environments cannot be over-emphasized. If employees are personally committed in engaging with safety performance, they can work along with the management to further improve their safety performance (Farooqui, 2011).

Hence, this research is intended to discover the effects of safety performance in a utility company.

1.2 Information about TNB

i. The Story of Electricity

The story of electricity begins in the 20th century and the first power generation was found in a mining town in Rawang, Selangor by two pioneers Loke Yew and Thamboosamy. They were the pioneer to use electricity generator to operate their mines in 1894 and the appearance of this electricity has become so marketable. After making its emergence, the electricity was extended to street lighting and this lead to another victory as railway station in Kuala Lumpur received its electricity supply in 1985. The story does not end there, because in 1900, the Sempam Hydroelectric Power Station in Raub was built and has become the first power station in Malaysia.

ii. Central Electricity Board (CEB)

In previous years, the generating plants used charcoal and local wood to operate, however as electricity became famous, it demands an establish operation. Therefore Central Electricity Board (CEB) was formed in 1949 with 34 power station and covered three main projects such as; The Connaught Bridge Power Station, The Cameron Highlands Hydroelectric Project & The development of a National Grid.

iii. The National Electricity Board

Central Electricity Board (CEB) was changed to the National Electricity Board (NEB) in 1965. NEB was led by a Malaysian CEO. Later, former Prime Minister Dato Seri Dr. Mahathir Mohamad declared the decision of privatization. Although there were some risk, privatization was carried out.

v. A Private Company

After all the legislation process, NEB was changed to Tenaga Nasional Berhad (TNB) and Datuk Hj. Ibak bin Abu Hussein was appointed as the first Managing Director of TNB. TNB then was developed into a private company owned by the government. In 1990, Tan Sri Dato Haji (Dr) Ani bin Arope was appointed as Chairman.

vi. TNB Distribution Division.

In TNB, the distribution division may carry 230 volts to 33,000 volts. Abiding the same regular process, distribution division carry out the standard practice and planning to serve the nation. Covering the urban and suburban, a single-phase is recommended.

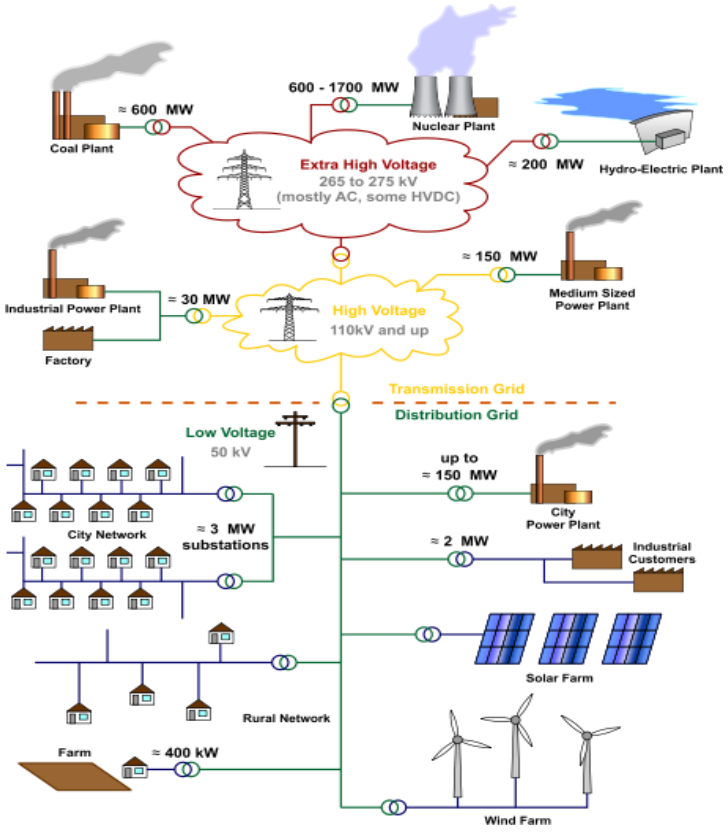

Figure 1.1 . Electrical schematic

However, for big companies, they are recommended for voltages that are connected to transformer because, besides being economical, it protects the wiring system efficiently. Nevertheless, electrical service is connected to meter for billing purposes and are charged on monthly basis.

1.3 Research Questions

This research seeks to answer the following questions.

i) Is there any relationship between management commitment and safety performance?

ii) Is there any relationship between safety training and safety performance?

iii) Is there any relationship between safety rules and procedure and safety performance?

iv) Is there any relationship between safety compliance and safety performance?

v) Is there any relationship between safety participation and safety performance?

vi) Do the IVs (management commitment, safety training, safety rules and procedure, safety compliance, safety participation) influence the DV (safety performance)?

1.4 Research Objectives

The purpose of this research is to examine the relationship between all IVs and the DV. The specific objectives are as follows:

i) To examine the relationship between management commitment and safety performance.

ii) To examine the relationship between safety training and safety performance.

iii) To examine the relationship between safety rules and procedure and safety performance.

iv) To examine the relationship between safety compliance and safety performance.

v) To examine the relationship between safety participation and safety performance.

vi) To examine whether the IVs (management commitment, safety training, safety rules and procedure, safety compliance, safety participation) influence the DV (safety performance).

1.5 Scope of the Study

This research was conducted in the Distribution Division, Tenaga Nasional Berhad focusing in Melaka state. According to Melaka Chief Minister, the industrial growth in Melaka as about 3.68 percent in 2011.When industrial developments arise, they will definitely have an impact on electrical growth. Therefore, this study is focused specifically on TNB distribution Melaka in line with the government's efforts.

Participants or respondents in this study were sampled randomly from the technical employees of TNB Melaka Distribution Division. This is because the technical employees are directly exposed to electrical hazards such as electrocuted and electrical burns. These hazards are lingering among the workers. Therefore, the workers must increase their safety performance, zero accidents.

1.6 Summary and Organization of the Thesis

In summary, Chapter One consists of the background of the study, the problem statement, the company information (in this case, TNB Melaka), research questions, research objectives, the scope of the study regarding safety performance, and also the summary and organization of the thesis. The following chapter reviewed the literatures and theories that are related to the safety performance. An overview of Relevant Registration, Domino Theory, Accident Theory, and are view of previous research studies has been gathered for further reading and references. Chapter Three reviews the method currently being used. The framework and hypothesis of the study are discussed simultaneously with the research design. This chapter also explains the population and sample of the study, the operational definition, the instruments used in the study, the development of the questionnaire and also the implementation of the pilot study. Also, the administration of the survey instruments and the analysis of the

data are discussed in this chapter. A summary of data collection, demography of respondents, the reliability of the instrument, the descriptive statistics, the hypothesis testing, and also the summary of results of the hypothesis testing are discussed in Chapter Four. Chapter Five discusses the hypotheses testing results, limitations and research direction, and recommendations and suggestion for future research.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

The literature review is taken from various researchers, and an overview of relevant legislation it also being discuss. Furthermore, Heinrich Theory and Accident Domino Theory which involve five (5) main factors of accident are highlighted in detail.

2.1 An Overview of Electrical Hazards

Electrical hazards are always connected to electrical shock and fire. It happens because human body is part of electrical circuit and the effects of electrical shock involved few conductors. Water is a good conductor that allows the current to flow into the body and it will become worst if the skin is wet. The effect of the shock can be as slight prickle to cardiac arrest.

An arc flash is a thermal energy that vaporized and ionized materials. It temperatures can be up to 35,000 °F and with these high temperatures it burns the skins and can cause explosion.

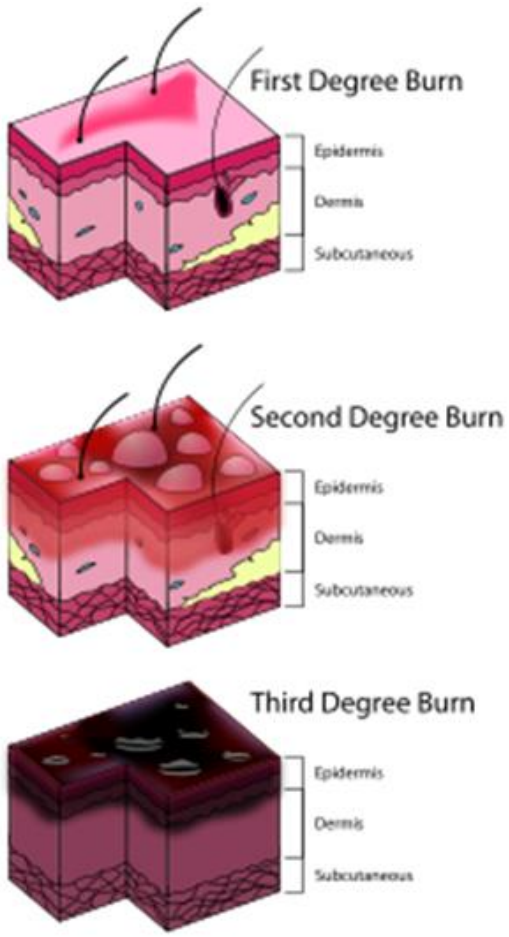

Figure 2.1. Three degrees burn

In Malaysia, the Energy Commission is a statutory body that is responsible for electricity and piped gas supply in Peninsular Malaysia and Sabah. Besides of the reasonable price, the supply must be of secure, reliable, consistent and safe to be used. Consequently, safety has been the top priority and it plays a vital role in servicing the customers.

Safety management is very important for all companies in order to avoid accidents and reduce the profitable losses. (Lin, 2009). Recognizing hazards may prevent injury or death. Therefore, when a person is engaging in work on a circuit controlled by a switch not under his immediate supervision, the switch shall be lock in the

"OFF" position until the work is finished (Regulation 112, Electrical Regulation 1994).

Figure 2.2. TNB lock out take out system

According to Electricity Supply Act 1990, "Substation" is conducive room that controls the equipment of controlling the transformers and converting the electricity of high and low voltage. Substation also operated as a switching procedure and tools, controlling and regulating energy at high voltage.

2.2 An overview of relevant legislation

i) Energy Commission of Malaysia

The Energy Commission of Malaysia was established in 2001 to ensure that electricity is developed efficiently. This is to make Malaysia in line with the globalization and liberalization. Apart from that, it was also to ensure that Malaysia is fully equipped to meet the vast challenges in the energy supply industry. Therefore, there are several acts were being introduced such as Electricity Supply Act 1990, License Supply Regulation 1990, Gas Supply Act 1993, Electricity Regulation 1994, and Gas Supply Regulation 1997, Electricity Supply Act 1990 - Act 447, Licensee Supply Regulations 1990 and Electricity Regulations, 1994.

The main things that have been described in the Electricity Supply Act 1990 - Act 447 relevant to this study are:

- Authorized Person: *"Person who is appointed to be responsible for any installation process, becoming the representative of the managements or agent that carry out the utilization of electricity".*

- Competent Person: *"Person with a certified competency certificate issued by the authority to perform duty a line with the limitation stated in the certificate".*

- Danger: *"Defined as hazardous to human being that may cause electrocuted, burn or even damages to the properties".*

- Dead: *"It applies to every part of the system, meaning that it is not live or alive".*

- Electricity : *"Energy and power to be generated, produced, transmitted, distributed except for the transmission of any communication or signal"*.

- Equipment : *"utilization of electrical energy, such as machines, transformers, apparatus, measuring instruments, protective devices, wiring materials, accessories and appliances".*

- Extra high voltage : *"a voltage exceeding 3,000 volts"*.

- High voltage: *"a voltage exceeding 600 volts but not exceeding 3,000 volts"*.

ii) Department of Occupational Safety and Health (DOSH)

Department of Occupational Safety and Health (DOSH) are focused in ensuring the welfare of Malaysian workers. With huge responsibility, DOSH came out with an act that is called the Factories and Machinery Act 1967 and the Occupational Safety and Health Act 1994 with the same aim that is to protect the well-being of the workers in Malaysia. The Occupational Safety and Health Act 1994 (Act 514) is relevant in Malaysian industries and it does not apply to those who are working abroad. With the enlighten of this act, hazards which have drawn a great attention in the past decade, is finally being given attention.

Hazards can be described as an event or situation that is not damage or injury but clearly has the potential for damage or injury. Besides, hazard also can be defined as

a condition with the potential of causing injury, accident or damage. Although there are many explanations on the term of hazard, it still has the same meaning. Hazard involves risk or chance and these words deal with the unknown.

In general, hazard is a contributing factor, for a potential causes to the occurrence of accident. Thus, hazard identification is fundamental in workplace safety management as the unidentified hazards present the most unmanageable risks. Therefore, the cause of accidents should be recognized so that steps can be taken to avoid accident in workplace. Nevertheless, the implementation of Factories and Machinery Act 1967 was developed intending to secure the welfare of Malaysian workers.

2.3 Theory related to the study

Accidents happen nearly every day and to prevent it from happened, a person need to know the cause of accidents. Tremendous theories have been implemented to prevent the accidents occurrences and there are also model developed to detect and expect the accidents from happened. Thus, in this study the Domino Theory and accident/incident theory has been used.

2.3.1 Accident domino theory

Heinrich (1950) has proposed that accident does not suddenly occurred but through the sequence of incident. He recommended that accident happened due to the domino effect which involves five main factors namely lack of management control, root cause, unsafe act or condition, incident and loss.

The earliest theories on accident causation were developed by Heinrich in the 1920s (Heinrich, 1950), who had studied and classified numbers of industrial accident and

he concluded 88 percents of unsafe acts lead to industrial accidents and the rest is can be considered as dangerous situation and cannot be avoided. According to Rowlinson (1997), accident causation, better known as Domino and theory, is based on ten axioms.

Below are the summarized accidents occurrence based on chronological order.

a) Mental and emotional character of the individual is called ancestry and social environment. This factor may lead to a negative quality and at the same time may direct people to behave in a dangerous manner. They may also be an inherited trait driven by surrounding or social environment.

b) Human mistakes are a factor that can be traced to a person's tendency to a dangerous behaviors or the intolerance of themselves in following the rules with respect to adherence to standards for hazardous conditions.

c) The unsafe behavior is cause of accidents.

d) Accidents caused by moving objects and fall from height.

e) Typical injuries lead to human physical damages.

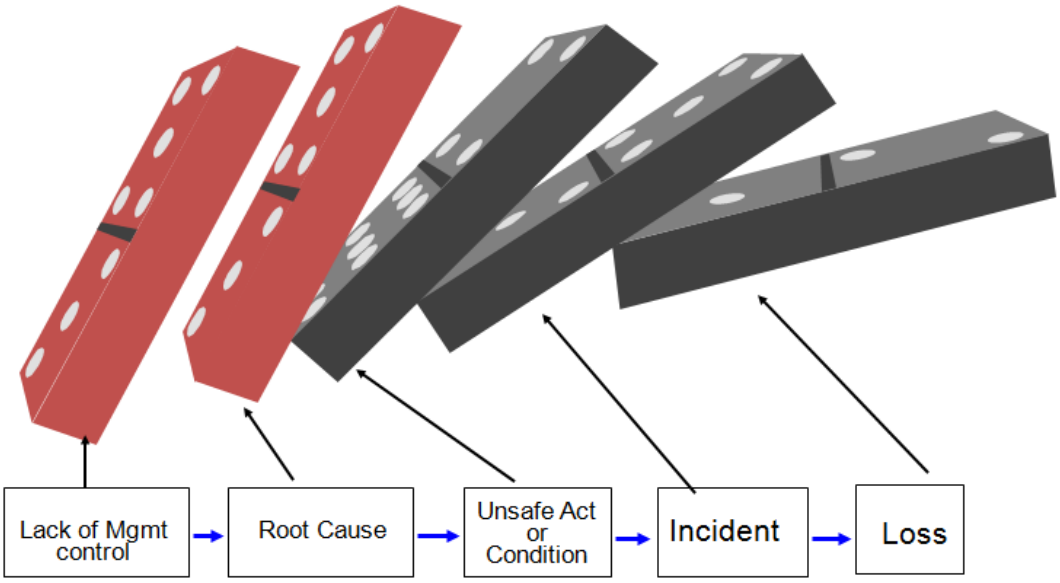

Figure 2.3. "Loss Causation Model" – Domino theory

Bird and Loftus (1976) gave their opinion that Heinrich's Theory should be adapted at the management level. Based on the Domino's Theory, they agreed that fatality and asset damages are due to incident at the workplace. Incident occurred due to the cause of substandard practiced by the worker. This reason is due to basic reason related to inexperience or worker physiology problem. All these basic causes are affected due to planning, organization and leadership setback.

For instance, this study maybe related to Heinrich's Theory. One example is lack of management control will lead to unsafe act or unsafe condition and this will definitely cause an accident to happen. As we know, when accidents happen they may directly lead to the loss of life or valuable equipment.

2.3.2 Accident/Incident theory

Peterson accident/incident theory of the National Safety Council stressed on few elements as showed in figure 2.4.

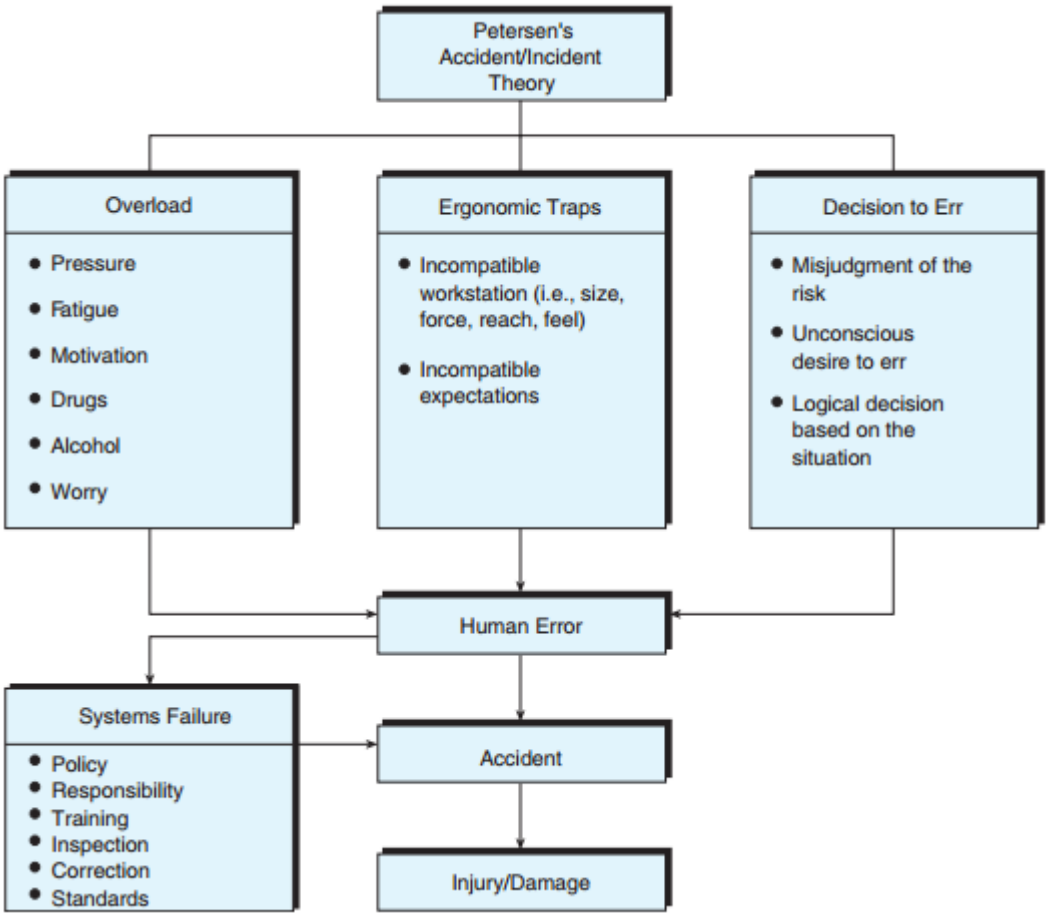

Figure 2.4. Accident/Incident theory

The system failure as mentioned in this theory is important to this study. Based on this theory, if we do not abide with management control or management commitment, it will lead to unsafe acts or conditions. We are aware that when accidents happen, they may result in loss of life or valuable equipment. One of the elements in incident/accident theory is system failure; this system is related to safety training, safety rules and procedure, safety compliance, and safety participation. If

the organization has safety training, safety rules and procedures, safety compliance and safety participation from workers, this should lead to good safety performance.

2.4 Review of previous research study

2.4.1 Management commitment and safety performance.

Top managements should have technical knowledge and able to educate their workers to work in a conducive working environment as these elements will direct them to strengthen the teamwork.

Written Safety and Health Policies helps the managements to emphasis their commitment towards safety. It enables the managements to tackle safety issues in the organization. Under the Occupational Safety and Health Act, the safety awareness is very vital and it is considered as part of the responsibility of the top managements. If the safety communication flows from top managements to the bottom, injuries will be prevented and this was also agreed with in the findings of Ahmet (2013), who showed that management plays a significant role in safety performance.

Managements have various ways to express their commitment in safety performance. Nevertheless, the prominent way to lead a safety performance in workplace is by having a safety policy that includes clarity, reliability over safety. The multiple resources and activities in promoting safety and health will represent a complete sequence of program and this was agreed by Cohen et al. (1975) in his findings.

Nevertheless, while a manager is helping in developing and implementing programs, the real success actually depends on the ability of supervisory staff. They are to

ensure that the program is running during the day to day operations (Agrilla, 1999). Sawacha (1999) identified the fact that management commitments towards safety contain a positive relationship with construction safety performance at the project level (Cited from Ahmet, 2013).

According to Farooqui (2011), supervisory supports include of coaching, mentoring and training of employees, providing them with the right tools at the right time, take care of their personal safety, showing a commitment to safety, empowering employees to take an active part in portraying the unsafe conditions and recommend solutions, employee motivation. It is a key element in developing a safe working environment that is conducive and injury free. This is supported in Theodore (2001) who highlighted that the management commitment improved safety performance in organization.

The management commitment will motivate both management and employees. Lack of upper management involvement in safety and health issues become a serious obstruction to improve safety and health conditions. Without the awareness, the managements cannot set their safety goals and this will lead to safety performance issues.

2.4.2 Safety training and safety performance

Workers do not think that safety training is important to them although they are exposed to electrical hazards everyday because the work is done on daily basis. Therefore, by having safety training, the workers can set their attention on preventing electrical hazards which will improve safety performance (Hussain, 2009). According to Vinodkumar & Bhasi, (2010), safety training refers to government regulation compliance, a means to reduce insurance costs, and to

involve them in safety work procedure**.** This was supported by Kirkpatrick et al. (2006) who found that safety training is good to change workers' behaviours.

Effective safety training is the factors of having a successful organization with zero accident occur. Right behavior, positive attitude and knowledge can be imparted during the training. Vinodkumar & Bhasi (2010), safety training can be indicators to improve the percentage of accident occur. Therefore, organization should establish comprehensive safety and health training programs.

Safety training can educate the workers therefore it can improve their safety performance in workplace. This may also resulted in acknowledgement of the effectiveness on safety procedures. An effectiveness of safety training in terms of developing and maintaining a work environment is conducive to the incident and injury free. According to Farooqui (2011), safety training is a key component of jobsite safety. Safety is essentially to an ongoing teaching and learning processes at all levels. It is crucial not only to keep them on track but also to maintain safe environment and cooperation in all work sites. Particular site training can provide positive reinforcement which employees can be informed of any lack of security practices and they need to improve and correct it immediately. Mark (2009) revealed that there are linkages of workplace injury and 1-hour classroom safety training because with the safety training lesson it will lessen the injury in the workplace and increase the safety awareness among the workers.

According to Colligan & Cohen, (2003), workers who have safety training in their workplace are known to have minimal electrical injuries. This was also agreed by Barling et al. (2003), safety training can increase competencies in doing their daily work and this somehow will boost up their safety performance. Besides, by attending

safety training, it will improve their problem solving skills (Osterman, 1995). According to Anthea & Julian, (2005) workers should have a proper safety training provided with the well balance safety modules that are related to their job scope. This includes the initial learning of various procedures, such as using the correct tools and machines, include the basic facts of the procedure and highlighting the risk and circumstances of injury. Snyder et al. (2008) said that it is very important to expose the workers to the safety knowledge since safety training is directly related to safety performance.

Terisa (2010) found that lack of safety training may increase rates of accident occur which may affect the safety performance. Therefore, Ahmet (2013), pointed out in his research that by implementing special training program for these trades and identifying the risk exposures associated with their scope of work as it relates to safety, can improve the safety performance.

2.4.3 Safety rules and procedures and safety performance.

Procedures are present for most aspects of a job whether they are formalized, written down or not. However for procedures is more effective in term of oral and written. Apart from that, employers should give emphasis to the employee about the procedure and demonstrate to assure proper understanding of the procedure. This is because safety rules list the specific activities of completing the job effectively and safely. Employees' compliance to safety procedures is vital in order to create workplace environment safer because their involvement will have an impact on any decision made (Heathfield, 2005).

Stated by Langford et al., (2000), comprehensive safety rules and procedures are the most important elements to ensure the intensity of safety performance. Safety on

handling electrical equipment is measured by level of implementation of safety rules and procedure, and hazard control mechanisms. However, these approaches have failed to recognize safety as an important scope because the person, culture, behavior and process, always determine the true safety performance. This is supported by Farooqui (2011), who pointed out rules and procedures are important in safety management.

The organization should encourage and promote safety rules and procedure as part of their daily routine. In fact, it has become the main factors that influence the safety level among the workers (Cox & Cheyne, 2000). In Farooqui (2011), a safety programs that prescribed safe behaviors, involve contractor's selection, training, inspections, motivation, enforcement, can increase the workers' compliance. In his findings, he also mentioned that the implementation of effective safety programs such as safety rules and procedures has positive correlation in reducing accidents. Nevertheless, even though these actions have given positive results, it still does not reach the zero-accident goal.

Cox & Cheyne (2000) stated that, safety regulations and procedures are a factor in safety research as safety regulation and procedures have a relationship with accident rates. If safety regulations and procedures are taken as a safety management practice, it will prevent accidents from happen.

2.4.4 Safety compliance and safety performance

Safety compliance is regarded as obeying the regulations of safety actions that includes safety clothing and tools (Burke et al., 2002). Another definition of safety compliance and safety performance is that it provides two further measures of occupational safety, namely safety and initiatives (Griffin &Neal, 2000). According to Wong et al. (1999) the elements of safety compliances are the factors that influence the safety performance.

On the other hand, safety compliance can also be regarded as following the safety policies and procedures without abandoning the safety behaviors because safety compliance provides a complete picture of the employees that behave safely at work (Neal et al., 2000).

Neal et al. (2000) stated that in order to achieve safety compliances, activities such as promoting the safety program in workplace and indicating safety behaviours should be implemented to improve safety performance. Nahrgang et al. (2008) firmly stated that safety compliance has significant effects on safety performance.

2.4.5 Safety Participation and safety performance

According to Sashkin (1976), safety participation and safety performance fall under the same category (Cited in Dietz et al., 2005). This was mentioned by Ventakaraman (2008), namely that incidents are one safety performance measure. By taking part in safety programs, workers can be familiarize with the electrical hazards and this will at the same time enable them to prevent any injuries or accidents occurrence in the workplace. When employees are committed to participate in safety awareness, they will cooperate with one another to continue improving safety

performance. Hence, the hypotheses of the study show a significant correlation between safety participation and safety performance (Farooqui, 2011).

According to Vinodkumar & Bhasi (2010), there is a correlation between safety participation and safety performance. Without the interference of safety participation and safety performance, organization will be exposed to accidents' risks. This has been supported by Nahrgang et al. (2008), who reported that safety participation had significant effects on work-related injuries.

2.5 Conclusion

Working with electrical hazards without any precaution can lead to death. While working with electrical equipments, rules and procedures to prevent from electrocuted should be taken into consideration. This will definitely reduce the number of electrical injuries. In order to eliminate electrical danger, electrical insulator or barrier is put between workers and electrical hazards along the road as PPE is believed to protect all workers, as electrical hazards are considered dangerous and it is still necessary to address the safety requirements for all employees. In summary, management commitment, safety training, safety rules and procedure, safety compliance, and safety participation in the workplace leading to the successful safety performance.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

Research methodology is used to obtain the objectives of the study and giving comprehensive results of the study despite avoiding deviation on the objectives. There are three stages of methodology involved in this study, namely research design, data collection methods, and data analysis. In terms of data collection method, a survey method was applied to gather data from the respondent sample. For the process of data analysis, Statistical Package for Social Science (SPSS) Version 19.0 was used.

3.1 Research design

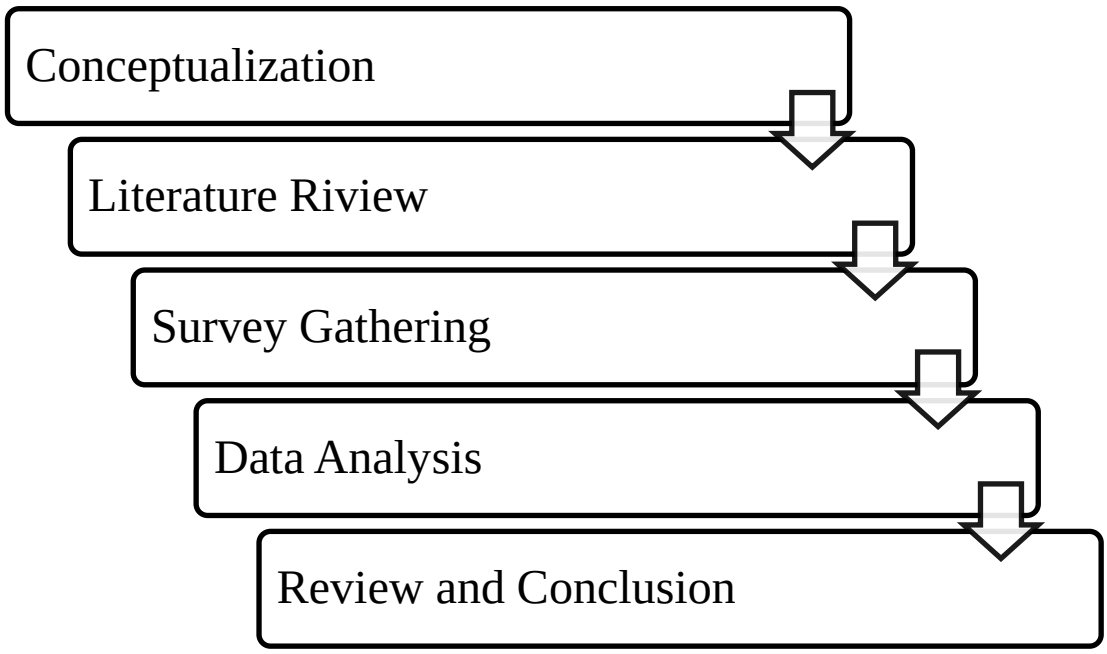

Figure 3.1. Summary of research methodology

Figure 3.1shows the summary of research methodology. This study began with a conceptualization and was continued with a compilation of literature review. Later, a survey gathering was conducted and the data were analyzed. Finally, the overall study was reviewed and summarized according to the findings.

3.2 Framework and hypothesis of the study.

3.2.1 Framework of the study

Safety performance has been selected as dependent variable in this study, while management commitment, safety training, safety rules and procedure, safety compliance, and safety participation are independent variables. A schematic diagram of the theoretical framework is shown in Figure 3.2.

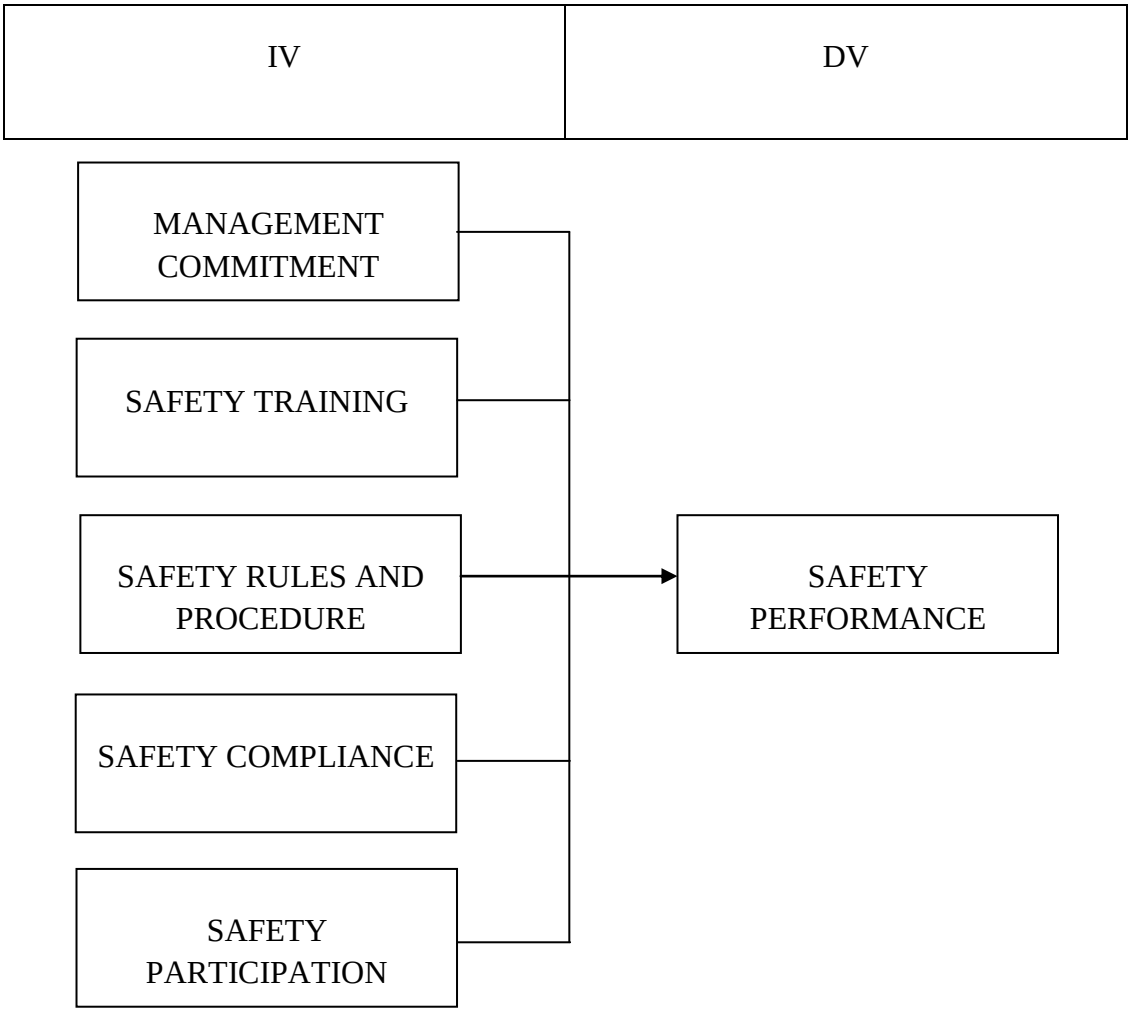

Figure 3.2. Theoretical framework

3.2.2 Hypothesis of the study

i) Management commitment and safety performance

In Cohen et al. (1975) and Smith et al. (1978), there are linkages between management commitment and safety performance. In other words, management commitment plays an important function in safety performance. Sawacha(1999) identified the fact that management commitment towards safety is the driving factor of construction safety performance at the project level and also find there is correlation between safety performance and management commitment. (Cited in Ahmet, 2013). Theodore (2001) demonstrated that improving safety and health performance has a correlation with management commitments towards safety performance.

Consequently, the hypotheses of this study are:

Hypothesis 1

H1 : There is a relationship between management commitment and safety performance.

H6a : Management commitment influences safety performance.

ii) Safety training and safety performance

Training is essential in improving performance and competence, yet overlooked by the management. According to Vinodkumar & Bhasi (2010), safety training needs to convince the workers on how important the safety training and safety performance is. Positive correlation of safety training and safety performance should be designed to educate the workers. Mark (2009) revealed a statistically significant relationship

between workplace injury and 1-hour classroom safety training was statistically less likely to suffer injury in the workplace and increase the safety performance. Mark (2009) showed with significant results that safety training and the incidence of workplace injury with lead to the safety performance. Nevertheless, stated by Snyder et al. (2008), safety training does not only revolve around safety understanding and safety control, it is more focused on the perceptive of safety performance. Terisa (2010) noted in study that there is no significant effect on whether teens perform hazardous, prohibited, or dangerous task at work, or the number of dangerous tasks they perform and the result suggest that lack of safety training may increase rates of accident occur which is may affect the safety performance. Again, it has been clearly proven that safety training and safety performance are closely interrelated. Therefore, a hypothesis of this study is as follows:

Hypothesis 2

H1 : There is a relationship between safety training and safety performance.

H6b : Safety training influences safety performance.

iii) Safety rules and procedure and safety performance

Employee adherence to safety procedures is essential in order to create a safer workplace in which their involvement has an impact on their decision decisions, as these affect their job (Heathfield, 2005). In Cox and Cheyne's (2000) findings, the main factor affecting the level of safety performance in organization is the perception of safety regulations and procedures. So, it explained the correlation between safety rules and procedure and safety performance. Per Farooqui (2011), rules and procedures is important in safety management program and have

relationship with safety performance in the organization. Therefore, a hypothesis of this study is as follows:

Hypothesis 3

H1 : There is a relationship between safety rules and procedure and safety performance.

H6c : Safety rules and procedure influences safety performance.

iv) Safety compliance and safety performance

When employees follow the rules pertaining to safety and generally work in a safe manner, they exhibit safety compliance, which helps reduce injuries and incidents. According to Parker et al. (2001) in Anthea & Julian (2005), there is a correlation between safety compliance and safety performance. Safety compliance provides a complete picture of the ways in which employees may behave safely at work. According to Nahrgang et al. (2008), safety compliance had significant effects on safety performance. Neal et al. (2000) stated that in order to achieve safety compliances, activities such as promoting the safety program in workplace and indicating safety behaviours should be implemented to improve safety performance. The developments of these elements are correlated with safety performance (Wong et al. 1999). Therefore, a hypothesis of this study is as follows:

Hypothesis 4

H1 : There is a relationship between safety compliance and safety performance.

H6d : Safety compliance influences safety performance.

v) Safety participation and safety performance

The importance of gaining workers' commitment in safety in order to achieve and maintain consistent incident and injury free environment cannot be overstated. When employees are committed to safety, the workers will keep on developing their safety performance, and the hypotheses of the study show a significant correlation between safety participation and safety performance (Farooqui, 2011).According to Vinodkumar & Bhasi (2010), in order to achieve safety compliances, activities such as promoting the safety program in workplace and indicating safety behaviours can be involved while indentifying the safety problems as there is correlation between safety participation with safety performance. Without participation it will not be efficient. According to (Hoffmeister, 2012) and Nahrgang et al. (2008), safety participation has a significant effects on work-related injuries. Therefore, a hypothesis of this study is as follows:

Hypothesis 5

H1 : There is a relationship between safety participation and safety performance.

H6e : Safety participation influences safety performance.

3.3 The population and sample of the study

This research required feedback from TNB Melaka. The population of study involves the workforce from Planning and Operation and Maintenance Unit at TNB Distribution Melaka. The population of this study is 294 technical staff members with direct impact on electrical hazards.

In order to identify the sample, a "combination probability sampling technique" was used. Through a probability sampling technique, simple random technique was used to identify each workplace and the respondents such as Planning & Project and Operation & Maintenance at TNB Distribution Melaka. This study specifically selected technical staff because they are directly involved to electrical hazard.

To determine the sample size, this study follows Krejcie and Morgan (1970). According to Human Resource department for Distribution Division, there are a total of 294 technical staff members at TNB Melaka who have direct impact on electrical hazards. From the total, this study needs to have a sample size of 169. To achieve a higher response rate, 200 questionnaires were distributed.

3.4 Operational Definition

3.4.1 Management commitment.

Management commitment involves positive behaviours and enthusiasm to obtain the objectives. (Cooper & Phillips, 2004). Apart from that, it can also be regarded as the key of safety environment (Zohar, 1980). Management safety commitment and involvement provide the strategic environment conducive to achieving and remaining incident and injury free (Farooqui, 2011). For this study, the Cooper and Phillips (2004) operational definition has been used.

3.4.2 Safety training

Safety training can increase knowledge and skills (Hussain, 2009). Training should be based on well balanced objectives and safety evaluation because safety training will enable to predict any accidents occurrence (Hussain, 2009). For this study, the Hussain (2009) operational definition for Safety training can increase knowledge and skills

3.4.3 Safety rules and procedures

Operational definition for safety rules and procedures in this study refer to Reason et al. (1998), is helping the workers to comprehend according to oral or written rules and procedures.

3.4.4 Safety compliance

According to Inness et al. (2010), safety compliance is obeying the rules and procedure that was been set by the organization. On the other hand, Griffin & Neal, (2000) stated that Safety compliance is focused safety behaviors. For this study, operational definition for safety compliance is referred Inness et al.

3.4.5 Safety participation

For this study, the operational definition for safety participation comprises of various elements. It includes promoting and improving safety activities at work (Neal & Griffin, 2000).

3.4.6 Safety performance

Operational definition for safety performance referring to Borman and Motowidlo (2009), the distinction between task and contextual elements of general performance was first articulated cited in Snyder et al. (2008). Safety performance also refers to behaviors that contribute to the specific purpose of the organization. In contrast, contextual performance represents those behaviors that do not directly support the specific purpose of the organization, but instead generate a social and psychological environment in which the purpose of the organization can be more effectively achieved. Within the safety context, the spectrums of task and contextual safety behaviors have not been simultaneously examined (Snyder et al., 2008). For this study, operational definition for safety performance refers to Snyder et al.

3.5 The Survey Instrument

A Likert scale is a common scale used to employ questionnaire. This approach is used to range responses in survey research. The scale is as follows: 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = slightly agree, 5 = agree and 6 = strongly agree.

The questionnaire has seven (7) sections as follows: section A = personal particulars; section B = management commitment; section C = safety training; section D = safety rules and procedure; section E = safety compliance; section F = safety participation; and section G = safety performance.

The questionnaire was taken from previous studies as follows:

Table 3.1

Source of every section

No	Variable	Item	Source	Scale
1	IV – Management Commitment	Question 1-8	Vinodkumar & Bhasi (2010)	1(Strongly Disagree)-6(Strongly Agree)
2	IV – Safety Training	Question 9-14	Vinodkumar & Bhasi (2010)	1(Strongly Disagree)-6(Strongly Agree)
3.	IV – Safety Rules and Procedure	Question 15-19	Vinodkumar & Bhasi (2010)	1(Strongly Disagree)-6(Strongly Agree)
4.	IV – Safety Compliance	Question 20-26	Vinodkumar & Bhasi (2010)	1(Strongly Disagree)-6(Strongly Agree)
5.	IV – Safety Participation	Question 27-31	Vinodkumar & Bhasi (2010)	1(Strongly Disagree)-6(Strongly Agree)
6.	DV – Safety Performance	Question 32-38	Haupt et al. (2007)	1(Strongly Disagree)-6(Strongly Agree)

i) Section A : Personal Particular

This section consists of six (6) questions. The purpose of this section is to collect information pertaining age, years of service, highest education, gender, race and department. The type of question was closed-ended questions which provide respondents with options to answer. Questionnaire can be referred at the Appendix 1.

ii) Section B : Management Commitment

This section was prepared to measure the Management Commitment of the respondent towards Safety Performance. It consists of eight (8) questions which are related to the dependent variable (Vinodkumar & Bhasi, 2010). Examples of

questions in the questionnaire include the following: *safety is given high priority by the management; safety rules and procedure are strictly followed by the management; and corrective action is always taken when the management is told about unsafe practices.* The full questionnaire can be referred at the Appendix 1:

iii) Section C : Safety Training

This section consists of six (6) questions which were to measure employee safety training towards Safety Performance (Vinodkumar & Bhasi, 2010). Among the examples of questions in questionnaire: *my company gives comprehensive training to the employees in workplace health and safety issues, newly recruits are trained adequately to learn safety rules and procedure, and Safety issues are given high priority in training programs*. The full questionnaire can be referred to in Appendix 1.

iv) Section D : Safety Rules and Procedure.

This section consists of five (5) questions concerning the safety rules and procedure towards safety performance (Vinodkumar & Bhasi, 2010). Examples of questions in the questionnaire include the following: *the safety rules and procedure followed in my company are sufficient to prevent incident occurring; the facilities in the safety department are not adequate to meet the needs of my organization; and my supervisors and managers always try enforcing safe working procedures.* The full questionnaire can be referred to in Appendix 1.

v) Section E : Safety Compliance

This section consists of seven (7) questions. It was developed to measure the safety compliance towards safety performance (Vinodkumar & Bhasi, 2010). Examples of questions in the questionnaire include the following: *I use all necessary safety equipment to do my job; I carry out my work in a safe manner; and I follow correct safety rules and procedure while carrying out my job.* The full questionnaire can be referred to in Appendix 1.

vi) Section F : Safety Participation

This section consists of five (5) questions. It was developed to measure the Safety Participation towards Safety Performance (Vinodkumar & Bhasi, 2010). Examples of questions in the questionnaire include the following: *I help my co-workers when they are working under risky or hazardous conditions; I always point out to the management if any safety related matters are noticed in my company; and I put extra effort to improve the safety of the workplace.* The full questionnaire can be referred to in Appendix 1.

vii) Section G : Safety Performance

The last section consists of eight (8) questions. It was developed to measure general knowledge of safety performance (Haupt et al., 2007). Examples of questions in the questionnaire include the following: *my commitment in Safety and Health reduced personal accident and injuries; my commitment in Safety and Health improved awareness of Safety and health within employees; and my commitment in Safety and Health improved productivity of workers.* The full questionnaire can be referred to in Appendix 1.

3.6 Reverse-score item and back translation

In this questionnaire, participants responded to the items using a 6-point Likert scale ranging from 1 ("Strongly Disagree") to 6 ("Strongly Agree"). With a reverse-score item, 1's are turned into 6's, 6's are turned into 1's, and all the scores in between is to become the appropriate opposite (5's into 2's, 4's into 3's, etc.). Below is a simple mathematical rule for reverse-scoring:

$$\text{reverse score}(x) = \max(x) + 1 - x$$

From this study, the questions need to reverse per Table 3.2:

Table 3.2

Reverse-score Question

No	Question
4*.	*In my workplace managers/supervisors do not show interest in the safety of workers.*
6*.	*Members of management do not attend safety meetings.*
12*.	*I am not adequately trained to response to emergency situation in my workplace.*
16*.	*The facilities in the safety department are not adequate to meet the needs of my organization.*
24*.	*Occasionally due to lack of time, I deviate from correct and safety work procedures.*
25*.	*Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures.*
26*.	*It is not always practical to follow all safety rules and procedure while doing a job.*

3.7 Data Collection

There are many types of methods that can be applied in collecting data from the identified respondents such as interview session, questionnaire, observation etc. In the context of this study, survey method was chosen and it was administered during site visits and site safety inspections.

The self-delivery approached issued due to time constraints as well as its clear advantages over another method such as postal, and interview, as that will take a longer time in order to achieve the same size of sample. To ensure better return rate, the questionnaires were also handed over by hand during safety meetings at respective area to the identified respondents.

A cover letter, a recommendation letter for Master Project from Universiti Utara Malaysia (UUM), and a set of questionnaires were prepared to be distributed among the selected projects. The questionnaire consist relevant questions that would be able to tap respondents' valuable feedback pertaining the objectives of the study. The selected department was given almost two weeks to complete the survey.

The randomly selected samples were asked on their personal knowledge and experience on safety practices in their respective work site. For confidentiality purposes, they do not have to identify themselves. This is the group of individuals which as the responsibility to ensure safety practices at their workplace.

3.8 Pilot Study

To determine the reliability of these sets of questionnaires a pilot study was carried out. According to Gardner (2003), pilot study helps researchers to establish stability and consistency using correlation. For this study, it was distributed to thirty respondents at the selected site.

3.9 Analysis of the Data

The gathered data was analyzed using the SPSS program version 19.0. After coding the data, frequencies, minimum, and maximum scales of all the items measured it was then inserted into the programs to determine the respondents' answers. According to Hofmann (2003), descriptive statistics are best describe organizing and summarizing as it discussed important characteristics of the data and the inferential statistics represent a particular relationship in the population. In simple words, descriptive statistics summarizes the sample data and inferential statistics are for drawing inferences about the population.

3.9.1 Data Screening

Once the data were gathered and inserted into SPSS, the temptation to plunge forward with sophisticated multivariate statistical analysis must be resisted without critically examining the quality of the data collected.

3.9.2 The Reliability of the Instrument

Cronbach's alpha or known as common measure of internal consistency ("reliability") was used in a pilot study to determine the reliability of the questionnaire. The internal consistency Cronbach α, is 0.7 or higher for a set to be considered as a scale (Vinodkumar & Bhasi, 2010).

3.9.3 Descriptive Statistics

This study deployed three statistical methods to analyze the data. Descriptive statistics are used to describe the basic features and it provides synopsis about the sample and the measures.

i) Mean Analysis

Mean analysis is one of the descriptive statistical methods which may be conducted using SPSS version 19.0. This method generated the value of mean, mod, median, standard deviation, variance, maximum and minimum. Basically the mean is the average score of distribution. Generally it applied in order to indicate the value of scale variables that is been used in the questionnaires to tap the relevant information regarding behavior (Farooqui 2011).

ii) Pearson correlation Analysis

Correlation is a method to analyse data which measure linear relationship between two variables that computes a coefficient value. In SPSS version 19.0, the Bivariate Correlations procedure compute Pearson's correlation coefficient, Spearman's rho and Kendall's tau-b with their significance levels. Correlations measure how variables or rank orders are related. Before calculating a correlation coefficient, the

data is been screened for outliers and evidence of a linear relationship. Pearson's correlation coefficient is a measure of linear association.

A Pearson correlation is a number measure the strength and direction of the linear relationship between the two variables. The correlation coefficient can range from -1 to +1, with -1 indicating a perfect negative correlation, +1 indicating a perfect positive correlation, and 0 indicating no correlation at all. (A variable correlated with it will always have a correlation coefficient of 1.) The p-value associated with the correlation is known as Sig. (2-tailed). The footnote under the correlation table explains on the single and double asterisks signify.

Before any further interpretation is carried out in the correlation analysis, the Pearson coefficient or known as r coefficient value need to be indicated at the first place. The r-values indicate the strength of association, while the p-value indicates whether there is significant correlation between variables or not. According to Cortina (1993), the interpretation of the r-value is as follows:

1. No correlation if the r-value is close to zero

2. Low or weak correlation is if the r-value is lower than 0.5 or less than -0.5

3. Moderate correlation if the r-value between ±0.5 and ±0.7

4. High or strong correlation if the r-values are higher than +0.7 and -0.7

iii) Regression

Variance and factorial analysis are related to means. Although one-way analysis of variance associated with the mean determined by a group of variables, factorial analysis of variance designed to test the difference between the set of instructions that are grouped by more than one classification variables or factors. As with one-way analysis of variance, the procedure examines the differences between group mean and the spread of value within groups.

3.10 Approval from Utility Company

This research has the approval of the Distribution Division Tenaga Nasional Berhad, Melaka (Appendix 2).

3.11 Summary

The methodology presented in this chapter is intended to provide insight into how the study was conducted in relation to the research title mentioned in Chapter One. The discussions on the outcome of the study, based on the methodology used, are covered in Chapter Four.

CHAPTER 4

RESEARCH FINDINGS

4.0 Introduction

Generally this chapter concentrates on data analysis process and presents the survey findings or results of the statistical analysis using methods that have been described earlier in Chapter Three. The collected data analyzed according to the objective of this study that has been stated in Chapter One. Basically the objective of the questionnaires is to get feedback from the TNB Melaka technical staff regarding the safety performance in Distribution Division, TNB Melaka.

4.1 Number of Return

This section will describe the number questionnaire which has been returned and the normality test. Out of 200 set of questionnaires sent, 133 responses were collected. The feedback received is still within the expected rate which is 66.5 percent. Thus, total of respondents sample has been analyzed. Table 4.1 shows the summary of responses from the questionnaire survey.

Table 4.1

Summary of Responses from the Questionnaire Survey

Item	N	Percent (%)
Questionnaire circulated	200	100%
Total respondents	169	100%
Totally completed questionnaire collected	133	88.7%

According to Fellows et al. (1997) the normal useable response rate for data collecting ranges from 25 percent to 35 percent of the population size. In the context of the present study, by assuming 75 percent of response rate, 113 responses should be collected out of 169 respondents. This in line with Fellows et al. (1997); thus, number of responses was considered sufficient data for this research.

4.2 Demography of Respondents

Data presentation on the demography variables is given in terms of category, frequency, and percentage. The demography variables and cross tabulation results presented in this research are age, years of services, highest education, gender, race and department. The presented data were solely gathered from technical workers in TNB Melaka.

i) Age

The computation of demography data of the respondent shows that those aged more than 35 years old make up 54.9 percent (73) of the sample; those 29 to 34 years, 15.8 percent (21); those 23 to 28 years, 26.3 percent (35); and those 17 to 20 years, 3 percent (4) of the 133. Table 4.2 provides a breakdown of respondents according to age.

Table 4.2

Breakdown of Respondent According to Age

Age (n=133)	Frequency	Percentage (%)
17 to 20 years	4	3.0
23 to 28 years	35	26.3
29 to 34 years	21	15.8
More than 35 years	73	54.9

ii) Years of Service

The computation of demography data of the respondents shows that years of service of more than 25 years make up 33.8 percent (45) of the sample; between 21 to 25 years, 9.8 percent (13); 16 to 20 years, 6.8 percent (9); 11 to 15 years, 3.8 percent (5); Years of Service between 5 years to 10 years represent 20.3 percent (27) and less than 5 Years of Service represent 25.6 percent (34). Table 4.3 gives a breakdown of respondent according to years of service.

Table 4.3

Breakdown of Respondent According to Years of Services

Years of Services (n=133)	**Frequency**	**Percentage (%)**
Less than 5 years	34	25.6
5-10 years	27	20.3
11-15 years	5	3.8
16-20 years	9	6.8
21-25 years	13	9.8
More than 25 years	45	33.8

iii) Education

Table 4.4 provides a breakdown of respondents' educational background. Technical workers with secondary education make up 37.6 percent and those with a certificate make up 33.1 percent.

Table 4.4

Denotes the Breakdown of Respondents Education Background

Education Background (n=133)	**Frequency**	**Percentage (%)**
Lower primary	7	5.3
Primary	5	3.8
Secondary	50	37.6
Certificate	44	33.1
Diploma	21	15.8
Degree or Higher	6	4.5

iv) Gender

Analysis of demographic data shows that males make up 84.2 percent (112) of the sample, while females make up15.8 percent (21) of the 133 respondents participating in the survey. Table 4.5 shows a breakdown of respondents according to gender.

Table 4.5

Breakdown of Respondent Gender

Gender (n=133)	**Frequency**	**Percent**
Male	112	84.2
Female	21	15.8

v) Race

The computation demography data of the respondent denotes that race make up 83.5 percent (111) are Malay, Chinese represent 8.3 percent (11), Indian represent 5.3 percent (7) and others represent 3.0 percent (4) out of the 133 respondent

participating in the survey. Table 4.6 shows the breakdown of respondent according to race.

Table 4.6

Breakdown of Respondent According to Race

Race (n=133)	**Frequency**	**Percentage (%)**
Malay	111	83.5
Chinese	11	8.3
Indian	7	5.3
Others	4	3.0

vi) Department

This study is divided into two departments, which are Planning & Project and Operation & Maintenance. From Table 4.7, respondents from Operation & Maintenance make up 57.9 percent (77) respondents from Planning & Project represent 42.1 percent (56) of the 133 respondents participating in the survey.

Table 4.7

Breakdown of Respondents Department

Department (n=133)	**Frequency**	**Percentage (%)**
Planning & Project	56	42.1
Operation & Maintenance	77	57.9

4.3 The Pilot Survey

The pilot study is to test the understanding of the respondents on the question. The pilot study was distributed to 40 respondents at selected sites. According to Sekaran (2005) and Vinodkumar & Bhasi, (2010), the Cronbach's alpha value should greater than 0.7; therefore, the reliability of the questionnaire has been accepted.

Table 4.8

Reliability Test. (Pilot questionnaire test)

Variable Subject	No of Item	Cronbach's Alpha
Safety Performance	8	0.771
Management Commitment	8	0.802
Safety Training	6	0.805
Safety Rules an Procedure	5	0.753
Safety Compliance	7	0.812
Safety Participation	5	0.915
OVERALL	39	0.810

4.4 The Reliability of the Instrument

4.4.1 Internal Reliability

The Cronbach's alpha value for Safety Performance is 0.723; Management Commitment, 0.732; Safety Training, 0.851; Safety Rules and Procedure, 0.745; Safety Compliance, 0.721; and Safety Participation, 0.732. According to Sekaran (2005) the Cronbach's alpha value should greater than 0.7; therefore, the reliability of the questionnaire has been accepted.

4.5 Descriptive Statistics

To investigate the gathered and summarized data, descriptive statistics are employed

4.5.1 Mean and Standard Deviation

Mean and Standard Deviation are techniques to describe characteristic of a data and to compare the result. Table 4.9 shows the results of the descriptive analysis.

Table 4.9

Descriptive Analysis (Mean and standard deviation)

Variable	Mean	Standard Deviation
Management Commitment	4.58	.718
Safety Training	4.67	.711
Safety Rules and Procedure	4.80	.695
Safety Compliance	4.58	.737
Safety Procedure	5.01	.620
Safety Performance	5.03	.602

4.5.2 Cross Tabulation between Level of Education and Safety Performance

Table 4.10 shows a Cross Tabulation between Level of Education and Safety Performance.

Table 4.10

Cross Tabulation between Level of Education and Safety Performance

		Lower primary	Primary	Secondary	Certificate	Diploma	Degree or Higher	Total
Disagree (1-3)	Count	0	0	1	0	0	0	1
Agree (4-6)	Count	7	5	49	44	21	6	132
Total	Count	7	5	50	44	21	6	133

The table shows Cross Tabulation between Level of Education and Safety Performance. In this study, a Likert scale from 1- 6 has been used. The 1-3 segment of the scale indicates disagreement while the 4-6 segment of the scale indicates agreement. In term of level of education, we can see that 99.2% of the responses agreed about safety performance and only 0.8% of responses disagreed about safety performance.

4.5.3 Cross Tabulation between Years of Services and Safety Performance

Table 4.11 shows a Cross Tabulation between Years of Services and Safety Performance

Table 4.11

Cross Tabulation Between Years of Services and Safety Performance

		Less than 5 years	5-10 years	11-15 years	16-20 years	21-25 years	More than 25 years	Total
Disagree (1-3)	Count	0	0	0	0	0	1	1
Agree (4-6)	Count	34	27	5	9	13	44	132
Total	Count	34	27	5	9	13	45	133

Table 4.11 shows the Cross Tabulation between Years of Service and Safety Performance. Again, the Likert scale from 1- 6 has been used. The 1-3 segment of the scale indicates disagreement while the 4-6 segment of the scale indicates agreement. In term of Years of Service, we can see that 99.2% of the responses agreed about safety performance and only 0.8% of the responses disagreed about safety performance.

4.6 Hypotheses Testing

4.6.1 Correlation

In order to examine the strength of relationships between variables, correlation analysis is implemented.

For this study, the following five (5) hypotheses for correlation were tested:

H1 : There is a relationship between management commitment and safety performance.

H2 : There is a relationship between safety training and safety performance.

H3 : There is a relationship between safety rules and procedure and safety performance.

H4 : There is a relationship between safety compliance and safety performance.

H5 : There is a relationship between safety participation and safety performance.

Table 4.12

Correlation

		Management Commitment	**Safety Training**	**Safety Rules and Procedure**	**Safety Compliance**	**Safety Participation**	**Safety Performance**
Management Commitment	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	133					
Safety Training	Pearson Correlation	.772**	1				
	Sig. (2-tailed)	.000					
	N	133	133				
Safety Rules and Procedure	Pearson Correlation	.665**	.695**	1			
	Sig. (2-tailed)	.000	.000				
	N	133	133	133			
Safety Compliance	Pearson Correlation	.464**	.495**	.401**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	133	133	133	133		
Safety Participation	Pearson Correlation	.212*	.292**	.402**	.365**	1	
	Sig. (2-tailed)	.015	.001	.000	.000		
	N	133	133	133	133	133	
Safety Performance	Pearson Correlation	.280**	.387**	.427**	.450**	.710**	1
	Sig. (2-tailed)	.001	.000	.000	.000	.000	
	N	133	133	133	133	133	133

i) Hypothesis 1

H1 : There is a relationship between management commitment and safety performance.

Table 4.12 shows a positive correlation between safety performance and management commitment, where r = 0.28, n = 133, p <0.00. Thus from the correlation, the null hypothesis was rejected and the alternative hypothesis was accepted.

ii) Hypothesis 2

H1 : There is a relationship between safety training and safety performance.

Table 4.12 shows a positive correlation between safety performance and safety training, where r = 0.387, n = 133, p <0.00. Thus from the correlation, the null hypothesis was rejected and the alternative hypothesis was accepted.

iii) Hypothesis 3

H1 : There is a relationship between safety rules and procedure and safety performance.

Table 4.12 shows a positive correlation between safety performance and safety rules and procedure, where r = 0.427 , n = 133 , p < 0.00 . Thus from the correlation, the null hypothesis was rejected and the alternative hypothesis was accepted.

iv) Hypothesis 4

H1 : There is a relationship between safety compliance and safety performance.

Table 4.12 shows that there was positive correlation between safety performance and safety compliance, where $r = 0.45$, $n = 133$, $p < 0.00$. Thus due to this correlation, the null hypothesis was rejected and the alternative hypothesis was accepted.

v) Hypothesis 5

H1 : There is a relationship between safety participation and safety performance.

From Table 4.12, it shows that there was positive correlation between safety performance and safety participation, where $r = 0.71$, $n = 133$, $p < 0.00$. Thus from the correlation, null hypothesis was rejected and alternative hypothesis was accepted.

4.6.2 Multiple regression

The multiple regression analysis results are shown in Table 4.13, showing the standard coefficient, t value, and Sig Value. The associations between management commitment, safety training, safety rules and procedure, and safety performance (DV) are not significant, as indicated by p-value (sig > 0.05). Nevertheless, safety participation and safety compliance are significant, as indicated by p-value (sig < 0.05).

Table 4.13

Multiple Regression Analysis

	Standard Coefficient (Beta)	**t**	**Sig.**
Management Commitment	-0.87	-0.888	0.376
Safety Training	0.141	1.378	0.171
Safety Rules and Procedure	0.080	0.888	0.376
Safety Compliance	0.173	2.432	0.016
Safety Participation	0.592	8.828	0.000

R^2 = .724 *p value = 0.00* *F = 28*

4.7 Summary result hypothesis testing

The summary of the hypothesis test are displayed in Table 4.14. From the analysis of the study, it is summarize that all of the developed hypothesis can be accepted when the ‘p’ value is less than 0.05.

Table 4.14

Summary of Hypothesis Testing

	Alternative Hypothesis	**Outcomes**
Hypothesis 1	There is a relationship between management commitment and safety performance.	Accepted
Hypothesis 2	There is a relationship between safety training and safety performance.	Accepted
Hypothesis 3	There is a relationship between safety rules and procedure and safety performance.	Accepted
Hypothesis 4	There is a relationship between safety compliance and safety performance	Accepted
Hypothesis 5	There is a relationship between safety participation and safety performance.	Accepted
Hypothesis 6	The IVs (management commitment, safety training, safety rules and procedure, safety compliance, safety participation) influence the DV (safety performance)	Rejected • *management commitment* • *safety training* • *safety rules and procedure* Accepted • *Safety Compliance* • *Safety Participation*

The analysis is in line with the research objectives and research questions posed in Chapter One. The conclusions of the findings are discussed in Chapter Five.

4.8 Discussion

4.8.1 Management commitment and safety performance.

According to this study, there is a relationship between management commitments with safety performance; however, management commitment did not influence safety performance.

Management commitment should encourage both management and employees. Deficiency of senior management involvement in matters of safety and health is a serious obstacle in improving safety and health conditions. Zohar (1980) demonstrated that the supervisors at the workplace are less effective, tend to assign responsibility for the personal safety of all specified without delegating to any executive power. Commitment from the management to safety and health as well as safety practices is one-dimensional. In order to achieve a safe workplace, the management of safety and health should be put to priority. Most research has focused that leadership of management can revenue productivity, profitability, and employee satisfaction and can be made more as a criterion to measure the effectiveness of their leadership. As identified by Ramsay (1991), management commitment represents a significant change to the approach and will effects the safety performance. Top management commitment will lead to better safety performance.

Management commitment did not influence safety performance, because enforcement was not strictly carried out by the top management. Apart from that, the attitude of the top management was very low in terms of assuring the safety performance practiced by workers. This results in self-safety compliance, in which

they carry out a safety audit such as safety quality assurance (SQA) amongst themselves.

4.8.2 Safety training and safety performance.

According to this study, there is a relationship between safety training with safety performance; however, safety training did not influence safety performance.

It is an essential element of every successful organization to be involved in any successful accident prevention program or occupational safety and health program because it promotes positive outcomes (Vinodkumar & Bhasi, 2010). Therefore, safety training will improve safety performance. In addition, training is often overlooked by the management although its value is very clear (Hyman, 1992). Apart from this, managers should put more efforts in promoting safety training. TNB safety training program at Learning Solutions (ILSAS) has been integrated for the success of accident prevention programs for training standardization. Training has begun in accordance with the Safety Management Plan (TNB Safety Road Map 2015) starting from 2005-2015. In this plan, the goal of training is to train and develop employees' safety training at all levels.

TNB should consider to include the training KPI in the organization and make training mandatory for all staff. This will ensure the staff attending all the training without fail. In addition, Training Need Identification (TNI) and Training Need Analysis (TNA) must be developed and revised regularly so that the training provided would be related to their tasks or core activities.

4.8.3 Safety rules and procedure and safety performance.

Employee adherence to safety procedures is essential in order to create a safer workplace. Their involvement has an impact on the decision that they make, even in terms of their job (Heathfield, 2005). This was also supported by Langford et al. (2000), in that the most important evidence of the management commitment is a comprehensive written safety and health program. Rules and procedures are key components of safety management. There are many procedures used by TNB during implementation of the project, including Method of Statements, Safe Work Procedures, Hazard Identification, Risk Assessment and Risk Analysis, Job Safety Analysis, Checklist, and so on. Overall, documents have been standardized and documented per the International Standards Organization (ISO).

The establishment of communication during fieldwork must be improved. This can be done by having a frequent toolbox briefing in relation to procedures. Procedures should also specify the responsibilities and personnel assignments, as well as the coordination required. Procedures should draw an attention to what must be done and they must be easy to use. This means being easy to read, and having no small print, few sentences, use of colors and diagrams, and ease of access.

4.8.4 Safety compliance and safety performance.

According to this study, there is a relationship between safety compliance with safety performance, and safety compliance influences safety performance.

There are two types of different indicators of occupational safety which are safety compliance and safety initiatives (Griffin and Neal, 2000). In order to exhibit safety compliance, an employee should obey the safety-related rules and generally perform their job in a safe manner. These help to reduce or prevent incidents. The aim of these safety programs is to enhance an environment where safe work behavior is very significant. Organizations with a safe environment demonstrate a continuing commitment to a safe workplace. When safety is a priority for everyone in the workplace, it becomes a way of life and makes the workplace healthier both physically and mentally. By giving responsibilities at the management level it does not only threat of unauthorized personnel action, but also including the fundamental issues that influence both management strategies and policies.

Safety Quality Assurance (SQA,), where the audit was carried out, ensures that all employees in TNB Melaka are doing their job and comply with all safety aspects.

4.8.5 Safety participation and safety performance.

According to this study, there is a relationship between safety participation and safety performance, and safety participation influences safety performance.

According to Farooqui (2011), the importance of getting employee commitment to safety in achieving and maintaining consistently incident and injury-free environment cannot be overemphasized. When employees are committed to safety, they are more willing to cooperate with each other, and together with the management team they will continue to improve their safety performance. TNB always gives freedom to workers to voice their opinion during safety committee meetings so that they are aware of the importance of safety issues.

CHAPTER 5

RECOMMENDATIONS AND CONCLUSION

5.0 Introduction

This chapter summarizes and concludes the findings of the study. Generally, this chapter covers the major findings of the study. The outline of this chapter follows the arrangement of Chapter Four as close as possible. Some limitations regarding this study are also covered in the last session of this chapter.

In general, this chapter concludes the hypothesis involved in this study. Some of the implications derived from the findings regarding various industries are also elaborated upon. Recommendations for further study are also presented at the end of this chapter.

5.1 Summary of findings

The purpose of this research has been to examine the relationship between all the IV and DV. As specific objectives of this research are, this research has looked closely at the relationship between management commitment and safety performance, as well as the relationship between safety training and safety performance; safety rules and procedure and safety performance; safety compliance and safety performance; safety participation and safety performance; as well as whether the IVs (management commitment, safety training, safety rules and procedure, safety compliance, safety participation) influence DV (safety performance).

Based on the objectives given, four of five objectives have been achieved. There is a positive relationship between management commitment and safety performance;

safety training and safety performance; safety rules and procedure and safety performance; safety compliance and safety performance; as well as safety participation and safety performance. The IVs of safety compliance and safety participation) influence the DV (safety performance). However, the independent variables for management commitment, safety training, and safety rules and procedure did not influence safety performance. Therefore, only safety compliance and safety participation were shown to influence safety performance.

5.2 Significance of study

This study will assist TNB Melaka to improve their safety performance level in the workplace. Therefore, by improving safety performance in their workplace, TNB Melaka can reduce the risk of injury and the costs of accidents. This will lead TNB Melaka to a growth in profits.

This research also implies that that active management of safety performance occurs through leadership, program assessment, and the improvement of training. Also, this research will enable TNB Melaka to set expectations for staff performance, establish goals to achieve performance, and measure and evaluate safety performance results. Due to these elements, TNB Melaka will achieve their safety performance goals. This research provides valuable guidance of safety in workplace for TNB Melaka, as well as other researchers and practitioners.

5.3 Limitation and Future Research Directions

Although there have been many previous studies on safety performance, this study has some limitations; this section explains the limitations and provides suggestions for future research. This study was conducted only within the Distribution Division, TNB Melaka, because the technical team in this division is the team directly

involved with electrical hazards. The respondents of this study were limited to 131, a smaller scope than desired, due to time constraints.

Further research should be developed to focus on other variables such as factors, places, different industry requirements, different practices, and other populations. Further recommendations include the need for management to be strict with their employees regarding safety smatters. This safety concern is necessary for implementation and must be instilled from top management to line workers; it must be ensured that they are followed accordingly. This is because comprising safety issues may lead to unwanted incident.

An accident does not happen on its own. It happens through cause and effect, which must be placed under consideration in any organization. For example, unreliable processes, poor housekeeping, changing of environment, human error, lack of training and failure of communication can lead to accidents. Hence, workers should be aware of safety issues in their daily work activities so that it would improve the safety performance.

5.4 Recommendations

This study only focuses on the TNB Melaka Distribution Division's technical staff. Their practices and standards may differ from other industries. Therefore the discussion is only recommended to be used in TNB Melaka Distribution Division.

Safety reflects the whole organization, in representing any organizations' particular organizational strengths and weaknesses. Although positive relation between safety

and health is demonstrated in so many researchers, some organizations tend to neglect it.

While employee involvement shows a positive relationship, there are still many inconsiderate people tried to gamble their safety at workplace. As mentioned, accident may occur anywhere without any notice; therefore a person should be aware of their safety environment to prevent any accident occurrences.

i) Management Commitment

Based on this finding, below are recommendations for improvement:

- Upper management attitudes regarding the importance of safety should be strengthened.
- Management should implement intrinsic and extrinsic motivation to attract the workers in ensuring their safety in workplace.

ii) Safety Training

Based on the above findings, below are the recommendations for further improvement in safety training:

- A Key Performance Index should be set for each worker in terms of how many days per year they attend a safety course.
- The training provided should be related to their task or core activity. The training must focus on procedure. For example, technical staff who perform switching must take precautions and remain in control.

- Training Need Identification (TNI) and Training Need Analysis (TNA) need to be performed and set for worker KPI.
-

iii) Safety Rules and Procedure

Below are recommendations for the enhancement of safety rules and procedure:

- The establishment of communication at a site has to improve, such as through more frequent toolbox briefings in relation to procedure.
- Procedures should also specify the responsibilities and personnel assigned, as well as coordination required.
- The procedure should draw attention to what must not be done.
- The procedures should be easy to use when needed, being easy to read, having no small print, few sentences, use of colors, diagrams, and allowing ease of access.

iv) Safety Compliance

In Safety Compliance, enforcement plays a vital role. The right method of enforcement should be implemented in order address safety issues, because strict enforcement in any organization may not be able to achieve strict safety compliance.

v) Safety Participation

Below are recommendations for the enhancement of safety participation:

- Increase the awareness among the managements and workers towards incident and injury free environment.

- Open communication between top management and employees may increase employee participation.
- A voluntary public commitment to security not only increases the likelihood of the person making a commitment to follow through, but also gives rights to team partners, with a clear alert to the person at some point in time, if the person does not fulfill his or her promises.

5.5 Conclusion

The five major components of management commitment, safety training, safety rules & procedure, safety compliance, and safety participation are connected with safety performance at the TNB Melaka Distribution Division. However there are several other factors which may be explore and enhance in order to get better understanding and outstanding result toward safety performance at current practices. The above discussions have discussed the interrelation between components involved in the Distribution Division TNB Melaka setup within the scope of this study. Safety performance at the workplace leads to successful performance in terms of time, quality, cost, productivity, and a conducive work environment for worker safety.

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Appendix 1

Universiti Utara Malaysia (UUM), Sintok, Kedah Darul Aman

SURVEY QUESTIONNAIRE FOR THE MASTER OF SCIENCE IN OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT (MOSHM) / ***SOAL SELIDIK TINJAUAN UNTUK YANG SARJANA SAINS DALAM PENGURUSAN KESELAMATAN DAN KESIHATAN (MOSHM)***

Title of Research: Safety Performance in TNB Distribution Division Melaka.

Tajuk Penyelidikan: Keselamatan Prestasi di Melaka Bahagian Pembahagian TNB.

Dear Sir / Madam / Miss, / *Tuan / Puan / Cik,*

I am a Master of Science in Occupational Safety and Health Management student from College Of Business, Universiti Utara Malaysia (UUM). This research is being conducted to fulfill the **partial requirements** for the award of the master degree.

The objective of this survey is to obtain related information pertaining to safety performance. Your response is significantly important because your experience will contribute positively towards the effectiveness of safety and health. Please be assured that all information given will be treated as confidential and will be used for research purposes only.

You are kindly requested to answer all questions. ***Before answering the questions, please read the statements carefully.*** If you have any queries pertaining to this survey, please do not hesitate to contact **Mohd Faiz Bin Abu Bakkar 019-5712871 (hp) or email: faizab@tnb.com.my.**

Thank you very much for your cooperation and support. Your support is much appreciated.

Saya pelajar Sarjana Sains dalam Pengurusan Keselamatan dan Kesihatan dari Kolej Perniagaan, Universiti Utara Malaysia (UUM). Kajian ini dijalankan untuk ***memenuhi keperluan*** *sebahagian daripada penganugerahan ijazah sarjana.*

Objektif soal selidik ini adalah untuk mendapatkan maklumat berkaitan prestasi keselamatan Maklumbalas anda adalah penting kerana pengalaman anda akan menyumbang secara positif kepada keberkesanan keselamatan dan kesihatan. Segala maklumat yang diberi dianggap sebagai sulit dan akan digunakan untuk tujuan penyelidikan sahaja

Anda diminta menjawab semua soalan. ***Sebelum menjawab soalan, sila baca kenyataan ini dengan teliti****. Jika anda mempunyai sebarang pertanyaan berkaitan kajian ini, sila hubungi* ***Mohd Faiz Bin Abu Bakkar 019-5712871 (hp) atau e-mel: faizab@tnb.com.my****.*

Terima kasih di atas kerjasama dan sokongan anda. Sokongan anda amat dihargai.

MOHD FAIZ BIN ABU BAKKAR

Matrix No. : 809081

Master of Science in Occupational Safety and Health Management

Universiti Utara Malaysia (UUM)

Sintok, Kedah Darul Aman.

SECTION A : BACKGROUND OF THE RESPONDENT / LATARBELAKANG

Please tick (√) the answer as above scale.

Sila tanda (√) pada jawapan seperti skala di atas.

1. Age

   Umur

☐	17 – 22 years	☐	29 – 34 years
☐	23 – 28 years	☐	More than 35 years.

2. How long have you been working in the industries?

Berapa lama anda telah bekerja dalam industry ini?

☐	Less than 5 years	☐	11 - 15 years	☐	21 - 25 years
☐	5 -10 years	☐	16 - 20 years	☐	More than 25 years

3. Highest education level.

Tahap tertinggi pendidikan.

☐	Lower Primary	☐	Secondary	☐	Diploma
☐	Primary	☐	Certificate	☐	Degree or Higher

4. Gender

Jantina

☐	Male
☐	Female

5. Race

Bangsa

☐	Malay	☐	Indian
☐	Chinese	☐	Others (please specify): _____

6. Department

Unit

	Perancang & Projek / Planning & Project
	Operation and Maintanance / Kendalian & Senggaraan

SECTION B :MANAGEMENT COMMITMENT / PENGLIBATAN PIHAK PENGURUSAN

Use the scale below to answer the following question.

Gunakan skala dibawah untuk menjawab soalan-soalan berikut.

Strongly Disagree/ Sangat Tidak Setuju	Disagree/ Tidak Setuju	Slightly Disagree / Agak Tidak Setuju	Slightly Agree / Agak Setuju	Agree / Setuju	Strongly Agree/ Sangat Setuju
1	2	3	4	5	6

Please tick (√) or circle (O) the answer as the above scale.

Sila tanda (√) atau bulatkan (O) pada jawapan seperti skala di atas.

1. Safety is given high priority by the management 1 2 3 4 5 6

   Pihak pengurusan memberikan keutamaan yang tinggi untuk

keselamatan pekerjaan

2.	Safety rules and procedures are strictly followed by the management. *Pihak pengurusan mematuhi peraturan dan prosedur keselamatan.*	1 2 3 4 5 6
3.	Corrective action is always taken when the management is told about unsafe practices. *Pihak pengurusan mengambil tindakan pembetulan jika terdapat amalan kerja yang tidak selamat.*	1 2 3 4 5 6
4.	In my workplace managers/supervisors do not show interest in the safety of workers. *Di tempat kerja, pengurus/penyelia saya tidak menunjukkan minat mengenai keselamatan pekerja.*	1 2 3 4 5 6
5.	Management considers safety to be equally important as product. *Pengurusan memastikan keselamatan adalah sama penting dengan produk.*	1 2 3 4 5 6
6.	Members of management do not attend safety meetings. *Pihak pengurusan tidak menghadiri mesyuarat keselamatan.*	1 2 3 4 5 6
7	When near-miss accidents are reported, my management acts quickly to solve the problems. *Apabila kemalangan nyaris dilaporkan, pihak pengurusan bertindak cepat untuk menyelesaikan masalah.*	1 2 3 4 5 6

8 My company provides sufficient personal protective equipment for the workers. 1 2 3 4 5 6

Syarikat saya menyediakan peralatan perlindungan diri yang mencukupi untuk pekerja.

SECTION C : SAFETY TRAINING / LATIHAN KESELAMATAN

Use the scale below to answer the following question.

Gunakan skala di bawah untuk menjawab soalan-soalan berikut.

Strongly Disagree/ Sangat Tidak Setuju	Disagree/ Tidak Setuju	Slightly Disagree / Agak Tidak Setuju	Slightly Agree / Agak Setuju	Agree / Setuju	Strongly Agree/ Sangat Setuju
1	2	3	4	5	6

Please tick (√) or circle (O) the answer as the above scale.

Sila tanda (√) atau bulatkan (O) pada jawapan seperti skala di atas.

9. My company gives comprehensive training to the employees in workplace health and safety issues. 1 2 3 4 5 6

Syarikat saya memberikan latihan yang menyeluruh untuk pekerja-pekerja berkenaan isu keselamatan dan kesihatan di tempat kerja.

10.	Newly recruits are trained adequately to learn safety rules and procedures. *Pekerja yang baru dilantik dilatih berkenaan peraturan dan prosedur kerja selamat.*	1 2 3 4 5 6
11.	Safety issues are given high priority in training programmes. *Isu-isu keselamatan diberi keutamaan yang tinggi dalam program keselamatan.*	1 2 3 4 5 6
12.	I am not adequately trained to response to emergency situation in my workplace. *Saya tidak dilatih untuk bertindak balas terhadap situasi kecemasan di tempat kerja saya.*	1 2 3 4 5 6
13.	Management encourages the workers to attend safety training programmes. *Pihak pengurusan menggalakkan pekerja untuk menghadiri program latihan mengenai keselamatan.*	1 2 3 4 5 6
14.	Safety training given to me is adequate to enable to me to assess hazards in workplace. *Latihan keselamatan yang diberikan kepada sya adalah mencukupi bagi membolehkan saya menilai hazad di tempat kerja.*	1 2 3 4 5 6

SECTION D : SAFETY RULES AND PROCEDURES / PERATURAN DAN PROSEDUR KESELAMATAN

Use the scale below to answer the following question.

Gunakan skala di bawah untuk menjawab soalan-soalan berikut.

Strongly Disagree/ Sangat Tidak Setuju	Disagree/ Tidak Setuju	Slightly Disagree / Agak Tidak Setuju	Slightly Agree / Agak Setuju	Agree / Setuju	Strongly Agree/ Sangat Setuju
1	2	3	4	5	6

Please tick (√) or circle (O) the answer as above scale.

Sila tanda (√) atau bulatkan (O) pada jawapan seperti skala di atas.

15. The safety rules and procedures followed in my company are sufficient to prevent incident occurring. 1 2 3 4 5 6

    Peraturan dan prosedur keselamatan yang diikuti dalam syarikat saya adalah mencukupi untuk mengelakkan kejadian kemalangan daripada berlaku.

16. The facilities in the safety department are not adequate to meet 1 2 3 4 5 6

the needs of my organization.

Kemudahan di jabatan keselamatan dan kesihatan tidak mencukupi untuk memenuhi keperluan organisasi saya.

17. My supervisors and managers always try enforcing safe working procedures. 1 2 3 4 5 6

    Penyelia dan pihak pengurusan saya sentiasa cuba menguatkuasakan prosedur kerja yang selamat.

18. Safety inspections are carried out regularly. 1 2 3 4 5 6

    Pemeriksaan keselamatan di tempat kerja dijalankan secara kerap.

19. The safety procedures and practices in this organization are useful and effective. 1 2 3 4 5 6

    Prosedur dan amalan keselamatan di dalam organisasi adalah berguna dan berkesan.

SECTION D : SAFETY COMPLIANCE / PEMATUHAN KESELAMATAN

Use the scale below to answer the following question.

Gunakan skala di bawah untuk menjawab soalan-soalan berikut.

Strongly Disagree/ Sangat Tidak Setuju	Disagree/ Tidak Setuju	Slightly Disagree / Agak Tidak Setuju	Slightly Agree / Agak Setuju	Agree / Setuju	Strongly Agree/ Sangat Setuju
1	2	3	4	5	6

Please tick (√) or circle (O) the answer as the above scale.

Sila tanda (√) atau bulatkan (O) pada jawapan seperti skala di atas.

20. I use all necessary safety equipment to do my job. 1 2 3 4 5 6

    Saya menggunakan kesemua peralatan keselamatan yang diperlukan untuk melakukan kerja saya.

21. I carry out my work in a safe manner. 1 2 3 4 5 6

    Saya menjalankan tugas saya dengan cara yang selamat.

22. I follow correct safety rules and procedures while carrying out my job. 1 2 3 4 5 6

Saya mengikuti peraturan-peraturan keselamatan dan prosedur yang betul ketika menjalankan tugas saya.

23. I ensure the highest levels of safety when I carry out my job. 1 2 3 4 5 6

Saya memastikan keselamatan di tahap yang tinggi apabila saya menjalankan tugas saya.

24. Occasionally due to lack of time, I deviate from correct and safety work procedures. 1 2 3 4 5 6

Kadang-kala disebabkan kekurangan masa, saya menyimpang dari prosedur kerja yang betul dan selamat.

25. Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures. 1 2 3 4 5 6

Disebabkan kebiasaan melakukan sesuatu kerja, kadang-kala, saya menyimpang dari prosedur kerja yang betul dan selamat.

26. It is not always practical to follow all safety rules and procedures while doing a job. 1 2 3 4 5 6

Adalah tidak praktikal untuk mematuhi segala peraturan dan prosedur kerja selamat semasa menjalankan kerja.

SECTION E : SAFETY PARTICIPATION / PENYERTAAN KESELAMATAN

Use the scale below to answer the following question.

Gunakan skala di bawah untuk menjawab soalan-soalan berikut.

Strongly Disagree/ Sangat Tidak Setuju	Disagree/ Tidak Setuju	Slightly Disagree / Agak Tidak Setuju	Slightly Agree / Agak Setuju	Agree / Setuju	Strongly Agree/ Sangat Setuju
1	2	3	4	5	6

Please tick (√) or circle (O) the answer as above scale.

Sila tanda (√) atau bulatkan (O) pada jawapan seperti skala di atas.

27. I help my co-workers when they are working under risky or hazardous conditions. 1 2 3 4 5 6

    Saya membantu rakan sekerja ketika mereka bekerja dalam keadaan berisiko atau berbahaya.

28. I always point out to the management if any safety related matters are noticed in my company. 1 2 3 4 5 6

    Saya selalu merujuk kepada pihak pengurusan jika terdapat apa-apa perkara yang berkaitan dengan keselamatan dalam

syarikat saya.

29. I put extra effort to improve the safety of the workplace. 1 2 3 4 5 6

    Saya berusaha sedaya-upaya menambahbaik aspek keselamatan di tempat kerja.

30. I voluntarily carry out tasks or activities that help to improve workplace safety. 1 2 3 4 5 6

    Saya secara sukarela melaksanakan tugas atau aktiviti untuk menambahbaik aspek keselamatan di tempat kerja.

31. I encourage my co-workers to work safely. 1 2 3 4 5 6

    Saya menggalakkan rakan sekerja saya untuk bekerja dengan selamat.

SECTION F : SAFETY PERFORMANCE / PRESTASI KESELAMATAN

Use the scale below to answer the following question.

Gunakan skala di bawah untuk menjawab soalan-soalan berikut.

Strongly Disagree/ Sangat Tidak Setuju	Disagree/ Tidak Setuju	Slightly Disagree / Agak Tidak Setuju	Slightly Agree / Agak Setuju	Agree / Setuju	Strongly Agree/ Sangat Setuju
1	2	3	4	5	6

Please tick (√) or circle (O) the answer as above scale.

Sila tanda (√) atau bulatkan (O) pada jawapan seperti skala di atas.

32. My commitment in Safety and Health reduced personal accident and injuries. 1 2 3 4 5 6

    Komitmen saya dalam keselamatan dan kesihatan mengurangkan kemalangan dan kecederaan.

33. My commitment in Safety and Health improved awareness of Safety and health within employees. 1 2 3 4 5 6

    Komitmen saya dalam keselamatan dan kesihatan meningkatkan kesedaran tentang keselamatan dan kesihatan di kalangan pekerja.

33. My commitment in Safety and Health improved productivity of workers.

Komitmen saya dalam keselamatan dan kesihatan meningkatkan produktiviti pekerja. 1 2 3 4 5 6

34. My commitment in Safety in Health reduced the number of damaged material on site. 1 2 3 4 5 6

Komitmen saya dalam keselamatan dan kesihatan mengurangkan kerosakan harta benda di tempat kerja.

35. My commitment in Safety and Health improved motivation to work. 1 2 3 4 5 6

Komitmen saya dalam keselamatan dan kesihatan menambahbaik motivasi pekerja.

36. My commitment in Safety and Health reduced absenteeism of workers.

Komitment saya dalam keselamatan dan kesihatan mengurangkan ketidakhadiran pekerja. 1 2 3 4 5 6

37. My commitment in Safety and Health reduced the cost related to accidents and injuries. 1 2 3 4 5 6

Komitmen saya dalam keselamatan dan kesihatan mengurangkan kos yang berkaitan dengan kemalangan dan kecederaan.

38. My commitment in Safety and Health reduced number of workers affected with work related illnesses & diseases. 1 2 3 4 5 6

Komitmen saya dalam keselamatan dan kesihatan mengurangkan bilangan pekerja yang terjejas dengan penyakit pekerjaan.

Appendix 2

TENAGA NASIONAL BERHAD

Rujukan kami	:	TNB(B)/MELA 15/05/09
Tarikh	:	02 Julai 2012
Kepada	:	Mohd Faiz Bin Abu Bakkar Sarjana Sains Keselamatan Dan Kesihatan Pekerjaan Universiti Utara Malaysia
Perkara	:	**PERMOHONAN MENJALANKAN KAJIAN BERKENAAN KESELAMATAN DAN KESIHATAN PEKERJAAN DI BAHAGIAN PEMBAHAGIAN, TNB MELAKA**

Pendahuluan : Permohonan saudara adalah dengan ini dirujuk. Terlebih dahulu saya ingin mengucapkan terima kasih di atas minat serta kepercayaan saudara untuk memilih Tenaga Nasional Berhad sebagai tempat menjalankan kajian berkenaan keselamatan dan kesihatan pekerjaan.

Kelulusan : Sukacita dimaklumkan bahawa pihak kami telah meluluskan permohonan saudara dan ingin mengalu-alukan kedatangan saudara. Kelulusan telah diberi kepada saudara untuk menjalankan kajian mengikut maklumat di bawah :

Maklumat Kajian :

Tempat	:	**Pengurus Besar Negeri (Melaka), Bahagian Pembahagian TNB, Tingkat Mezzanine, Karung Berkunci 1005, 75990 Melaka.**
Tarikh	:	**02 Julai 2012 hingga 15 Ogos 2012**

Sekian, terima kasih.

"TNB - PENGGERAK KEMAJUAN NEGARA"

(Datuk Ir. Mohd Azlm Bin Dato' Haji Yusof)
Pengurus Besar Negeri (Melaka)
Bahagian Pembahagian,
Tenaga Nasional Berhad.

s.k - Norfadzidatul Izwa binti Farouk Shah
Pemangku Pengurus (Pengurusan Sumber Manusia
& Perkhidmatan Pentadbiran) Melaka
Bahagian Pembahagian TNB

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