Enhance Work Performance Through Employee Involvement Strategy

A Business Field Project submitted to the graduate School in partial fulfillment of the requirements for the degree Master of Business Administration (MBA), Universiti Utara Malaysia

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Abstract (Bahasa Malaysia)

Industri kuasa elektrik di Malaysia beroperasi dalam enviromen yang pesat dengan kemajuan dan peralihan pembangunan yang pantas. Kemajuan teknologi meberangsangkan pengguna untuk mempertikaikan mutu perkhidmatan yang diterima dari syarikat utiliti. Kehendak pengguna terhadap kualiti produk dan perkhidmatan memaksa pihak utiliti untuk mencari strategi yang terbaik untuk memberi kepuasan kepada Pengguna. Salah satu faktor yang selalu di persoalkan adalah berhubung dengan reliabiliti bekalan elektrik.

Di Tenaga Nasional Berhad Bagan Serai, kekerapan gangguan bekalan voltan rendah yang tinggi dalam pertengahan sembilan puluhan telah mendapat tamparan hebat dari pengguna dan pihak pengurusan atasan. Aplikasi terdahulu yang menggunakan cara tradisi melalui "Tall Hierarchy Concept" tidak dapat mengatasi masalah gangguan bekalan. Pada bulan July 1996, satu strategi baru yang dikenali sebagai " Employee Involvement Participation Method" di perkenalkan untuk mengatasi isu kekerapan gangguan bekalan.

Daripada penganalisaan, adalah didapati bahawa faktor manusia dan kaedah menjadi punca utama gangguan bekalan. Berpandukan kepada maklumat tersebut, fokus terperinci keatas isu teknik dan bukan teknik di laksanakan. Beberapa perubahan di implementasikan bertujuan untuk menyatukan anggota kerja mengatasi masalah gangguan bekalan secara berpasukan (teamwork). Kaedah ini berjaya mengurangkan jurang gangguan bekalan dari angka 306 pada bulan September 1995 kepada angka 43 pada akhir bulan April 1997 dan seterusnya berada di paras bawah dari 15 gangguan pada akhir bulan Disember 1999.

Kertas kerja ini mempaparkan pengalaman yang dilalui oleh TNB Bagan Serai untuk mencapai kejayaan. Ia juga menceritakan strategi yang di gunakan untuk mentransformasikan anggota kerja dari berbilang bangsa , berbeza usia dan pangkat yang berlainan untuk bersatu hati dalam satu pasukan untuk melaksanakan satu visi iaitu menggurangkan gangguan bekalan. Satu temuduga / survey berhubung berkesanan cara pengurusan sebelum dan selepas telah diadakan dari 24hb Jan 2000 sehingga 30hb Jan 2000.

Abstract (English)

Electricity power industry in Malaysia has been operating in environments of intense and rapid change. Technology advancement has forced customers to demand for services from the utilities. Customers demand for quality product and services had launched the search by the utility companies for best strategy to satisfy their needs.

At TNB Bagan Serai, the high rate of low voltage power failures during the middle of nineties has caused the organization faced with pressure from both customers as well as top management. The earlier application of the Conventional Method through tall hierarchy did not help to solve the problem. Many strategies were outlined but it failed to produce promising results.

During the month of July 1996, a new strategy as known as Employee Involvement Participation Method was introduced in order to overcome power outages issue. Since the causes of the outages were identified due to human factor and method factor, a severe focus on technical and non-technical issues were enhanced. Emphasis getting job done through employee involvement was enhanced. As a result, the power outages rate of 306 in September 1995 was reduced to 43 by end of April 1997 and settled below 15 a month by end of December 1999.

This paper explains the experiences encountered by TNB Bagan Serai to achieve an excellent result and how they manage to transform the employees from various ethic background with different level of age to unite in a team with one vision: reduce power outages. An interview survey regarding the effectiveness of two different management methods was conducted between 24th Jan 2000 to 30th Jan 2000. The result of this survey is discussed in this paper.

PENGHARGAAN

Sesungguhnya, projek bidang pengurusan (Business Field Project) ini tidak mungkin dapat disempurnakan tanpa bimbingan dan tunjukajar Profesor Madya Dr Zolkafli bin Hussin, selaku penyelia yang telah sudi meneliti, menyemak dan memperbaiki draf projek ini dari peringkat awal hingalah ke peringkat akhir. Jasa dan budi baik beliau amat saya hargai dan sanjung tinggi.

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TABLE OF CONTENTS

		Page
PERMISSION TO USE		i
ABSTRACT (BAHASA MALAYSIA)		ii
ABSTRACT (ENGLISH)		iii
ACKNOWLEDGMENTS		iv
LIST OF TABLES		viii
LIST OF FIGURES		ix
CHAPTER ONE : INTRODUCTION		
1.1	Introduction	1
1.2	Background of the study	4
	1.2.1 TNB Bagan Serai's Conventional Method	4
	1.2.2 Move towards new strategy	5
1.3	Objectives of the study	7
CHAPTER TWO : LITERATURE REVIEW		
2.1	Introduction	8
	2.1.1 Quality management	8
	2.1.2 Organizational structure, culture and communication	10
	2.1.3 Employee involvement	11

2.1.4 Organizational structure and leadership 12

2.1.5 Empowerment and ownership 13

2.1.6 Work teams 14

2.1.7 Job Redesign, training and development 15

2.1.8 Motivation 16

CHAPTER THREE : METHODOLOGY

3.1 Data collection 19

3.2 Pareto analysis 19

3.3 Interview / Survey 20

3.4 Cost analysis 21

CHAPTER FOUR : FINDINGS

4.1 Introduction 22

4.2 Power outages data analysis from September 95 to June 96 22

4.3 Power outages root cause analysis using qualitative method 24

4.4 Power outages data analysis from July 96 to April 97 28

4.5 Interview / Survey Analysis 31

4.5.1 Employee Involvement Strategy Enhances better communication system 34

4.5.2 Employee Involvement Strategy Enhances Empowerment and Ownership 36

4.5.3 Employee Involvement Strategy Encourage Work Teams 37

4.5.4 Job Design in Employee Involvement Method motivate work performance 39

4.5.5 More Merits and Recognition in the Employee Involvement Method 40

4.6 Cost Reduction Analysis 41

CHAPTER FIVE : DISCUSSION OF RESULTS

5.1 Introduction 43

5.2 Remedy 43

5.2.1 Changes in work culture 45

5.2.2 Enhance job redesign 48

5.2.3 Establish work teams 49

5.2.4 Fostering individual development 52

5.2.5 Establish awards and incentives 53

CHAPTER SIX : CONCLUSION

6.1 Discussion and recommendations 55

6.2 Implications 58

BIBLIOGRAPHY 59

APPENDIX A Zone System At TNB Bagan Serai 63

APPENDIX B Interview / Survey Questionnaire Sample 64

APPENDIX C Questionnaire Outcome and T-Test Computation 65

APPENDIX D Cost Analysis 66

APPENDIX E Technical Activities from July 96 to December 96 67

APPENDIX F Courses conducted through In House Training 68

APPENDIX G TNB Bagan Serai's recognition as best district in Perak for power outages reduction (***Published in Fokus Perak, internal magazine for TNB***). 69

LIST OF TABLES

Table No.		Page
1.1	Real GDP and Consumer Prices (Annual Percent Change)	2
4.1	Frequency of power outages occurrences by category	25
4.2	Performance Comparison between Conventional Method and Employee Method	29
4.3	Reduction comparison for the outages due to possible causes during the Conventional and Employee Involvement Method	30
4.4	T-Test for possible causes in power outages	31
4.5	Demographic Profile of Respondents (Gender)	31
4.6	Demographic Profile of Respondents (Ethnicity)	32
4.7	Demographic Profile of Respondents (Occupation)	32
4.8	Demographic Profile of Respondents (Age)	33
4.9	Demographic Profile of Respondents (Academic Qualification)	33
4.10	T-Test analysis for communication components	35
4.11	T-Test analysis for Empowerment and Job Ownership	36
4.12	T-Test analysis for Work Team components	38
4.13	T-Test analysis for Job Design components	39
4.14	T-Test analysis for Merit components	41
4.15	Cost Reduction Analysis	42

LIST OF FIGURES

Figure No.		Page
4.1	LV power outages from September 95 to June 96	23
4.2	Faults segmentation according to category from Sept 95 to June 96	23
4.3	Possible root causes for power outages from Sept 95 to June 96	24
4.4	Pareto Chart	26
4.5	Cause and Effect Diagram	27
4.6	Comparison between two different dimension, before and after	28
4.7	LV power outages from July 96 to April 97	29
4.8	Cost Comparison between two different dimension	42
5.1	Power outages from September 95 to December 99	43
5.2	Rotted wooden pole collapsed causing power outage	44
5.3	Employees are transferring faulty transformer through team work	51
5.4	In house training – pole fuse installation demonstration	53

CHAPTER ONE - INTRODUCTION

1.1 Introduction

In recent years, the electric utility business is faced with the most radical and important changes in its history. It is operating in environments of intense and rapid change. Major changes have been taking place in marketing, regulatory, and social and political environments in which company operates. The industry can no longer be considered as a natural monopoly in any country in the world. According to Felton(1998), the ownership bases of utilities are changing with government programs of privatization. Privatization reflects changes in government views toward state ownership, the need to bring more efficient and customer-responsive management to utilities, and in some cases the desire to raise funds that the government can deploy in other activities or sectors.

These changes mean that the electric utilities and utility-related institutions must shift their attention from their traditional concerns, which are internal in nature, to the concerns of customers for better quality of service, faster response and lower cost of electricity. The competitiveness in market urged the utilities to become closer to customers, understanding more thoroughly their needs. Era of consumerism and technology advancement forced customers to demand from utilities. Customers are beginning to have choices regarding from whom they purchased electricity. As a result, it places pressures on utilities regarding pricing, services and reliability. At

the same timer, utilities are responding by cutting costs, expanding marketing activities or even venturing into a new business.

In Malaysia, rapid economic growth as shown in Table 1.1 in the previous years has encouraged many sophisticated industries immerged as mushrooms. The electricity supply has become increasingly critical. Customers are much more quality minded and demanding now than in the past. People are on the Internet, they're watching satellite transmission (Astro), and they're running world class factories with sub-micron precision. If there is a glitch in the electricity, production is lost. According to Robbins (1998), quality product pays off in higher profits. However, poor quality not only erodes the firm's ability to compete in the marketplace but it also increases the cost to produce quality products and efficient service resulting direct impact over country's development and economic growth.

Table 1.1 : Real GDP and Consumer Prices (Annual Percent Change)

Year	Real GDP	Consumer Prices
1996	8.2	3.5
1997	7.8	2.7
1998	1.4	7.5

Tenaga Nasional Berhad (TNB), one of the largest public organization in terms of market capitalization on the Kuala Lumpur Stock Exchange, a leading company in electricity business which serves over four million domestics, commercial and industrial customers throughout Peninsular Malaysia. Tenaga Nasional Berhad , to remain competitive in the global business world, has introduced many measures to meet market demands. In 1996, Dato' Ir. Mohd Annuar Yusof, general manager of TNB's Customer Service Division, an advocate

of quality customer service, has initiated changes, introduced improvement programs and laid down three guidelines which includes measures to Reduce Breakdowns, Fast Customer Service and Think Business for effective and efficient functioning of the division (Celine, 1997: 3).

In line with the vision, all states and districts outlined their strategies to reduce breakdowns (power outages) which was the most critical issue at that time. In Perak state, one of the district which had the highest low voltage (LV) power outages was TNB Bagan Serai. TNB Bagan Serai was once well known during middle of nineties for her high low voltage (LV) power outages. The outages were as high as 300 in numbers per month. There were numerous complaints over frequent power failures and delay in supply restoration period. The local management was pressurized by top management by setting time frame to overcome the high level of LV power failures.

The local management's conventional method of handling the power failure issue was not delivering good result as expected. An effective change was required to meet the assigned challenges. Managers and employees in the company found themselves working in target and result orientation environment which was different from the environment they were hired. They realized that successful management in the new environments requires skills and perspectives that have not been a part of their training and development. In brief, managers and employees found that they were not well prepared for the new demands coming from the rapidly changing environment.

1.2 Background of the study

In this section, two different type of method were used to handle the power outage reduction will be discussed. The Conventional Method was the first application used but it was replaced with the Employee Involvement Method from July 1996 onwards.

1.2.1 TNB Bagan Serai's Conventional Method

In 1996, TNB Bagan Serai had 36,300 customers comprises of 31,500 Domestic customers, 4,500 Commercial customers, 130 Industrial customers and 170 Public lighting customers. The maximum electricity demand was 30 Megawatt. Reliability and quality of electricity supply has always been an important criteria for customer satisfaction and this has become a critical issue since the technology advancement has penetrated customers daily activities. However, it was noted the frequent LV power failures had been the main problem faced by TNB, which affects the organization image and performance. The local management through the application of the conventional method out lined several strategies to overcome the power outages but the reduction percentage was not promising.

In the conventional method, a group of people comprising of executives and technicians will sit together every month and discuss over the issue. Basically, they will analyze the monthly data for the power failures and outline strategies. Then, the senior technicians will be given tasks to head the operations at site. Executives had full authority in decision making , however a little bit of empowerment was given to

the down lines. Most of the problem solving methods applied was nothing more than the ad hoc (reactive) strategies.

The organizational structure, leadership, employee participation, decision-making and job design were strongly influenced by the tall hierarchical concept. The existence layers of red tapes, minimum feedback system and individual decision making concept had instilled barriers towards productivity. Employees became stressful and dissatisfied with unchallenging job practices. They were unable to analyze in depth the root cause of the problem. There were also lacking in team work and job ownership. Employees were not given enough responsibility or authority in decision working. As a result, they were juggling in their routines, which lead them no where than to boredom.

1.2.2 Move Towards New Strategy

The organization's poor performance in reducing power outages had let the management to search for an immediate remedy. It was identified that the real challenge was how to link the gap between customer's expectations and operating capabilities. One major optional surfaced was to transform the workforce to arrest the problems through " Employee Involvement Strategy". Employee Involvement is an important " spoke" of Total Quality Management (TQM) wheel. It is a participation process that uses the entire capacity of employees and is designed to encourage increased commitment to the organization's success. Employee is the biggest asset for TNB and by enhancing employee participation, it is expected that

workers will become motivated, committed to the organization, productive, and satisfied with their jobs.

In the mission to reduce frequent LV power failures and improve power quality through employee involvement strategy, a simple method known as the " Zoning System" was implemented in July 1996. The main purpose of the "Zoning System" was to establish employee participation and create job ownership. This method was initiated with a strong basis from the influence of the Malaysian traditional way of handling situations which is known as " Gotong Royong ", a concept whereby a group of people work together voluntarily to complete a task.

Zoning System was used to plan, monitor and control the organizational task by dividing the Krian district into four main zones geographically: Kuala Kurau, Semanggol, Parit Buntar and Bagan Serai. These four main zones were further sub-segmented into seven sub-zones in average . Each of the zones was assigned to zone leaders and sub-zone leaders. All the zone leaders and sub zone leaders were given responsibilities to collect data, monitor outages, analyze root cause, propose remedies and ensure action is taken over the proposals. They were given empowerment to make decision. Weekly meetings were made mandatory and teamwork was encouraged for problem solving. All issues about the power failures were discussed and new strategies were outlined at this meeting. Through this process, a smooth communication flow was integrated via upward, downward and horizontal . Strong communication integration between management and employees, among piers and between departments was also enhanced. Area segmentation, task

delegation and other relevant information about the " Zoning System" are attached in Appendix A.

1.3 Objectives of the study

The success an Industrial System is generally measured in terms of productivity or output. Effective human performance is a key factor in producing a desired output in an organization. Past experience has shown that many industrial systems are conceptualized around machinery, materials and architectural featured, with too little thought given to what, how and where things should be done.

For this study, three main objectives were given emphasis. They are as follows:

1. The primary objective of this study starts with determining the root cause of the power outages. Is it cause by Man, Machine, Method, Material or any other relevant causes? This is the core issue to be placed importance because it will guide to outline strategies for corrective action.
2. The second objective is to analyze and evaluate the performance of two different methods. Which method produces a good work performance, the Conventional Method or proposed Employee Involvement Strategy Method ?.
3. The third objective is to analyze the cost differences between two methods applied for power outages reduction. Which method promises a greater financial savings ?.

CHAPTER TWO – LITERATURE REVIEW

2.1 Introduction

The purpose of this section is to provide a summary of relevant literature in the interest of the proposed study. This chapter is an overview of the research pertaining to the work performance through employee involvement strategy. The literature review forms the bases for the research questions which are the research objectives.

2.1.1 Quality Management

Robbins (1998), quoted that managers get things done with people and through people to achieve organizational objectives. They make decisions, allocate resources, and direct the activities of others to attain goals. Managers do their work in an organization. Since organizations exist to achieve goals, therefore the management is responsible to plan, organize, lead and control.

Dr. Deming once said, " Improve quality, you automatically improve productivity, you capture the market with lower price and better quality. You stay in business, and you provide jobs, so simple" (Fisher, 1995: 44). Dr W. Edwards Deming, considered to be the father of quality control in Japan, summarized the far-

reaching, long lasting effects of improving quality control with his five-step chain reaction.

- First, costs decline because of less rework, fewer mistakes, fewer delays, and better use of time and materials, which
- Results in improved productivity, which
- Increases market share because of better quality and prices, which
- Increases profitability, allowing the company to stay in business, which
- Results in more jobs.

He also added that management must develop proper tools to manage quality –not only machines or hand tools, but also statistical methods to control processes and to help identify the sources of quality problems. Deming believed that statistical methods are the backbone of management's arsenal of tools for managing quality.

Juran, like Deming pioneered the education of the Japanese in quality management. Juran believes that over 80 percent of quality defects are caused by factors controllable by management. Consequently, management continually needs to seek improvements through sound quality management, which Juran defines as a trilogy of quality planning, control, and improvement (Krajewski, 1998: 166).

Many firms are aggressively seeking better ways to operate because of the stiff competition in productivity, quality and time. According to Soin (1992), the philosophy of continuous improvement seeks ways to improve operations. It means selecting valid performance measures, getting internal and external feedback on current performance, setting goals for future improvement, and enlisting everyone in the change process. To foster a creative, competitive environment, some firms are

restructuring by publishing responsibilities down the organization, removing people and management layers, and empowering employees to get more fully involved in making key decisions.

2.1.2 Organizational Structure, Culture and Communication

Although it is not always obvious to the casual observer, spans of management for various managerial positions directly influence the number of hierarchical levels in an organization. A tall structure is one that has many hierarchical levels and narrow spans of control. In contrast, a flat structure is one that has few hierarchical levels and wide spans of control. According to Kathryn M. Bartol (1998), very tall organizations raise administrative overhead, slow communication and decision making, make it more difficult to pinpoint responsibility for various tasks, and encourage the formation of dull, routine jobs. Because of such problems many companies have recently been downsizing. Downsizing is the process of significantly reducing the layers of middle management, increases the span of control and reducing the size of work force for purposes of improving organizational efficiencies and effectiveness.

Malaysia with ' minefield of multicultural sensitivities" has a rich and distinct culture based on age-old beliefs, traditions and practices which must be recognized and understood by managers when they interact with employees in their day-to-day work. For Malaysian, ethnic values is a set of clear and uncompromising statements about what is important to that particular ethnic group. These values are revered and form the basis of their shared rituals which are frequently strengthened

within family members and significant elders. It is important to know and understand the significance of these values before making an attempt to introduce any new practices. To bring out the best from the workforce, managers have to be sensitive to different cultural nuances, beliefs and tradition (Asma Abdullah, 1995: 2-10).

Chester Barnard viewed organizations as made up of people who have interacting social relationships. Managers' major roles were to communicate and to stimulate subordinates high levels of effort. A major part of an organization's success, as Barnard saw it, depended on maintaining good relations with people and institutions outside the organization with whom the organization regularly interacted (Robbins, 1998: A- 7).

2.1.3 Employee Involvement

What specifically do we mean by employee involvement ? Robbins (1991), define employee involvement as a participate process that uses the entire capacity of employees and is designed to encourage increased commitment to the organization's success. The underlying logic is that by involving workers in those decisions that affects them and by increasing their autonomy and control over their work lives, employees will become more motivated, more committed to the organization, more productive, and more satisfied with their jobs.

Krajewski (1998), indicated employee involvement as one of the important 'spokes" of the Total Quality Management (TQM). A complete program in employee involvement includes

a) changing organizational culture

b) fostering individual development through training

c) establishing awards and incentives and

d) encouraging teamwork.

2.1.4 Organizational Structure and Leadership

One of the key strategic roles of managers, whether they are general or functional managers, is to provide strategic leadership for their subordinates. Strategic leadership refers to the ability to articulate a strategic vision for the company, or a part of the company, and to motivate others to buy into that vision. An enormous amount has been written about leadership. Few key characters are (1) vision, eloquence, and consistence; (2) commitment ; (3) being well informed; (4) willingness to delegate and empower; and (5) astute use of power (Charles W.L.H, 1998: 14).

Together with scholars Lippitt and White, Lewin systematically investigated three styles of leadership : authoritarian, democratic and laissez-faire in a summer camp. The democratic style of leadership was found to be superior on virtually every measure. The groups led by the democratic counselors developed high levels of cohesiveness. When left unsupervised, they behaved admirably, following through whatever project they were supposed to be pursuing. In contrast, the boys who

worked under the authoritarian counselors tended to require close supervision to maintain high level of productivity. Typically, they demonstrated poor discipline when left on their own. Finally, the boys who worked under lassez-faire leaders suffered more than either of other groups. They did not perform well in groups, either in terms of quality of effort or productivity (Andrews, 1996: 39-40).

2.1.5 Empowerment and Ownership

Empowerment is a relatively new turn in the management literature, but its counterpart – authority – has been around for centuries. The dictionary of empowerment is " to invest with power, especially legal power or authority". Empowerment is synonymous with authority. According to Peter Mears (1994), one study of companies using team found that teams which had been empowered had greater productivity, more effective use of resources, and better problem solving success. The job ownership establishment is also very promising.

One Scholar, Warren Bennis, sought to identify the defining characteristics of excellent leaders by interviewing ninety individuals who had been nominated by their peers as the most influential leaders in all walks of society. Bennis reported that these individuals one significant characteristics: They made others feel powerful. Bennis concluded that empowering others consistently produced several important benefits. Those who felt empowered reported feeling important and valued by their fellow workers. They developed a conviction that learning and competence really matters and strove to behave in ways consistent with those convictions. They also perceived themselves as part of a team and / or embedded within a community.

Finally, they came to view their work as more engaging and challenging than ever before (Patrcia Hayes, 1996: 180) .

2.1.6 Work Teams

According to Michael Armstrong (1995), Mary Parker Follet was one of the earliest writers to recognize that organizations could be viewed from the perspective of individual and group behavior. Follet thought that organizations should be based on a group ethnic rather than individualism. Individual potential, she argued, remained only potential until released through groups association. Managers and workers should view themselves as partners – as part of a common group. Therefore, managers should rely more on their expertise and knowledge than on the formal authority of their position to lead subordinates .

Robbins (1991), indicated that group offer an excellent vehicle for performing many of the steps in the decision-making process. They are a source of both breadth and depth of input for information gathering. If the group is composed of individuals with diverse backgrounds, the alternatives generated should be more extensive and the analysis more critical. When the final solution is agreed upon, there are more people in a group decision to support and implement it. These pluses, however, can be more than offset by the time consumed by group decisions, the internal conflicts they create, and the pressures they generate toward conformity.

Groups and teams is not the same thing. Work group is a group that interacts primarily to share information and to make decisions to help each other perform

within his or her area of responsibility where else work team has a different theme. Work team is defined as a group whose individual efforts result in a performance that is greater than the sum of individual inputs. A work team generates positive synergy through coordinated effort. Three common work teams are problem-solving teams, self-managed teams, and cross-functional teams (Robbins, 1998: 286).

2.1.7 Job Redesign , Training and Development

What do individuals want from their jobs? Herzberg asked hundreds of people that question in the late 1950s, and carefully analyzed their responses. He concluded that people preferred jobs that offered opportunities for recognition, achievement, responsibility, and growth. According to Herzberg, if managers want to motivate their people, they should redesign jobs to allow workers to perform more and varied tasks. The most comprehensive approach to job design is job enrichment, which entails a vertical expansion of duties. This approach supports the development of employee empowerment and self-managed teams, whereby employees make basic decisions about their jobs (Ivancevich, 1998: 167-192).

Recognition of the importance of developing managers' interpersonal skills is closely knitted to the need for organizations to get and keep high performing employees. Chief executive of Chrysler Corporation, Robert Eaton, sees his workforce as an asset that provides his company with a sustainable competitive advantage. Eatons says "Your culture and how you motivate and empower and educate your people is what it makes different." In today's increasingly competitive

and demanding workplace, managers can't succeed on their technical skills alone. They also have to have good people skills (Robbins, 1998: 2).

2.1.8 Motivation

The essence of human studies relations movement was the belief that the key to higher productivity in organizations was by increasing employee satisfaction. Without question, the most important contribution to the human relations movement within organizational behavior came out of the Hawthorne studies undertaken at the Western Electric Company's Hawthorne works in Cicero, Illinois. Harvard professor Elton Mayo, concluded that in Hawthorne studies behavior and sentiments were closely related, that group influences significantly affected individual behavior, that group stands established individual worker output, and that money was less a factor in determining output than were group standards, group sentiments and security (Andrews, 1999: 36-40).

Probably the most widely cited example of scientific management has been Taylor's pig iron experiment. Through this experiment Taylor proved that by putting the right man on the job with the correct tools and equipment, by having the worker follow his instructions exactly, and by motivating the worker through the economic incentive of a significantly higher daily wage, higher work performance could be obtained (Robbins, 1998: A- 7) .

Dale Carnegie's book How to Win Friends and Influence People was read by millions during the 1930s, 1940s, and 1950s. Carnegie's essential theme was that the

way to success was through winning the cooperation of others. He make his audience to : (1) make others feel important through a sincere appreciation of their efforts; (2) strive to make a good first impression; (3) win people to their way of thinking by letting others do the talking, being sympathetic, and "never telling a man he is wrong"; and (4) change people by praising their good traits and giving and giving the offender the opportunity to save face (Andrews, 1995: 40-43) .

Abraham Maslow proposed a theoretical hierarchy of five needs: physiological, safety, social, esteem, and self-actualization. From a motivation standpoint, Maslow argued that each step in the hierarchy must be satisfied before the next can be activated, and that once a need was substantially satisfied, it no longer motivated behavior (Badiru A.B, 1995: 45).

Mc Gregor provided a model of managerial leadership assumption: Theory X and Theory Y. Theory X assumes that employees dislike working and coercive to perform, and will avoid responsibilities whenever possible. Theory Y assumes that employees do not dislike working, can become committed to meet organizational objectives without coercive pressures, and will learn not only to accept but also to take responsibility. Under Theory X, focused on incentives and penalties along with close supervision and inspection to guarantee productivity is required to be enhanced. Under Theory Y, focuses on system improvements that require participation, delegation of responsibility and appropriate resources for competent and trust with people to be productive is required (Joseph A. Patrick, 1997: 11).

The overall literature suggests that a relationship exits between work performance and employee participation. Employee involvement participation has high tendency in improving quality of a product or services which directly enhances work performances. Changes in work culture, enhance team work fostering individual development and establish incentives and merits does encourage employee participation for better work performance. Management commitment encourages employee participation which in return produces higher work performance through good product quality and services resulting higher profits.

CHAPTER THREE - METHODOLOGY

3.1 Data Collection

The first step in improving the quality of an operation is data collection. Data can help uncover operations requiring improvement and the extent of remedial action needed. At TNB Bagan Serai, the initial power outages data according to fault types was collected for ten months from September 1995 till June 1996. It was further segmented to identify the possible root cause.

3.2 Pareto Analysis

Through qualitative method, five tools for organizing and presenting data to identify areas for quality improvement were applied. This includes checklists, bar charts, Pareto charts, cause-and-effect diagrams and graphs. A checklist is a tool used to record the frequency of occurrence of certain product or service characteristics related to quality whereelse bar charts represent the frequency of occurrence of data characteristics measured on a yes-or-no basis. The bar height indicates the number of times a particular quality characteristics was observed. When managers discover several quality problems that should be addressed, Pareto chart is used to identify which problem should be attacked first . The cumulative frequency curve in the Pareto chart identifies the few vital factors that warrant

managerial attention. One way to identify a design problem that needs to be corrected is through developing a cause –and-effect diagram that relates a key quality problem to its potential causes. The cause-and-effect diagram is also known as a fishbone diagram. The main quality problem is labeled as the fish's "head", the major categories of potential causes as structural "bones" and the likely specific causes as "ribs."

Finally, graphs represent data in a variety of pictorial formats, such as line graphs and pie charts. Line graphs represent data sequentially with data points connected by line segments to highlight trends in data. Once the data collected for ten months and cause-and-effect diagram was analyzed, then strategies to overcome the defects will be implemented. Then once again data for the next ten months starting from July 1996 until April 1997 will be monitored. The differences will highlight the direction of the strategy applied whether it was a right decision or otherwise. The data monitoring process was carried out till Dec 1999 to ensure the chosen strategy produce an effective work performance.

3.3 Interview / Survey

In order to compare the advantages and disadvantages of using the Conventional Method and Employee Involvement Strategy Method to arrest frequent power failures at TNBD Bagan Serai, data were obtained through a structural questionnaire, which is in 2 parts. The first part captures the background data of respondents, such as name, age, gender, academic qualification, and current position. The second part of the questionnaire requires the respondent to evaluate the

strength and weakness of both methods based on a scale 1 to 4. A score of 1 indicates " strongly agree", 2 " agree ", 3 "disagree" and 4 "strongly disagree". There are five segments to be evaluated in the second part : Communication, Empowerment and Ownership, Work Teams, Job Design and Merits.

Thirty five respondents consisted of Executives, Senior technicians, Technicians, Linesman, Supervisor , Fault finders and a Driver were selected to participate in the interview (survey). The respondents were the group of people who have been involved in the " Zoning System". The first sample of questionnaire utilizes the Conventional Method of arresting the problem while the second uses the same questionnaire structure but with the Employee Involvement Strategy Method. All the questionnaires were collected for further analysis. A sample of a questionnaire's result is attached in Appendix B.

3.4 Cost Analysis

The final part of the study emphasized on costing. For the costing section, data was collected for the first ten months starting from September 95 and the cost for each type of power failures was analyzed. First, the fault was grouped into four categories: Fuse, Pole, Line and others. Then the direct and indirect cost for each fault was calculated. It was compared with the next ten months performance starting from July 1996. The differences show savings in the financial point of view.

CHAPTER FOUR - FINDINGS

4.1 Introduction

The findings of the study can be grouped into five major categories as stated below :

a) Power outages data analysis from September 1995 to June 1996

b) Power outages root cause analysis using qualitative method

c) Power outages data analysis from July 1996 to April 1997

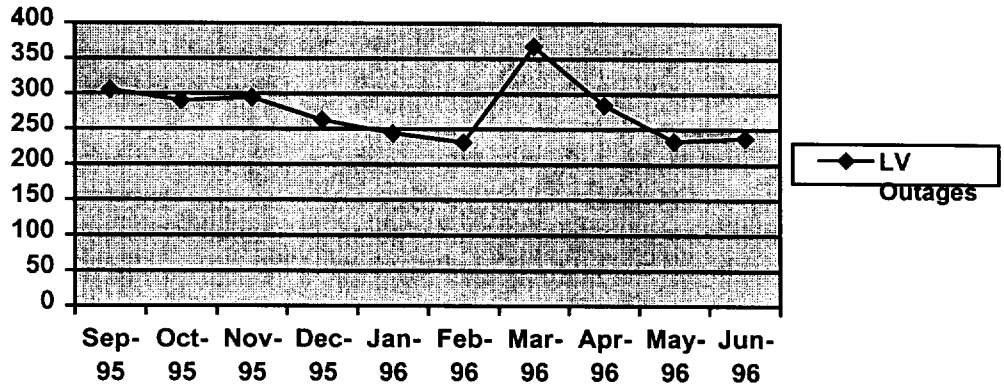
d) Questionnaire Survey analysis

e) Cost Reduction Analysis

4.2 Power Outages data analysis from September 1995 to June 1996

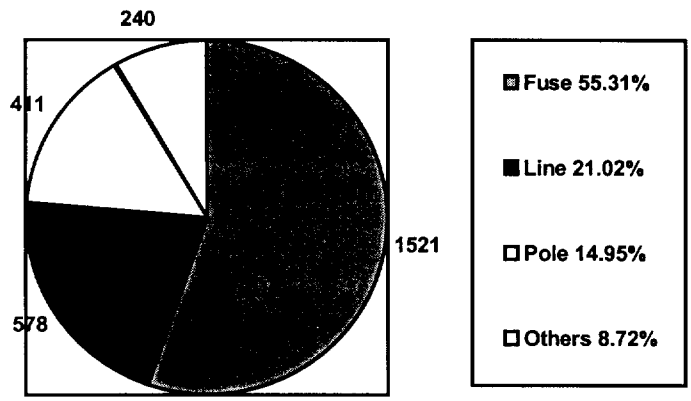
Data for the low voltage power outages were collected from September 95 until June 96. The overall data is converted into line graph. The pattern of the line graph for monthly power outages is shown in Figure 4.1. From the graph, it can be justified that the average power outages for a month are within 275 numbers. A surge can be seen for the month of March 96 whereby there were 361 power outages for this month. The major cause for high contribution was due to bad weather.

Figure 4.1 : LV power outages from Sept 95 to June 96



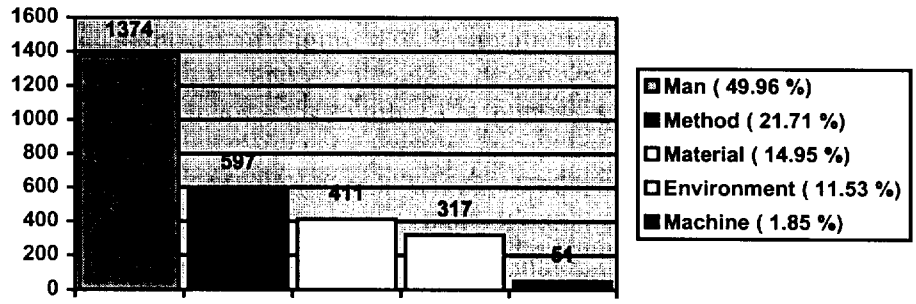
To study in depth the type of material failed, the overall fault was further segmented into four categories : Fuse, Pole, Line and others. The pie chart in Figure 4.2 shows fault segmentation for ten months since September 1995. The fuse category represents the highest amount of fault comprising of 1521 numbers which is accounted for 55.31 percent. It is followed by the line fault with 21.09 percent, poles with 14.95 percent and lastly the other category accounted for 8.72 percent.

Figure 4. 2 : Faults segmentation according to category from Sept 95- June 96



Once the fault was categorized accordingly to the material group, it was further segmented to identify the possible root cause for the failures. Five possible root causes were identified : Man, Method, Machine, Material and Environment. The root cause for the total power outages amounting 2750 numbers for ten months duration is shown in Figure 4.3. From the bar chart, it can be notified that Man factor was the main cause with 1374 number of outages. The second major cause was due to the Method factor which represents 597 numbers of outages. It was followed by Material factor with 411 outages, Environment factor with 317 outages and lastly the Machine factor with 51 outages.

Figure 4. 3 : Possible Root Causes for power outages from Sept 95 to June 96



4.3 Power outages root cause analysis using qualitative method

The major step in improving the quality of an operation is data collection. An accurate data will help to decide the correct action needed to be taken. Data can help to uncover operations requiring improvement and the extent of remedial action needed. The summary of the power outages root cause data from September 95 until June 96 is shown in Table 4.1. From the table, the frequency occurrence of fuse related outages are 1521 numbers in which a real attention is required. It was

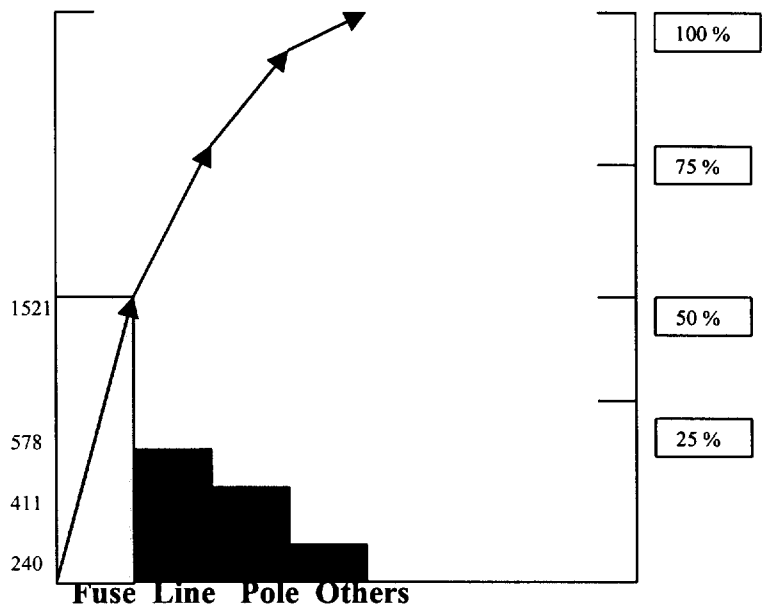
followed by the Line outages with 578, Pole outages with 411 and lastly the Others category outages amounting to 240 numbers.

Table 4.1 : Frequency of power outages occurrences by category

No	Defect Category (Sept 95- June 96)	Total (No)	Percentage
1	Fuse	1521	55.31
2	Pole	411	21.02
3	Line	578	14.95
4	Others	240	8.72
	Total	2750	100

Vilfredo Pareto, a nineteenth –century Italian scientist whose statistical work focused on inequalities in data, proposed that most of the "activity" is caused by relatively few of the factors. Pareto's concept, called the 80-20 rule, is that 80 percent of the activity is caused by 20 percent of the factors. By concentrating on the 20 percent of the factors (the "vital few"), managers can attack 80 percent of the quality problems (Whetten D.A, 1995: 182). With the guidance of Vilfredo's concept, a Pareto chart was applied to identify the vital factors for power outages as shown in Figure 4.4. The cumulative frequency curve on the Pareto chart identifies the few vital factors that warrant managerial attention. From Figure 4.4, it can be notified that the fuse category contributes the highest outages which amounting to 55.31 percent needs severe attention. The second factor requires attention is the Line category which was contributing 21.02 percentage.

Figure 4.4 : Pareto Chart

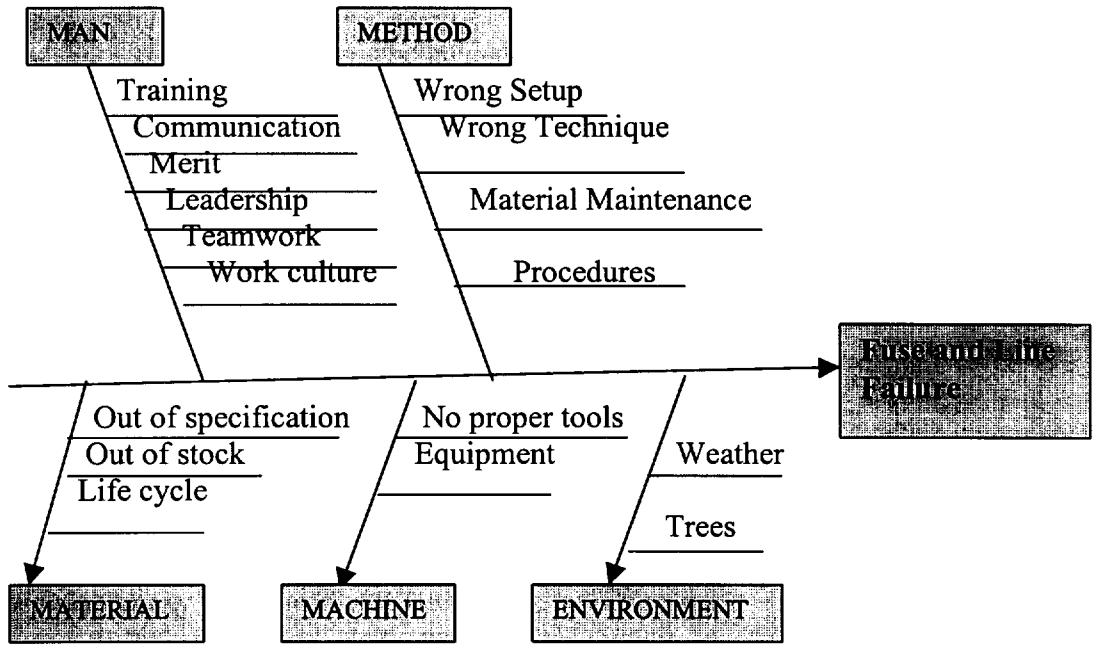


One way to identify a problem that needs to be corrected is to develop a cause-and-effect diagram that relates a key quality problem to its potential causes. The cause-and- effect diagram sometimes is called a fishbone diagram. The main quality problem is labeled as the fish's "head,", the major categories of potential causes as structural "bones," and the likely specific causes as "ribs." From figure 4.4, it was established that the main quality problem was due to fuse failure and it was followed by the line failure. Therefore these problems was labeled as the fish's "head" as shown in Figure 4.5. There were five major potential causes identified : Man, Method, Machine, Material and Environment.

In Figure 4.5, the specific causes are also well elaborated. Through brainstorming , two major possible causes contributing to the fuse and line failure was identified. The two factors are the Man and Method factors. Man factor comprises of lack of tainning, poor communication, less teamwork, demotivating

workculture, authocractic leadership and insufficient merit. The Method factor includes the wrong technique applied to install and maintain the particular material, poor maintenance, lack of work procedures and wrong system setup. To correct the problems, Employee Involvement strategy application was intoduced to TNB Bagan Serai.

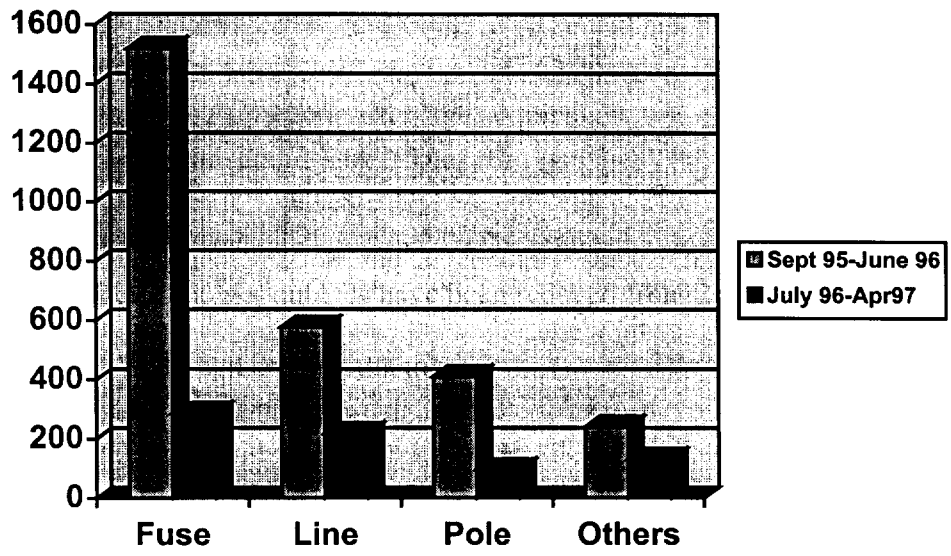
Figure 4.5 : Cause and Effect Diagram



The employee involvement strategy was established as a result of the findings of cause-and-effect methodology. Employee involvement strategy was implemented at TNB Bagan Serai in July 1996. Figure 4.6 shows the quantity of the power outages before and after the implementation of employee involvement strategy was implemented. The comparison was done based on ten months before the strategy implementation and a ten months after the strategy implementation. From the bar chart below, a tremendous reduction for all the categories was seen. The fuse category experienced a huge reduction of 81.20 percent. The previous

large number of power outages have been reduced from 2750 outages to 733 outages amounting 73.34 percent in reduction

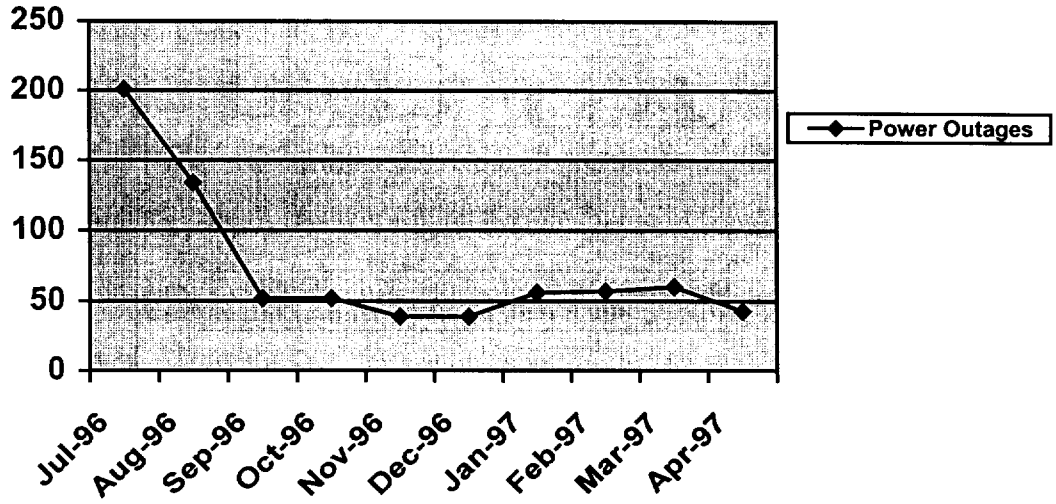
Figure 4.6 : Comparison between two different dimension, before and after



4.4 Power outages data analysis from July 1996 to April 1997

Data for power outages from July 1996 until April 97 was monitored in conjunction with the implementation of the Employee Involvement Method in July 96. There were tremendous changes in the monthly power outages trend. The descending pattern of the outages for ten months since July 96 is shown in Figure 4.7. From the graph, the monthly average outages are justified to be within the level of 73 numbers. The overwhelming reductions in the outages tend to settle on the 50 number platform eventually after the month of September 1997. The impressive result was achieved through hard work instilled by TNB Bagan Serai management and their employees. Many technical and non-technical activities took place during the ten months period which will be discussed in detail in the next chapter.

Figure 4. 7 : LV power outages from July 96 until Aprill 97



Employee Involvement Strategy has produced excellent result to overcome the power outages issue. The outages comparison for a two different periods is shown in Table 4.2. During the period of the conventional method application for problem solving, a total of 2750 outages were recorded. However, this amount was reduced to 733 numbers within 10 months time frame through the application of employee involvement strategy. Fuse category recorded the largest reduction amounting 81.20 percent. The positive figure in the number of reduction for all the categories recognizes credibility to the new method of handling the outages issue.

Table 4.2 : Performance comparison between Conventional Method and Employee Involvement Method.

No	Category	Fault during Conventional Method (Sept 95 –June 96)	Fault during Employee Involvement Method (July 96 –April 97)	Reduction
1	Fuse	1521	286	81.20 %
2	Pole	411	97	76.40 %
3	Line	578	218	62.28 %
4	Others	240	132	45.00 %
	Total	2750	733	73.34 %

The comparison for possible causes of power outages during two different method applications is shown in Table 4.3. The Man factor which has an outages of 1374 has been reduced to 255 during Employee Involvement method. The Method factor experienced a reduction of 67.67 percent. Concentration on these two factors in the employee involvement strategy does contribute indirect impact for reduction on the other three causes as shown in Table 4.3.

Table 4.3 : Reduction comparison for the outages due to possible causes during the Conventional and Employee involvement method.

No	Category	Fault during Conventional Method (Sept 95 –June 96)	Fault during Employee Involvement Method (July 96 –April 97)	Reduction
1	Man	1374	255	81.44 %
2	Method	597	193	67.67 %
3	Machine	51	19	62.75 %
4	Material	411	116	71.78 %
5	Environment	317	150	52.68 %
	Total	2750	733	73.34 %

A one-tailed t-test as shown in Table 4.4 was used to analyze the effectiveness of five chosen possible causes which caused the power failures. The analysis is answered by the test of all the items which shows that the t calculated value has greater value compared to the significance level at 0.01. An example of a t-test carried out elaborates that the affection of possible cause by the Man factor in the Conventional Method is 137.4 and Employee Involvement Method is 25.5. This shows that the Man factor has an impact in power outages reduction. The t-value for the comparison of the difference at 9.20 is significant at $p <= 0.01$

Table 4.4 : T-Test evaluation for possible causes in power outages

		Conventional Method	Employee Involvement Method	T-Value	Significance Level of 0.01 (one- tailed)
	Possible Causes	Mean	Mean		P<=0.01
1	Man	137.4	25.5	9.20	2.55
2	Method	59.7	19.3	5.01	2.55
3	Machine	5.1	1.9	5.28	2.55
4	Material	41.1	11.6	6.07	2.55
5	Environment	31.7	15	3.21	2.55

4.5 Interview (Survey) Analysis

Table 4.5 to 4.9 illustrates the demographic variables of the study. The sample represented workforce from various occupational levels. As shown in Table 4.5, all of the samples are male who comprises of 100%. Female employees were not included in my sampling as none of them are attached with the technical department.

Table 4.5: Demographic Profile of respondents –Gender

Gender	No of respondents	% of respondents
Male **Female**	**35** **0**	**100** **0**
Total	**35**	**100**

The overall respondent participated in the survey were from various ethnic groups. From table 4.6, it is clearly notified that the majority of the participants were Malays (71.4 %), followed by Indians (22.9 %) and Chinese (5.7 %). Each ethnic group had their own values and beliefs.

Table 4.6: Demographic Profile of Respondents – Ethnicity

Ethnicity	No of respondents	% of Respondents
Malay	25	71.4
Chinese	2	5.7
Indian	8	22.9
Others	0	0
Total	35	100

As shown in table 4.7, the respondents were the technical staff comprising of executives (11.4%), Technicians (11.4%), Supervisors (20%), Linesman (37.1%), Fault Finders (17.2 %) and driver (2.9%). All these respondents have participated in the " Zoning System application" to overcome power outages. All the participants were from various technical departments with different level of technical knowledge and skill.

Table 4.7 : Demographic Profile of Respondents – Position

Position	No of respondents	% of Respondents
Executives	4	11.4
Senior Technician	2	5.7
Technician	2	5.7
Supervisor	7	20
Linesman	13	37.1
Fault Finder	6	17.2
Driver	1	2.9
Total	35	100

Sixty three per cent of the respondents were aged between forty one to fifty five years old, followed by age group of thirty one to forty years old (31%) and twenty one to thirty years old (6 %). This is clearly elaborated in table 4.8.

Table 4.8: Demographic Profile of Respondents – Age of Respondents

Age	No of respondents	% of Respondents
21-30	2	6
31-40	11	31
41-55	22	63
Total	35	100

Four out of the thirty five respondents have high academic qualification. They graduated with either a degree or diploma. The majority of the respondents who comprises of seventy one percent have education below the " Sijil Pelajaran Malaysia". Only seventeen percent have SPM qualification. The overall segmentation is elaborated in Table 4.9.

Table 4.9: Demographic Profile of Respondents – Academic Qualification

Education	No of respondents	% of Respondents
Degree	2	5.7
Diploma	2	5.7
SPM /Cert	6	17.2
SRP and below	25	71.4
Total	35	100

In order to test the validity of the findings, the 29 dimensions or so called the questions was selected to be evaluated for identifying the significance differences between Conventional Method and Employee Involvement Method. The summary of the questionnaire outcome for the 29 dimensions is attached in Appendix C. A parametric Statistical test (the t-test) was carried out. The first level was to test the data gathered for the mean and standard deviation for conventional method application and compare it with employee involvement application method. Once the difference between the two scenario was obtained, the t-test was conducted . The

t-test was used to examine whether two samples differ significantly from one another. This Parametric Statistical Test was carried out for five components of the study ; communication, Empowerment and job ownership, work team, job design and Merits. The followings will be the discussion in details over the t-test for the five components as stated above.

4.5.1 Employee involvement strategy enhances better communication system

Nearly every work in an organizations points to the importance of communication for achieving organizations objectives, furthering human relationships, making sound decisions, and so forth. Communication, however cannot be viewed simply as an important organizational component. Rather communication is every organization's life blood. Here, a single-stage t-test (one-tailed) was used to analyze the effectiveness of communication flow in the Conventional Method and Employee Involvement Method. The result is given in Table 4.10. The analysis is answered by the test of all items (last line, table 4.10), which shows that the affection of communication flow in the Conventional Method is 3.15 and Employee Involvement Method is 1.69. This shows that the communication flow in the conventional method is further away compared to the Employee Involvement Method. The t-value for the comparison of the difference at 12.13 is significant at $p <= 0.01$

Therefore, the argument that communication flow is better in Conventional Method does not seem to hold here. On the contrary, communication flow is more affective in the Employee Involvement Method. The difference between

Conventional and Employee Involvement seem to emerge in a number of areas as indicated in the significant differences in Table 4.10. In the application of the employee involvement strategy, employees roles and responsibilities have been clearly communicated. Employees found easier to communicate with superiors, counterparts and subordinates. A vast practices of two way communication was applied. This factor enhanced employee to express their views and ideas freely. Executives and supervisors were interested in receiving feedback from employees for decision making. In fact most changes in the planning and strategy implementation were made based on employee feedback.

Table 4.10 : T-Test analysis for communication components

	Questions	Conventional Method	Employee Involvement Method	T-Value	Significance Level of 0.01 (one- tailed)
	Communication	Mean	Mean		P<=0.01
1	Easily can communicate With superiors, counterparts and subordinates	3.26	1.4	12.6	2.36
2	Employees are encouraged to freely express their views and ideas	3.37	1.66	12.98	2.36
3	Most changes are made from employees feedback	3.29	1.86	10.53	2.36
4	Vast practices of two way communication	3.11	1.69	14.57	2.36
5	Employees roles and responsibilities have been clearly communicated	2.8	1.89	5.21	2.36
6	Executives and supervisors are interested in receiving feedback from employees	3.09	1.63	8.87	2.36
	All items above	3.15	1.69	12.13	2.36

Scale : 1 - Strongly Agree, 2-Agree , 3-Disagree and 4 -Strongly Disagree

4.5.2 Employee Involvement strategy enhances Empowerment and Ownership

The result given in Table 4.11 shows that employee involvement strategy enhances empowerment and job ownership. The analysis is answered by the test of all items (last line, table 4.11), which shows that the Empowerment and Job Ownership enhancement in the Conventional Method is 3.16 and Employee Involvement Method is 1.71. This shows that the Empowerment and Job Ownership in the Conventional Method was not promising compared to the Employee Involvement Method. The t-value for the comparison of the difference at 7.17 is significant at $p <= 0.01$

Table 4.11 : T-Test analysis for Empowerment and Job ownership components

	Questions	Conventional Method	Employee Involvement Method	T-Value	Significance Level of 0.01 (one- tailed)
	Empowerment and Ownership	Mean	Mean		P<=0.01
1	Minimum layers of red tapes for decision making	3.83	1.49	21.5	2.36
2	Employees are encouraged to identify problems, find root cause and solve the problem	2.91	1.83	11.29	2.36
3	Employees are enhanced with job ownership	3.11	1.69	12.19	2.36
4	Employees take ownership for their action	3.03	2.17	5.36	2.36
5	Empowered to make job related decision	2.8	1.46	9.64	2.36
6	Enhanced leadership	3.29	1.6	12.37	2.36
	All items above	3.16	1.71	7.17	2.36

Scale : 1 - Strongly Agree, 2-Agree , 3-Disagree and 4 -Strongly Disagree

From table 4.11, a strong indication that employees were empowered and job ownership was established through Employee Involvement strategy can be clearly notified. This statement is further supported by the t-value for all items which is significant at p <= 0.01. Employees agreed that the level of red tapes for decision making in the employee involvement strategy method was lesser compared to the conventional method. Furthermore employees were encouraged to look deeper into problems, identify the root cause and finally solve the problems. They were also given empowerment to make decision on job related issues resulting in leadership enhancement. Finally employees were augmented with job ownership and encouraged to take ownership for their actions.

4.5.3 Employee Involvement Strategy Encourage Work Teams

Whether or not a team is effective, then, depends upon its members' skills, mutual trust, sense of purpose, and commitment to objectives as well as external factors. When managers are truly committed to empowerment through teamwork, however, and are willing to put aside traditional hierarchical constraints and to think in fresh, creative ways, work teams can serve as true vehicles of empowerment. Here, a one-tailed t-test was used to analyze the degree of the work-team establishment in the Conventional Method and Employee Involvement Method. The result is shown in Table 4.12. The analysis is answered by the test of all items (last line, table 4.12), which shows that the effectiveness of work-team formation in the Conventional Method is 3.23 and Employee Involvement Method is 1.66. This shows that the work –team development concept was much more brighter in the Employee Involvement method than in the Conventional Method. The t-value for the comparison of the difference at 9.16 is significant at p <= 0.01

Table 4.12 : T-Test analysis for Work team components

	Questions	Conventional Method	Employee Involvement Method	T-Value	Significance Level of 0.01 (one- tailed)
	Work Teams	Mean	Mean		P<=0.01
1	Closer ties between Management and Employees	3.17	1.54	5.55	2.36
2	Employees work together as a team	3.37	1.4	14.71	2.36
3	Workgroup works well with other workgroup	3.34	1.6	14.64	2.36
4	Resources are shared by work groups	3.11	2.4	5.68	2.36
5	Analysis and Decisions are made together in a group	3.2	1.4	14.41	2.36
6	Have opportunity to learn and develop new skills	3.2	1.63	9.76	2.36
	All items above	3.23	1.66	9.16	2.36

Scale : 1 - Strongly Agree, 2-Agree , 3-Disagree and 4 -Strongly Disagree

Therefore, it can be concluded that the Work team concept was not widely practiced widely in the Conventional Method.. On the contrary work-team establishment was more effective in the Employee Involvement Method. The difference between Conventional and Employee Involvement seem to emerge in a number of areas as indicated in the significant differences in Table 4.12. In the application of the employee involvement strategy, closer ties between management and employees can be seen. Employees worked together as a team as well as the workgroup worked well with other workgroup. Resources available such as manpower, material and transportation were shared on win-win situation by work-groups. Most of the analysis and decisions were made together in a group which in return leads to a better performance. By working together in a team, opportunity to learn and develop new skills was likely very much promising.

4.5.4 Job Design in Employee Involvement method motivates work performance

The Job design in the conventional method needed some changes. Employee found that the job design was no longer motivating for performance due to its monotonous. T-test (one-tailed) was used to analyze the job design impact in the Conventional Method and Employee Involvement Method . The result is shown in Table 4.13. The analysis shows that the job design impact in the Conventional Method is 3.06 and Employee Involvement Method is 2.03. This shows that the conventional method's job design was not able to motivate work performance compared to the Employee Involvement Method. The t-value for the comparison of the difference at 2.61 is significant at p <= 0.01

Table 4.13: T-Test analysis for Job design components

	Questions	Conventional Method	Employee Involvement Method	T-Value	Significance Level of 0.01 (one- tailed)
	Job Design	Mean	Mean		P<=0.01
1	Job design is monotonous	2.14	3.4	10.4	2.36
2	Good opportunity to develop more know how skills	3.57	1.46	17.23	2.36
3	Job Design towards job enrichment	3.23	2.17	10.05	2.36
4	Able to motivate work performance	3.23	1.80	10.39	2.36
5	Optimizing labor resource	2.80	1.80	5.89	2.36
6	Able to cut down operation cost	3.37	1.57	15	2.36
	All items above	3.06	2.03	2.61	2.36

Scale : 1 - Strongly Agree, 2-Agree , 3-Disagree and 4 -Strongly Disagree

Table 4.13 shows that all other components of Job design are also significant. Therefore, it can be concluded that the Employee Involvement Strategy provides an interesting job design specifically supports the job enrichment . This type of job design provides good opportunity for employees to develop more know how skills in order to improve work performance. With the new job design application, employees believed that labor force optimization could be achieved and the operation cost could be reduced.

4.5.5 More Merits and recognition in the Employee Involvement method

Merit is the final component where t-test was carried out. From the five items selected as shown in Table 4.14, four items supported the statement that the Employee Involvement Strategy does promise better merits compared to the Conventional Method. The t-value for the comparison of the difference at 3.99 is significant at $p <= 0.01$ for all the items as shown in the last line of the table 4.14. In the Employee Involvement Strategy, individual performance were recognized and so as the teams effort. The great merit of all kind, motivation was widely enhanced through this method. Employees were not only gained monetary value but they also gained non-monetary merit for their performance. However both of the methods did not promise that the top performers received better recognition. This is shown in table 4.14, whereby the t-value for the comparison of the difference at 1.19 is not significance at $p <= 0.01$.

Table 4.14: T-Test analysis for Merit components

	Questions	Conventional Method	Employee Involvement Method	T-Value	Significance Level of 0.01 (one- tailed)
	Merits	Mean	Mean		P<=0.01
1	Recognizes individual performance	3.34	1.94	7.56	2.36
2	Good opportunity to develop more know how skills	3.31	2	8.51	2.36
3	Top performances receive better recognition	3.17	3.03	1.19	2.36
4	Enhance Motivation	3.2	1.77	12.22	2.36
5	Gain non monetary merits	2.97	1.77	8.89	2.36
	All items above	3.2	2.1	3.99	2.36

Scale : 1 - Strongly Agree, 2-Agree , 3-Disagree and 4 -Strongly Disagree

4.6 Cost Reduction Analysis

In any organization, cost is considered as one of most important element to look at because it directly influences the profit of the particular organization. In table 4.15, a comparison of cost for the duration from September 1995 to June 1996 and from July 1996 to April 1997 is shown. The total cost for power outages during the Conventional Method application was RM 1,914,857.00 where else the total cost during the application of Employee Involvement Method was RM 580,587.50. There was a tremendous reduction of 69.68 percent amounting RM 1,334,310. Fuse category has proved the highest reduction amounting RM 560,250.00 and the Others category has the lowest reduction amounting RM 104,490.00. More focus was

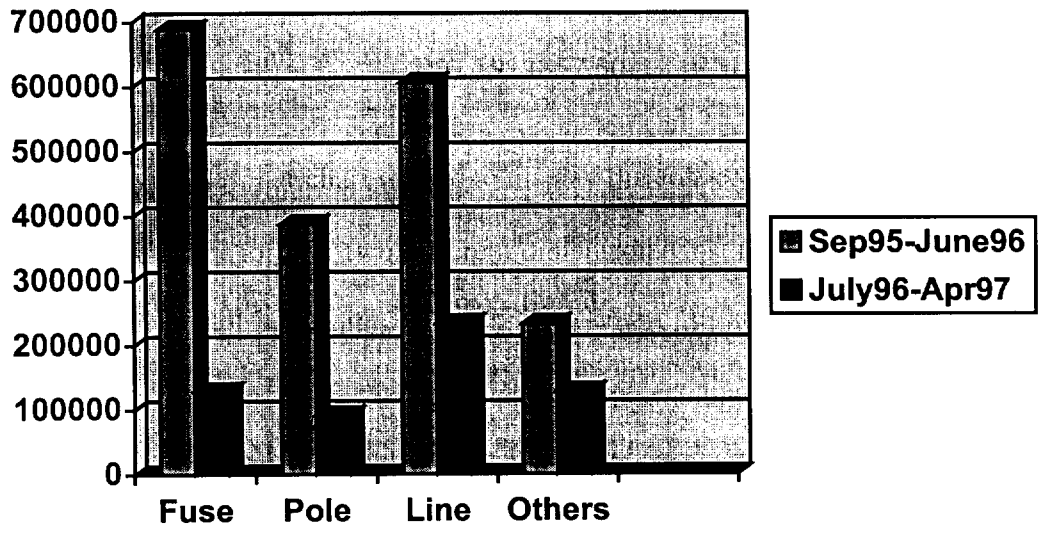
given to fuse category because this portion was easy to solve. It does not require a lot of investment. The detail for costing is attached in Appendix D.

Table 4.15 : Cost Reduction analysis

No	Category	Cost /BD	Conventional Method (Sep 95 –June 96)	Employee Involvement Method (July 96- Apr 97)	Reduction
1	Fuse	RM 450.00	RM 688950.00	RM 128700.00	81.31 %
2	Pole	RM 942.50	RM 387367.50	RM 91422.50	76.40 %
3	Line	RM1076.50	RM 606340.00	RM 232715.00	61.62 %
4	Others	RM967.50	RM 232200.00	RM 127710.00	45.00 %
	Total	-	RM 1914857.50	RM 580547.50	69.68 %

In Figure 4.8, bar chart is used to display the cost comparison for fuse, line, pole and others category for two different dimension. Cost reduction in the fuse category has the highest savings of 81.31 percent and followed by the pole category with 76.40 percent.

Figure 4. 8 : Cost comparison between two different period

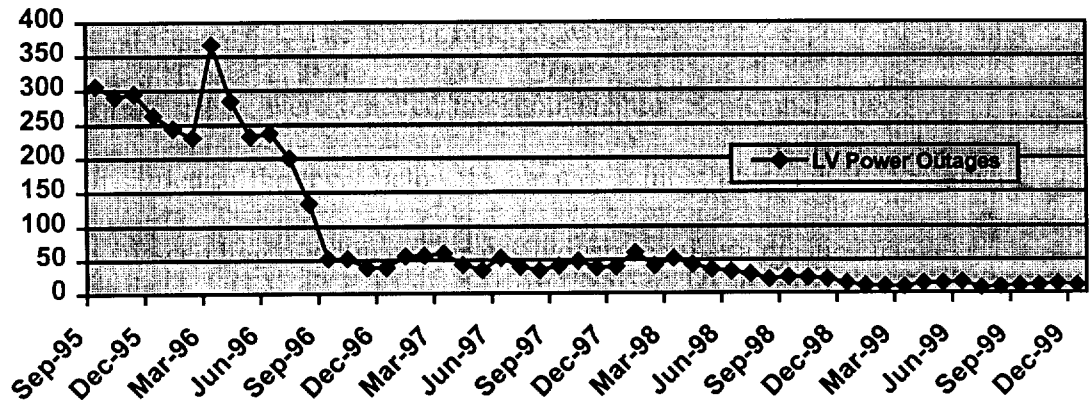


CHAPTER FIVE – DISCUSSION OF RESULTS

5.1 Introduction

Low voltage power outages from September 1995 until December 1999 is captured in Figure 5.1. The power outages which were at the point of 301 numbers in September 1995 were reduced to 50 outages in September 1996. It fell further and well settled at the level below 15 outages a month by end of December 1999. From the descending trend in can be easily justified that a drastic changes has taken place since July 1996. What exactly had happened?. How did TNB Bagan Serai managed to turn over from the poor performing scenario to excellent achievers?.

Figure 5.1 : Power outages from September 1995 until December 1999



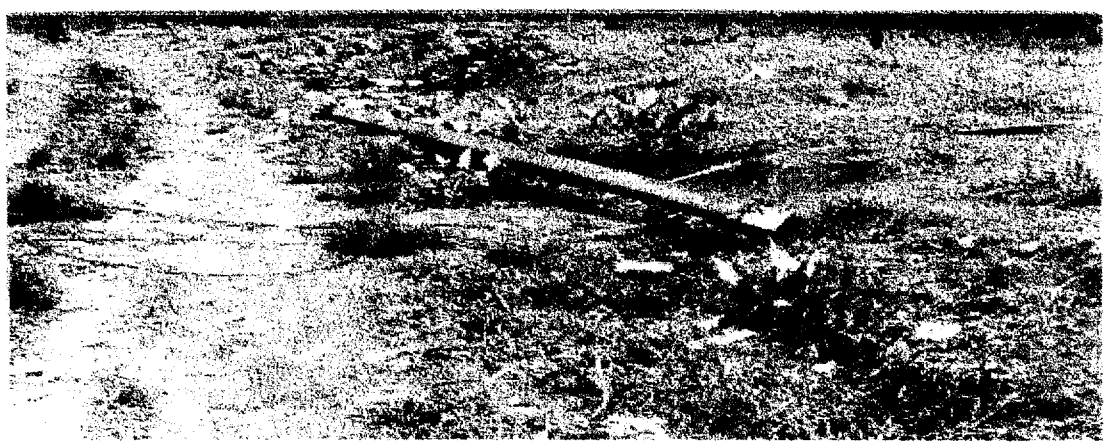
5.2 Remedy

The findings from Chapter five revealed that the main cause was due to good effort and commitments from both management and employees besides some

implementation of technical actions. From the findings, it was identified that fuse category and line category has contributed to high failure rate. The main factor behind these failures was human negligence and poor method application. To overcome the frequent power outages, strategies were outlined focused on two categories : technical and non-technical.

For technical issues, fuse category was given priority. Since, most of the fuses blown was due to line shorting caused by branches on line, loading and loose contact, an immediate maintenance program for rentice clearance, load distribution and pole fuse maintenance was implemented. Pole and line categories required large sum of investment for rehabilitation work. Since it involves budget, longer duration was needed for action plan implementation. However, rotted wooden poles were identified and spun pole replacing program was established in stages. An example of the fault due to rotted pole is displayed in Figure 5.2. Whenever, there was difficulties in loping trees and branches, the particular bare line system was replaced with insulated Ariel Bundle Cables (ABC). All action taken was based on data and feedback from zone leaders and sub-zone leaders. The actual technical activities done from July 96 till Dec 96 is attached in Appendix E.

Figure 5.2 : Rotted wooden pole collapsed causing power outage



Since Man and Method factor was the root cause for the power outages, therefore more weightage was given to the non-technical issues. Man and Method factors which had caused large number of outages stimulated TNBD Bagan Serai management to opt for the Employee Involvement Strategy for power outages reduction. The employee participation was enhanced through the application of the " Zoning System Application". There were many non technical activities carried out in order to reduce the number of power outages. One of the most important strategies TNB Bagan Serai applied to maximize employee participation was through instilled changes in work culture. It was further strengthened through maximizing job enrichment, encouraging work team, fostering individual development and finally establishing awards and incentives.

5.2.1 Changes in work culture

What can management do to change an organizational work culture when it no longer supports the organization's mission ?. The fact that an organization's work culture is made up of relatively stable and permanent characteristics tends to make culture very resistant to change. A culture takes long time to form; and once established, it tends to become entrenched. Therefore in order to break this entrenchment change must come from top levels of management. Winston Churchill once said, " There is nothing wrong with the change as long as it is in the right direction" (Gregory P.Smith, 1997: 15). At Bagan Serai, four important success factors as follows were initiated to improve the deteriorating change in work culture (1) Strong leadership; (2) Employee Ownership; (3) Lower Level Employee Empowerment ; and (4) Two way communication.

a) Strong Leadership

According to Peter Mears (1994), leadership is like the golden thread holding all other separate threads together in a cohesive fabric. A leader is a person who inspires others to take a journey to a destination they wouldn't go by themselves. My study at Bagan Serai expresses the same view as pointed out by Peter Mears. In addition to this, from top to down must shares common values, share the view that errors or defects should be caught and corrected at the source, not passed along to the internal or external customers.

b) Employee Ownership

Establish an environment for employee to be responsible and committed towards the task delegated. The logic behind this is to instill an awareness of the importance of quality in all employees and to motivate employees to improve product and service quality. According to Harold L. Taylor (1991), delegation provides employees with the opportunity to grow to expand their skills and decision making capability. It allows them to accept greater responsibility gradually and to put what talents they already have toward practicing their problem solving skills.

c) Lower Level Employee Empowerment

As technology has advanced, the notion of empowerment has become especially important. Organizations are doing the same or more work with fewer people; thus; they need to facilitate opportunities for each member to contribute maximum value

to the organization and its customer, and to do so in a way is personally compelling. In practice, the empowering process involves managers delegating and sharing resources and decision making with employees (Patricia Hayes, 1996 : 5).

A person can't swim if the legs and hands are tied. He can only float. Therefore it is important to empower lower level employee to certain extent. Through empowering process, executives will be able to delegate and share resources and decision making with employees. Empowerment does not confer on a person the freedom to do whatever he desires. Empowerment merely enables an employee to take actions that he deems appropriate in a given context of an accountability and responsibility that recognizes employer interest.

d) Two way communication

It is desirable to make provisions for feedback in communication process. Feedback decreases the potential for distortion between the intended message and the received message. A feedback loop provides a channel for receiver response enabling the communicator to determine whether the messages been received and has provided the intended response. One way communication process does not allow receiver to communicator feedback. Two ways communication process provides the feedback. Breakdown in communication may be indicated by indirect means, such as declines in productivity, the poor quality of production, increases absenteeism or turnover, and conflict or lack or coordination between units (James H. Donnely, 1984: 434)

In my observation at TNB Bagan Serai, I discovered that organizational communication is influenced by the realities of hierarchies. As organizations become flatter, with few hierarchical layers, the communication system become more effective. In the Conventional method, TNB Bagan Serai had tall hierarchical structure. This formation resisted the smooth flow of two way communication which articulated and realized mutually held visions, purposes and goals. Through employee involvement strategy, two way communications was well established. This process encouraged feedback which was the backbone for decision making.

The four factors mentioned above were instilled through the implementation of the " Zoning System Application." At TNB Bagan Serai, employee accepted the changes in the work culture with less resistance, in fact they came forward with ideas and views to turn over the unsuccessful targets. All the changes, targets, achievements and action plan were discussed in the weekly meeting. The weekly meeting were held on every Friday for a three hour duration, attended by the local management and zone leaders. Zone leaders and sub- zone leaders regularly have their meetings trice a week for a duration of twenty minutes. Local management, zone leaders and sub-zone leaders used to meet once on the last Friday of the month. The practice has boosted up the employees morale and in return work performance aim to reduce power outages was taken very positively.

5.2.2 Enhance Job redesign

The process of job redesign started from an analysis of what needed to be done – the task that have to be carried out to achieve organizational goals. The

pursuit of short-term efficiency by imposing the maximum degree of task specialization may reduce longer-term effectiveness by demotivating job holders and increasing employee turnover and absenteeism. The implication of the job redesign concentrated just with human needs alone is not sufficient in the present context. However, consideration is needed on how a job set up can provide the maximum degree of intrinsic motivation for those who have to carry them out with view of improving performance and productivity.

To enhance work performance, executives, zone leaders and sub zone leaders were given task to be accomplished. Their responsibilities were well spell out. To ensure, given target could be achieved, TNB Bagan Serai opted for job enrichment. Job enrichment is not just increasing the number or variety of tasks; nor the provision of opportunities for job rotation. Job enrichment aims to maximize the interest and challenge of work by providing the employee with a job that can afford the employee as much variety, decision-making responsibility and control as possible in carrying out the work. This is a process of making a job more intrinsically rewarding and related to worker motivation and empowerment.

5.2.3 Establish Work Teams

Patricia Hayes (1996), states that hundreds of group studies have convincingly demonstrated that groups are no panacea. The potential negatives associated with group include wasted time; uneven participation ; costly decision making ; poor organization; poor listening; pressure for uniformity; and ineffective leadership. Individual group members may play negative roles – perhaps by raising

constant objections, by telling endless stories, or simply by coming to meetings unprepared. Besides the negatives, the opportunities are for social interaction to fulfill personal needs, the greater pool of idea and information, the diversity of approaches to problem solving offered by group, employee involvement in decision-making process, and the opportunity for rigorously testing ideas through group interaction. Perhaps the most important, group are often seen as vehicles for empowerment.

John Oakland (1994), further elaborated that the use of team approach to problem solving has many advantages over allowing individual to work separately. The advantages are such as :-

- A greater variety of complex problem may be tackled
- Problem are exposed to a greater diversity of knowledge, skill, experience, and are solved more efficiently
- The approach is more satisfying to team members, and boost morale and ownership through participation in problem solving and decision making
- Problems that cross department or functional boundaries can be dealt more easily, and the potential / actual conflicts are more likely to be identified and solved
- The recommendations are more likely to be implemented than individual suggestion, as the quality of decision making in good teams is fill

I strongly agree with Patricia Hayes and John Oakland. In my opinion, teams provide the natural vehicle for employees to share ideas and implement improvements. This is the reason why the work teams concept was enhanced at TNB

Bagan Serai. Initially, problem-solving teams were established at TNB Bagan Serai. The problem-solving shared area of responsibility and meet regularly to discuss their quality problems, investigate causes of the problems, recommend solutions, and take corrective actions. Problem-solving teams were on the right track but they didn't go far enough in getting employees involved in work-related decisions and processes. This led to experimentation with truly autonomous teams that could not only solve problems but implement solutions and take full responsibility for outcomes. The self-managed work teams were enhanced. The self-managed work teams improved employee motivation, increased levels of productivity and also improved communication upward, downward and horizontally. An example of a self managed work team can be seen in Figure 5.3.

Figure 5.3 : Employees are transferring faulty transformer through team work

5.2.4 Fostering Individual development

In an article in the Harvard Business Review, former Balrige judge Donald said, " Total quality comes not from contingencies set by managers but from the native curiosity, pride, and desire" from craftsmanship that are likely widespread in the work place (Stephen George, 1994: 106). From my study at Bagan Serai I observed that competent employees don't remain competent forever. Skills deteriorate and become obsolete. That's why TNB spend millions of dollars each year on formal training. Most training is directed at upgrading and improving an employee's technical skill. Since TNB's training centre is decentralized at Bangi, most of the employees were unable to upgrade their skills due to opportunity limitation. This becomes even bad when new products were introduced to the districts without providing proper training. Employees will have to install that particular product without knowing the standard procedure for installation.

Responding to the problem, an in-house training program was introduced at TNB Bagan Serai. This program was perfected through creating catalyst or so called mentor to share knowledge attained to lower level employees. Executives and senior foreman were given task to carry out in-house training on specific topics which will be able to improve work performance and in return reduce power outages. The topics presented include technical and non technical issues which is shown in Appendix F. Through in-house training more individuals gained knowledge to perform quality job. As a result, reduction in operation cost and perfection in the product and service quality expanded. An example of in-house training is shown in Figure 5.4.

Figure 5.4 : In house training – correct method to install pole fuses

5.2.5 Establish Awards and Incentives

According to Scoot Myers (1991), a challenging job which allows a feeling of achievement, responsibility, growth, advancement , enjoyment of work it self, and earned recognition does motivates employee to work effectively. From the standpoint of motivation, Maslow theory states that although no need is ever fully gratified, a substantially satisfied is no longer motivates. If you want to motivate someone, according to Maslow, you need to understand where that person is in the hierarchy and focus on satisfying needs at or above that level. However, the basic rule of thumb verifies that awards and incentives will definitely motivate employees to improve work performance to a certain extent. Although at TNB, the major rewarding power such as promotion, bonus and pay increase are held within the hands of the top management but there are some fractions which could be initiated by the local management.

In conjunction with strengthening of rewarding power, TNB Bagan Serai established the non-monetary awards as priority. Recognition in front of co-workers was widely practiced. A special recognition, such as plaque, appreciation letter, hampers, breakfast at fine restaurant was honored for employees who demonstrated quality workmanship. Teams which produced excellent results were given trips to visit manufacturing factories and other TNB districts. All the employee participated in the mission to reduce power outages were given letter of appreciation and bonus points for yearly personal performance evaluation.

CHAPTER SIX – CONCLUSION

6.1 Discussion and Recommendation

The popular phrase that management is " getting work done through other people". Although an oversimplification, underscores the importance of the managerial task of managing people. There are no " peoples" organizations, so managers must know how to motivate, lead and communicate, and they must understand interpersonal relations and the behavior of group people (James H.D, 1984: 9).

According to Asma Abdullah (1992), the primary task facing managers today is to create an environment in which each employee –regardless of race, age, ethnicity, or other factors irrelevant to level of performance – is motivated to perform and can experience a sense of empowerment. But it is not an easy task. For instance, research has shown that people who share experiences and attitudes and are similar to one another are also more likely to interact well with one another, like each other, and share common bond. People who are not similar demographically (in age, sex, or race) are most likely not to have common experiences, do not share similar values, and do not understand one another. And such non similarities make difficult for them to communicate with one another effectively. In spite of complexities of managing an increasingly diverse workforce, TNB Bagan Serai

simply have no choice but to acknowledge the changes that are occurring and to take bold initiatives aimed at turning potential problems into advantages.

Power outages reduction study at TNB Bagan Serai is a perfect example which elaborates the importance of the Employee Involvement Strategy for problem-solving. Although the composition of the employees were from various ethnic background, different age level and mixed rank group but their strong commitments and determination has let them to achieve excellent results. The Employee Involvement Strategy through changing organizational culture, fostering individual development through training, encouraging teamwork, improving job design and enhancing merits and awards has helped TNB Bagan Serai to overcome high low voltage power failures within a short duration. One other important key factor was due to the support given for changes from the top levels of management. It was perfected with the application of the democratic leadership by the management.

Managing cultural diversity is challenging. But the potential benefits, both to the organizational and to the individual, are well worth of time and sustained effort required to recruit and maintain a fully functioning, culturally diverse workforce. The advantages are numerous. As employees learn to value diversity, they may feel a sense of empowerment, as does anyone who has opportunities to learn and grow. Learning to interact effectively with those who differ from us in gender, color, race, or ethnicity enhances our skills, alters our attitudes, and educates us to be more sophisticated members of our own organizational communities. Traditionally, in the Conventional Method executive is viewed as one who

- thinks of self as a manager or boss
- follows the chain-of-command
- works within a set organizational structure
- makes most decision alone
- hoards information
- demands long hours

However, in the new team-based, it incorporates an entirely new set of assumptions about the role of an executives. The new executive is viewed as one who

- deals with anyone to get the job done
- changes organizational structures in response to market change
- invites others to join in decision making
- shares information
- demand results

With the new team-based approach and through Employee Involvement method, TNB Bagan Serai does not only successfully enhanced work performance of the lower level employee but it also managed to eliminate the vast application of theory X concept. Theory X approach to management based on direction and control through the exercise of authority was substituted with large practice of theory Y. Theory Y's empowering philosophy of management championed by McGregor, encourage managers to share decision making with workers at all levels of the organizational hierarchy and offer opportunities for workers to seek greater responsibility and achieve self-actualization .

6.2 Implications

Michael Yeoh (1995) elaborated that to succeed in the twenty-first century, managers need to learn to manage with less. This requires a strong focus on change management, empowerment, strategic leadership, continuos improvement, and team work. From the study at TNB Bagan Serai, I believed it is important for management to inject employees with proactive attribute such as take initiative, creative, positive, receptive, committed, high integrity, focused, innovative, leadership and team player in order to boost productivity. This could be attained through the implementation of the Employee Involvement Strategy with strong focus in five aspects : Change in work culture, Enhance job enrichment, Establish work teams, Foster individual development and Establish merits and incentives. As a result, a higher work performance could be expected to be attained. The success story of TNB Bagan Serai's achievement was published by Fokus Perak (TNB'S internal circulation magazine) on February 1997. The cover page article is attached in Appendix G.

I believe, this study would be able to furnish practitioners some input to produce better work performance through employee participation strategy. Academicians should be able to pick up the fact that age, ethnic composition and education background is not a major factor for the work performance improvement but it is the technique how to manage workforce to work in a team to achieve the outlined strategy.

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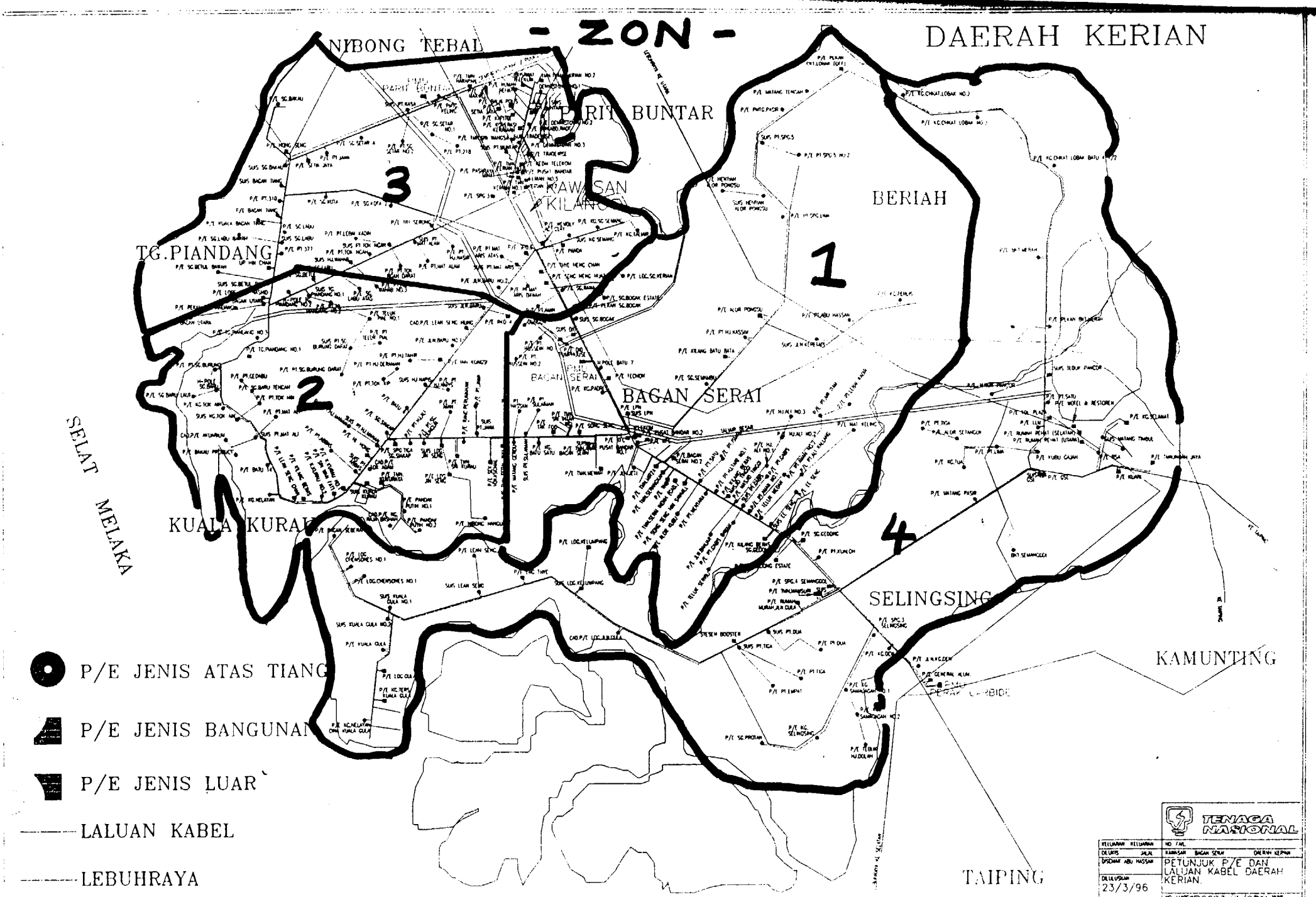
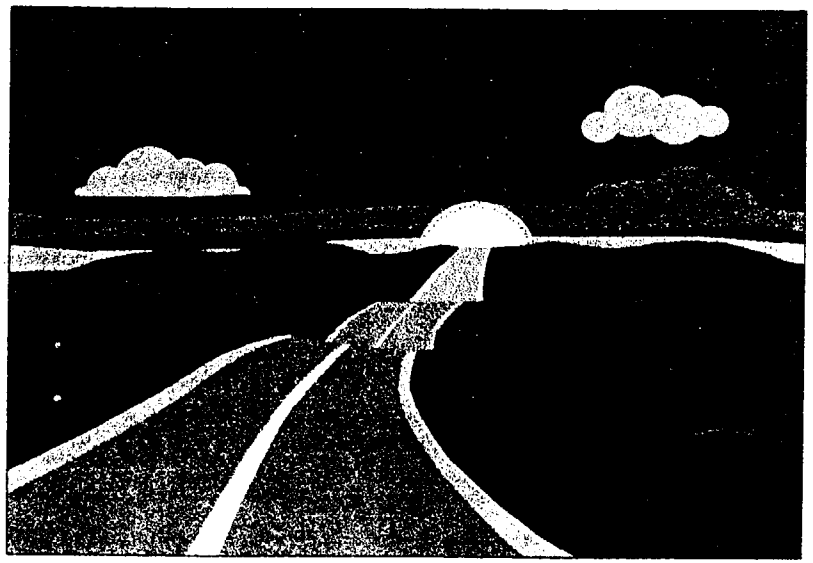
APPENDIX A

ZONING SYSTEM APPLICATION

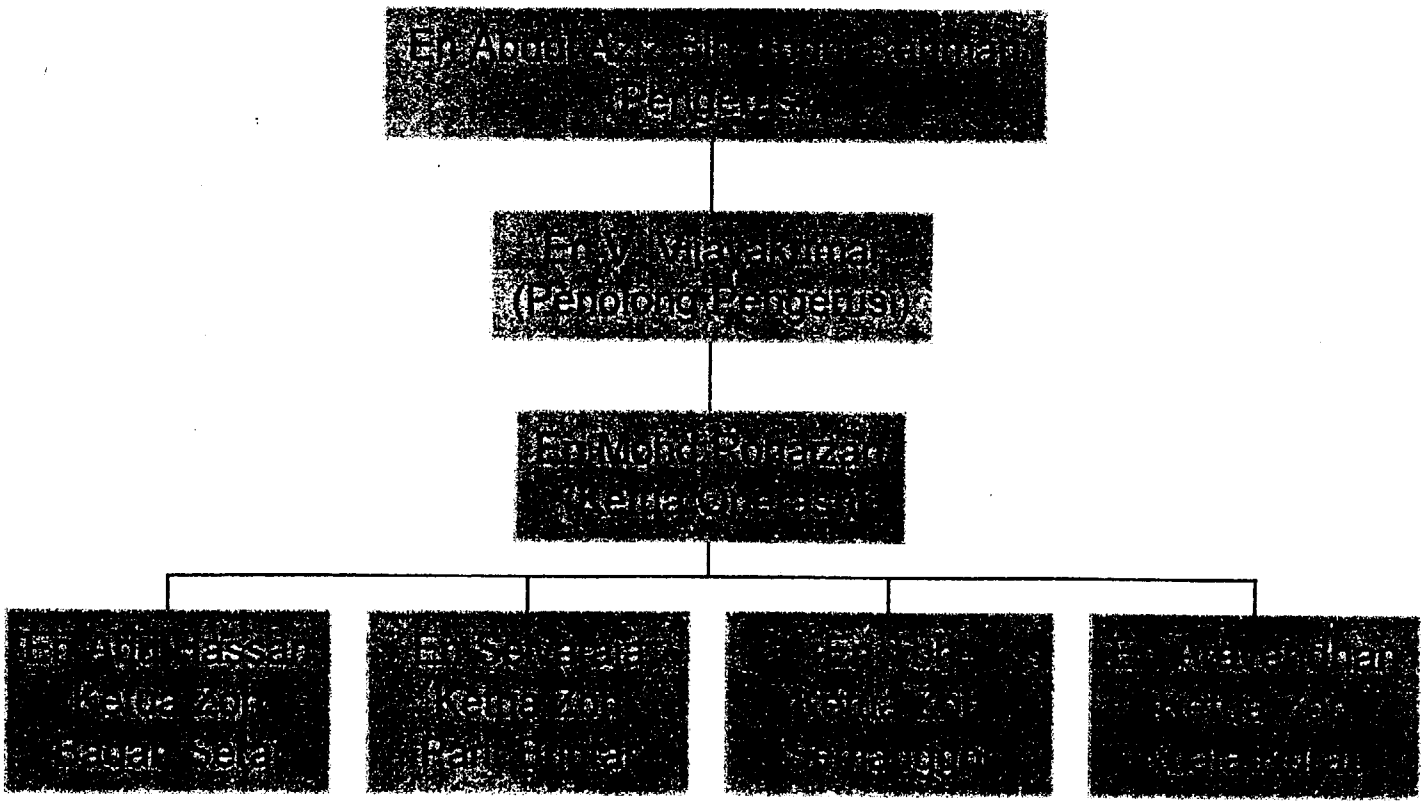

- ZON -
DAERAH KERIAN
NIBONG TEBAL
PARIT BUNTAR
KAWASAN PERINDUSTRIAN KILANG
BERIAH
TG.PIANDANG
BAGAN SERAI
KUALA KURAU
SELINGSING
KAMUNTING
TAIPING
SELAT MELAKA
1
2
3
4
P/E JENIS ATAS TIANG
P/E JENIS BANGUNAN
P/E JENIS LUAR
LALUAN KABEL
LEBUHRAYA
TENAGA NASIONAL
PETUNJUK P/E DAN LALUAN KABEL DAERAH KERIAN.
DILUKISKAN 23/3/96
NO. LUKISAN BG283Z3/96

Matlamat Operasi

- Meneruskan usaha untuk mengggurangkan gangguan bekalan elektrik dibawah paras 87%.
- Mengamalkan kaedah "Preventive maintenance"
- Perlaksanaan Pengoperasian menerusi "Team Work"



Jawatankuasa Bertindak



Senarai pegawai-pegawai yang bertanggungjawab keatas sistem voltan rendah TNB Bagan Serai.

Kawasan Pusat Pengurusan Bagan Serai: Zon 1
Ketua Zon 1: En Abu Hassan

Sub-zon 1	Sub-zon 2	Sub-zon 3
Batu 7 Kpg Padri, Telekom Pusat Bandar 1 Bagan Serai KFC Holdings Song Seng Taman Seri Intan Tmn Bagan Serai Rancangan Perumahan Awam	Taman Mewah Tak Foo Kpg Bt 1 Parit Sulaiman suis Parit Sulaiman Matang Gerdu Pt Hassan Lorong Jetty Parit Mat Keling DID Pump House DID suis	Bgn Serai 3 Bgn Serai 1 Sg Semambu Builders Brickworks Prt Haji Kassim Alor Pongsu Pt Spg 5 Jln keretapi suis Pt Abu Hassan Pt Jawa Suis Tebuk Jawa
Sub-zon 4	**Sub-zon 5**	**Sub-zon 6**
Tmn Sri Serai Tmn Sri Serai Jaya Pejabat TNB Song Seng Hin Pt satu Alor Kubu Pt Ismail Pt Mentara Pt Hj Taib1 Pt Haji Taib 2 Pt Haji Taib 3 Pt Mentara 3	Kpg Perlis Suis Hentian Alorpongsu Stesen suis spg Parit 5 Hentian Alor Pongsu Prt Spg lima 2 Matang Pasir Matang Tengah Techcon Electronic Tmn Mirza Bagan Serai 2	Jln Banjar Masjid Tinggi Prit Air Hitam Pt Lebai Kadir, Teluk Medan Pt Ali Kallang Kpg EE Seng Klg Beras Sg Gedong Prt Haji Hussin1 Pt Hj Hussin 2 Sg Bogak Pekan Sg Bogak.
Sub-zon 7		
Pt Hj Ali 1,2,3 Parit Gabis suis Parit Gabis Atas Parit Gabis Bawah Teluk Peribu J1 Teluk Peribu J2 Parit Aman 1,2 Tmn Sri Kurau		

Nama Penyelia	Gred	Jawatan	Sub-zon
En Yusof Hamid	JG 10	Tukang K3 T/K	1
En Khairuddin	JG 07	Pemandu	2
En Zainal Yeop	JG 08	Tukang K3 T/B	3
En Aziz	JG 09	Tukang K3 T/K	4
En Sharom	JG 10	Tukang K3 T/K	5
En Shamsuddin	JG 09	Tukang K3 T/K	6
En Abdullah Hashim	JG 08	Tukang K3 T/B	7

Kawasan Pusat Pengurusan Kuala Kurau: Zon 2
Ketua Zon 2: En Ara

Sub-zon 1	Sub-zon 2	
Lope Nor Rashid Bagan Utara Bgan Utara No 1 Tg Piandang 2 Tg Piandang 3 Tg Piandang 1 Pt Tg Piandang 3 Prt Tanjung Piandang suis Parit Tanjung Piandang Parit Tg Piandang 2 Kpg Nelayan (Tanjung Piandang)	PT Teluk Pial 1 Pt Sg Burung Darat Atas Pt Sg Burung Darat Pt Teluk Pial 2 Jin Seng Estate Nibung Hangus Pt Amin Sg Dungun Pt Hj Ali Spg 3 Sg Siakap Pt Hj Manan suis Pt Hj Manan	
Sub-zon 3	**Sub-zon 4**	**Sub-zon 5**
Pt Abbas Suis Parit Abbas Kuala Kurau Suis Kuala Kurau 1 Kpg Pandak Putih Kpg Raja Bashah Kpg Pandak Putih 2 Sin Wan Fatt Kuala Kurau 2 Kilang Beras L.S Chan Kilang Ais L.S Chan Tmn kuku Raya	Kpg Nelayan Bt 14 Pt Mat Ali Suis Pt Mat Ali Pt Kpg Tok Ain Suis Kpg Tok Ain Pt Gedabu Sg Baru Laut Pt Sg Burung Pt Tokpa Hin Sg Baru Tengah	Jln Baru 2 Jln Baru Suis RKO4 Jln Baru Klg Beras L.S Hung Inn Kongsi Pt Hj Tahir Pt HJ Deraman Prt Toh Kip Pt Hj Napis suis Prt Hj Napis Bt 6 Sg Siakap

Nama Penyelia	Gred	Jawatan	Sub-zon
En Mansor Harun	JG 08	Tukang K3 T/B	1
En Veerayah	JG 09	Tukang K3 T/K	2
En Lim Kam Hong	JG 08	Tukang K3 T/B	3
En Munusamy Reddie	JG 08	Tukang K3 T/B	4
En Chandra	JG 08	Tukang K3 T/B	5

Kawasan Pusat Pengurusan Parit Buntar: Zon 3
Ketua Zon 3: En Selvaraja

Sub-zon 1	Sub-zon 2	Sub-zon 3
Parit Buntar Kapitol Balai Polis P/B Rumah Rehat Ibu Sawat Talikom Tmn Krian2 Taman Damai Taman damai fasa3 Tmn Krian 5 Pasaraya Billion Pasaraya minat Tradewise Jln Tpg	Sg Rawa Pt Amin Sg Dungun Seng Heng Huat Thye Heng Chan Spg 5 Pt Mat Aris suis Pt Mat Aris Atas Parit Mat Aris Bawah	Pt Kasa suis Pt Sg setar 1 Kpg Kedah Pt Sg Setar 2 Sg Setar A Pt Jawa Setia Jaya Hung Seng Sg Bogak Estate Ldg Sg Krian.
Sub-zon 4	**Sub-zon 5**	**Sub-zon 6**
Sg Bakau Bagan Tiang 1 Pt 310 Bagan Tiang Kuala Bagan Tiang Sg Labu Sg Labu Bawah Sg Labu suis Pt377 Hup Chin Chan	Sg Betul Bawah suis Sg Betul Bawah Pt mat alam suis Pt Mat Alam Titi Serong Sg kota 1 Sg Kota 2 Pt Hj Nasir	Permatang Kling 3 Taman Harapan Jln Maxwell Tmn Setia Jaya Tmn Krian 1 Spg 3 Parit Buntar Kpg Tali Air Kpg Semang Tmn Krian No 6.
Sub-zon 7	**Sub-zon 8**	
Pusat Bandar P.Buntar Kedai Talikom Taman Semarak Teong Nam Tmn Sri Wangsa Tradewise Housing Jln Abdul Raof Dennistown 1 Dennistown 2 Dennistown 3	Sg Betul Sg Labu suis Sg Labu Atas Pt Haji Wahab suis Pt Hj Wahab 3 Pt Tok Ngah 1 Link Suis Pt Tok Ngah Pt Tok Ngah Darat Pt Lebai Akhir Pt Haji Wahab 1	

Nama Penyelia	Gred	Jawatan	Sub-zon
En Md Zin	JG 08	Tukang K3 T/B	1
En Isa	JG 09	Tukang K3 T/K	2
En Morgan	JG 08	Tukang K3 T/B	3
En Jaafar	JG 08	Tukang K3 T/B	4
En Osman Senapi	JG 09	Tukang K3 T/K	5
En Nasir Kassim	JG 08	Tukang K3 T/B	6
En Fadhil Md Isa	JG 08	Tukang K3 T/B	7
En Kamaruddin	JG 08	Tukang K3 T/B	8

Kawasan Pusat Pengurusan Semanggol : Zon 4

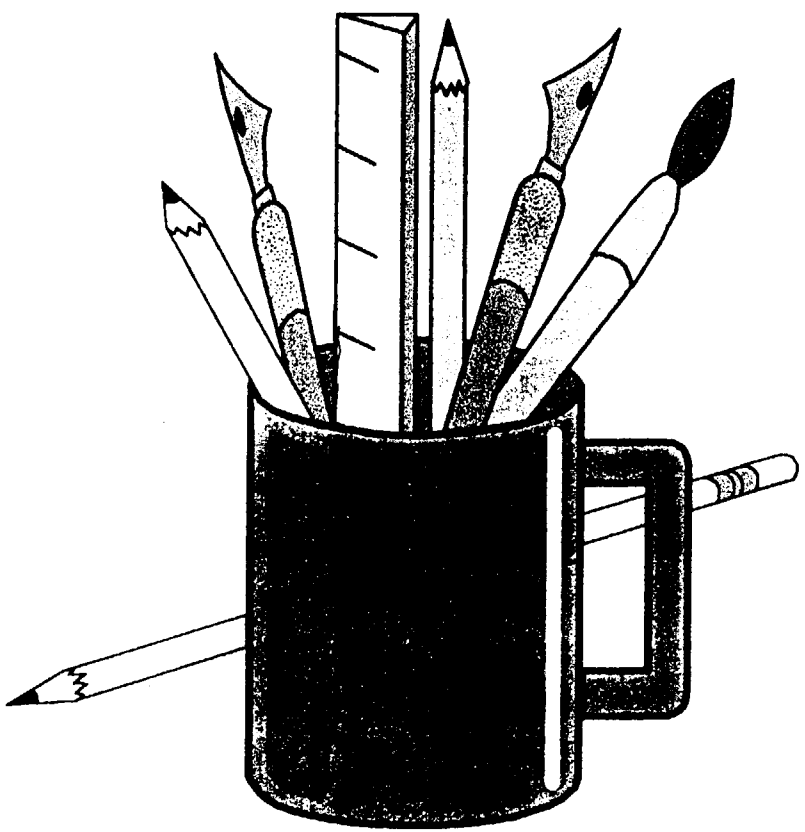
Ketua Zon 4 : En. Toh Weng Keong.

Sub-zon 1	Sub-zon 2	Sub-zon 3
Kpg Nelayan Cina	Eng Thye	Kpg Samagagah 1
Kpg Ters. Kuala Gula	Suis Ladang Kelumpang	Kpg Samagagah 2
Ladang Gula	Ladang Kelumpang	Tebuk Haji Dollah
Kuala Gula	Suis Parit 3	Spg Tiga Selinsing
Suis Kuala Gula 1&2	Parit tiga	Kpg Dew
Ldg Chersonese 1	Parit Empat	Rumah Murah, J.G
Ldg Chersonese 2	Suis Parit 2	Tmn Mahsuri
Bagan Seberang	Parit 2	Spg 4, Semanggol
Suis Lean Seng	Sungai Protan	Sg Gedong
Lean Seng	Kampung Selinsing	Parit Kualoh
Sub-zon 4	**Sub-zon 5**	**Sub-zon 6**
Matang Pasir	Kpg Kubu Gajah	Bukit Merah
Krian Water Work	Pejabat LLM	Pekan Bukit Merah
Bukit Semanggol	Parit 5, Selinsing	Changkat lobak 1
Semanggol Quarry	Kpg tua Semanggol	Changkat lobak 2
Rumah Murah Smgl	Parit 1 suis	Changkat lobak 3
Matang Timbul	Parit satu	Pekan Chgkat Lobak
Kpg Selamat	Tebok Panchor 1	
Matang Timbul Suis	Tebok Panchor 2	
RSA suis		
Bt 7,Krian		

Nama Penyelia	Gred	Sub-zon	Jawatan
En Ganesamoorty	**JG 08**	**1**	**Tukang K3 T/B**
En Awaludin	**JG 08**	**2**	**Tukang K3 T/B**
En Meor Ahmad	**JG 08**	**3**	**Tukang K3 T/B**
En Jaafar Arifin	**JG 08**	**4**	**Tukang K3 T/B**
En Fadhil	**JG 11**	**5**	**Tukang K3 T/K**
En Yusof Ahmad	**JG 08**	**6**	**Tukang K3 T/B**

Tugas Penyelia Sub-Zon

- Melukis plan sistem VR yang sediaada dengan maklumat bil tiang, jenis pengalir, bil servis, jenis fius dan nombor tiang
- Mengenalpasti kawasan yang seringkali mengalami gangguan dan mencari jalan untuk mengatasinya.
- Menguruskan pengambilan bacaan beban disemua feeder pada sistem tersebut.
- Melapurkan kerja-kerja senggaraan yang perlu dilaksanakan.
- Menguruskan kerja-kerja mencantas dahan.
- Menguruskan gotong-royong
- Memastikan laporan yang di majukan kpd ketua zon telah diambil tindakan.
- Bertanggungjawab penuh keatas sub-zon masing-masing



Eksekutif Teknik
Juruteknik T/K (P&S)
Juruteknik T/B (SVR)
Juruteknik T/B (P&S)

10/8/96

MESYUARAT MINGGUAN MENGGURANGKAN GANGGUAN ELEKTRIK 50%

Dengan hurmatnya, merujuk kepada perkara diatas dimaklumkan bahawa mesyuarat mingguan bagi menggurangkan gangguan elektrik dibawah paras 50% akan diadakan pada 16/8/96, jam 9.30 pagi di bilik mesyuarat TNB Bagan Serai.

Tuan perlu mengambil tindakan segera terhadap perkara- perkara seperti yang disebutkan dibawah dan membincang kemajuannya dalam mesyuarat.

1. Lapuran gangguan elektrik bagi semua P.P.Bekalan dan analisa.....Tindakan En Selva
2. Kemajuan Plan Skimatik Voltan Rendah dan Bacaan Beban.....Tindakan Semua Ketua zon.
3. Kemajuan pemotongan rentis, dan lapuran penukaran fius tiang & copper jumper...Tindakan En Ara
4. Lapuran Penukaran Tee-off.....Tindakan En Ara
5. Routine Maintenance untuk fius tiang termasuk green box dan Black box.....Tindakan En Ara.
6. Keperluan Barang-barang (Jenis, tempat dan kuantiti hendak digunakan)... Tindakan Semua Ketua Zon
7. Lapuran gangguan bekalan Voltan Tinggi.....Tindakan En Abu
8. Hal semasa

" Touch your heart and ask yourself - the height of your commitments towards this problem"

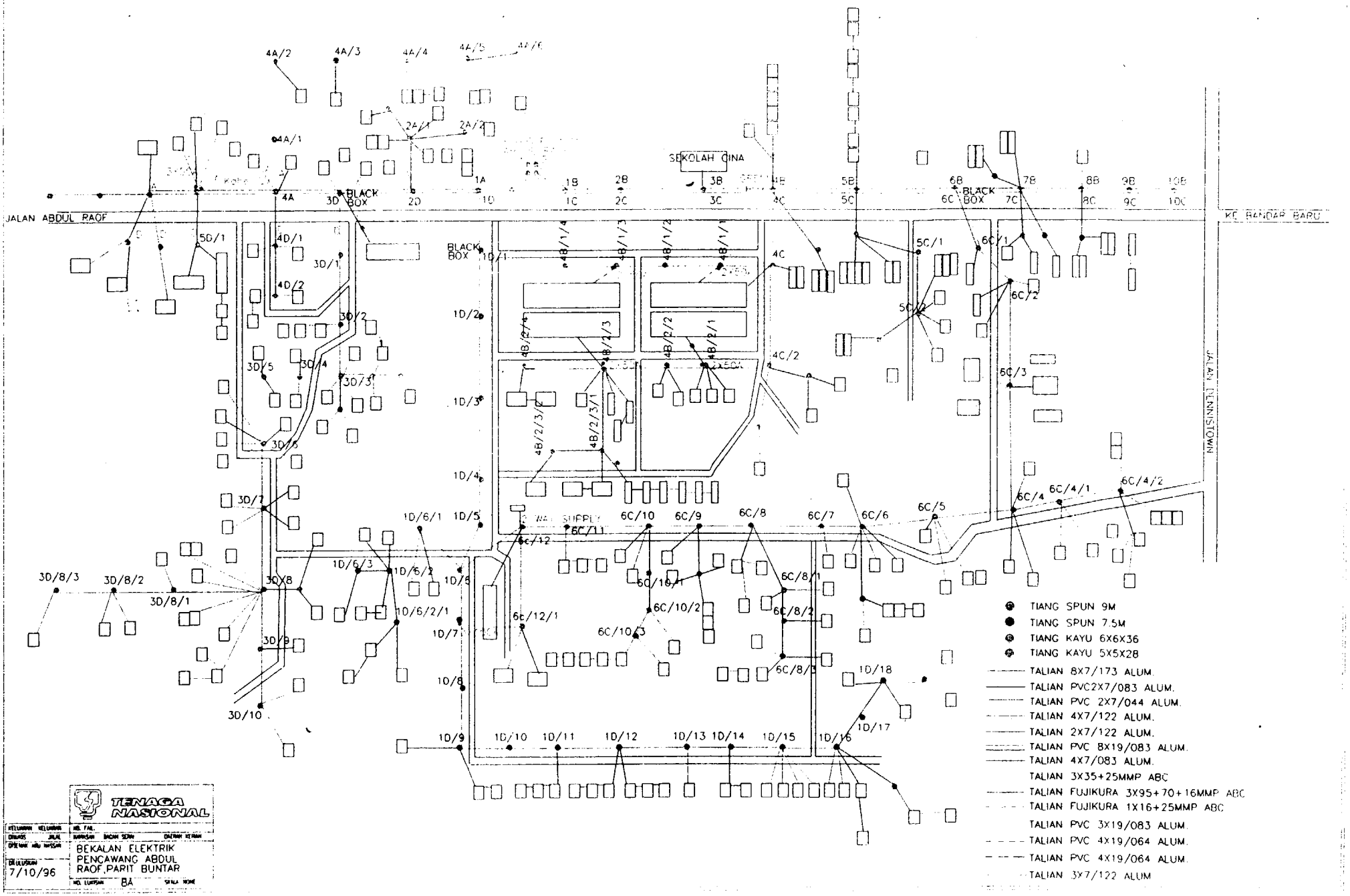
Simple tips for your daily supervision- SET GOALS

1. Problem Defination--need for a proposed project is defined
2. Mission Statement--major output of problem defination
3. Planning--outline of the series of actions needed to accomplish a goal
4. Organizing--specifies to intergrate the functions of the personnel involved
5. Resource Allocation--allocate resources to functional requirements
6. Scheduling--to ensure overall project objectives are achieved within reasonable time span
7. Tracking--check results of the project plan and performance specifications
8. Reporting--help pinpoint corrective actions and curb defficiencies
9. Control--to take appropriate actions to correct unacceptable deviations
10. Termination--a project should not be allowed to drag on.

Sekian, Terima Kasih

V. Vijayakumar
Jurutera (Perkhidmatan Kejuruteraan)

s.k Pengurus Daerah


JALAN ABDUL RAOF
KE BANDAR BARU
JALAN TENISTOWN
SEKOLAH CINA
BLACK BOX
4A/2
4A/3
4A/4
4A/5
4A/6
4A/1
4A
2A/1
2A/2
1A
2A
1B
1C
2B
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1D/18
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4B/1/3
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6C/11
6C/12
6C/10/1
6C/10/2
6C/10/3
6C/8/1
6C/8/2
6C/8/3
6C/12/1
WATER SUPPLY
TIANG SPUN 9M
TIANG SPUN 7.5M
TIANG KAYU 6X6X36
TIANG KAYU 5X5X28
TALIAN 8X7/173 ALUM.
TALIAN PVC2X7/083 ALUM.
TALIAN PVC 2X7/044 ALUM.
TALIAN 4X7/122 ALUM.
TALIAN 2X7/122 ALUM.
TALIAN PVC 8X19/083 ALUM.
TALIAN 4X7/083 ALUM.
TALIAN 3X35+25MMP ABC
TALIAN FUJIKURA 3X95+70+16MMP ABC
TALIAN FUJIKURA 1X16+25MMP ABC
TALIAN PVC 3X19/083 ALUM.
TALIAN PVC 4X19/064 ALUM.
TALIAN PVC 4X19/064 ALUM.
TALIAN 3X7/122 ALUM
TENAGA NASIONAL
BEKALAN ELEKTRIK
PENCAWANG ABDUL RAOF, PARIT BUNTAR
7/10/96
BA

(1) Data Collection for LV Power Outages from Sept 95 - Jun 96

	Sep-95	Oct-95	Nov-95	Dec-95	Jan-96	Feb-96	Mar-96	Apr-96	May-96	Jun-96	Total	%
Man	144	152	164	101	97	120	169	157	133	137	1374	49.96
Method	68	53	57	97	75	47	52	54	43	51	597	21.71
Machine	5	7	3	4	3	6	8	4	5	6	51	1.85
Material	44	39	45	39	48	36	73	34	28	25	411	14.95
Environment	45	39	26	22	21	22	65	35	24	18	317	11.53
Total	306	290	295	263	244	231	367	284	233	237	2750	100

(2)Data Collection for LV Power Outages From July 96 - Apr 97

	Jul-96	Aug-96	Sep-96	Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	Total	%
Man	93	51	15	17	8	13	10	16	18	14	255	34.79
Method	58	47	18	14	9	12	8	12	9	6	193	26.33
Machine	2	3	2	3	1	2	2	1	2	1	19	2.59
Material	22	16	5	5	12	4	15	13	15	9	116	15.83
Environment	26	17	12	13	9	8	21	15	16	13	150	20.46
Total	201	134	52	52	39	39	56	57	60	43	733	100

	Old (1)	New (2)	Reduction (%)
Man	1374	255	-81.44
Method	597	193	-67.67
Machine	51	19	-62.75
Material	411	116	-71.78
Environment	317	150	-52.68
Total	2750	733	-73.34

Data Collection for LV Power Outages from Sept 95 - Jun 96

	Sep-95	Oct-95	Nov-95	Dec-95	Jan-96	Feb-96	Mar-96	Apr-96	May-96	Jun-96	Total	%
Fuse	168	175	169	143	125	135	185	153	123	145	1521	55.31
Pole	44	39	45	39	48	36	73	34	28	25	411	14.95
Line	49	62	53	63	50	43	83	65	53	47	578	21.02
Others	35	14	28	18	21	17	26	32	29	20	240	8.72
Total	306	290	295	263	244	231	367	284	233	237	2750	100

Data Collection for LV Power Outages From July 96 - Apr 97

	Jul-96	Aug-96	Sep-96	Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	Total	%
Fuse	91	60	25	14	5	5	18	24	21	23	286	39.02
Pole	22	16	5	5	7	4	10	9	13	6	97	13.23
Line	52	32	18	25	21	22	15	11	12	10	218	29.74
Others	36	26	4	8	6	8	13	13	14	4	132	18.01
Total	201	134	52	52	39	39	56	57	60	43	733	100

	Old (1)	New (2)	Reduction (%)
Fuse	1521	286	-81.2
Pole	411	97	-76.4
Line	578	218	-62.28
Others	240	132	-45
Total	2750	733	-73.34

Data Analysis for various root causes for Power outages using two different method application

	Conventional Method		Employee Involvement Method		t - value (Computed)	Significance level of 0.01
	Mean	Standard Deviation	Mean	Standard Deviation		(one tailed) p < 0.01
Category						
1. Man	137.4	25	25.5	26.6	9.2	2.55
2. Method	59.7	16.17	19.3	18.01	5.01	2.55
3. Machine	5.1	1.66	1.9	0.74	5.28	2.55
4. Material	41.1	13.35	11.6	5.82	6.07	2.55
5. Environment / Tools	31.7	14.65	15	5.42	3.21	2.55

APPENDIX B

SURVEY QUESTIONNAIRE FORMAT

Work Performance (Appraisal Checklist)

1. Questionnaire Introduction

This is a survey that asks views on general issues in this company.
The objective of this survey is to compare the advantages and disadvantages of using the Conventional Method (Initial) and Employee Involvement Strategy method to arrest frequent power failures at TNBD Bagan Serai. The questionnaire will be based on issues such as ownership, empowerment, leadership, workteams, job design, productivity and merits

2. Personal Particulars

1. Name :
2. Age :
3. Gender :
4. Academic Qualifications :
5. Designation :
6. Length of Service :

3.0 Scale

Please indicate the extent to which you agree or disagree by shading one response against each statement on the response form

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

Format

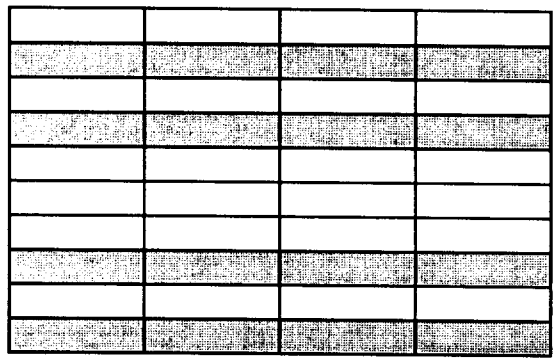
Conventional Method

Employee Involvement Strategy Method

1 Strongly Agree	2 Agree	3 Disagree	4 Strongly Disagree

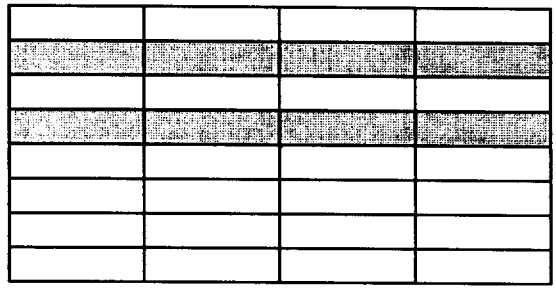
A. Communication

1. Easily can communicate with superiors, counterparts and subordinates
2. Employees are encouraged to freely express their views and ideas
3. Most changes are made based on employee feedback
4. Vast practices of two way communication
5. Employees roles and responsibilities have been been clearly communicated
6. Executives and Supervisors are interested in receiving feedback from employees



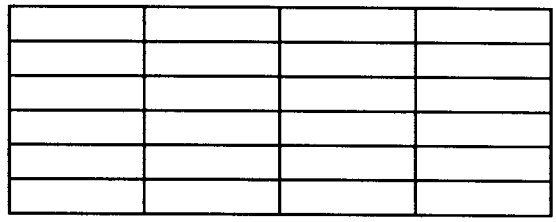
B. Empowerment and Ownership

1. Minimum layers of red tapes for decision making
2. Employees are encouraged to identify problems and the root cause
3. Employees are enhanced with job ownership
4. Employees take ownership for their action
5. Empowered to make job related decision
6. Enhanced leadership



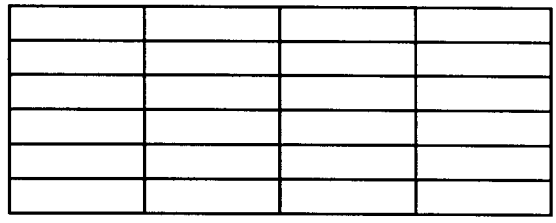
C. Work Teams

1. Closer ties between Management and Employees
2. Employees work together as a team
3. Workgroup works well with other Workgroup
4. Resources are shared by work groups
5. Analysis and Decisions are made together in a group
6. Have opportunity to learn and develop new skills



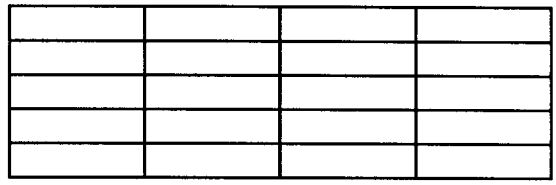
D. Job Design

1. Job design is monotonous (Routine)
2. Good opportunity to develop more know how skills
3. Job design towards job enrichment
4. Able to motivate work performance
5. Optimizing labor resource
6. Able to cut down operation cost



E. Merits

1. Recognizes individual performance
2. Recognizes team effort
3. Top performers receive better recognition
4. Enhance motivation
5. Gain non monetary merits



Conventional Method
Employee Involvement Strategy Method

1	2	3	4
Strongly Agree	Agree	Disagree	Strongly Disagree

A. Communication

1. Easily can communicate with superiors, counterparts and subordinates
2. Employees are encouraged to freely express their views and ideas
3. Most changes are made based on employee feedback
4. Vast practices of two way communication
5. Employees roles and responsibilities have been been clearly communicated
6. Executives and Supervisors are interested in receiving feedback from employees

B. Empowerment and Ownership

1. Minimum layers of red tapes for decision making
2. Employees are encouraged to identify problems and the root cause
3. Employees are enhanced with job ownership
4. Employees take ownership for their action
5. Empowered to make job related decision
6. Enhanced leadership

C. Work Teams

1. Closer ties between Management and Employees
2. Employees work together as a team
3. Workgroup works well with other Workgroup
4. Resources are shared by work groups
5. Analysis and Decisions are made together in a group
6. Have opportunity to learn and develop new skills

D. Job Design

1. Job design is monotonous (Routine)
2. Good opportunity to develop more know how skills
3. Job design towards job enrichment
4. Able to motivate work performance
5. Optimizing labor resource
6. Able to cut down operation cost

E. Merits

1. Recognizes individual performance
2. Recognizes team effort
3. Top performers receive better recognition
4. Enhance motivation
5. Gain non monetary merits

APPENDIX C

QUESTIONNAIRE OUTCOME AND T-TEST COMPUTATION

Conventional Method

Employee Involvement Strategy Method

	1 Strongly Agree	2 Agree	3 Disagree	4 Strongly Disagree	X1 Mean	Standard Deviation
A. Communication						
1. Easily can communicate with superiors, counterparts and subordinates		5	16	14	3.26	0.7
2. Employees are encouraged to freely express their views and ideas		2	18	12	3.37	0.6
3. Most changes are made based on employee feedback		2	21	12	3.29	0.57
4. Vast practices of two way communication			31	4	3.11	0.32
5. Employees roles and responsibilities have been been clearly communicated		15	12	8	2.8	0.8
6. Executives and Supervisors are interested in receiving feedback from employees		9	14	12	3.09	0.78
B. Empowerment and Ownership						
1. Minimum layers of red tapes for decision making			6	29	3.83	0.38
2. Employees are encouraged to identify problems and the root cause		10	18	7	2.91	0.7
3. Employees are enhanced with job ownership		8	15	12	3.11	0.76
4. Employees take ownership for their action		3	18	24	3.03	0.45
5. Empowered to make job related decision		11	20	4	2.8	0.63
6. Enhanced leadership		3	19	13	3.29	0.62
C. Work Teams						
1. Closer ties between Management and Employees		7	15	23	3.17	0.75
2. Employees work together as a team		2	18	15	3.37	0.6
3. Workgroup works well with other Workgroup			23	12	3.34	0.48
4. Resources are shared by work groups		3	25	7	3.11	0.53
5. Analysis and Decisions are made together in a group		2	24	9	3.2	0.53
6. Have opportunity to learn and develop new skills		8	12	15	3.2	0.8
D. Job Design						
1. Job design is monotonous (Routine)	2	26	7		2.14	0.49
2. Good opportunity to develop more know how skills			15	20	3.57	0.5
3. Job design towards job enrichment			27	8	3.23	0.43
4. Able to motivate work performance		5	17	13	3.23	0.69
5. Optimizing labor resource		12	18	5	2.8	0.68
6. Able to cut down operation cost			22	13	3.37	0.49
E. Merits						
1. Recognizes individual performance		9	5	21	3.34	0.89
2. Recognizes team effort		3	18	14	3.31	0.63
3. Top performers receive better recognition			29	6	3.17	0.38
4. Enhance motivation		2	24	9	3.2	0.53
5. Gain non monetary merits		5	26	4	2.97	0.51

Conventional Method

Employee Involvement Strategy Method

	1 Strongly Agree	2 Agree	3 Disagree	4 Strongly Disagree	X1 Mean	Standard Deviation
A. Communication						
1. Easily can communicate with superiors, counterparts and subordinates	21	14			1.4	0.5
2. Employees are encouraged to freely express their views and ideas	12	23			1.66	0.48
3. Most changes are made based on employee feedback	8	24	3		1.86	0.55
4. Vast practices of two way communication	11	24			1.69	0.47
5. Employees roles and responsibilities have been been clearly communicated	9	21	5		1.89	0.63
6. Executives and Supervisors are interested in receiving feedback from employees	13	22			1.63	0.49
B. Empowerment and Ownership						
1. Minimum layers of red tapes for decision making	18	17			1.49	0.51
2. Employees are encouraged to identify problems and the root cause	6	29			1.83	0.38
3. Employees are enhanced with job ownership	11	24			1.69	0.47
4. Employees take ownership for their action	9	21	5		2.17	0.82
5. Empowered to make job related decision	19	16			1.46	0.51
6. Enhanced leadership	14	21			1.6	0.5
C. Work Teams						
1. Closer ties between Management and Employees	16	19			1.54	0.51
2. Employees work together as a team	21	14			1.4	0.5
3. Workgroup works well with other Workgroup	14	12			1.6	0.5
4. Resources are shared by work groups		21	14		2.4	0.5
5. Analysis and Decisions are made together in a group	21	14			1.4	0.5
6. Have opportunity to learn and develop new skills	13	22			1.63	0.49
D. Job Design						
1. Job design is monotonous (Routine)			21	14	3.4	0.5
2. Good opportunity to develop more know how skills	19	16			1.46	0.51
3. Job design towards job enrichment	6	17	12		2.17	0.71
4. Able to motivate work performance	7	28			1.8	0.41
5. Optimizing labor resource	13	16	6		1.8	0.72
6. Able to cut down operation cost	15	20			1.57	0.5
E. Merits						
1. Recognizes individual performance	8	21	6		1.94	0.64
2. Recognizes team effort	7	21	7		2	0.64
3. Top performers receive better recognition		5	24	6	3.03	0.57
4. Enhance motivation	8	27			1.77	0.43
5. Gain non monetary merits	11	21	3		1.77	0.6

T-Test for all components for questionnaire

	Conventional Method		Employee Involve Method		T-Value	Significance Level of 0.01
	Mean	Std Dev	Mean	Std Dev		p <= 0.01
A. Communication						
1. Easily can communicate with superiors, counterparts and subordinates	3.26	0.7	1.4	0.5	12.6	2.36
2. Employees are encouraged to freely express their views and ideas	3.37	0.6	1.66	0.48	12.98	2.36
3. Most changes are made based on employee feedback	3.29	0.57	1.86	0.55	10.53	2.36
4. Vast practices of two way communication	3.11	0.32	1.69	0.47	14.57	2.36
5. Employees roles and responsibilities have been been clearly communicated	2.8	0.6	1.89	0.63	5.21	2.36
6. Executives and Supervisors are interested in receiving feedback from employees	3.09	0.78	1.63	0.49	8.87	2.36
B. Empowerment and Ownership						
1. Minimum layers of red tapes for decision making	3.83	0.38	1.49	0.51	21.5	2.36
2. Employees are encouraged to identify problems and the root cause	2.91	0.7	1.83	0.38	11.29	2.36
3. Employees are enhanced with job ownership	3.11	0.76	1.69	0.47	12.19	2.36
4. Employees take ownership for their action	3.03	0.45	2.17	0.82	5.36	2.36
5. Empowered to make job related decision	2.8	0.63	1.46	0.51	9.64	2.36
6. Enhanced leadership	3.29	0.62	1.6	0.5	12.37	2.36
C. Work Teams						
1. Closer ties between Management and Employees	3.17	0.75	1.54	0.51	5.55	2.36
2. Employees work together as a team	3.37	0.6	1.4	0.5	14.71	2.36
3. Workgroup works well with other Workgroup	3.34	0.48	1.6	0.5	14.64	2.36
4. Resources are shared by work groups	3.11	0.53	2.4	0.5	5.68	2.36
5. Analysis and Decisions are made together in a group	3.2	0.53	1.4	0.5	14.41	2.36
6. Have opportunity to learn and develop new skills	3.2	0.8	1.63	0.49	9.76	2.36
D. Job Design						
1. Job design is monotonous (Routine)	2.14	0.49	3.4	0.5	10.4	2.36
2. Good opportunity to develop more know how skills	3.57	0.5	1.46	0.51	17.23	2.36
3. Job design towards job enrichment	3.23	0.43	2.17	0.71	10.05	2.36
4. Able to motivate work performance	3.23	0.69	1.8	0.41	10.39	2.36
5. Optimizing labor resource	2.8	0.68	1.8	0.72	5.89	2.36
6. Able to cut down operation cost	3.37	0.49	1.57	0.5	15	2.36
E. Merits						
1. Recognizes individual performance	3.34	0.89	1.94	0.64	7.56	2.36
2. Recognizes team effort	3.31	0.63	3	0.64	8.51	2.36
3. Top performers receive better recognition	3.17	0.38	3.03	0.57	1.19	2.36
4. Enhance motivation	3.2	0.53	1.77	0.43	12.22	2.36
5. Gain non monetary merits	2.97	0.51	1.77	0.6	8.89	2.36

The t-test is one of the most powerful statistical tests available to the practitioner researcher. Its value surpasses that of the non-parametric tests. However, it can be time-consuming in its calculation if no statistical program is available.

The formula for independent samples is as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{N_1\sigma_1^2 + N_2\sigma_2^2}{N_1 + N_2 - 2}\,\frac{N_1 + N_2}{N_1 N_2}}}$$

Where $\bar{x}_1$ = mean of sample one
$\bar{x}_2$ = mean of sample two
N_1 = number in sample one
N_2 = number in sample two
σ_1 = standard deviation of sample one
σ_2 = standard deviation of sample two

For the following example, you can see how the t-test can be calculated manually (means and standard deviations have been prepared already).

30 pupils were admitted to a school and given a standard test which showed a mean score of 47 points with a standard deviation of 8 points. At the end of the year 25 pupils were left in the class and a similar list showed a mean of 52 points and a standard deviation of 10 points. Had there been any improvement over the year?

H_0: there is no significant improvement in the performance of pupils over the school year

H_1: there is a significant improvement in the performance of pupils over the school year

Significance level (α) = 0.05 Direction of hypothesis = one-tailed

Here is the calculation (please note that x_1 and x_2 have been reversed; in our calculation we are concerned only with differences between the means).

$$t = \frac{52 - 47}{\frac{30 \times 64 + 25 \times 100}{53} \times \frac{55}{30 \times 25}} = \frac{5}{2.47} = 2.02$$

A table value of 1.67 is identified from Appendix H. You need to remember that you have a significance of 0.05 *and* a one-tail test. This is important when you examine the Appendix. For the degrees of freedom you sum together the numbers in each group (minus two) which is 53 degrees of freedom. The nearest table value is at 60 degrees of freedom (this is as close as we can go), a value of 1.67.

Degrees of freedom	*Significance level of 0.05 (one-tailed)*	*Significance level of 0.05 (two-tailed)*	*Significance level of 0.01 (one-tailed)*	*Significance level of 0.01 (two-tailed)*
1	6.31	12.71	31.82	63.66
2	2.92	4.30	6.97	9.93
3	2.35	3.18	4.54	5.84
4	2.13	2.78	3.75	4.60
5	2.02	2.57	3.37	4.03
6	1.94	2.45	3.14	3.71
7	1.90	2.37	3.00	3.50
8	1.86	2.31	2.90	3.36
9	1.83	2.26	2.82	3.25
10	1.81	2.23	2.76	3.17
11	1.80	2.20	2.72	3.11
12	1.78	2.18	2.68	3.06
13	1.77	2.16	2.65	3.01
14	1.76	2.15	2.62	2.98
15	1.75	2.13	2.60	2.95
16	1.75	2.12	2.58	2.92
17	1.74	2.11	2.57	2.90
18	1.73	2.10	2.55	2.88
19	1.73	2.09	2.54	2.86
20	1.73	2.09	2.53	2.85
21	1.72	2.08	2.52	2.83
22	1.72	2.07	2.51	2.82
23	1.71	2.07	2.50	2.81
24	1.71	2.06	2.49	2.80
25	1.70	2.06	2.49	2.79
26	1.71	2.06	2.48	2.78
27	1.70	2.05	2.47	2.77
28	1.70	2.05	2.47	2.76
29	1.70	2.05	2.46	2.76
30	1.70	2.04	2.46	2.75
40	1.68	2.02	2.42	2.70
60	1.67	2.00	2.39	2.66
120	1.66	1.98	2.36	2.62
∞	1.65	1.96	2.33	2.58

(Adapted from Table III, Fiser, R. A. and Yates, F. 1963. *Statistical tables for biological, agricultural and medical research*, 6th edn, Oliver & Boyd)

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APPENDIX D

COST ANALYSIS

COST ANALYSIS FOR POWER OUTAGES

	Total		Sept 95 -Jun 96		Jul 96 -Apr 97		Jul 96 -Dec 99	
FUSE			Quantity	Total (RM)	Quantity	Total (RM)	Quantity	Total (RM)
Material = (Pole fuse = RM 400)	RM92.50							
Labor = (3 man x RM10.00 X 3 hours)	RM90.00							
Transport = (50 KM X RM 1.50 KM)	RM75.00							
Revenue Losses = (100 con x1.5kw x 0.25 / kw X 3 hr)	RM112.50							
Others = RM 100.00	RM80.00	**RM450.00**	1531	688950.00	286	128700.0	867	390150.00
POLE								
Material = (2 Pole X RM 200)	RM400.00							
Labor = (6 Man x RM 10 X 3 hour)	RM180.00							
Transport = (100 KM X RM 1.50 KM)	RM150.00							
Revenue Losses = (100 con x 1.5kw x 0.25 / kw x3)	RM112.50							
Others = RM 100.00	RM100.00	**RM942.50**	411	387367.50	97	91422.50	166	156455.0
LINE								
Material = (20m X RM 30.00)	RM600.00							
Labor = (6 Man x RM10.00 X 3 hour)	RM180.00							
Transport = (50 KM X RM 1.50 KM)	RM75.00							
Revenue Losses = (100 con x 1.5kw x 0.25 / kw x 3)	RM112.50							
Others = RM 100.00	RM100.00	**RM1067.50**	568	606340.0	218	232715.0	430	459025.0
OTHERS								
Material = (RM 500)	RM500							
Labor = (6 Man x RM10.00 X 3 hour)	RM180							
Transport = (50 KM X RM 1.50 KM)	RM75.00							
Revenue Losses = (100 con x1.5kw x 0.25 / kw X 3hr)	RM112.50							
Others = RM 100.00	RM100	**RM967.50**	240	232200.0	132	127710.0	140	135450.0
	TOTAL		2750	1914857.5	733	580547.5	1603	1141080.00
	% Reduction				-73.34%	-69.68%		

APPENDIX E

TECHNICAL ACTIVITIES CARRIED OUT FROM JULY 1996 TO DECEMBER 1996

Kerja-Kerja Senggaraan Yang Dijalankan Dari Bulan Ogos 96 - Dis 96

1. Pemasangan Fius Tiang 100A = 442 Unit

2. Pemasangan Line Shroud
   Bagan Serai = 350
   Parit Buntar = 550
   Kuala Kurau = 800
   Semanggol = 250

3. Penggunaan 19/.064 copper untuk fius tiang = 4282 m

4. Penggunaan Copper grease tube = 323

5. Pemasangan Blackbox 400A = 259 unit

6. Penukaran servis dari 7/.044 ke 7/.083 = 431 servis

7. Penukaran servis dari 7/.044 ke 1X16 +25 mmp = 73 servis

8. Penukaran Tee-off dari pengalir tidak bertebat kpd 3X16+25 = 63 span

9. Penukaran Tiang kayu kepada tiang spun

   9.0 m = 279
   7.5 m = 173

10. Mencantas / Rentis dahan

    Bagan Serai = 100%.
    Parit Buntar = 100%
    Kuala Kurau = 100%
    Semanggol = 100%

TARGET STESEN TNB BAGAN SERAI UNTUK MENGGURANGKAN GANGGUAN BEKALAN ELEKTRIK VR PADA TAHUN 1997 ADALAH DIBAWAH 32 GANGGUAN SEBULAN.

RANCANGAN SETERUSNYA ADALAH SEPERTI BERIKUT.....

1) Seperti yang dicatitkan dalam milestone chart

2) Mengimplementasikan 10 projek MSVR (Budget Tambahan 96/97)

3) Mengimplementasikan 62 MWCS bagi MSVR (Spt dlm lampiran)

4) Menggantikan tiang kayu dan pengalir tidak bertebat pada talian utama
(jarak lebih kurang 40 km)

a) Dari Pencawang Sg Siakap ke Spg Lima
b) Dari Bagan Utara Suis ke Spg Tiga
c) Dari Bagan Utara Suis ke Sg Bakau
d) Dari Sg Bakau ke Permatang Kling
e) Dari LPN ke Pekan Changkat Lobak

5) Projek MSVR

a) Pencawang Kpg Selinsing
b) Pencawang Tebok Panchor
c) Pencawang Sg Protan
d) Pencawang Bukit Semanggol
e) Pencawang Bukit Merah

MEMPERKUKUH DAN MENGURANGKAN 50% SVAR

1A - A4

NO.SIRI LKKK	PERKARA	JUMLAH	A	B	C	D	E	F	G	H	I	J	K
SVR 96 00081	MEMPERKUKUH SVR DI P/E KPG. TOK AIN , DI T/NO. PTH 1B & PTH 10B	RM 35,001.00		26		700					400		Belum
SVR 96 00082	MEMPERKUKUH SVR DI P/E KPG. TOK AIN , DI T/NO. PTH 10B & PTH 20B	RM 32,035.00	33			700					500		Belum
SVR 96 00083	MEMPERKUKUH SVR DI P/E PT. SATU DI T/N O. PTS 12A/16 & PTS 12A/31	RM 24,726.00	26						3060	540	390		Belum
SVR 96 00084	MEMPERKUKUH SVR PENUKARAN BOX SYSTEM, DI P/E SG.BETUL DI T/NO. SB 5A & SB 5A/13	RM 31,259.00	34				600		680	540	1530		Belum
SVR 96 00085	MEMPERKUKUH SVR PENUKARAN BOX SYSTEM, DI P/E SG.BETUL DI T/NO. SB 5A/13 & SB 5A/26	RM 28,242.00	33				600		410	900	495		Belum
SVR 96 00086	MEMPERKUKUH SVR PENUKARAN BOX SYSTEM, DI P/E SG.BETUL DI T/NO. SB 5A/26 & SB 5A/42	RM 27,402.00	32				400		450	1200	500		Belum
SVR 96 00087	MEMPERKUKUH SVR PENUKARAN BOX SYSTEM, DI P/E KUALA BAGAN TIANG & MATANG GERDU DI T/NO. MG 7 B & KBT 45A	RM 29,894.00		24			900		150	600	1080		Belum
SVR 96 00088	MEMPERKUKUH SVR PENUKARAN BOX SYSTEM, DI P/E PEKAN ALOR PONGSU DI T/NO. PAP 1 C & PAP 29 C	RM 34,304.00					2000		250	1500			Belum
SVR 96 00089	MEMPERKUKUH SVR PENUKARAN BOX SYSTEM, DI P/E PARIT MEGAT ARIS DI T/NO. JBT 47	RM 28,143.00		26			850			1000			Belum
SVR 96 00090	MEMPERKUKUH SVR DI P/E MATANG TENGAH DI T/NO. MT 26B	RM 13,952.00		13						1700			Belum
SVR 96 00091	MEMPERKUKUH SVR DI P/E TAMAN MIRZA DI T/NO. TMZ 20 C, TMZ 8A ^ TMZ 17 C	RM 16,730.00	15						850	1080	675		Belum
SVR 96 00092	MEMPERKUKUH SVR PENUKARAN BOX SYSTEM DI P/E PEKAN ALOR PONGSU DI T/NO. PAP 1 C & PAP 29 C	RM 26,579.00	56								850		Belum
SVR 96 00093	MEMPERKUKUH SVR DI P/E MATANG PASIR DI T/NO. MP 8 A & MP 5 A	RM 16,831.00	10	10						2200	450		Belum
SVR 96 00094	MEMPERKUKUH SVR DI P/E MATANG PASIR DI T/NO. MT 27 B & MT 6 B	RM 16,134.00		18						2000			Belum
SVR 96 00095	MEMPERKUKUH SVR DI P/E PT. MENTARA 3 DI T/NO. PM3 11A, PM3 9A & PM3 34 B	RM 11,843.00	12							1000	180		Belum
SVR 96 00096	MEMPERKUKUH SVR DI P/E PT. MENTARA 3 DI T/NO. PM3 1 B, PM3 19 A & PM3 22 A	RM 16,347.00	12	4					410	1080	180		Belum
SVR 96 00097	MEMPERKUKUH SVR DI P/E PT. MENTARA 3 DI T/NO. PM3 11 A, PM3 9 A & PM3 8 B	RM 19,013.00	15	9					320	1700	225		Belum
SVR 96 00098	MEMPERKUKUH SVR DI P/E PT. MENTARA 3 DI T/NO. PM3 25 B & PM3 34 B	RM 16,321.00	18						540	810	270		Belum
	JUMLAH BESAR	RM 426,756.00											

MUKA 1

MEMPERKUKUH DAN MENGURANGKAN 50% SVAR (1A-A4)

NO.SIRI. LKKK	PERKARA	JUMLAH	A	B	C	D	E	F	G	H	I	J	K
SVR 96 00037	PERTUKARAN TIANG SPUN & ABC 3X185+120+16 DJALAN TAIPING & P/E BAGAN SERAI 2 (MATANG BULUH)	RM 22,237.00	9			600					200		Md Zain
SVR 96 00038	PERTUKARAN TIANG SPUN & ABC 3X185+120+16 DJALAN TAIPING & P/E BAGAN SERAI 2 (MATANG BULUH)	RM 22,237.00	9			600					200		Md Zain
SVR 96 00039	MEMPERKUKUH SVR - PENGURANGAN 50% BREAKDOWN DIKAWASAN PARIT LEBAI AKHIR, PT. BUNTAR DI T/NO. JBT 53	RM 8,852.00											
SVR 96 00040	MEMPERKUKUH SVR - PENGURANG 50% BREAKDOWN DIKAWASAN PEKAN BAGAN TIANG, PT. BUNTAR DI T/NO. JTB 60/22	RM 19,999.00		21					630	675	315		Muda
SVR 96 00041	(MEMPERKUKUH SVR) - PENGURANGAN 50% BREAKDOWN DIKWS BELAKANG PEKAN BAGAN TIANG, PT. BUNTAR DI T/NO JBT60/62	RM 19,999.00		21					630	675	315		Muda
SVR 96 00042	(MEMPERKUKUHKAN SVR) - PENGURANGAN 50% BREAKDOWN DIKWS. KUALA BAGAN TIANG , PT. BUNTAR DI T/NO. JBT 51	RM 21,364.00		22					765	608	220		Muda
SVR 96 00043	(MEMPERKUKUHKAN SVR) - PENGURANGAN 50% BREAKDOWN DIKWS. KUALA BAGAN TIANG , PT. BUNTAR DI T/NO. JBT 50/28	RM 21,364.00		22					765	608	220		Muda
SVR 96 00044	(MEMPERKUKUHKAN SVR) - PENGURANGAN 50% BREAKDOWN DIKWS. KG.TERSUSUN JALAN TAIPING, SIMPANG 5, PT. BUNTAR T/NO SHH 11A	RM 12,854.00		8					500	600	200		Md Zain
SVR 96 00045	(MEMPERKUKUHKAN SVR) - PENGURANGAN 50% BREAKDOWN DIKWS. KUALA BAGAN TIANG, PT. BUNTAR DI T/NO	RM 14,908.00		15						900	165		Muda
SVR 96 00046	(MEMPERKUKUHKAN SVR) - PENGURANGAN 50% BREAKDOWN DIKWS. JALAN ABDUL RAOF, PT. BUNTAR. DI T/NO. JAR 3D	RM 22,512.00	1	17			500		250	1000	300		Bumikawan
SVR 96 00047	(MEMPERKUKUHKAN SVR) - PENGURANGAN 50% BREAKDOWN DIKWS DI KWS. PT. 310 BAGAN TIANG , PARIT BUNTAR DI T/NO. DEKAT	RM 6,303.00		4						200	60		Hasil SBA
SVR 96 00048	MEMPERKUKUHKAN SVAR - DI P/E PT. TOK NGAH DI T/NO. PTN 20A (ZON PT. BUNTAR)	RM 24,283.00		21			800			200	315		Bumikawan
SVR 96 00049	MEMPERKUKUHKAN SVR - DI P/E PARIT 310 DI T/NO. P 310 37 (ZON PARIT BUNTAR)	RM 14,997.00		18						1150	300		Hasil SBA
SVR 96 00050	MEMPERKUKUHKAN SVR - DI P/E PT. 310 DI T/NO. P 310 28 (ZON PARIT BUNTAR)	RM 17,005.00		17					800	100	260		Hasil SBA
SVR 96 00051	MEMPERKUKUH DAN MENGURANGKAN 50% SVR - DI P/E BG. TIANG 1 DI T/NO. BT 1 10B/31/11 (ZON PARIT BUNTAR)	RM 30,630.00		31			860		350	860	470		Muda
SVR 96 00052	MEMPERKUKUH DAN MENGURANGKAN 50% SVR - DI P/E PT. TOK NGAH, DI T/NO. PTN 11A/4 (ZON PARIT BUNTAR)	RM 19,852.00		23			315			800	400		Bumikawan
SVR 96 00053	MEMPERKUKUH SVAR - DI P/E PT. TOK NGAH DI T/NO. PTN 11A/29 (ZON PT. BUNTAR)	RM 18,629.00		24					675	450	360		Bumikawan
SVR 96 00054	MEMPERKUKUH SVAR - DI P/E PT. TOK NGAH DI T/NO. PTN 30B (ZON PT. BUNTAR)	RM 6,905.00		4						200	60		Bumikawan
SVR 96 00055	MEMPERKUKUH SVAR - DI P/E PT. TOK NGAH DI T/NO. PTN 11A/4/8 (ZON PT. BUNTAR)	RM 23,077.00		26			450			800	400		Bumikawan
SVR 96 00056	MEMPERKUKUH DAN MENGURANGKAN 50% SVR - DI P/E PT. HJ WAHAB 1 DI T/NO KHW 2A/17/15 & KHW 2A/38(ZON PT. BUNTAR)	RM 10,781.00		5					300	150	100		Bumikawan
SVR 96 00057	MEMPERKUKUH DAN MENGURANGKAN 50% SVR - DI P/E SG BAKAU DI T/NO. JSP 83/2 - JSP 88/18 (ZON PT. BUNTAR)	RM 34,724.00	17	8		800				900	260		Md Zain
SVR 96 00058	MEMPERKUKUH DAN MENGURANGKAN 50% SVR - DI P/E PT. HJ WAHAB DI T/NO. KHW 2A/7 & KHW 7B (ZON PT. BUNTAR)	RM 12,719.00		16					300	500	250		Bumikawan
	JUMLAH BESAR	RM 406,231.00											

A= TIANG SPUN 9M
B= TIANG SPUN 7.5M
C= TIANG SPUN 7.5M (TALIKOM)
D= ABC 4-C 3x185+120+16
E= ABC 4-C 3x95+70+16
F= ABC 4-C 3x35+25

G= ABC 4-C 3x16+25
H= ABC 2-C 1x16+25
I = PVC 7/.083 ALUM.
J= PVC 19/.064 ALUM.
K= KONTRAKTOR
L= TARIKH MULA KERJA

Perancangan menggurangkan gangguan bekalan elektrik VR bagi Tahun 1997

CARTA MILESTONE

Target Perancangan	Dis 96	Jan 97	Feb 97	Mac 97	Apr 97	May 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Nov 97	Dis 97
Melukis Plan LV dan mengambil bacaan beban VR													
P.P.B Bagan Serai	**												
P.P.B Parit Buntar	**												
P.P.B Kuala Kurau	**												
P.P.B Semanggol	**	**											
Transfer plan ke komputer	**	**	**										
Senggaraan Fius tiang dan copper jumper bagi fius.													
P.P.B Bagan Serai	**	**											
P.P.B Parit Buntar	**	**											
P.P.B Kuala Kurau	**	**											
P.P.B Semanggol	**	**	**										
Mencantas dahan													
P.P.B Bagan Serai				**									
P.P.B Parit Buntar				**									
P.P.B Kuala Kurau				**									
P.P.B Semanggol					**								
Maklumat tiang dan jarak pengalir													
P.P.B Bagan Serai	**	**											
P.P.B Parit Buntar	**	**											
P.P.B Kuala Kurau	**	**											
P.P.B Semanggol	**	**											
Penukaran Serbis ke 7/.083 atau 1x16+25mmp (50/bulan/Zon)													
P.P.B Bagan Serai	**	**	**	**	**	**	**	**	**	**	**	**	**
P.P.B Parit Buntar	**	**	**	**	**	**	**	**	**	**	**	**	**
P.P.B Kuala Kurau	**	**	**	**	**	**	**	**	**	**	**	**	**
P.P.B Semanggol	**	**	**	**	**	**	**	**	**	**	**	**	**
Menukar Semua Tee-off Tidak Bertebat Kpd Bertebat.													
P.P.B Bagan Serai	**	**	**	**	**	**	**	**	**	**	**	**	**
P.P.B Parit Buntar	**	**	**	**	**	**	**	**	**	**	**	**	**
P.P.B Kuala Kurau	**	**	**	**	**	**	**	**	**	**	**	**	**
P.P.B Semanggol	**	**	**	**	**	**	**	**	**	**	**	**	**

E7

Perancangan menggurangkan gangguan bekalan elektrik VR bagi tahun 1997

CARTA MILESTONE

Target Perancangan	Dis 96	Jan 97	Feb 97	Mac 97	Apr 97	Mei 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Nov 97	Dis 97
MWCS -Menukar Tiang 60 batang / zon/bulan													
P.P.B Bagan Serai		***	***	***	***	***	***	***	***	***	***	***	***
P.P.B Parit Buntar		***	***	***	***	***	***	***	***	***	***	***	***
P.P.B Kuala Kurau		***	***	***	***	***	***	***	***	***	***	***	***
P.P.B Semanggol		***	***	***	***	***	***	***	***	***	***	***	***
CWA: MSVT- Menukar alum bare kpd ABC. (Minima satu projek setiap 2 bulan / zon)													
P.P.B Bagan Serai			***	***	***	***	***	***	***	***	***	***	***
P.P.B Kuala Kurau			***	***	***	***	***	***	***	***	***	***	***
P.P.B Semanggol			***	***	***	***	***	***	***	***	***	***	***
Gotong Royong (Min 6 Sub.St / zon/ bulan)													
P.P.B Bagan Serai			***	***	***	***	***	***	***	***	***	***	***
P.P.B Parit Buntar			***	***	***	***	***	***	***	***	***	***	***
P.P.B Kuala Kurau			***	***	***	***	***	***	***	***	***	***	***
P.P.B Semanggol			***	***	***	***	***	***	***	***	***	***	***
Menombor tiang													
P.P.B Bagan Serai						***	***	***					
P.P.B Parit Buntar						***	***	***					
P.P.B Kuala Kurau						***	***	***					
P.P.B Semanggol						***	***	***					
Mesyuarat Pengoperasian Min 2 kali/ bulan	3day advance.												
P.P.B Bagan Serai.	***	****	***	***	****	***	***	***	***	***	***	***	***
P.P.B Parit Buntar	***	****	***	***	****	***	***	***	***	***	***	***	***
P.P.B Kuala Kurau	***	****	***	***	****	***	***	***	***	***	***	***	***
P.P.B Semanggol	***	****	***	***	****	***	***	***	***	***	***	***	***
Mesyuarat Ketua Zon dan Ketua Sub-zon (15 min) Min 3 kali/minggu													
P.P.B Bagan Serai	***	****	***	***	****	***	***	***	***	***	***	***	***
P.P.B Parit Buntar	***	****	***	***	****	***	***	***	***	***	***	***	***
P.P.B Kuala Kurau	***	****	***	***	****	***	***	***	***	***	***	***	***
P.P.B Semanggol	***	***	***	***	****	***	***	***	***	***	***	***	***

APPENDIX F

COURSES CONDUCTED THROUGH IN-HOUSE TRAINING

In-house Training at TNB Bagan Serai from July 1996 till Dec 1996

1. Fuse Maintenance - Lower Level Employee
2. Piercing Connector -Lower Level Employee
3. Load distribution and current carrying capacity phenomena -All Employees
4. Project Management (Basic) - Technicians and executives
5. Total Quality Management (Basic)-All
6. Teamwork Concept - Lower level employee
7. Data Analysis and Reporting Method - Technicians and Executives
8. Monitoring and Control - Technicians and Executives
9. Motivation - All employees
10. Awards and incentives - Executives and senior technicians
11. Leadership - All employees

APPENDIX G

TNB BAGAN SERAI'S RECOGNITION AS THE BEST DISTRICT IN PERAK FOR POWER OUTAGES REDUCTION

FOKUSPERAK

Edaran Untuk Kakitangan Sahaja

Edisi 1/97. Volume 7 *Februari 1997*

Dari Meja
PENGURUS WILAYAH

Kemajuan Berterusan Matlamat Kita

Dalam masa umat Islam menyambut Aidil Fitri dan kaum cina merayakan tahun baru nya, maka menjadi tanggungjawab kita untuk menyediakan bekalan yang berterusan tanpa gangguan.

Satu konsep yang boleh kita amalkan ialah konsep kemajuan berterusan (continuous improvement) atau KAIZEN. Dalam falsafah pengurusan, ia memberi makna bahawa sesuatu organisasi telah mencapai matlamat peningkatan produktiviti melalui peningkatan yang kecil yang dilakukan oleh semua pekerja setiap hari. Semua peningkatan kecil ini, kalau dicampurkan, menjadi satu "breakthrough". Semua pekerja mesti mengamalkan pemikiran kaizen ini (kaizen mentality) seperti:-

- *Sikap suka menyoal - Sering bertanya "Apakah ada cara yang lebih baik untuk melakukan kerja ini".*
- *Sikap positif - Tidak perlu kecewa (discourage), apabila menghadapi sesuatu masalah, sebaliknya kita beranggapan ia adalah peluang untuk peningkatan diri.*
- *Fikiran yang terbuka - Sedia menerima idea baru dari orang lain".*

Jika semua anggota kerja TNB Wilayah Perak memahami konsep KAIZEN ini dan mengamalnya, matlamat kita untuk mengurangkan gangguan voltan tinggi dan gangguan voltan rendah boleh dicapai.

SELAMAT TAHUN BARU dan MAAF ZAHIR BATIN

(Haji Heruddin Hussain)
Pengurus Teknikal Wilayah

Pengurangan Gangguan Bekalan

BAGAN SERAI DAERAH TERBAIK

Bagan Serai - Dalam proses untuk mengurangkan gangguan kerosakan yang dialami oleh pengguna, semua anggota kerja TNB Perak terutama bahagian teknikal telah mengembeleng semua tenaga yang ada untuk mencapai satu matlamat.

Encik Abdul Aziz Abdul Rahman

Antara daerah yang tidak terkecuali menyahut cabaran ini ialah Daerah Bagan Serai.

Dalam temubual Fokusperak dengan Pengurus Daerah Bagan Serai Encik Abdul Aziz Abdul Rahman beliau menyatakan bahawa berbagai usaha telah dilakukan untuk mencapai sasaran 80% pengurangan kerosakan voltan rendah dan apa yang dilakukan adalah usahasama dan komitmen seluruh anggota kerja yang diketuai oleh Encik Vijayakumar Jurutera (Perkhidmatan Kejuruteraan).

Menurut beliau, purata kerosakan voltan rendah empat bulan pengnujung tahun 1995 sebanyak 289 telah dapat dikurangkan kepada 39 sahaja bagi bulan Disember 1996. Peningkatan yang melebihi sasaran ini adalah sesuatu yang boleh dibanggakan.

"Pihak kami akan cuba pastikan tahap pengurangan akan melebihi angka tersebut" jelas beliau.

Pembahagian Zon

Menyentuh mengenai kaedah yang beliau lakukan dalam menangani masalah gangguan bekalan, beliau menegaskan bahawa beliau membahagikan Daerah Bagan Serai kepada empat zon, yang mana setiap zon diketuai oleh seorang ketua yang bertanggungjawab terhadap zon masing-masing.

Langkah Mengatasi

Ketua zon akan mengenalpasti tempat yang selalu berlaku kerosakan dan membuat cadangan mengatasinya. Antara langkah-langkah yang selalu dilakukan ialah dengan menukar pole fuse, jumper, tukar kabel servis 7/.044 ke 7/.083, atau ABC 'bare conductor' ke ABC (Aerial Bundle Cable) tukar tiang kayu ke tiang konkrit sebanyak 60 batang sebulan dan membuat rentis yang berterusan.

Disamping itu pihak daerah juga selalu mendapat kerjasama dari penduduk setempat. Beberapa sesi gotong royong telah diadakan dengan kerjasama orang kampung untuk mencantas dahan pokok dan membersihkan sekitar pencawang.

Untuk menghargai kecemerlangan anggota kerja, baru-baru ini satu majlis penganugerahan sijil kepada ketua zon dan kepada zon terbaik telah disampaikan oleh Pengurus Daerah. Jamuan ringan turut diadakan untuk meraikan semua anggota kerja yang hadir. - MBA

Penyampaian Surat Penghargaan oleh Pengurus Daerah

Pengurus Wilayah (Perak), Tenaga Nasional Berhad, 1-5 Jalan Dato Maharaja Lela, 30000 Ipoh, Perak Darul Ridzuan.
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670