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People's Republic of Bangladesh

Technical Cooperation Project for the Power Sector

Final Report

March 2005

Japan International Cooperation Agency
Economic Development Department

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Technical Cooperation Project for Power Sector of the People's Republic of Bangladesh

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Tokyo Electric Power Company

for

Japan International Cooperation Agency
(JICA)

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Appendix

Chapter 1 Summary of Report

Japan International Cooperation Agency (JICA) has continued this technical cooperation project since 1999 as a part of the technical cooperation program for power sector of Bangladesh. The project consists of the dispatch of short-term experts and Country Focused Training and its area has focused on TQM and Distribution O&M since 2001 for the improvement of management and distribution O&M activity in Bangladesh Power Development Board (BPDB). This service was carried out as a part of the project and consists of technical transfer in Bangladesh for one month and the preparation of training course in Japan.

For the activity in Bangladesh, two experts, TQM and Distribution O&M, were dispatched from November 18th, 2004 to December 17th of the same year.. The TQM expert made advices and recommendations for the promotion of top management's commitments to TQM activity, establishment of systematic training system, internal promotion and public relations system. The distribution expert made advices and recommendations for the formulation of O&M standard, reduction of frequent outage by accident and system loss reduction.

A training course was held by Tokyo Electric Power Co. in Japan from January 23rd 2005 to February 19th, 2005 with 10 participants

As a result of the project for 5 years, TQM concept expanded rapidly in BPDB and TQM activity in the field level started in these days. Distribution O&M activity was also improved gradually by the advice of short-term experts and implementation of TQM activity. However, the experts found some issues that would be barriers to further promotion and improvement, that is, non-organized activity and lack of management capability in BPDB. The experts tried to clarify causes and improve this situation through their activity and training course.

Because issues to be tackled come out continuously in the process of improvement and they gradually become more specific and essential, it becomes more important than before to understand the actual situation and issues of the counterpart and make adequate technology transfers in future technical cooperation projects.

The power sector of Bangladesh is now under reform. As Power Grid Company of Bangladesh (PGCB) and West Zone Power Distribution Co. LTD (WZPDCL) are eager to introduce TQM for the capacity building, it is sure that this project contributes to the sector reform by improvement of management capability of power

sector. It is also important in future technical cooperation projects to be linked with the sector reform and contribute to the improvement of not only each organization but also whole power sector of Bangladesh.

Chapter 2 Outline of Service

2.1 Scope of Service

The project that has been continued since 1999 consists of two parts, the dispatch of experts and the training course in Japan. In this service, two experts, TQM and Distribution O&M, were engaged, and this year they were in charge of the technology transfer in Bangladesh, the preparation of the training course in Japan and its evaluation. Detailed scope of service is as follows.

[Activities in Bangladesh]

(1) Technology Transfer

(a) Technology Transfer for TQM Promotion throughout BPDB

- Encourage management's commitment
- Establish systematic training system for employees
- Internal promotion and public relation system
- Action planning to expand TQM and QC Circle activities

(b) Technology Transfer for O&M Activities in Distribution Sector

- Formulation of O&M standard and action plan for its dissemination & implementation
- Reduction of frequent outage by accidents and amendment of O&M manual
- Distribution system loss reduction

(2) Preparation for Training Course in Japan

- Design of draft curriculum and discussion on it with the counterpart
- Interview with candidates

(3) Wrap-up Seminar

(4) Questionnaire Survey etc.

[Training Course in Japan]

- Selection of the recipient agency
- Arrangement of the training schedule and its contents
- Evaluation of the training course

2.2 Flowchart of Service

The flowchart of the service is shown in Fig 2-1. It has no major changes from the initial plan. Duration of the service is about four months and the main works are the technology transfer in Bangladesh for one month, the arrangement of the training course in Japan and its evaluation.

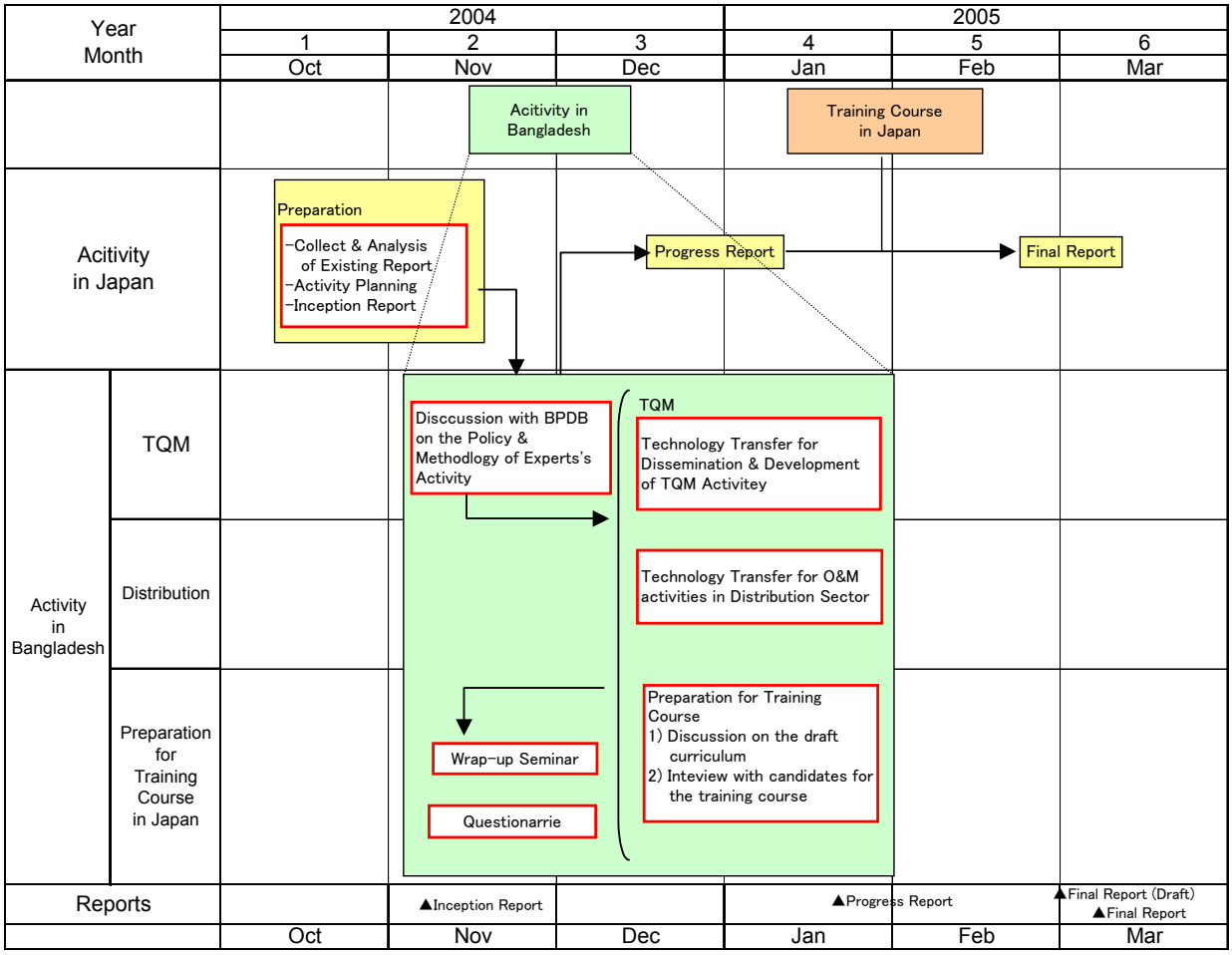


Figure 2-1 Flowchart of Service

Chapter 3 Methodology

The purpose of the project is to introduce and promote TQM activities and improve O&M activities of distribution. To achieve this aim, the experts paid attention to the synergy of the technology transfer in Bangladesh and the training course in Japan.

3.1 Technology Transfer in Bangladesh

3.1.1 Outline

Since 2001, the activity of TQM experts have focused on the development of TQM promotion system and the activity of distribution O&M experts have focused on the improvement of the field level O&M activities. According to the former expert's report, results such as the implementation of primitive TQM activities in field offices and the improvement of O&M activities with TQM have been attained, however, these activities have not become organized and sustainable yet. It is important to make these activities organized and sustainable, that is, to establish PDCA cycle and normalize it in BPDB immediately.

With these understandings, the experts focused on the improvement of the field level activities with the understandings of their actual condition and the advices and recommendation of countermeasures to make them organized and sustainable. The experts also focused on working together for the synergy of TQM and Distribution O&M and on supporting the self-help effort of counterparts for their capacity building. The cooperation with JICA Bangladesh office and Mr. Nakanishi, the JICA long-term expert, was also important in this activity to promote the effect of Technical Cooperation Program for Power Sector of Bangladesh. The summary of activities and schedule are shown as follows.

[Duration] Nov 18th, 2004 – Dec 17th , 2004

[Counterpart] Staff of TQM Promotion Office, BPDB

[Activity] 1st week : Survey to grasp the actual condition and Interview with candidates

2nd week : Survey on TQM and O&M activities in Distribution Circle and ESU

3rd week : Discussion with counterparts and the top-management for improvement

4th week : Preparation and administration of Wrap-up Seminar

Table 3-1 Actual schedule of Experts in Bangladesh

Date		Place	Activity
18-Nov	Thr		Leave Japan
19-Nov	Fri	Dhaka	Arrive at Dhaka
20-Nov	Sat	ditto	AM Courtesy Call Mr.Dewan Zakir Hossain (Joint Secretary, Power Division, MOPE&MR) Mr.Mominul Huq Bhuiyan (Member Admi, BPDB) Mr.Khwaja Thulam Ahmed (Chairman, BPDB) PM Kick-off Meeting: TQM Promotion Office
21-Nov	Sun	ditto	AM Courtesy Call JICA Bangladesh Office Mr.Md.Didarul Ahsan (Deputy Secretary, Economic Relations Divisions) JBIC Dhaka Office
22-Nov	Mon	ditto	AM TQM Promotion Office PM Meeting with PGCB TQM Promotion Office Embassy of Japan
23-Nov	Tue	ditto	AM TQM Promotion Office PM Meeting with WZPDC & Interview with Candidates
24-Nov	Wed	ditto	AM Task Team Meeting PM Meeting with Member (Distribution) TQM Promotion Office
25-Nov	Thu	ditto	AM ACE Meeting PM Interview with Candidates from BPDB and PGCB
26-Nov	Fri	ditto	Interview Result Report
27-Nov	Sat	Mymensingh	Mymensingh Distribution Circle Office
28-Nov	Sun	ditto	ESU(XEN) : Mymensingh (North) , Mymensingh Dis. Circle
29-Nov	Mon	ditto	ESU(XEN) : Mymensingh (South), Mymensingh Dis. Circle
30-Nov	Tue	ditto	ESU(XEN) : Sherpur, Mymensingh Dis. Circle
1-Dec	Wed	Tangail	Tangail Distribution Circle Office
2-Dec	Thu	ditto	Site Visit(Substation/Distribution line etc.), TBBS
3-Dec	Fri	Dhaka	Matreial Analysis
4-Dec	Sat	ditto	AM TQM Promotion Office (Interim Meeting) PM Meeting with Member(Admi)
5-Dec	Sun	ditto	Discussion with C/P (TQM Promotion Office) - Analysis of current situation - How to improve
6-Dec	Mon	ditto	
7-Dec	Tue	ditto	
8-Dec	Wed	ditto	AM Meeting with Chairman PM TQM Promotion Office
9-Dec	Thu	ditto	AM Haripur Power Station(TQM) / Distribution System Planning(Dis) PM Embassy of Japan
10-Dec	Fri	ditto	Matreial Analysis/Preparation for Wrap-up Seminar
11-Dec	Sat	ditto	AM Togi Training Center (TQM) / SBU Office & Prepaid Project Office(Dis) PM TQM Promotion Office
12-Dec	Sun	ditto	Preparation for Wrap-up Seminar (TQM Promotion Office)
13-Dec	Mon	ditto	
14-Dec	Tue	ditto	AM Embassy of Japan PM Preparation for Wrap-up Seminar
15-Dec	Wed	ditto	AM Wrap-up Seminar PM JICA Office
16-Dec	Thr		Leave Dhaka
17-Dec	Fri		Arrive Japan

3.1.2 Discussion on Methodology

In the beginning of activities, the experts explained their activity plan in the inception report to the staff of JICA Bangladesh Office, the long-term expert and their counterparts and discussed on methodology with them. The main topics of the discussions are shown below.

(1) Discussion with staff of JICA Bangladesh Office and Long-term Expert

- Principles, Methodology and activity plan in the inception report were accepted.
- The experts were requested to try to study as far as possible the potential expansion of TQM activity to other organizations such as PGCB and WZPDCL.

(2) Discussion with Counterparts

The experts submitted the inception report and its summary to BPDB and had discussion on the activity plan and methodology with Chairman, Member Admin. and their counterparts. Main topics of this discussion are shown below.

- Principles, Methodology and Activity Plan in the inception report were accepted.
- Counterparts proposed the Bogra and Mymensingh circles as outstanding circles and Tangail circle as an average circle in TQM activity.

3.1.3 Rearrangement of Activity Plan

According to counterparts' suggestion, Tangail circle was selected as an additional site to visit for the comparison of TQM activity in an outstanding circle, Mymensingh, and in an average circle.

3.2 Preparation for Training Course in Japan

3.2.1 Implementation Plan

The expert reviewed the training evaluation since 2001 and made the implementation plan of the training course in Japan.

3.2.2 Discussion on Implementation Plan

(1) Discussion with staff of JICA Bangladesh Office and the Long-term Expert

The notion that participants in the training course in Japan should be selected not only BPDB but also PGCB and WZPDCL was discussed.

(2) Discussion with Counterparts

The expert explained the implementation plan for the training course in Japan to BPDB, PDCB and WZPDCL, which will be the organization to send participants, and they agreed to it.

3.2.3 Interview with Candidates and Result

(1) Interview

The experts conducted interviews with 18 candidates from BPDB, PGCB and WZPDCL.

Because PGCB and WZPDCL has just started their effort to adopt TQM to their management, local staff of JICA Bangladesh Office, the JICA long-term expert and two short-term experts had a meeting with the Managing Director (MD) of both organizations to see their capacity and potential. From the fact that PGCB has established TQM Promotion Office already and assigned members for the office, even though it required taking on an additional job, and MD of WZPDCL is strongly committed to improving the organization by adopting TQM, it is considered that they have enough potential to adopt TQM and participants for the training from PGCB and WZPDCL are acceptable.

(2) Result

The experts recommended the selection of middle manager from the field office to promote the changing mindset of manager level and field level activities because they found that most middle managers in BPDB still have an antiquated mindset and it is a disincentive for improvement.

Additionally, the experts recommended BPDB select a participant from Mymensingh circle, which would make their TQM activity sustainable and organized, for more improvement.

3.2.4 Curriculum for Training Course

The experts arranged the training curriculum according to the needs of candidates, activities of former participants in their workplace and issues of TQM and O&M activities of their organizations. To be concrete, lectures for TQM were increased in Distribution O&M course and a lecture for management capability development was added to both courses.

Chapter 4 Achievement

4.1 Summary

As a result of the project, TQM expands to field level and distribution O&M activity is improved gradually and the stage of the activity is moving to the next step, that is, the TQM implementation in field offices and the improvement of its quality. That's why that the experts visited some field offices together to see the actual activity in field office and its issues in their activities in Bangladesh. The experts made advice and recommendations with their understandings in field offices, discussion with counterpart and Wrap-up seminar. The outline of activity in Bangladesh is shown below.

For TQM promotion, with recognition that TQM activity in BPDB expands rapidly in field but it depends heavily on the ability of particular person, the expert made guidance and recommendations as follows.

- Improvement of the existing training program for the development of leadership in field office
- Enhancement of follow-up and monitoring of trainee's activity after training
- Discussion with top management & presentation in Wrap-up Seminar for the promotion of top management's commitment and sharing a sense of crisis.
- Establishment of objective monitoring and evaluation system of field level activity

For the improvement of distribution O&M, with recognition that there is shortage of management capability, the expert made guidance and recommendations as follow.

- Compliance with manual
- Promotion of awareness of system reliability
- Data based preventive O&M activity and development of data management skill and system
- Accurate monitoring of meter reading and billing operation for non-technical loss reduction

4.2 Technology Transfer for TQM Promotion throughout BPDB

4.2.1 Current status recognition based on Action Plan and suggestions

Activities by the TQM Promotion Office are based on the Action Plan of January 2004, revised in accordance with the instruction by the JICA short-term expert.

The covered activities can be categorized as below, which define the task scope of the Office.

- Plan and implementation support of training programs
- Promotion and control: find the implementation offices, provide training programs and collecting/sharing the on-site TQM activity information
- Event planning and implementation: e.g., TQM convention
- Policy/Quality control on overall management issue, Monitoring and instruction on site management based on the overall policy

Three items listed above have been found implemented as planned. The detail assessment is as follows.

(1) Plan and Implementation Support of Training Programs

As the results of training program in Japan, the Office and Task team members now recognize the importance of training activities to promote TQM and have made a substantial effort to establish and implement training. On the other hand, the speed of training promotion in BPDB is still slow, compared with the training record of TEPCO in early 1980s.

Main reasons for slow promotion of trainings include not only the shortage of required resources but, and more importantly, also the lack of technical on-site transfer by trainees. Based on the discussion using QC tools, it has been decided that the training program shall be revised so that trainees are encouraged to positively apply acquired knowledge into practice and, through this process, to transfer knowledge to colleagues. The revised training, which is reflected to the new action plan, will contain the practical portion using real cases and encourage trainees to involve colleagues into the problem solving activities.

The section 4.2.3 will discuss in detail the issues involving the training program, facility and procedure.

(2) Promotion and Control

The actual promotional activities started in Nov. 2003 with the establishment of a series of training programs. That is, the Office has set TQM activities in approximately 80% of all site offices in BPDB for one year. Consider the organization scale for the promotion (6 Office staff + Task Team ember); this performance can be evaluated in a positive way. Meanwhile, it is also true that the installation of the TQM (new working system) requires much time and energy to withdraw a positive attitude from the site and that the installation process shall be slowed in bureaucratic system. These facts also indicate that the Office and

other TQM promotional people have made substantial efforts under a given/constrained environment. Above all, they have spent a considerable amount of energy in order to persuade and involve stakeholders as strong as labor unions.

The Office holds the Task Team meeting and ACE meetings every month and tries to grasp the site situation. Collected information is compiled into a monthly report and submitted to JICA. This monitoring and reporting system has been in effect since Jan. 2004, and reporting contents and format have been revised continuously based on the consultation with JICA staff.

Although the Office has tried to establish the monitoring-evaluation-feedback system through a series of meetings, the system has yet worked. ACE meeting particularly, does not function as expected—information sharing and discussion on administrative issues on TQM, but stays at the level of training place regarding TQM tools.

At the ACE meeting, both a lack of preparation and sense of responsibility can be observed among participants. Here, the expert advised that ACEs by themselves should initiate their own problem solving and report them in the meeting, which becomes an opportunity for information sharing.

The Task Team meeting should be a place to share more practical/problem-oriented issues encountered in field offices. In this regard, the current meeting with the full members should be reorganized based on the similarity of the offices. Though they may not make a substantial effect, these fine tunings in the system are reflected in the action plan.

(3) Event Planning and Implementation

The Office held the 1st internal QC convention on Sep. 25th and 26th, 2004. Before the convention, the Office also held the circle case study event as the pilot project and subsequently applied that experience to the procedure and content of the convention.

The process of the convention and the internal/external promotion activities through this event involve various ideas and efforts of the Office and Task Team members. On the other hand, the activities found in the convention show a wide quality deviation. While some show an appropriate analysis and solution to the important daily management issues, some only claim and request the procurement of perks.

This fact necessitates the analysis of the effectiveness of the promotion program based on the quality of activities. These real cases should be utilized to improve the promotion.

(4) Policy Control on Overall Management, Management Auditing

The necessity of policy management in BPDB has become a common understanding in the promotion organization. However, the activity for this initiative has not yet arisen. Concretely, although the Annual Report may suggest the mission and vision of BPDB, they are not developed into a concrete business plan or code of conduct.

The TQM promotion staff considers that the top management should take overall initiative to this issue and is not positively involved in it.

However, this initiative should be based on the thorough understanding of the situation of site offices. Here, the TQM monitoring and information sharing activities may be the important step to develop into the method of management quality assessment and into the solution programs. Moreover, organization-wide strategy and policy should be established as the reference standard for the assessment.

However, it is also a valid argument that current TQM promotion structure is difficult to fulfill the wide-range and high-level functions of management auditing and corporate planning. The top management should take the initiative to organize these functions in BPDB.

4.2.2 Encourage Management's Commitment

The TQM promotion in BPDB is equivalent with the changing process of its management philosophy. In the changing process, top management commitment and practice play a vital role.

(1) Champion and his Initiative

Member Administration is identified as the champion and has played a vital role to achieve various performances listed in above section. Indeed, thanks to the substantial support by the Member Admin, the Office has acquired a certain level of discretion to attain various promotion programs. He also contributed to encourage understanding of other management.

Thanks to the commitment of the champion, TQM program has taken an important position in BPDB's management. On the other hand, it is also true that site offices, such as power plants and distribution offices, rather prioritize the authority of their belonging function (i.e., Member Generation or Member

Distribution) over that of Member Administration. That is, if the top of the sites shares the common standpoint with him, the TQM will be promoted boldly, but otherwise, the activity will be just in name.

Based on the observation of promotion system and site activities, the expert encouraged further commitment of the champion and the Chairman (refer to appendix1-1). Particularly, discussion focuses on the fact that TQM promotion in sites is heavily dependent on the capability and motivation of particular personnel. The restructuring of top management as a method to effectively influence and interact with site offices is crucial—some methods for this initiative are introduced.

As an important issue regarding the champion and other key top management, it should be addressed that due to the structural problem surrounding BPDB—the personnel authority for Chairman/Members belongs to the ministry—may hinder the stability of top management, a fact that may reduce the credibility of the top management policy in BPDB. In the long term, it is expected that the progress of the power sector will reduce the political intervention. In short term however, initiative is required to withdraw commitment for TQM from the ministry and to secure the personnel stability.

(2) Encourage commitment of other executives

Although the level of commitment from other executives has been increasing thorough the champion's instruction and training, the practical level in pushing the new philosophy is dependent on personal capability and motivation.

Through the discussion with various executives and the Office member, this issue may come from the lack of sense of crisis among executives toward the management environment surrounding BPDB. That is, the lack of sense of crisis may allow management to stay in the mindset of "why do we have to now reinvent the management through TQM practice?"

The first step is that all top management shares the strong sense of crisis. The expert tried to ferment the understanding that under the changing business environment surrounding BPDB, reinvention of management is the only way to recover the current critical phase and survive in the future deregulated market.

In this sense, the promotion of TQM is, at present at least, one of the most effective ways to realize the management reinvention in the current BPDB. For this purpose, the practice of TQM by top management is really important, and concretely, development of management control system to manage/ evaluate the operational process of each field office is important. Restructuring of the

budgeting process may be helpful to increase the communication level between management and field offices.

Preparation of an incentive scheme is also effective, where TQM practice and performance records are interacted with the promotion and evaluation criteria for management.

4.2.3 Establish Systematic Training System for Employees

(1) Improvement of the existing programs

Existing training programs have been established based on the program in Japan. The Office staff coordinated with other trainees of Japan to build new programs, considering the unique needs in BPDB (appendix 1-2). They had to spend some time to get internal approval and to collect and create textbooks (e.g., translation to Bengali), resulting in the delay of the launch of the program.

Although the program arranges practical elements such as QC practice and case studies, weak evaluation of training effect and shortage of follow-up may hinder the 'actual' practice of TQM in field offices.

Based on the discussion with the Office on this issue, the following amendment to the existing programs will be made:

- Prepare and implement questionnaire survey: to understand the effect of training, progress of management reinvention and future training needs (appendix 1-3)
- In the short run, the following amendment is made:
  - In the mid-point of the training, each trainee must bring their field problem and discuss on it
  - In the end of the training, each trainee must present problem solving plan using QC method.
- The following follow-up system shall be installed:
  - QC activity workshop shall be held two-to-three months after the end of the training program. During this period, trainees must submit progress reports (twice a month) to the Office, and if necessary, Task Team members will make additional instruction.
  - Completion certificate will be issued at this workshop based on each trainee's comprehension level. Using the scoring standard of QC Convention, trainees above 50 points will be certified as completed.

The above amendment is reflected to the action plan and will be in place from Jan 2005 training.

(2) Establish new program targeting top management

In order to enhance the basic management capability of top management and candidates of it the Office shall establish new training program. In the initial stage, the program will be in Japan and Bangladesh and encourage all top management to positively engage in TQM activities. In the mid-long run, the training implementation organization should be identified and nurtured, and program be extended in mid-lower management level.

a) Training System Overview (Draft)

Output to be sought

- One step forward from the current training to learn the 'concept' of TQM (through awareness seminar and QC tool training), this training will provide managers with the 'experience' for them to practice TQM in each of their business operations. Through the practice of TQM, trainees will acquire the leadership capability to 'actualize and develop' the managerial reinvention in their organization.
- Executives by themselves will learn the practical method to organize 'PDCA' cycle, which is composed of the following steps:
  1. Situational Analysis and problem identification, based on data-based fact
  2. Examination and execution of implementation countermeasures to resolve the route and critical causes.
  3. Analysis and monitoring of the implementation process and evaluation of results and effects
  4. Feedback and countermeasure formation based on analysis/ evaluation

  Accordingly, actualize and constitutionalize the management quality improvement.
- External experts (incl. JICA and domestic) will advise and evaluate the comprehension of the QC methods and the process by which to apply it to the actual business operation. Hence, executives shall improve their practical capability in actual management and in their education of subordinates.

- Through mutual evaluation, analysis and discussion on activities in other divisions and/or other offices in the same division, promote mutual encouragement, information sharing and standardization.

b) Trainees

Top Management: Member, Chief Engineer, promising Superintendent Engineer

c) Procedure

The program is divided into three sessions. Trainees must practice problem solving on real management, using periods between sessions.

1st Session (apx. 7days, Bangladesh):

- Understand management environment and current situation: necessary knowledge/tool to analyze financial situation
- QC tools: method to identify important strategic issues and to seek the real/route causes
- Problem identification: practice to identify actual/substantial problems in BPDB (presentation and discussion)

2nd Session (2-3 months later, apx.7days, in Japan):

- Discussion on identified strategic issues: situational analysis (advanced level)
- Theory and practice on management control and policy management
- Theory and practice on strategic management and change management
- QC tools: Research and analysis for problem solving, standardization and monitoring-evaluation method
- Action Plan: Problem solving plan to identified strategic issues (presentation and discussion)

3rd Session (2-3 month later, 2-3days, Bangladesh): with dispatched experts from Japan

- Presentation on problem solving activities—discussion and evaluation
- Discussion on overall management reinvention in BPDB
- Discussion on future direction of the program

d) Evaluation and Control Method

The Chairman is assigned overall responsibility to promote the program. He is in charge of instruction and supervision of problem solving activities of

participants, and with the assistance of instructors/ experts, evaluates the process and results of the program.

Based on the milestone of the program, Chairman shall hold the steering committee (jointly established by BPDB and external experts) and evaluate the overall situation of management and mental reinvention in BPDB. Based on evaluation, he is in charge of setting the direction of the way forward.

(3) Other issues regarding the training system

(a) Rehabilitation of Training Facilities

Compared with the conventional lesson-style training, TQM training style should be group work and practice oriented. Presentation skills are also an important area. Furthermore, facilities in field offices (e.g., white board) should be established on a small scale.

(b) Restructuring existing training programs (incl. non TQM programs)

In 2004, BPDB has more than 100 regular training programs (TEPCO: apx. 50). The necessity of established courses has not been examined in the changing environment. Furthermore, there is no evaluation or analysis of the effectiveness of each program.

Expansion of training facility under this situation is not worthy choice, and the first step should be to restructure existing programs to meet the current managerial issues and needs. BPDB should establish guidelines for program establishment, revision, and abolition. For example, guidelines should be established to judge program expansion or simplification when advancing the QC program to TQC and Policy Management.

Guidelines should cover:

- Background (or external environment) condition to start the program
- Decision making criteria to judge the training needs/ satisfaction and start/ revision of the program
- Decision making criteria to downscale or discontinue the program

4.2.4 Internal Promotion and Public Relation System

In this chapter, we will understand 'internal promotion' not only as an employee enlightenment activity (i.e., part of the training programs) but also as a package of methods to promote management reinvention through TQM. That is, internal promotion is a package of systems and activities inward, which complement the training programs.

Public relations activities may include reporting to outside stakeholders, information exchange and public announcement and appeals. Among these activities, this section focuses on the reporting system to development partners including JICA and JBIC.

(1) Internal Promotion System

The following points may be a good starting point to improve current internal promotion activities, aiming at giving employees appropriate motivation toward TQM:

- To give appropriate incentive to encourage employees to use established systems

(a) Current Situation

Information sharing on good cases, currently made through training, convention and site visits, is working as a good incentive-creating method. Cases experiencing substantial benefits indeed stimulate other offices to adopt TQM. On the other hand, information-sharing tools/foundation has not yet been established, which is expected to work to practically support the field offices.

Existing incentive schemes (e.g., reward in QC convention, chairman's award etc.) do not function well because the number of rewarded person/circles is too small compared to the whole organization to stimulate employees.

(b) Advice

a) Establish the information sharing system/ database

Current information sharing system should be restructured into a more practical database to support the actual activities of field offices. The Question and Answer booklet for problem solving activities may become useful information package. Here, field sites can share possible solutions for practical problems that they encounter in the process of problem identification, analysis, and solving implementation.

In the future, every problem solving record/report shall be integrated into the database where reports are categorized by activity and/or technical bases, and can be referenced by others.

b) Reconsider the Reward System

The current commendation and reward system should be examined for its effectiveness based on the following criteria.

Rewards should be:

- Decided in a fair and transparent process
- Equally attainable and accessible to all
- Valuable to the recipient
- Large enough to have impact
- Awarded for widely understood reasons
- Timely
- Memorable so that learning occurs
- Reversible
- Cost efficient

(2) Public Relation

TQM activities in BPDB are summarized into a monthly progress report and reported to JICA.

Current report contents generally cover all promotional activities and are expected to improve based on the advice by JICA local staff. In addition to a monthly report, it is recommended that the Office issue an annual review report, which may cover, but is not limited to, the following:

- Trend of performance (i.e., TQM results, promotional activities) and evaluation of it.
- Qualitative evaluation of activities: achievement of initial target, future direction
- Information sharing and promotion policy for good examples

Although the Office regularly reports its activities, it is also true that JICA and other agencies may feel skeptical and unsecured toward the effectiveness of TQM activities. One of the main reasons for these feelings is that they cannot find substantial and numerically proven evidence that shows the results of the TQM program. On the other hand, improvement activities in daily management under QC cannot be expected to realize drastic benefit in a short-term.

Under this dilemma, BPDB should 1) seek the concrete and tangible target by integrating TQM into high-level management, and 2) in reporting, improve the credibility of the monitoring and evaluation.

When focusing on the issue of report credibility, the challenge of BPDB is that under the current promotion system, there is no system to secure the objectivity of the evaluation. Alternative solutions to address this issue include establishing a management audit system, utilizing the third-party experts' feedback and other system establishments. Considering these options and their feasibility under the

deregulating business environment, BPDB should establish effective and sustainable system (long-term solution).

In the short-run, under the advice of JICA experts, BPDB should establish and build capacity of management auditing.

4.2.5 Action Planning to Expand TQM and QC Circle Activities

(1) Promotion Situation

(a) Evaluation

Since the training system establishment in November 2003, QC circle promotion cycle (Site selection—Circle establish—Training—Start activity and monitoring) started working, and the activity in number has been rapidly increasing.

Furthermore, thanks to the enthusiastic enlightenment activities by Member Admin and other promotional members, "TQM" has become a slogan when talking about management. This fact may suggest that barrier and resistance against the promotion of TQM/ QC has been substantially degraded; the ground for further promotion has already been established.

On the other hand, on the micro level, a huge gap in activity quality between field offices was observed. Two visiting distribution circles (Mymensingh and Tangail) show significant difference in mental reinvention, resulting in the performance difference in daily operation and maintenance (See appendix 1-4 for detail observation).

(b) Analysis and Advice

Based on the observation and interviews, the experts found that the quality of TQM activities on site is heavily dependent on the individual capability and nature of top to middle management in sites, who can heavily influence the operational decision making.

When trying realizing managerial reinvention through TQM, it is critical that the top to middle manager, as the main agent of change, be well qualified. However, relying on only the quality of people means lack of corporate level management. Top management must bear responsibility to establish a series of strategies to suggest clear direction and motivation and thus to support the field-level reinvention.

In the mid-long term therefore, management capability of top management and its supporting organization should be enhanced through training and organizational restructuring process, and accordingly solidify the management

control system. In the short-run, the experts would recommend that BPDB establish a financial resource pool, named "management quality improvement fund", based on the consultation with the ministry. Using this source, the field office, after the audit of its achievement of managerial improvement, can quickly finance for problem-solving activity if it is judged as rational. Auditing of management quality may be implemented by the former proposed organization (which will be advised by JICA Experts). Detail of recommendations (short to long term) will be discussed hereafter.

(2) Revision of Promotion System (Recommendation)

The following recommendations were proposed at the wrap-up seminar.

(a) Prepare management quality improvement fund — Short-term and transitional measure

Under the current limited financial situation and under-functional budgeting and settlement system, field offices have very limited financial authority and thus frequently cannot finance for improvement activities. In the long run, the progress of power sector reform is expected to restore a structural problem surrounding these issues (problem as a part of governmental body). At the same time, the enhancement of top management capability may realize policy management, whereby budgeting and management control will solidify. In the short run however, BPDB may prepare a financial source to meet the site needs.

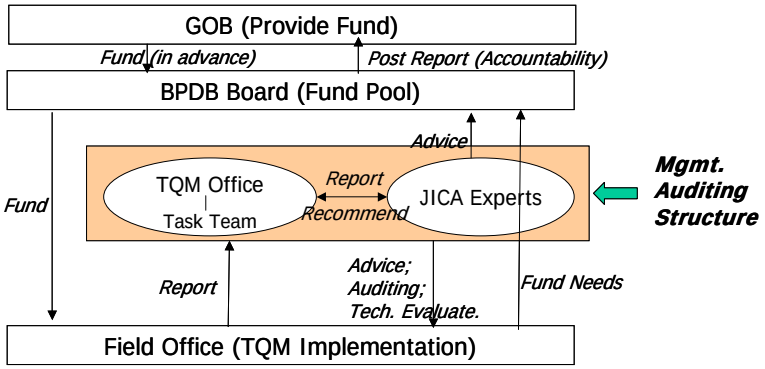


Figure 4-2-1 Management Improvement Promotion Fund

Figure 4-2-1 outlines the system of the management improvement promotion fund. The following four activities are the major components:

- BPDB shall persuade the ministry and finance the necessary fund. The usage of the fund will be annually reported on an ex post basis, but BPDB

must secure the accountability in a transparent decision-making process.

- BPDB shall establish an organizational system to monitor and audit the quality of management at sites. In the short term, the Office may be expanded and be in charge of these tasks. The Office executes task under the advice of JICA Experts, and must regularly report Experts their activities—the name of the organization may be management auditing team.
- The management auditing team shall set some standards to judge the management quality improvement level well in advance of auditing and inform them (but not all—to prevent manipulation) to the sites thus encouraging them to set and achieve targets. Based on the request from sites, the team (with JICA Experts if necessary) will assess the achievement of management improvement and feasibility of required investment (for example, up to Tk 5million per site) for problem solving activity.
- When judging the fund as feasible and rational, the team shall advise the board to encourage finance for the site.

This mechanism may bring the following derivative effects:

- By categorizing the fund into expected activities or objectives, BPDB can show the direction and signal which the sites should seek.
- By installing the mechanism where sites compete for a certain amount of funding (scarce resource), this method may induce competition in improving management quality.
- Based on the assessment by the Experts, needs from sites shall be speedily reflected to the Board's decision, a fact that suggests the delegation of authority in a practical sense.

(b) Restructuring the Budgeting System and Management Control Systems — mid- long term measure

a) Planning and Budgeting Process Reengineering

By reengineering the planning & budgeting process, BPDB should improve the communication level between head management and field offices.

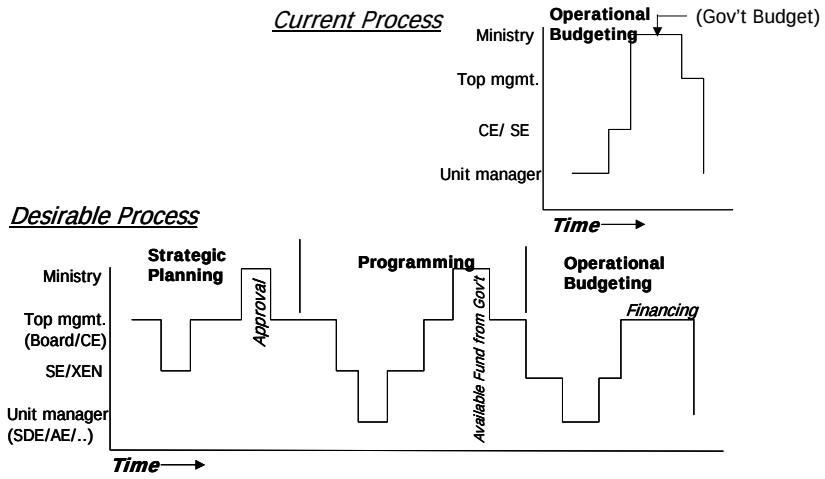


Figure 4-2-2 Business Planning and Budgeting Process

Figure 4-2-2 shows the current and desired processes of business planning and budgeting. Current short-term focused budgeting process should be restructured into the integrated planning program, where the long-term (3-5 yrs.) strategic planning develops into concrete action programming (2-3 yrs.) and annual specific budgeting. This process of increasing commitment to specific activities will increase the communication level with field offices.

Through this process reengineering, BPDB should seek the following output:

- Increase the accuracy and consistency of planning and budgeting, and hence, reduce the financial and technical risk.
- Create consensus between head management and field offices in the process of planning and budgeting, and hence, increase the commitment to the plan.
- Get approval and consensus of the ministry in the early planning process, and hence, reduce the political intervention level in the latter budgeting process.

During the process of reengineering, the Financial Division of BPDB should alter its role from just assigning the national budget in BPDB to executing the usual corporate finance operations. In the aspect of budgeting, Financial Division should be involved in decision-making, not from the view of allocating available budget, but from the view of the BPDB-wide strategic direction. In the aspect of financing, it should seek a diverse financing route, appealing the government to mitigate the current limited financing scheme.

b) Restructuring the Management Control Systems

Current management control of field office operation is based on 'result control'. But, this control system is fully applied to only a part of offices that are under SBU management practice.

The SBU management scheme started more than three years ago, a fact that suggests that the time has come that the effect of this system should be examined. BPDB should early review the current SBU and its effects, and after necessary adjustments, should apply the system to all offices. In the result control system under SBU, BPDB should fully utilize the planning and budgeting process, discussed above, and improve the quality of targets (i.e., should be worth challenging as well as feasible).

Meanwhile, the philosophy of TQM—the reinvention of the management process through continuous improvement activities—suggests that management control should not only be based on the results but also integrated with the quality of process and activities that lead the results. BPDB should make the following activities/examinations to integrate the process quality into current management control systems:

- The top management shall visit, observe and discuss with field offices and comprehend by themselves the real picture and real process of field level operation/management.
- The top management shall define the desired management process in field offices (See appendix 1-5).
- BPDB shall establish the system and organization to objectively evaluate the process quality (i.e., establish management auditing team, define its roles and allocate necessary authority and resources)
- BPDB shall make appropriate linkage between the achievement in process/management quality and the reward system.

(3) Revision of the Action Plan

As results of a series of analyses here above, the current action plan should be revised as follows.

(a) Incremental changes of the current system—already revised; in charge of the Office

- Revise the existing training (4.2.1(1), 4.2.3(1))
- Plan to establish the new training program targeting the top management (4.2.3(2))

- Revise the ACE Meeting（4.2.1(2)）
- Revise the operational rule of Task Team meetings（4.2.1(2)）
- Issue the Question and Answer handbook for problem solving activities（4.2.4(1)）
- Issue the Annual Promotion Activity Report（4.2.4(2)）

(b) Changes of the current system, requiring the coordination with several organizations —not yet revised; in charge of appropriate organization(s) after coordination

- Draft the guidelines to establish/revise/abolish training programs（4.2.3(2)）
- Restructure the overall training programs（4.2.3(2)）
- Promote SBU/ Corporatization in BPDB（4.2.5(2)）

(c) Change in management systems—not yet revised; in charge of the top management

- Reinvent the performance evaluation and promotion system for management（4.2.2(2)）
- Restructure the reward system（4.2.4(1)）
- Establish the management auditing system/ organization（4.2.4(2)）
- Establish management quality/process evaluation method, considering the usage of the third party experts （4.2.5(2)）
- Establish the rule and scheme of the management quality improvement fund（4.2.5(2)）
- Reengineer the business planning and budgeting system; restructure the finance division to meet the role in the corporate finance（4.2.5(2)）
- Start discussion with the ministry for diverse financing（4.2.5(2)）

4.3 Technology Transfer for O&M activities in Distribution Sector

In this activity, the expert visited Mymensingh and Tangail Distribution Circle first to see the actual O&M activity in the field. After that, the expert had discussion with counterparts about three topics, such as O&M standard, the reduction of outage by accidents and the system loss reduction, and gave them advices and recommendations.

4.3.1 Organization of Distribution Division in BPDB and its Business

Distribution in Bangladesh is carried out by five organizations, BPDB, WZPDCL, DESA, DESCO and REB.

The organization chart of Distribution sector in BPDB is shown below. The distribution area of BPDB is divided into 6 zones and each zone is also divided into a number of areas. Each zone and area has its zonal office and area office (Distribution Circle). Electric Supply Unit (ESU) under the area office is in charge of affairs of O&M and customer relations. Under the ongoing power sector reform program, it is planning to corporatize all zonal offices by June 2006[1].

The performance of each office is reported monthly by MOD that has performance indexes such as the system loss, C/I and the accounts receivable etc.

The SBU system has been implemented in the distribution sector since 2001. Distribution Circles under the SBU set the annual achievement target for some performance indexes and make PTA contract with BPDB.

Though there has been no delegation of power with implementing SBU, the incentive scheme that has been linked with the performance has been newly installed in the management of BPDB's distribution sector.

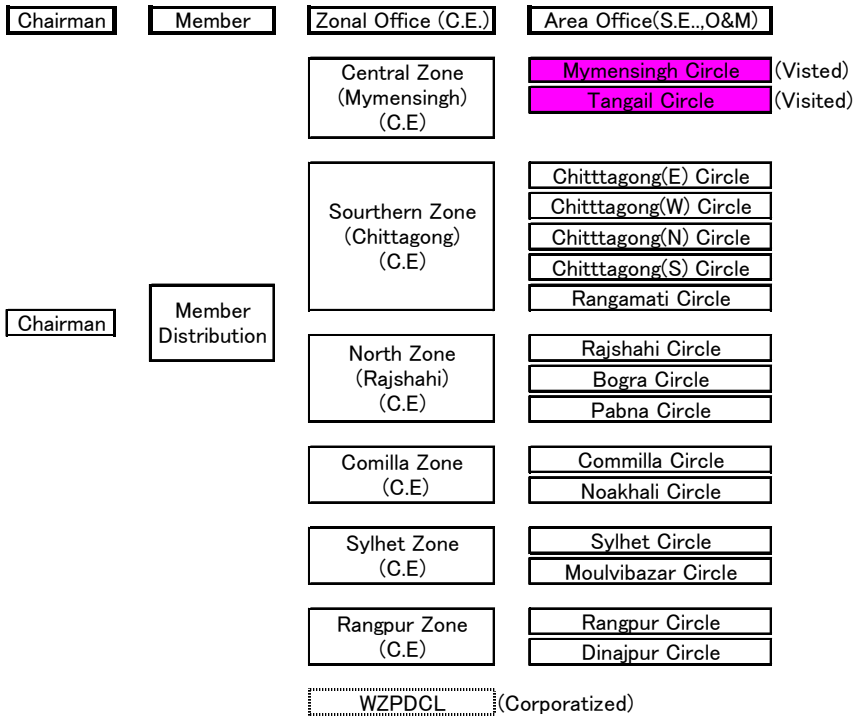


Figure 4-3-1 Organization of Distribution Sector in BPDB

[1] 3-Year Road Map for Power Sector Reform : Power Division, MPE&MR, May 2003

4.3.2 Formulation of O&M Standard and Action Plan for its Dissemination & Implementation

(1) Present Condition and Issues

(a) Organization Chart of Mymensingh Circle

The organization Chart of Mymensingh Circle is shown as follows. There are 22 ESUs under the area office and they are responsible for all kinds of distribution services.

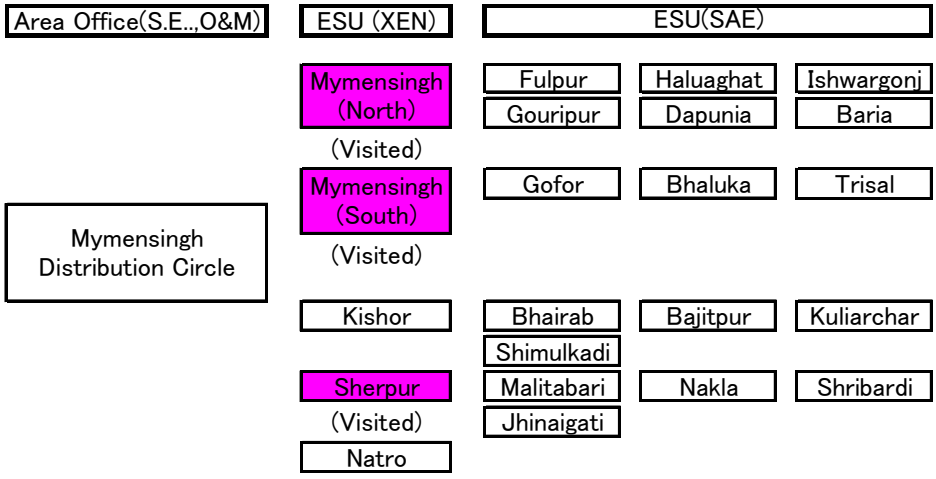


Figure 4-3-2 Organization Chart of Mymensingh Circle

(b) O&M activity in Mymensingh Circle

As described above, the experts visited Mymensingh and Tangail Circle to see the O&M activity in the field. As the former short-term experts for distribution reported, the O&M activity in Mymensingh Circle, especially Mymensingh north and south ESUs, has been improved dramatically with TQM activity. The main activities that were implemented in these ESUs after starting TQM activity are as follows.

- Scheduled and preventive maintenance for the distribution line and substations
- Enhancement of maintenance in accident-high seasons such as rainy season
- Formulation of QC circles for each 11kV feeder and implementation of QC circle activities (Balancing the unbalancing load of transformer etc.)
- Fostering safety awareness

With the comparison of Mymensingn and Tangail and discussion with concerned people, the expert pointed out factors that contributed to the improvement of O&M activity in Mymensingh Circle as below.

- Management's commitment to TQM activity

  Dissemination activities of TQM by Mr. Harim, who was a participant of Country Focused Training in Japan and XEN of Mymensingh North ESU, influenced his subordinates and other middle management employees. As a result, TQM activity in Mymensingh Circle became organized activity with the commitment of managers.

- Synergy of SBU and TQM

  After the implementation of SBU, TQM activity became more active as a tool for target achievement activity.

(c) Manual for O&M Activity

BPDB has the O&M manual based on the concept of the preventive maintenance[2] but almost all the people with whom the expert discussed suggested that actual O&M activity in the field doesn't follow this manual. Their suggestion was confirmed by the fact that even the improved O&M activities in Mymensingh Circle are described in the existing manual.

It is clear that there is a lack of management and problems in the operation system of the field activity and they should be improved first for appropriate O&M activity.

(2) Advices and Recommendations

The understanding of the expert is that for the improvement of the present O&M activity it is more important to make the activity follow the O&M manual than it is to make a new O&M standard. With this understanding, the expert made advices and recommendations to promote the implementation of O&M activity that follows the manual.

(a) Discussion and Cause Analysis with Counterpart

One of the root causes of the neglect of the manual in field activity is that staff and workers in the field feel no need to follow the manual and there is no motivation to follow it. The experts made discussion and cause analysis for this situation with counterpart and its results are listed below.

- Insufficient monitoring system
- Lack of regard for the preventive maintenance in managements
- Insufficient manual management (No responsibility, No follow-up)
- Lack of manual publicity in the field office (non-delivery, unread, etc.)

[2] "Manual for Operation & Maintenance of Distribution System Vol1,2"

The expert made advice and recommendations based on this discussion as follows.

1) Monitoring and Management of O&M activity

Because monitoring and management of the activity is essential to make preventive O&M activity sustainable, the expert suggested that it is the first step of BPDB to follow the monitoring procedure thoroughly that is shown in the existing manual. In this suggestion, the expert emphasized that middle management should review its responsibility and make efforts to develop its leadership and management capacity because monitoring is one of its duties.

2) Support for motivated people from middle management

The successful Mymensingh case shows us that the commitment of C.E., S.E. and other middle management motivates the lower level management in the field and the activities of motivated people have synergistic effects on each other and will be developed into organized and sustainable preventive O&M activity. On the other hand, it is a fact that there is a participant of Country Focused Training who is motivated but can't take actual action because of lack of support from his boss.

Though employees in middle management in the field have important roles to motivate other employees and make the improved activity organized and sustainable, it seems that they feel most reluctant to change their mind-set in BPDB. The expert suggested that BPDB should take measures to change their mind-set such as training and monitoring their performance.

3) Awareness of Manual

As mentioned above, insufficient management and lack of publicity of the manual in the field are also pointed out as reasons for the neglect of the manual in the field activity.

The expert recommended that BPDB should make effective use of the training and OJT for the awareness of manual and its concept. As a first step, it is also recommended that the program for the introduction of manual and its concept of preventive O&M should be added to the existing training program.

The expert also suggested that the management improvement program should be implemented in BPDB because awareness of appropriate management should be shared and appropriate monitoring system should be developed in BPDB to improve the insufficient management.

(b) Synergy of SBU and TQM

There is the synergy of SBU and TQM to improve the O&M activity because Distribution Circles under SBU have strong incentives to apply TQM as the tool for their target achievement and, as a result, active TQM activity improves the O&M activity.

The expert advised SBU Core Monitoring Team and TQM Promotion Office, which are responsible for SBU and TQM respectively, that they should collaborate to get maximum benefit from their activities.

(c) Action Plan for Dissemination & Implementation of O&M Standard

The Action Plan should focus on how to implement O&M activity that follows the manual. Because the successful Mymensingh case shows that TQM activity is very effective for the implementation of such activity, the action plan for TQM dissemination by TQM Promotion Office was applied to the action plan for dissemination and implementation of O&M standard.

4.3.3 Reduction of Frequent Outage by Accidents and Amendment of O&M manuals

(1) Methodology

The reliability of the power supply is evaluated generally by SAIDI (System Average Interruption Duration Index) and SAIFI (System Average Interruption Frequency Index). For the reduction of the frequency of interruption, it is important to take the preventive O&M activity and effective countermeasures with the feedback of the fault data analysis. For the reduction of the duration of interruption, it is important to establish the appropriate emergency system for the prompt detection and isolation of fault point and prompt recovery of supply.

From these points of view, the expert surveyed the present condition, especially the following items, and made advices and recommendations.

- Management of reliability by data
- Fault data collection
- Preventive O&M activity and Feedback of data analysis to the O&M activity
- Emergency system in the field office

(2) Present Condition & Issues

(a) Reliability Index

MOD has no reliability index. On the other hand, in PTA, there are two reliability indexes as performance index[3] but they aren't in use because it is preparation period for the data collection.

Table 4-3-1 Reliability Index in SBU

Index	Description of Formula
The total hour of Interruption per month	(Hour of Interruption for 12 months)/12
Total mWh of Interrution per month	(Total MWH Lost for interruption for 12 months) / 12

In Mymensingh Circle, SAIDI and SAIFI of each 11kV feeder are calculated as part of QC circle activity.

From these facts, it seems that reliability has been less important for BPDB but with the implementation of TQM and the management improvement activity the importance of BPDB becomes recognizable.

(b) Data Collection

Actual operation data is collected at a distribution substation. Main collected data are as below.

- Operation data of every hour (Input/output Energy, Voltage etc.)
- Fault data (Time, Opened CB etc.)
- Maintenance data

These data are recorded in the notebook (Photo 4-3-1) and reported to ESU monthly.

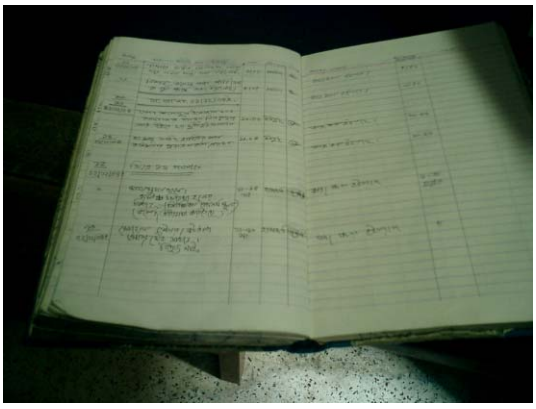



Photo 4-3-1 Collection of Operational Data

[3] Implementation of Performance Target Achievement in PDB

Though the necessary data are collected, the present data collection system used for result reporting should be improved for effective data management and analysis.

(c) Preventive O&M based on Data Analysis

As mentioned above, BPDB has the O&M manual based on the concept of the preventive maintenance but actual O&M activity in the field doesn't follow this manual.

In Mymensingh Circle, scheduled and preventive O&M activity such as tree trimming and checking the load of transformer have been implemented and collected data are visualized using graphical tools but even the activity in Mymensingn has not reached the sufficient data analysis activity.

(d) Emergency System

In case of interruption or accidents, the substation operator or customer provides ESU with the necessary fault information and the maintenance team, which works in three shifts, is dispatched to fault point.

(3) Advices and Recommendations

The expert recognized that it was the primary reason of low reliability of BPDB that the improvement of system reliability was of low priority and there were no actions taken for it, such as preventive maintenance. The expert made advices and recommendations for awareness of system reliability and the data based activity that would be necessary for the prevention of accidents.

(a) Setting the Reliability Index

To foster the consciousness of the improvement of the reliability, the expert recommended that BPDB should introduce the reliability index as a performance index to all Distribution Circles.

The expert also recommended that these indexes should be set with consideration of the present condition of Bangladesh power sector that faces frequent planned power outage. For example, the index from the result of the outage by accidents in distribution equipment can be used for the internal performance evaluation of the distribution sector and the index from the result of the outage by all causes can be used for the evaluation of the quality of BPDB's service.

(b) Preventive O&M activity based on data analysis

Though the preventive O&M activity is important to reduce outages caused by accidents, it has not been implemented in the field of BPDB while they have the O&M manual for the preventive O&M. As reported in the previous clause, the expert made advices for the implementation of O&M activity.

Additionally, these preventive O&M activities should be developed into activity that is based on data analysis because it would be most effective to prevent a similar accident by the detailed analysis of causes, fault points and fault equipment of previous accidents. Data should be transformed into useful information for judgment for the next action. Because BPDB has almost no experience in data based activity, the expert explained its outline and benefit with simple examples.

As the first step of the implementation of data based activity, it should be tried out in the offices that implemented preventive O&M activity with TQM and the importance of data management and analysis should be explained simply in the training program of TQM.

As a secondary effect of data based activity, accountability of the performance in BPDB is expected to improve.

(c) Preparation for Data Based Activity

As the immediate action for the improvement of the data collecting system, the expert recommended the review of items, formats and procedure in the present data collection system with consideration of required data and analysis for the reliability improvement.

For example, if the typical fault causes are classified for the accident report, it would be useful for not only the efficiency of reporting but also the cause analysis.

(d) Data Management System

To make the data based activity effective and sustainable, a computerized data management system will be necessary in the future. This system should integrate the information shown in Fig 4-3-3 and be helpful not only for O&M activity in the field but also management decision making.

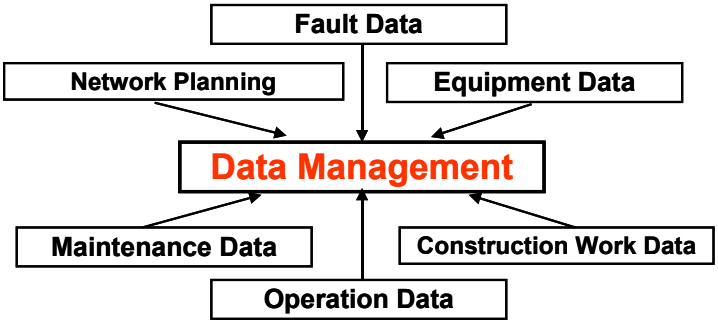


Figure 4-3-3 Data Management System

(e) Others

For distribution network configuration, circuit length is very long and there are not many section switches or interconnection switches. In case of the outage, the affected area enlarges because it is impossible to sectionalize. In addition, the restoration duration of the outage is lengthening. The expert recommended reviewing the present design standard for the distribution network from the aspect of the reliability improvement and cost effectiveness.

(4) Manual for Reliability Improvement

It is the first manual to implement the O&M activity, following the existing manual. In the future, Distribution Circles should develop their activities according to local conditions and compile them in local manual.

4.3.4 Distribution System Loss Reduction

(1) Methodology

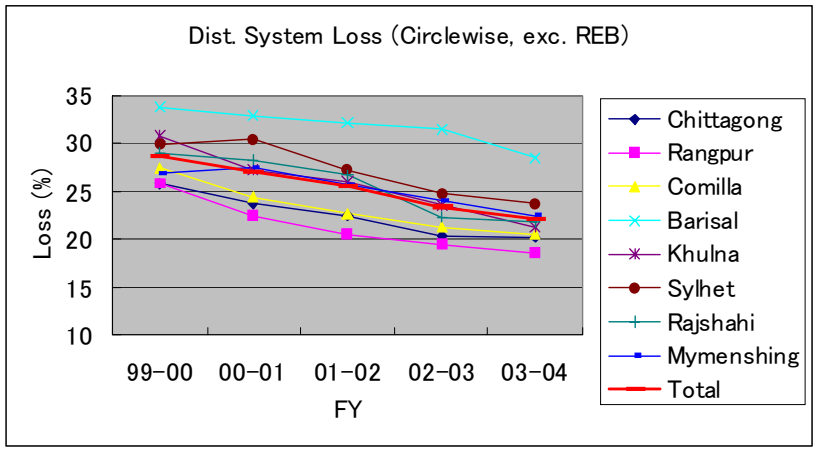
There are various causes of distribution system loss. For example, overload and unbalanced load causes technical loss and defective meters, illegal activity such as electricity theft and meter tampering and human factors such as miss reading and billing causes non-technical loss. Because the countermeasures for the reduction of the system loss vary by causes, the first step is to measure the actual loss and analyze the causes for the loss reduction.

From these points of view, the expert surveyed the loss analysis in BPDB and the activities for the loss reduction first and made advices and recommendations.

(2) Present Condition of Distribution System Loss

The 5-years trend of the distribution system loss of each distribution circle is shown in graph 4-3-1. Though the system loss of BPDB, which average is 22% (FY '03-'04), has remained at a high level, it has decreased at about 6% annually in these 5 years.

The distribution system loss in BPDB usually means the deduction of the billed energy except the supply for REB from the input energy to 33kV bus line.



Graph 4-3-1 Distribution System Loss in BPDB

(3) Cause Analysis and Activity for Loss Reduction

(a) Discussion with Counterpart

The expert had a discussion with counterparts about the non-technical loss in BPDB because it is important to understand the social and cultural background. Counterparts recognized that there were two main causes of the non-technical loss, the first is illegal activities that are caused by low moral of some customers and employees of BPDB and another is the improper operation of meter reading and billing such as the estimate meter reading. Improper monitoring was also pointed out as one of the causes of non-technical loss. The result of this discussion is attached as appendix 1-6.

The system planning is the responsibility of the system planning division in the head office and Distribution Circles and ESUs have no responsibility for the system planning. In the system planning, the constant increase rate is applied to the demand forecast and about 10% loss is allowed in the distribution system planning. There's fear that such uniform planning might bring a system that would not match the future demand and have high technical loss by the overload or voltage drop.

Additionally, any phenomena that are not the responsibility of the distribution sector, such as the voltage drop in the bulk transmission system, cause a technical loss of distribution.

(b) Activities in BPDB for Loss Reduction

BPDB takes some action for the loss reduction in the distribution system. The expert visited ESU and the project offices to see the field level activity and BPDB's projects.

a) QC Circle Activities

For the technical loss reduction, the balancing load of the transformer is carried out as the QC Circle activity in Mymensingh. Members of the QC Circle check the load condition of transformers on site at the peak load time (around 19hrs) voluntarily and balance any unbalanced load they find. With the implementation of the preventive maintenance, the checking of loose connection is also carried out in the patrol.

Though these activities can't reduce the loss drastically, such a small but sustainable activity in the field level is important for not only the loss reduction but also the maintaining of improved condition.

b) Preventive Measure for Illegal Action

Because most of the illegal actions occur around the meter, BPDB takes preventive measures around the meter such as outside metering, using meter box, box sealing and the earth of meter box.

Though the deterioration of meter accuracy is one of the causes of non-technical loss, periodical accuracy checking or replacement of meter is not executed in BPDB after meter installation.

Photo 4-3-2 Meter Installing

c) Project

Computer Billing and Prepaid Metering Project is only implemented in some model areas in BPDB. It is true that these systems are effective for the reduction of non-technical loss but the huge investment is required to expand them all around BPDB. BPDB should evaluate the feasibility and cost effectiveness of these projects carefully before the expansion of the projects.

(4) Advices & Recommendations

(a) Proper Monitoring

It is very important to prepare the appropriate operation and monitoring flow chart of the meter reading and billing because there are many chances for corruption in these works.

Though BPDB has a manual that includes the procedure of the meter reading and billing[4], it is the fact that the monitoring does not follow the manual thoroughly and it allows corruption and cheating as counterparts pointed out.

The expert attached too much importance on the changing mindset and capacity building of the middle managers as 4.3.2 (2) because they have responsibilities of monitoring of the field works.

(b) Quality Control of Meter

The expert recommended the periodical accuracy checking of the meter for quality control. It is helpful to detect defective meters and might induce a secondary effect as below.

a) Effective Meter Checking

It would be possible to know the trend of the aged deterioration of the meter and the quality of manufacturers through the analysis of manufacturers, elapsed years and fault causes of defective meters. Such information is helpful to make the meter checking efficiency. For example, the checking interval would be set depending on the elapsed years or manufacturers.

b) Periodical Replacement

The periodical replacement of meters is very effective for the prevention and destruction of defective meters. An adequate replacement period is important and it would be provided by the analysis of aged deterioration of the meter as above.

[4] Commercial Operation Procedures for ESU

Though there are some barriers to the periodical meter replacement in the present condition, BPDB should consider its introduction in the future.

(c) Review of the operation

There are some activities in the review of the operation such as the outside metering and the meter box sealing. The expert recommended that this kind of review should be executed more flexibly, responding to the regional conditions.

For example, in an ESU that has difficulty executing monthly meter reading and billing because of the low-density of customers and the shortage of manpower, adequate staff assignments should be done first but, if it is impossible, the review of operations for the efficiency such as outsourcing and one point metering of the village should be considered.

4.4 Wrap-up Seminar

Wrap-up Seminar, hosted by JICA Bangladesh Office and BPDB, was held at the end of the experts' activity. The agenda of the seminar was as below.

① History & Progress of TQM in BPDB (by counterparts)
② TQM activity in Mymensingh circle (by Mymensingh circle)
③ Experts' Activity Report (by JICA short-term experts)

Presentation materials are attached (See appendix 1-7).

4.5 Training Course in Japan

The list of participants and the training curriculum are attached as appendix 2-1. Participants were selected from

- Persons who are engaged in TQM promotion in BPDB such as TQM Promotion Office and Training Center
- Middle Managers from field offices or organizations that is just starting TQM activities for the improvement of management
- Young engineers of Mymensingh Distribution Circle

For the object of the training course, this selection was considered reasonable and proper.

Lectures for TQM method and development of management skill were set the main topics in this training because the acquisition of these skills and knowledge is a common goal for all participants. The summary of the training is shown as follows.

[Agency] Tokyo Electric Power Co.
[Duration] Jan 23rd, 2005 - Feb 18th, 2005
[No. of Participants] TQM Course : 6 persons (BPDB 3, PGCB 2, Ministry 1)
Dis. O&M Course : 4 persons (BPDB 3, WZPDCL 1)

Participants and lecturers had active discussions in the training and it was evaluated that participants got useful technology and know-how of Japan effectively in one month. Participants selected lectures for TQM method and development of management, "QC Method" and "Basic Management Training", as the most beneficial subjects and showed their willingness to learn more specific and detailed knowledge or skill about TQM in the training evaluation (appendix 2-2). It shows that participants promoted better understanding of TQM and recognized the importance of management in this training.

Materials of the action plan presentation are attached as appendix 2-3. The presentation was held on the last day of the training and concerned people in Bangladesh such as JICA Bangladesh office, JICA long-term expert and higher officers of Ministry, BPDB, PGCB and WZPDCL joined it through JICA-Net. In the Q&A session, they had active discussion about participant's action plan and issues that they faced in Bangladesh. Tele-conference by JICA-Net seems to be very effective to erase barriers that discourage participants from implementing their action plan in Bangladesh. Such barriers typically include fallen motivation, shortage of support from the boss and no monitoring of their activities.

Photo 4-5-1 Discussion in training course

Photo 4-5-2 Action plan presentation

The activity for the improvement of BPDB is just started along the right lines with the leadership of Member Admin and participants of training course in Japan, however, it is expected that issues to be tackled will arise continuously in the process

of improvement and become more specific and essential. In future training course, it be more important than before to clarify and specify the target of training in Japan with the full understanding of the actual situation and issues of counterpart.

One of the participants commented in the evaluation of the training that the subject on "Electrical protection devices engineering" should be added to the Distribution Course. It was not possible to add the subject because of the time constrain. It should be considered to add the subject or not in the arrangement of future training course.

4.6 Project Completion Report

The experts summarized the project since 1999 in the project completion report. (See appendix 3)

Appendix 1

Materials on Technology Transfer in Bangladesh

Appendix 1-1

Presentation and Discussion Materials with the Top Management

Nov.27, 2004
Shigetoshi Otaru,
JICA Short-term Expert in TQM

Dear Sir,

Initial Assessment of TQM Activities in BPDB—for Member Administration

Thanks to your strong commitment and involvement in TQM promotion activities, the concept of TQM and its importance are now permeated throughout BPDB. It is a significant achievement that now most PDB officials have some idea of TQM as the management renovation tool and its importance. The TQM Promotion Office, thanks to some (but not all) strongly committed personnel, fulfill satisfactory role to plan and implement effective activities (e.g., continuous activities—task team meeting and ACE meeting, and eventual activities—QC conventions)

However, for most of employees, the TQM is still in the 'formal' learning process where to get knowledge but not to transform into practice. One of the factors of is insufficient sense of crisis among management (ACE for example). It is advised that you will instill sense of crisis that improving the management quality is the only way for BPDB to survive in the power market deregulation, and that the TQM is the useful tool for this purpose. TQM is the tool for practice, so it is important that every management should involve in 'practice process'.

The other important issue to promote TQM is that, under the current PDB's decision-making system, it is still difficult that employees can experience the whole PDCA process and learn from it. This problem may come from 1) structural problem and 2) lack of management commitment. It is rather difficult to resolve structural/political problem, but you can contribute to increasing the management commitment. The expert also plans to recommend to JICA/JBIC to create new scheme to empower management and increase commitment.

The promotion of TQM still relies on a few resourceful personnel. The existence of these personnel and continuous support of her/him will strongly affect the level of field activities. To secure the sustainability and bottom-up of the TQM, you may consider the following option:

- Identify resourceful person and empower her/him, placing in the right place
- Build personnel system where these persons are fairly evaluated and encourage others to become this type of personnel.
- Create management control systems to encourage (especially management) personnel to commit to management improvement.
- Empower people financially and assign corresponding responsibility—increase independency.

Meeting with the Chairman and the Board Members

Dec. 8, 2004

JICA Short-term Experts

Objectives of the meeting

- Report on the situation in Mymensingh and Tangail
- Discuss issues and challenges to further promote the TQM program
- Encourage the top commitment and leadership in management changing

Situation in Mymensingh

- Great Achievement in changing mind-set. Especially worker level.
- Well functioning leadership structure (SE—XEN—QC facilitators)
- Some weakness in data management

•Achieved the first step goal (mental change)
•Should proceed to the next step (realize benefit)

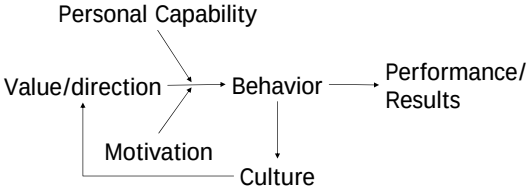
Situation in Tangail

- Still in the old mindset—especially of management class.
- Weak leadership structure—QC facilitators have some good idea, but cannot implement them
- A few good activities done by lower workers (voluntary base)

•In the process of the first step but weak possibility to achieve
•Should motivate/encourage the change

Why so different?

- TQM is the CHANGING PROCESS of working style
- Why some can change behavior and some can't?—behavior model



Current Management in PDB

- Only address to results control (e.g., MOD) and no address to lack of direction/value and shortage of motivation.

Only Rely on the qualified persons in field offices
—wide gap in performance quality

What is the current challenges?

- Field Offices need:
  - Concrete Direction to be sought
  - Control System for Motivation (bad and good)

  ⇨ **Importance of Policy Management**
- Whose task?

  TOP MANAGEMENT!!

The Role of Top Management

- In the changing process, the management is required bold leadership
  - **Build a sense of crisis**
  - **Initiate own behavior—show the role model**
  - Determine strategic direction/ take responsibility
  - Delegate and assign sufficient resources to sites
  - Review activities from managerial viewpoint
  - Engage in public relations with important stakeholders

Sense of Crisis

- First, you should recognize the crisis of BPDB by yourself
  - Power Sector has already made significant impact
  - Int'l agencies are not looking your performance, but looking at your **management quality**
  - Without management improvement NOW, better asset will be transferred—see the REB case—asset left has less value

Management is about People

- Change you mindset:
  - (Past-Present) Controlling/ monitoring results
  - (Future) Influencing the behavior of your people
- Start from understanding your people!
  - Have you visited all sites?
  - Have you discussed openly with your people??
- Think through 1)What activities are desired, and 2) What activities are likely
- Describe direction (HOSHIN) and how to achieve it (KANRI)

(Conclusion) Initiate with your action

- Crisis is here—without your initiative, PDB will be vanished.
- Start from understanding the 'reality' of your people
- Describe Desired Activity of them (HOSHIN), Think How you can influence on them (Strategy), and How you can control the quality and monitor it (KANRI)
- Your resource is sufficient?

(Proposal) Start from your training

- HOSHIN KANRI Training
- Practical Training that you actually solve your own problem using QC methods
- Focus on actual 'practice' of your problem solving
- Japan can assist the formation and implementation of the training program

Appendix 1-2

Curriculum of TQM Training Programs

BANGLADESH POWER DEVELOPMENT BOARD

Conference Room, Office of the Controller of Accounts & Finance, Dhaka.

SUBJECT : Class Programme of " Total Quality Management (ISO Standard)" Training course for Chief Engineers & equivalent "1ST Module"
Duration : 14.02.2004 & 15.02.2004
Venue : Conference Room, Office of the Controller of Accounts & Finance, "Bidyut Bhaban," 1, Abdul Gani Road, Dhaka.
Course Co-ordinator : Engr. S.M . Haider Ali, Director, TQM Promotion Office, Dhaka.
Time : 1st Session : 9.00 to 10.20, 2nd Session-10.20 to 11.40, Tea-Break 11.40 to 11.50, 3rd Session : 11.50 to 13.10
Lunch & Prayer Break : 13.10 to 13.40, 4th Session : 13.40 to 15.00 .

Date & Day	1st Session, Subject & Teacher	2nd Session, Subject & Teacher	Tea-break	3rd Session, Subject & Teacher	Lunch & prayer break	4th Session, Subject & Teacher
14.02.2004 Saturday	**Registration & Inauguration** Engr. S.A. Mayeed, Chairman, BPDB, Dhaka. Engr. Rafiqul Islam Bhuiyan General Manager (Training). Engr. S.M Haider Ali, Director TQM Promotion Office	**The Total Quality Concept : An overview** Mr.Md. Mominul Haque Bhuiyan, Member (Admn), BPDB, Dhaka.	Tea-break	**5-S Technique for Work Environment** Engr. K.A.Bari Executive Engineer, TQM Promotion Office, BPDB, Dhaka.	Lunch & prayer break	**Introduction to Quality Circles & how they work** Engr. Kazi Matiur Rahman, Project Co-ordinator (CE), PRP, BPDB, Dhaka.
15.02.2004 Sunday	**Overview of Total Quality Tools.** Engr. M.A. Hasnat, Deputy Manager, Haripur Power station, BPDB, Narayanganj.	**Kaizen (Continuous Improvement)** Mr. Baig Nasir Jahan , Asstt. Director (Security), CSD, BPDB, Tongi.	Tea-break	**Case-Study** Engr. Ashok Kumar Ghosh, Asstt. Engineer,Dte.of System Planning, BPDB, Dhaka.	Lunch & prayer break	**Closing Ceremony** Engr. S.A.Mayeed, Chairman, BPDB, Dhaka. Engr. Rafiqul Islam Bhuiyan General Manager (Training),

10.02.2004
(S.M. Haider Ali)
Director
TQM Promotion Office
Date :10 /02/2004

Memo No : 35 / BPDB/TQM / 113/2003
Copy for information and necessary action to –

1. Controller (Accounts & Finance), BPDB, Dhaka.
2. Director, Directorate of Training and Carrier Development, BPDB, Dhaka.
3. CSO to Chairman, BPDB, Dhaka.
4. Director, TQM Promotion Office, BPDB, Dhaka & Course Coordinator
5. Deputy Secretary to Member Admn. BPDB, Dhaka.
6. Mr. .....Trainer.

10.02.2004.
(Nasrin Perveen)
Deputy Director

hp :D: TQM Check Sheet

BANGLADESH POWER DEVELOPMENT BOARD

Conference Room, Office of the Controller of Accounts & Finance, Dhaka.

SUBJECT : Class Programme of " Total Quality Management (ISO Standard)" Training course for Chief Engineers & equivalent "2 nd Module"
Duration : 17.07.2004 & 18.07.2004
Venue : Conference Room, Office of the Controller of Accounts & Finance, "Biddut Bhaban," 1, Abdul Gani Road, Dhaka.
Course Co-ordinator : Engr. S.M . Haider Ali, Director, TQM Promotion Office, Dhaka.
Time : 1st Session : 9.00 to 10.20, 2nd Session-10.20 to 11.40, Tea-Break 11.40 to 11.50, 3rd Session : 11.50 to 13.10, Lunch & Prayer Break: 13.10 to 13.40, 4th Session : 13.40 to 15.00.

Date & Day	1st Session	2nd Session, Subject & Teacher	Tea-break	3rd Session, Subject & Teacher	Lunch & prayer break	4th Session, Subject & Teacher
17.07.2004 Saturday	**Registration & Inauguration** Engr. Nuruddin Ahmed, General Manager (Training). BPDB, Dhaka. Engr. S.M Haider Ali, Director TQM Promotion Office	**TQM & Human Resource Development** Mr. Md. Mominul Haque Bhuiyan, Member (Admn), BPDB, Dhaka.	Tea-break	**Quality Culture** Mr. Md. Mozammel Haque Superintending Engineer, O & M Circle , BPDB, Mymensingh,	Lunch & prayer break	**Quality & Competitiveness** Engr. Kazi Matiur Rahman, Chief Engineer, Generation, BPDB, Dhaka.
18.07.2004 Sunday	**Establishing a customer Focus: Customer Satisfaction & Retention** Engr. Enayetur Rahman, Project Co-ordinator (C.E), PRP office, BPDB, Dhaka.	**Total Employee Involvement & Empowerment** Mr. Baig Nasir Jahan, Asstt. Director (Security), CSD, BPDB, Tongi.	Tea-break	**Leadership, Team Building & Team Work** Mr. Md. Mominul Haque Bhuiyan, Member (Admn.), BPDB, Dhaka.	Lunch & prayer break	**Closing Ceremony** Engr. S. A. Mayeed, Chairman, BPDB, Dhaka. Engr. Nuruddin Ahmed, General Manager (Training), BPDB, Dhaka.

28/9/2008
(S.M. Haider Ali)
Director
TQM Promotion Office

BANGLADESH POWER DEVELOPMENT BOARD

REGIONAL TRAINING CENTRE, TONGI, GAZIPUR

SUBJECT : Class programme of "Total Quality Management (ISO Standard)" Training Course for Superintending Engineer/Director/Executive Engineer/Deputy Director.

DURATION. : 02.10.2004. to 09.10.2004.

VENUE : REGIONAL TRAINING CENTRE, BPDB, TONGI, GAZIPUR.

Course Co-ordinator : Md. Abdul Wahab Khan, Dy. Director (XEN). RTC, BPDB, Tongi, Gazipur.

Time : 1st Session : 9.00 to 10.20. 2nd session -10.20 to 11.40. Tea-Break 11.40 to 11.50
3rd Session-11.50 to 13.10. Lunch & Prayer Break : 13.10 to 13.40. 4th Session-13.40 to 15.00.

Date & Day	1st Session, Subject & Teacher	2nd Session, Subject & Teacher	Tea-break	3rd Session, Subject & Teacher	Lunch & prayer break.	4th Session, Subject & Teacher
02.10.2004 Saturday.	**Registration & Inauguration** Engr. Md. Khijir Khan, Director, Dte. of Training & Career Development, BPDB, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.	**Registration & Inauguration** Engr. Md. Khijir Khan, Director, Dte. of Training & Career Development, BPDB, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.	Tea-break	**The Total Quality Concept: An Overview** Engr. Md. Mozammel Haq, Superintending Engr., O & M Circle, BPDB, Mymensingh.	Lunch & prayer break.	**Quality Culture** Engr. Md. Mozammel Haq, Superintending Engr., O & M Circle, BPDB, Mymensingh.
03. 10.2004 Sunday.	**TQM & Human Resource Development** Mr. Md. Mominul Haque Bhuiyan, Member (Admn.) BPDB, Dhaka.	**Planning & Implementing TQM Vision & Mission** Mr. Md. Mominul Haque Bhuiyan, Member (Admn.) BPDB, Dhaka.	Tea-break	**5-S Technique for Work Environment.** Engr. Sayeed Akram Ullah, SDE, Dte. of Design & Inspection-1, BPDB. Dhaka.	Lunch & prayer break.	**5-S Technique for Work Environment.** Engr. Sayeed Akram Ullah, SDE, Dte. of Design & Inspection-1, BPDB. Dhaka.

Date & Day	1st Session, Subject & Teacher	2nd Session, Subject & Teacher	Tea-break	3rd Session, Subject & Teacher	Lunch & prayer break.	4th Session, Subject & Teacher
04. 10.2004 Monday	**Introduction to Quality Circles and how they work** Engr. Enayetur Rahman, Co-ordinator (CE), PRP, BPDB, Dhaka.	**Introduction to Quality Circles and how they work** Engr. Enayetur Rahman, Co-ordinator (CE), PRP, BPDB, Dhaka.	Tea-break	**Total Employee Involvement and Empowerment.** Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.	Lunch & prayer break.	**Leadership, Team Building & Team Work.** Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.
05.10.2004 Tuesday	**Quality and Competitiveness** Chief Engr. (Gen.), BPDB, Dhaka	**Establishing a Customer Focus : Customer Satisfaction and Retention** Chief Engr. (Gen.), BPDB, Dhaka	Tea-break	**Overview of Total Quality Tools** Engr. Abdul Wahab Khan, DD (XEN), Regional Training Centre, BPDB, Tongi.	Lunch & prayer break	**Overview of Total Quality Tools** Engr. Abdul Wahab Khan, DD (XEN), Regional Training Centre, BPDB, Tongi.
6.10.2004 Wednesday	**Communication / Interpersonal Relations /Conflict Management** Engr. Khurshid Ahmed, Superintending Engr. , CERS, BPDB, Dhaka.	**Internal Politics & Total Quality** Engr. Khurshid Ahmed, Superintending Engr., CERS, BPDB, Dhaka.	Tea-break	**Kaizen (Continuous Improvement)** Mr. Baig Nasir Jahan, Asstt. Director (Security) CSD, BPDB, Tongi.	Lunch & prayer break.	**Kaizen (Continuous Improvement)** Mr. Baig Nasir Jahan, Asstt. Director (Security) CSD, BPDB, Tongi.
07.10.2004 Thursday	**Benchmarking.** Engr. Md. Shahinul Islam Khan, Executive Engr. CERS, BPDB, Tongi.	**Decision Making and Problem Solving.** Engr. Md. Shahinul Islam Khan, Executive Engr. CERS, BPDB, Tongi.	Tea-break	**Case-Study** Engr. Ashoke Kumar Ghosh, Asstt. Engr, Dte. Design & Inspection-2 BPDB, Dhaka.	Lunch & prayer break.	**Case-Study** Engr. Ashoke Kumar Ghosh, Asstt. Engr, Dte. of Design & Inspection-2 , BPDB, Dhaka.

Date & Day	1st Session, Subject & Teacher	2nd Session, Subject & Teacher	Tea-break	3rd Session, Subject & Teacher	Lunch & prayer break.	4th Session, Subject & Teacher
08.10.2004 Friday	Weekend.					
09.10.2004 Saturday	**Creating Total Quality Corporate Environment.** Mr. Md. Mominul Haque Bhuiyan, Member (Admn.) BPDB, Dhaka.	**Creating Total Quality Corporate Environment.** Mr. Md. Mominul Haque Bhuiyan, Member (Admn.) BPDB, Dhaka.	Tea-break	**Closing Ceremony.** Engr. Md. Khijir Khan, Director, Dte. of Training & Career Development, BPDB, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.	Lunch & prayer break.	**Closing Ceremony.** Engr. Md. Khijir Khan, Director, Dte. of Training & Career Development, BPDB, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.

(Mr. Abdul Wahab Khan.)
Dy-Director (XEN),
Regional Training Centre, BPDB, Tongi.

Memo No-TR-14/2004

Date : /08/2004.

Copy for information and necessary action to :-

1. General Manager (Training), BPDB, Dhaka.
2. Director, Directorate of Training and Carrier Development BPDB, Dhaka.
3. Director, TQM Promotion Office, BPDB, Dhaka.
4. Manager/ Superintendent Engineer /Director, ...
5. Dy -Director, R.A.O. BPDB. Dhaka.
6. Mr. Birjish Hossain, Sub-Divisional Engineer, R.T.C. Tongi & Co-ordinator Mid level management
7. Training Course.
   Mr. ..... Trainer/Trainee.

(Mr. Abdul Wahab Khan.)
Dy-Director (XEN),
Regional Training Centre, BPDB, Tongi

BANGLADESH POWER DEVELOPMENT BOARD
REGIONAL TRAINING CENTRE, TONGI, GAZIPUR

SUBJECT : Class programme of "Total Quality Management (ISO Standard)" Training Course for Sub-Divisional Engineer./Assistant Engineer/Asstt. Director.

DURATION. : 01.11.2004. to 10.11.2004.

VENUE : REGIONAL TRAINING CENTRE, BPDB, TONGI, GAZIPUR.

Course Co-ordinator : Mr. Ferdus Hossain. Astt.Engeneer. Regional Training Centre, BPDB, Tongi, Gazipur.

Please send one set of Course Materials to Course Co-Ordinator for Participants.

Date & Day	1st Session. Subject & Teacher. 9.00 to 10.20.	2nd. Session. Subject &Teacher. 10.20 to 11.40.	Break. 11.40 to 11.50	3rd.Session. Subject & Teacher. 11.50 to 13.10.	Prayer break. 13.10 to 13.40.	4th.Session. Subject &Teacher. 13.40 to 15.00.
01.11.2004. Monday	**Registration & Inauguration.** Engr. Alauddin Khan. Director, Dte. of Training & Career Development, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka. Course Co-ordinator.	**Registration & Inauguration.** Engr. Alauddin Khan. Director, Dte. of Training & Career Development, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka. Course Co-ordinator.	Break.	**The Total Quality Concept: An Overview.** Engr. Jafar Ullah. Executive Engineer. Dte. of Programme, BPDB, Dhaka.	Prayer break.	**Quality Culture.** Engr. Jafar Ullah.Executive Engineer Dte. of Programme, BPDB, Dhaka.
02.11.2004. Tuesday.	**Quality and Competitiveness.** Engr. Kazi Matiur Rahman. Chief Engineer, Generation. BPDB, Dhaka.	**Establishing a Customer Focus : Customer Satisfaction and Retention.** Engr. Kazi Matiur Rahman. Chief Engineer, Generation. BPDB, Dhaka.	Break.	**5-S Technique for Work Environment.** Engr. Sayeed Akram Ullah, SDE, Dte. of Design & Inspection-1, BPDB. Dhaka.	prayer break.	**5-S Technique for Work Environment.** Engr. Sayeed Akram Ullah, SDE, Dte. of Design & Inspection-1, BPDB. Dhaka.
03.11.2004. Wednesday.	**Kaizen (Continuous Improvement).** Mr. Baig Nasir Jahan, Asstt. Director (Security) CSD, BPDB, Tongi.	**Kaizen (Continuous Improvement).** Mr. Baig Nasir Jahan, Asstt. Director (Security) CSD, BPDB, Tongi.	Break.	**Introduction to Quality Circles and how they work.** Mr. Eskander Ali. Director. Dte. of O &M. PDB. DHaka.	Prayer break.	**Introduction to Quality Circles and how they work.** Mr. Eskander Ali. Director. Dte. of O &M. PDB. DHaka.
04.11.2004. Thursday.	**Overview of Total Quality Tools.** Engr. M.A. Hasnat, Deputy Manager, Haripur Power Station, PDB, Narayanganj.	**Overview of Total Quality Tools.** Engr. M.A. Hasnat, Deputy Manager, Haripur Power Station, PDB, Narayanganj.	Break.	**Overview of Total Quality Tools.** Engr. M.A. Hasnat, Deputy Manager, Haripur Power Station, PDB, Narayanganj.	Prayer break.	**Overview of Total Quality Tools.** Engr. M.A. Hasnat, Deputy Manager, Haripur Power Station, PDB, Narayanganj.
05.11.2004. Friday	*Weekend.*					

Date & Day	1st Session. Subject & Teacher. 9.00 to 10.20.	2nd. Session. Subject &Teacher. 10.20 to 11.40.	Break. 11.40 to 11.50	3rd.Session. Subject & Teacher. 11.50 to 13.10.	Prayer break. 13.10 to 13.40	4th.Session. Subject &Teacher. 13.40 to 15.00.
06.11.2004. Saturday.	**TQM & Human Resource Development.** Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka.	**Planning & Implementing of TQM Vision & Mission.** Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka.	Break.	**Total Employee Involvement and Empowerment.** Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.	Prayer break.	**Leadership, Team Building & Team Work.** Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.
07.11.2004. Sunday.	*Govtt. Holiday.*					
08.11.2004. Monday	Observation of TQM Management at Haripur 100 MW P/S. Engr. M.A. Hasnat, Deputy Manager, Haripur Power Station, BPDB, Narayanganj. Course Co-ordinator.	Observation of TQM Management at Haripur 100 MW P/S. Engr. M.A. Hasnat, Deputy Manager, Haripur Power Station, BPDB, Narayanganj. Course Co-ordinator.	Break.	Observation of TQM Management at Haripur 100 MW P/S. Engr. M.A. Hasnat, Deputy Manager, Haripur Power Station, BPDB, Narayanganj. Course Co-ordinator.	Prayer break.	Observation of TQM Management at Haripur 100 MW P/S. Engr. M.A. Hasnat, Deputy Manager, Haripur Power Station, BPDB, Narayanganj. Course Co-ordinator.
09.11.2004. Tuesday.	**Case-Study.** Mr. A.N.M. Shahidullah. Management Counsellor. B.I.M. Dhaka.	**Case-Study.** Mr. A.N.M. Shahidullah. Management Counsellor. B.I.M. Dhaka.	Break.	**Case-Study to be presented by the Trainees.** Mr. A.N.M. Shahidullah. Management Counsellor. B.I.M. Dhaka.	Prayer break.	**Case-Study to be presented by the Trainees.** Mr. A.N.M. Shahidullah. Management Counsellor. B.I.M. Dhaka.
10.11.2004. Wednesday.	**Benchmarking.** Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka.	**Decision Making and Problem Solving.** Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka.	Break.	**Closing Ceremony.** Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka. Engr. Nuruddin Ahmmed. General Manager, Training, BPDB, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka. Course Co-ordinator.	Prayer break.	**Closing Ceremony.** Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka. Engr. Nuruddin Ahmmed. General Manager, Training, BPDB, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka. Course Co-ordinator.

স্বাঃ/-

Dy-Director (X-en),
Regional Training Centre, BPDB, Tongi.
Date : 19/10/2004.

Memo No-TR-29/2004/

Copy for information and necessary action to :-

1. General Manager, Training, BPDB, Dhaka.
2. Director, Directorate of Training and Carrier Development BPDB, Dhaka.
3. CSO to Chairman. BPDB. Dhaka.
4. Director, TQM Promotion Office, BPDB, Dhaka.
5. Manager/ Superintendent Engineer /Director, ...
6. Dy -Director, R.A.O. BPDB. Dhaka.
7. Mr. Ferdus Hossain. Astt.Engeneer.RTC, BPDB, Tongi. & Couse Co-ordinator "Total Quality Management (ISO Standard)" Training Course.
8. Mr. ..... Trainer/Trainee.

19/10/04

(Mr. Abdul Wahab Khan.)
Dy-Director (X-en),
Regional Training Centre, BPDB, Tongi.

My doc/Mamb/REGIONAL TRAINING

BANGLADESH POWER DEVELOPMENT BOARD
REGIONAL TRAINING CENTRE, TONGI, GAZIPUR

SUBJECT : Class programme of "Total Quality Management (ISO Standard)" Training Course for Sub Asstt. Engineer / Staff.

DURATION. : 11.12.2004. to 19.12.2004.

VENUE : REGIONAL TRAINING CENTRE, BPDB, TONGI, GAZIPUR.

Course Co-ordinator : Md. Birjish Hossain. SDE., RTC, BPDB, Tongi, Gazipur.

Please send one set of Course Materials to Course Co-Ordinator for Participants.

Date & Day	1st Session. Subject & Teacher. 9.00 to 10.20.	2nd. Session. Subject &Teacher. 10.20 to 11.40.	Break. 11.40 to 11.50	3rd.Session. Subject & Teacher. 11.50 to 13.10.	Prayer break. 13.10 to 13.40.	4th.Session. Subject &Teacher. 13.40 to 15.00.
11.12.2004. Saturday.	নিবন্ধীকরন ও শুভ উদ্বোধন। Engr. Alauddin Khan. Director, Training & Career Development, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka. Dy. Director. RTC. & Course Co-ordinator.	নিবন্ধীকরন ও শুভ উদ্বোধন। Engr. Alauddin Khan. Director, Training & Career Development, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka. Dy. Director. RTC. & Course Co-ordinator.	Break	কোয়ালিটি ব্যবস্থাপনার বিবর্তন। Mr. Baig Nasir Jahan, Sr. Asstt. Director (Security), CSD, PDB, Tongi.	Prayer break.	কোয়ালিটি ব্যবস্থাপনার বিবর্তন। Mr. Baig Nasir Jahan, Sr. Asstt. Director (Security), CSD, PDB, Tongi.
12.12.2004. Sunday.	টি কিউ এম দর্শন এবং তত্ব। Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka.	টি কিউ এম ভিশন ও মিশন এর প্রস্তুতি এবং বাস্তবায়ন। Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka.	Break	কোয়ালিটি সার্কেলের পরিচিতি এবং সংগঠন। Mr. Eskander Ali. Director. Dte. of O &M. PDB. DHaka.	Prayer break.	কোয়ালিটি সার্কেলের পরিচিতি এবং সংগঠন। Mr. Eskander Ali. Director. Dte. of O &M. PDB. DHaka.
13.12.2004 Monday.	কর্মস্থলে সঠিক কোয়ালিটি পরিবেশ উন্নয়নে ৫-স কৌশল। Engr. Sayeed Akram Ullah, SDE, Dte. of Design & Inspection-1, BPDB. Dhaka.	কর্মস্থলে সঠিক কোয়ালিটি পরিবেশ উন্নয়নে ৫-স কৌশল। Engr. Sayeed Akram Ullah, SDE, Dte. of Design & Inspection-1, BPDB. Dhaka.	Break	কাইজান ও ইনোভেশন Mr. Baig Nasir Jahan, Sr. Asstt. Director (Security), CSD, PDB, Tongi.	Prayer break.	কাইজান ও ইনোভেশন Mr. Baig Nasir Jahan, Sr. Asstt. Director (Security), CSD, PDB, Tongi.
14.12.2004. Tuesday.	কিউ সি টুলের ব্যবহার Engr. M.A. Hasnat, Deputy Ditector (Xen), TQM Promotion office, BPDB, Dhaka.	কিউ সি টুলের ব্যবহার Engr. M.A. Hasnat, Deputy Ditector (Xen), TQM Promotion office, BPDB, Dhaka.	Break	কিউ সি টুলের ব্যবহার Engr. M.A. Hasnat, Deputy Ditector (Xen), TQM Promotion office, BPDB, Dhaka.	Prayer break.	কিউ সি টুলের ব্যবহার Engr. M.A. Hasnat, Deputy Ditector (Xen), TQM Promotion office, BPDB, Dhaka.
15.12.2004 Wednesday.	কিউ সি টুলের ব্যবহার Engr. M.A. Hasnat, Deputy Ditector (Xen), TQM Promotion office, BPDB, Dhaka.	কিউ সি টুলের ব্যবহার Engr. M.A. Hasnat, Deputy Ditector (Xen), TQM Promotion office, BPDB, Dhaka.	Break	কিউ সি টুলের ব্যবহার Engr. M.A. Hasnat, Deputy Ditector (Xen), TQM Promotion office, BPDB, Dhaka.	Prayer break.	কিউ সি টুলের ব্যবহার Engr. M.A. Hasnat, Deputy Ditector (Xen), TQM Promotion office, BPDB, Dhaka.

Date & Day	1st Session. Subject & Teacher. 9.00 to 10.20.	2nd. Session. Subject &Teacher. 10.20 to 11.40.	Break. 11.40 to 11.50	3rd.Session. Subject & Teacher. 11.50 to 13.10.	Prayer break. 13.10 to 13.40.	4th.Session. Subject &Teacher. 13.40 to 15.00.
16.12.2004. Thusday.	*Government Holiday.*					
17.12.2004. Friday.	বাঘাবাড়ী বিদ্যুৎ কেন্দ্রে টি কিউ এম ব্যবস্থাপনা পরিদর্শন এবং টি কিউ এম কেসস্টাডি পর্যবেক্ষন। Bagabari Site Visit + Case Study Engr. S. M. Akhtaruzzaman, Executive Engineer (Operation). Baghabari Power Station (SBU). BPDB, Baghabari. Shirajgonj , & Course Co-ordinator.					
18.12.2004. Saturday.	প্রশিক্ষণার্থী কর্তৃক কেস স্টাডির উপস্থাপনা। Case Study by Trainer (Guide) Mr. A.N.M. Shahidullah. outside Management Counsellor (B.I.M) Dhaka.	প্রশিক্ষণার্থী কর্তৃক কেস স্টাডির উপস্থাপনা। Mr. A.N.M. Shahidullah. Management Counsellor. B.I.M. Dhaka.	Break	প্রশিক্ষণার্থী কর্তৃক কেস স্টাডির উপস্থাপনা। Mr. A.N.M. Shahidullah. Management Counsellor. B.I.M. Dhaka.	Prayer break.	প্রশিক্ষণার্থী কর্তৃক কেস স্টাডির উপস্থাপনা। Mr. A.N.M. Shahidullah. Management Counsellor. B.I.M. Dhaka.
19.12.2004. Sunday.	টি কিউ এম এবং মানব সম্পদ উন্নয়ন। TQM+HRD Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka.	টি কিউ এম এবং মানব সম্পদ উন্নয়ন। Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka.	Break	সমাপনী অনুষ্ঠান Closing Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka. Engr. Nuruddin Ahmmed. General Manager, Training, BPDB, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.	Prayer break.	সমাপনী অনুষ্ঠান Mr. Md. Mominul Haque Bhuyan, Member (Admn.) BPDB, Dhaka. Engr. Nuruddin Ahmmed. General Manager, Training, BPDB, Dhaka. Engr. S.M Haidar Ali, Director, TQM Promotion office, BPDB, Dhaka.

1st two from outside

স্বাক্ষরিত
(Mr. Abdul Wahab Khan.)
Dy-Director (X-en),
Regional Training Centre, PDB, Tongi.
Date : 26/11/2004.

Memo No-TR-29/2004/955

Copy for information and necessary action to :-

1. General Manager, Training, BPDB, Dhaka.
2. Chief Engineer / Additional Chief Engineer.....
3. Director, Directorate of Training and Carrier Development PDB, Dhaka.
4. CSO to Chairman. Power Development Board. Dhaka.
5. Director, TQM Promotion Office, BPDB, Dhaka.
6. Manager/ Superintendent Engineer /Director, ...
7. D.S. (Admn).Power Development Board. Dhaka.
8. Dy -Director, R.A.O. PDB. Dhaka.
9. Md. Birjish Hossain. SDE.. RTC, BPDB, Tongi, Gazipur.
10. Mr. ..... Trainer/Trainee.

26/11/04

(Mr. Abdul Wahab Khan.)
Dy-Director (X-en),
Regional Training Centre, PDB, Tongi.
২৬/১১/০৪

Appendix 1-3

Questionnaire to Evaluate the Training (Draft)

Questionnaire for QC Activity Evaluation

To:
(Name of Offices)

Dear Sir and Madam,

Thank you for your continuous cooperation and commitment to TQM activities. This questionnaire survey is aiming at evaluating the effectiveness of TQM program in BPDB since the establishment of the TQM Office in 2002. As this project aims at improving the management capacity, questions will ask you about your and your office's behavioral/ work process change thanks to the series of TQM program.

Please fill-out the questionnaire; attaching any material to describe concrete example is welcome. When answering, please describe the situation of you and your office as concretely as possible.

Please use this questionnaire to feedback yourself and improve your management. Thank you for your cooperation!

Yours Sincerely,

Directorate, TQM Promotion Office, BPDB

Hydal

Questionnaire for the Review & Evaluation: Overall evaluation of technical transfer effect (2001-2004)

1. Activities in the site office

Q1.1: Describe concrete activities in 5S in your offices. What OJTs are going on? What activities in your office and what results are observed?

[Please fill out concrete example in you job]

Q1.2-n: *Other activities*

[Please describe your concrete activities on the job and of the job]

2. Progress of management improvement

2.1 Problem Solving Activities

Q2.1.1: Describe the QC activities at your office: When activities started/ What activities are underway/ How many problems have been solved/ How many persons (out of how many total personnel) participate in activities?

Q2.1.2: Describe concrete procedure to install QC the program in your office. What did you do for promotion? What supports did you receive from promotion office/ steering committee? What supports do you need now? Is there any feedback to training program in BPDB?

Q2.1.3: Describe concrete outcome of QC activities: Cost Cutting effect/ Accident decrease/ Preventive maintenance effects/ Revision of manuals/ Decrease in absentee/ Improve punctuality/ etc.

[Please attach any evidence]

Q2.1.3: Quality of QC activities

① Provide good examples of QC report—*Please attach the report*

② Describe the actual process of this QC activity. How do you identify issues? How were teams formed to tackle the identified issues?

2.2 Effect on daily operation and management

Q2.2.1: Describe any change in organization management. Any system that allows normal workers to participate in managerial decision-making? Some change in decision-making process?

[Please describe concrete example with identified effects]

Q2.2.2: Describe any improvement in communication. Do you start any new meetings? Do you have any change in operation process in operating/ maintaining your facilities?

[Please describe concrete example with identified effects]

2.3 Effect on attitude

Q2.3.1: Describe any change of your attitude toward your colleagues and subordinates. Now, how do you communicate with them?

[Please describe concrete situation and your attitude]

Q2.3.2: Describe concrete examples where you cooperate with other office/ other divisions to execute tasks.

3. Management system

Q3.1: Describe any change in management system. Do you have any change in:

- ✧ Budget planning
- ✧ Performance evaluation and incentive/reward system
- ✧ Do SBU/PTA systems bring any tangible differences in your office?

[Please describe concrete change and its effects: any attachment is welcome]

Q3.2: What do you think the problems to in order to further develop TQM program?

[Please describe concrete examples to explain problems. Please describe any suggestion that you think beneficial]

4. Your Profile
    - Career record (since employment)
    - Academic Record

End of the questionnaire

Appendix 1-4

Fact Finding at Mymensingh and Tangail Distribution Circles

4 Dec, 2004
JICA Short-term Experts

Fact Findings at Mymensingh Circle, BPDB

1. Significant achievement in morale improvement of workers. They now feel more empowered and are confident to take responsibilities in daily operations. Accumulation of small successes has given employees confident for TQM.
2. Leadership structure (communication from the top) works well. Order flow from SE-XEN- Facilitator- QC leader may work well to initiate the TQM program. Process to install TQM program may also work well. They have communicated and involved with important stakeholders such as union.
3. Bottom-up communication has been improving, but still go under due to the bureaucratic culture. Open communication, where everyone can disclose her/his concern and challenge, has not yet appeared.
4. In technical sense, TQM at Mymensingh contribute to give the meaning of manuals in daily operation. Employees have become to recognize and actualize the importance of existing manuals thorough TQM activities. Now, they positively use manuals based on their needs.
5. There is some room for improvement in their activity. Key words are 'thoroughness' and 'emphasis'. They may contradict, but should be achieved in the future. Thoroughness means that they should apply good improvement activities to every aspect of their operation. For example, 5'S' should be thoroughly implemented everywhere of the office, warehouse, workshop, etc. They should consider establish a system, which ensure thorough implementation of good activities such as safety equipments.
6. Emphasis means having focus in activities. This step may be found after 'thorough' implementation. For example, customer's needs toward distribution division are different by types of customers. If we can recognize the priority of their needs, they should primary focus on the first need to satisfy the customers. For example, private industry customer prioritizes high reliability rather than cost (public may opposite). Then, they may change the maintenance process based on this difference.
7. To achieve both 'thoroughness' and 'emphasis', the level of data usage should be enhanced. Now, they try to 1) collect the necessary data and/or 2) analyze the data using graphical tools. As the next step, the data analysis shall be enhanced into 'actionable level'; that is, data will be transformed into useful 'information' for judgment for the next action. For example, if the system tripping data is analyzed by the causal basis (e.g., using Parate diagram), you may find next 'focus' to counteract the problem. To improve the data analysis level, the practical training program, where trainers will teach through the actual problem solving, may be useful.
8. Employees now become to recognize some limitation of QC activities to solve issues that are cross cutting, require some scale investment, and/or relate to the structural issues. This may suggests the needs of involvement of mid-high level engineers in TQM activities.

4 Dec, 2004
JICA Short-term Experts

Fact Findings at Tangail Circle, BPDB

1. Still underway of mental change. Although some lower level workers start adapting the 'team base working method', which is the core of TQM, most employees including some XENs are still in the old mindset. They still orient 'showy' investment program, not seeking small but steady and systematic activities, not adopting TQM 'thinking process'.
2. Some mid-level engineers are very positive to the TQM program and have concrete idea for improvement. However, shortage of commitment of higher authorities (i.e., XEN and SE) discourages them to take concrete 'action'.
3. 5S activities are better than at Mymensingh. Some experienced workers may be playing a good role for this activity. This fact also suggests that the 'potential' of Tangail is not less than that of Mymensingh. Change in mindset (especially in management class) may turn around the current situation.
4. They prepare some track record data and graphs, referring those of Mymensingh. However, the level of analysis is not sufficient. They stop at the level of 'just drawing the graph', and cannot extract the meaning from data. For example, they cannot find deteriorating system loss at one feeder even the graph suggests it.
5. Tangail's fair track record in system loss and C/I is partly because of the good O+M contractor, TBBS. When evaluating its performance, you may consider this effect. Track record may not reflect the actual 'effort' of Tangail.
6. Tangail has a great study case of TBBS. TBBS achieved a significant result with very limited resource and budget—the situation is same as field offices of BPDB. Tangail should learn from TBBS and start from what they can do within the current resource and authority.

Appendix 1-5

Management Cycle & Process

Mgmt. Cycle	Management Process	
Establishing Mission (key) - Set the Challenging Goal - Establish Ethics in mgmt	M1: Goal and Leadership	M11 Consistency and Measurable goal setting ・ Consistency with PDB wide policy, mission etc. ・ Measurement system (How, when, who, what?) M12 Leadership to motivate/encourage understanding ・ Manager shows role model by initiating own action ・ Thoroughness of encouragement--not only in his unit but also in outside unit/ organization M13 Interaction method with employees ・ Meetings, Interviewing and other method of communication M14 Decision Making Process: Open and transparent ・ Decision should encourage action
	M2: Ethics and Social Responsibility in Mgmt.	Compliance, No discremination, Clear line b/w official and M21 private M22 Contribution to Social Welfare as an organization
Planning based on Mission (key) - Understanding the needs of Market and Customer	P1: Understanding Customer and Market	P11 Comprehension and Analysis of Customer needs and expectation, Market trend, Competitive environment, and ・ Set appropriate 'focus' in management
	P2: Planning and into individual action	P21 Consistency and thoroughness of planning ・ Consistency b/w plan and objective (goal achievement) ・ Development action plans for every stakeholders P22 Resource Allocation ・ Resource (Man, Money, Machine) Acquisition to implement the plan P23 Clear Action Plan and Procedure ・ Concreteness of Action Plan
Implementation/ Monitoring (Key) - Thoroughness and Focus - others		
Evaluation (Key) - Effectiveness - Efficiency - Sustainability	See PCM Framework	
Feedback/ Reporting (Key) - Call concrete action - Quality Reward		F31 Reward should be: ・ valued by the person being rewarded ・ large enough to have impact ・ why they are given, should be understandable ・ timely ・ memorable so that learning occurs ・ reversible ・ cost efficient

Appendix 1-6

Discussion Paper on Non-Technical Loss

Causes & Countermeasure for Non-tech Loss

Procedure	Origin of System Loss	Causes	Countermeasure (Implementation,Standard)	Countermeasure(Under Project)	Countermeasure(Idea)
Energy Supply	Power Theft				
	-Hooking by C, P	Immorality	Town meeting with local people Severe punishment		Scheduled night patrol
		Technically easy	Insulated conductor(0.4kV) Twisted conductor(0.4kV)		
	-Meter Tampering by C,P -Meter Bypass	Immorality	Town meeting with local people Rotation of meter reader		
		Technically easy	Monthly check(sealing,condition etc) Meter sealing Meter Box Outside metering Earthing Severe punishment		
Measurement	Inaccurate/Defective Meter				
	-Initial	Manufacture	Certicication/License System Accuracy Testing in Instllation Technical Standard		
		Improper shipment	Careful handling		
	-Aging	Aged Deterioration	Accuracy Check (on demand) Replacement		Schduled testing Frequent Checking (Aged meter) Preventive Replace
	Wrong Connection				
	-Initial	Immorality Low technical level	Checking after installation Training		
	-Intentional	Immorality	Frequent Check Sealing Meter Box outside metering Severe punishment		Scheduled testing
Meter Reading	Estimated Measureing	Shortage of Manpower Inefficiency laziness Shortage of Transportation			Increase of No.of Meter Reader Outsourcing Providing Transportation Review of Metering System
	Manupulate Reading	Immorality Lack of responsibility Improper monitoring	More than one meter reader reading Periodical Rotation		Prepared monitoring system
Billing	Non 100% isuue	Shortage of Manpower & Time Inefficiency		Computer Billing	Outsourcing
	Non 100% deliverly	Shortage of Manpower Inefficiency lack of monitering	Involve the outsider Completely following manual		Increase of No.of Billing Clerk Outsourcing
		Shortage of Transportation			Providing Transportation Mail deliverly Outsourcing

Appendix 1-7

Presentation Materials for Wrap-up Seminar

Agenda of Wrap-up Seminar -2004

Date -15/12/2004
Time-10.00 -13.00 Hrs
Venue-Spectra Convention Centre, Gulshan
House No-19, Road No-7, Gulshan-1.

1.	10.00 Hrs	Welcome Speech & Inauguration	Mr. M.A. Muttalib, Member P& D, BPDB
2.	10.05 Hrs	opening Remarks	Representative of EOJ- Mr. Nitta BPDB : Member (P&D) Mr. Mutalib JICA- Mr. Nagatomo - ~~MEMR- Mr.~~ CBA : Mr. Md. Zafrul Hasan.
3.	10.25 Hrs	TQM Promotion Activities of BPDB	(1) TQM Activities in BPDB - Mrs. Nasrin Parvin Dy. Director. TQM Promotion office BPDB (2) Result & Benefits - Mr. M.A. Hasnat Dy. Director. TQM Promotion office BPDB (3) Problem Identification & Counter Measures -Eng. S. M Haider Ali Director, TQM Promotion office BPDB (4) Action Plan - ~~Mrs. Nasrin Parvin~~ ~~Deputy~~ Director. TQM Promotion office BPDB .
4.	10.55 Hrs	TQM Activities of Mymenshing	(1) TQM Activities in Mymenshing Mr. Mozzamel Haque SE, O&M Circle Mymenshing (2) Case Study - Q.C Circle of Mymenshing.
5.	11.35 Hrs	Tea Break	
6.	11.55 Hrs	Distribution Activities Suggestion	Mr. TERAI JICA Short Term Expert
7.	12.20 Hrs	TQM Policy Suggestion	Mr. OTARU JICA Short Term Expert
8.	12.45 Hrs	Advise on TQM Activities	Mr. Md. Abu Ahmed Chief Engineer, Distribution Mymensingh ← Mr. Khwaja Ghulam Ahmed Chairman BPDB.
9.	12.50 Hrs	Remarks on TQM Activities	Mr. Md. Zafrul Hasan G.S CBA . BPDB.
10.	12.55 Hrs	Closing Speech	Mr. Khwaja Ghulam Ahmed Chairman BPDB.
11.	13.05 Hrs	Vote of Thanks	Eng. S.M Haider Ali Director . TQM Promotion office. BPDB.
12.	13.10 Hrs	Lunch	

File -113.1

Participants in Wrap-up Seminar (For Japanese only)

Date : 15 December' 2004
Time : 10.00 Hrs.
Venue: Spectra Convention Centre, Gulshan, Dhaka.

Sl. No.	Name & Designation	Name of organization	Signature
1.	Mr. Masahiko Kiya Counselor	Embassy of Japan	
2.	Mr. Koji Nitta First Secretary	Embassy of Japan	
3.	Mr. Kiyoshi Amada Chief Representative	Japan Bank for International Cooperation	
4.	**Mr. Noriaki Nagatoro** Additional Resident Representative	Japan International Cooperation Agency	
5.	Mr. Kanda Deputy Resident Representative	Japan International Cooperation Agency	
6.	Mr. Takeshi Ono Group Coordinator Haripur Power Station	JICA Senior Volunteer	
7.	Mr. Katsuhiro Kakuchi Operation & Maintenance of Power Station, Haripur Power Station	JICA Senior Volunteer	
8.	Mr. Nakanishi JICA Advisor on Power	JICA	

Participants in Wrap-up Seminar (For Japanese only)

Date : 15 December' 2004
Time : 10.00 Hrs.
Venue: Spectra Convention Centre, Gulshan, Dhaka.

Sl. No.	Name & Designation	Name of organization	Signature
1.	S. OTARU S.t. Expert	JICA	
2.	Y. TERAI S.t. Expert	JICA	
3.	Zulfikar Ali	JICA	
4.	Ummee Saila	JICA	
5.			
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17.			

Participants in Wrap-up Seminar (For Guest only)

Date : 15 December' 2004
Time : 10.00 Hrs.
Venue: Spectra Convention Centre, Gulshan, Dhaka.

Sl. No.	Name & Designation	Name of organization	Signature
1.	Md. Mokbul Ahmed Addl. Director.	West Zone Power Distribution Co. Ltd. Khulna.	15/12/04
2.	NAHIDA ISLAM	NAHID AD AND PRINTING.	15/12/04
3.	M. EMDADUL HAQUE Deputy Secretary	ERD	15/12
4.	Shahnaj Begum	The Daily Star	
5.	[illegible]	[illegible]	
6.			
7.			
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PTO

Participants in Wrap-up Seminar (for BPDB only)

Date : 15 December' 2004
Time : 10 : 00 Min.
Venue : Spectra Convention Centre, Gulshan, Dhaka.

Sl. No.	Designation	Name of organization	Signature
1.	Chief Engineer	Central Zone, BPDB Mymensingh	
2.	Chief Engineer	P & D, BPDB, Dhaka.	
3.	Chief Engineer	Services, BPDB Dhaka.	
4.	Chief Engineer	Civil Works, BPDB, Dhaka.	
5.	General Manager	Commercial Operation, BPDB, Dhaka.	
6.	Chief Engineer	Generation, BPDB, Dhaka.	
7.	Chief Engineer	Gorashal P/S Palash , Narshingdi	
8.	Chief Engineer	210 MW Siddirgonj P/S, Naryangonj	
9.	Project Coordinator	PRP, BPDB, Dhaka.	
10.	General Manager	Training, BPDB, Dhaka.	
11.	Controller	Finance & Accounts, BPDB & Member TQM Steering Committee।	
12.	Chief Medical Officer	Medical Centre, BPDB, Dhaka.	
13.	President	Power Station officers Association & Executive Engr. 5th & 6th Unit Ghorashal P/S, Palash, Narshingdi	
14.	President	বিদ্যুৎ কর্মকর্তা (অকারিগরী) সমিতি, BPDB & Member TQM Steering Committee।	
15.	President	Diploma Engineers Association,	
16.	President	জাতীয় বিদ্যুৎ শ্রমিক কর্মচারী ইউনিয়ন, Registration No.B -1886, CBA, BPDB & Member TQM Steering Committee।	
17.	President	Water & Power Engineering প্রকৌশলী সমিতি	
18.	Secretary	Central secretariat, BPDB, Dhaka	
19.	Director	Training & Carrier Development, BPDB, Dhaka.	
20.	Director	Public Relation, BPDB, Dhaka.	
21.	Director	O & M, BPDB, Dhaka.	
22.	Director	Enquiry & Discipline, BPDB, Dhaka.	
23.	Director	Finance, BPDB, Dhaka.	
24.	Director	Audit, BPDB, Dhaka.	

Sl. No.	Designation	Name of organization	Signature
25.	S.E	O & M, Circle BPDB, Mymensingh	
26.	S.E	O & M, Circle BPDB, Tangail	
27.	Manager	Horipur Power Station, BPDB, N'gonj	
28.	Manager	Baghabari Power Station, BPDB, Sirajgonj	
29.	Manager	Fenchuganj Power Station, BPDB, Syhlet.	
30.	Assistant Chief Engineer	Ghorasal Power Station, BPDB, Ghorasal Norsindi	
31.	Assistant Chief Engineer	Distribution South Central Zone, BPDB, Rajshahi	
32.	Assistant Chief Engineer	Distribution North Central Zone, BPDB, Chittagong.	
33.	Assistant Chief Engineer	Distribution Central Zone, BPDB, Mymensingh	
34.	Assistant Chief Engineer	P & D, BPDB, Dhaka	
35.	Deputy Director	RTC Tongi Gazipur	
36.	Deputy Director	RTC Chittagong	
37.	Deputy Director	RTC Rajshahi	
38.	Deputy Director	RTC Ghorasal	
39.	Mr. Sayed Mazharul Haq. Executive Engineer	18 Towen Power Distribution Project BPDB, Sylhet & Task Team Member	
40.	Mr. Abdul Majid Assistant Chief Eng.	Generation, BPDB, Dhaka & Task Team Member	
41.	Mr. Akturuzzama , Executive Engineer	Baghabari Power Station BPDB & Task Team Member	
42.	Mr. Enayet Karim Executive Engineer	S & D-1 Bogra & Task Team Member	
43.	Mr. Abdul Halim Executive Engineer	18 Towen Power Distribution Project, BPDB, ~~Sylhet~~ & Task Team Member	
44.	Mr. Khandokar Abul Aslam, Sub-Divisional Eng.	Siddhirgonj Power Station, BPDB N'gonj & Task Team Member	
45.	Mr. Beig Nasir Jahan Assistant Director	CSD BPDB, Tongi & Task Team Member	
46.	Mr. Assior Rahma. Executive Engineer	S & D, 16 Towen , BPDB, Ctg.	
47.	Chowdowry Fariduzaman Deputy Secretary	Admn. BPDB, Dhaka.	

Name & Des. ~~Desgnation~~ office — Signature

1. Mr. Lutfor Rahman. SDE — M.A.
2. Md. Lokman Hossain Miah S&D Mymensingh (North)
3. Rupali QC Circle, Mymensingh (S&D-1) - Total No - 10 (ten) — SAE Mym.
4. M. A. Hasnat — D.D. TQM office
5. Anisul Islam Haider. DD-TQM office BPDB.
6. Shayamal Kumar Das Assist Engineer, TQM, PDB — BPDB
7. Suresh chandra Paul Sub-Divisional Engr.
8. Md. Nizamul Haque Sarker Assistant Eng. — 15.12.04
9. PRADIP KUMAR GHOSHAL - SAE — 13.12.04
10. CHUNILAL DEBNATH SBU DD(Co)
* 11, Mr. Shamsudduha Talukdar Asstt. Acc.

12. Mr. Enamul Hoque — Electrician - C
13. Mr. Nurul Islam — Lineman - A
14. Mr. Ratan Kumar Dash — Lineman - A
15. Mr. Ferdous Alam — Lineman - A
16. Mr. Rukunuzzaman — Lineman - A
17. Mr. Mizanur Rahaman — Lineman - A
18. Mr. Arman Hossain — Helper

Wrap-up Seminar -2004

Venue-Spectra Convention Centre,
House No-19, Road No-7, Gulshan-1.
Time-10.00 -13.00 Hrs
Date -15/12/2004

Organized by

- Bangladesh Power Development Board
- JICA, Dhaka office.

Name & Deg ~~Degrees~~ Office — Signature

1. Mr. Lutfor Rahman. SDE
~~M.A.~~

2. Md. Lokman Hossain Miah S&D Mym. (North) SAE — Mym.

3. Rupali QC Circle, Mymn-(S+D-1) - Total No - 10 (ten)

4. M. A. Hashat

5. Anisul Islam Hawlader. D.D. TQM office BPDB.

6. Shayamal Kumar Das DD-TQM office BPDB

7. Suresh Chandra Paul Assist Engineer, TQM, PDB

8. Md. Nizamul Haque Sarker Sub-Divisional Engr. Assistant Eng.

9. PRADIP KUMAR GHOSHAL - SAE 15.12.04

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Time-10.00 -13.00 Hrs
Date -15/12/2004

Organized by

- Bangladesh Power Development Board
- JICA, Dhaka office.

Wrap-up Seminar
Presentation of TQM office
Dated :15-12-2004

1. TQM Activities in BPDB
2. Results and Benefits
3. Problem Identified & Countermeasures
4. Action Plan.

Nasrin Parveen, DD, TQM
M.A. Hasnat, DD, TQM
S.M. Hyder Ali, Director, TQM

TQM Activities in BPDB

Dated : 15-12-2004

Nasrin Parveen
Deputy Director
TQM Promotion office
BPDB, Dhaka.

History & Progress of TQM Office

Aug'2002	Establish TQM Promotion office
April-2003	Prepare action plan
Since March 2003	Awareness activities
Since Nov' 2003	Provide Training. for officers & staffs.
April-03 to Oct'04	Reporting /Follow-up Activities.
Sept' 2004	Annual Q.C. Circle Convention of BPDB.

Establish TQM promotion Office.

BPDB establish TQM Promotion office July-2002. It (TQM Office) started working since August-2002.

Prepare action plan

- JICA short-Term experts visited Bangladesh: November 2002 & April-2003.
  They provided necessary suggestion to implement TQM activities in BPDB.
- Annual Action Plan-2003 of TQM Promotion office was prepare in the month of April & excuted accordingly.

Action Plan as follows :

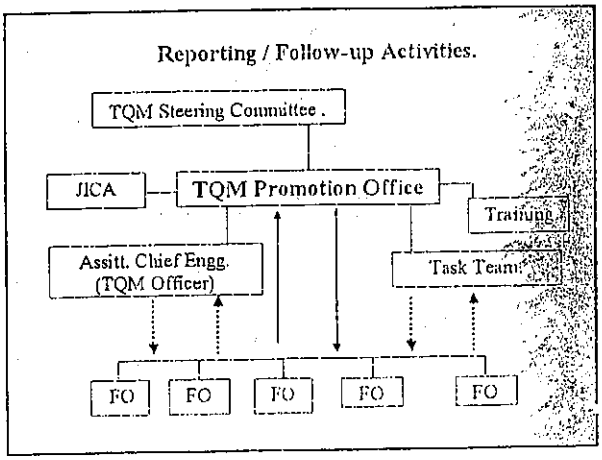
Awareness activities

From-2003 to Oct' 2004 - Selected 145 offices. Since-2003 awareness meeting /seminars were started respectively. Generally Member(Admn.) attend the Awareness seminar. Chairman BPDB also attended some seminars.

Training Activities

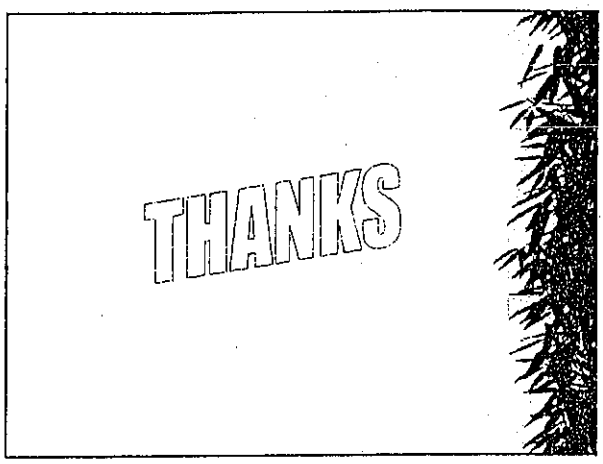
Our regular training program has been started from Nov'2003.

	Venue	No.of courses	2002	2003	2004	Remarks
			Person	Person	Person	
Outside BPDB	CMD, BIM.	2	4	10		
SAE/ Staff Level	RTC , Tongi	4		33	126	159
SDE, AE, AD, Level	-Do-	4			137	
SE, DIR, XEN,DD, Level	-Do-	4			141	
Chief Engineer level.	BPDB's Board Room	2			22	Two module
Staff Level	Ctg,Rraj,Ghorashal	2			95	Oct'2004
	RTC		Grand Total			568



QC Circle Internal Convention

Annual Internal Q.C.Convention : 25th & 26th Sept
Zonal (6 Zone) Q.C. Competition : July to Sept- 20
Name of Six Zone :Generation,Dhaka,Meymensing
Chittagong, Rajshahi, Syl
From Zonal Competition :26 Q.C. Circle Qualify to
Attend Q.C. Circle Conve
Honorable State Minister awarded prize to the winner.
Respectable Secretary (Power), Chairman, BPDB, High off
DESA, PGCB, OZPDCO, Representative of JICA, JBIC, offic
staff's of Dhaka office related side office & Mass Med
Present the convention,
Around 500 audience attended each day.

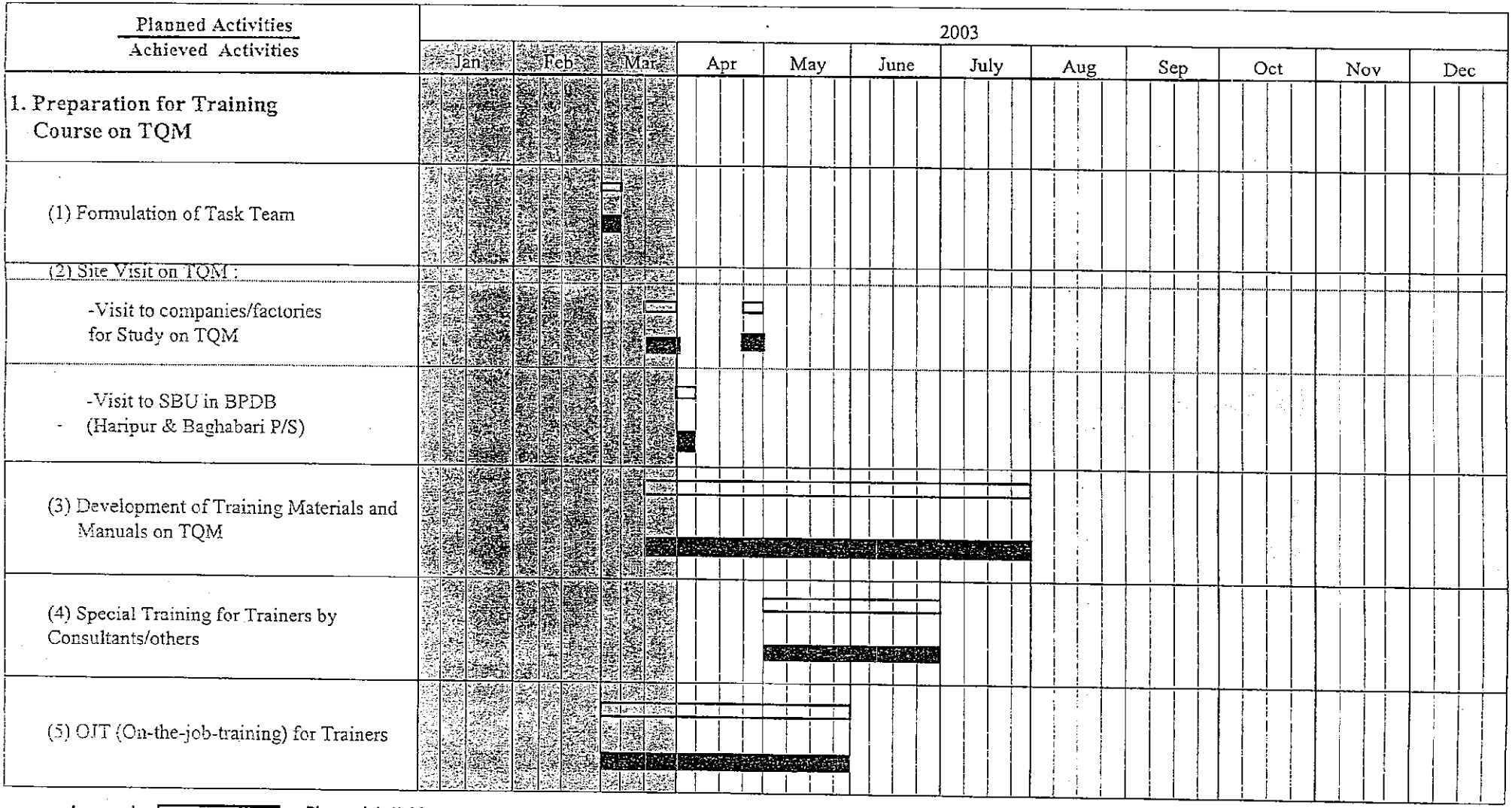


Office of the Director

TQM Promotion Office, BPDB, Dhaka.

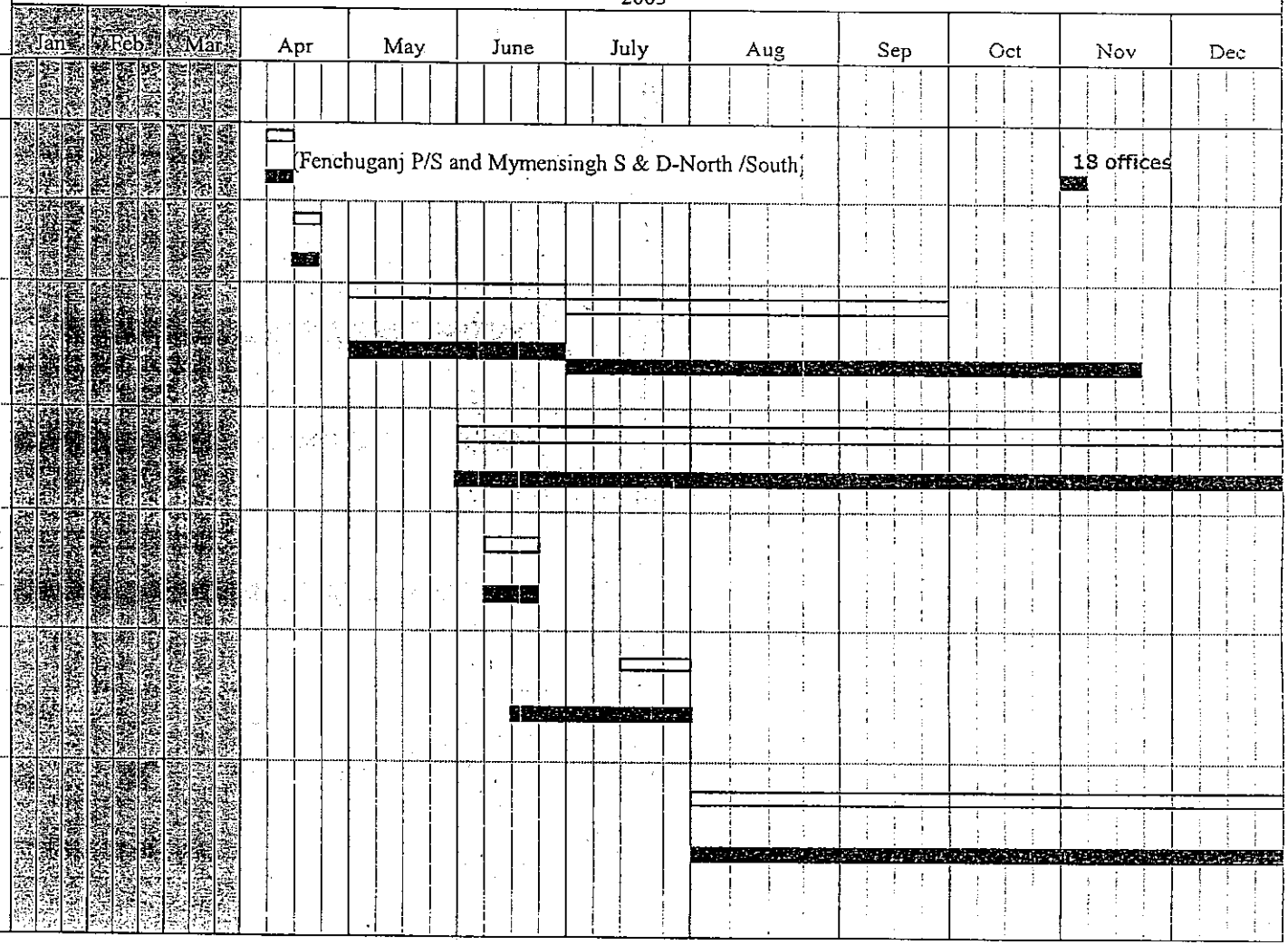
Reporting Period : Dec/ 2003

Table 1: Bar Chart for Planned Activities Vs. Achieved Activities against Annual Action Plan for TQM Promotion in BPDB (2003)



Planned Activities / Achieved Activities	2003
	Jan, Feb, Mar, Apr, May, June, July, Aug, Sep, Oct, Nov, Dec
2. Implementation & Follow-up of TQM activities	
(1) 5S Activities :	
a. Selection of eight (8) offices in BPDB	2offices, 2offices, 2offices, 2offices; 12 Offices
b. Sending booklet & Awareness meeting	
c. Implementation of 5S activities	
e. Follow-up Activities	

Planned Activities / Achieved Activities	2003
(2) TQM activities in newly selected units :	
a. Selection of Units	Fenchuganj P/S and Mymensingh S & D-North /South; 18 offices
b. Awarenes Seminar for newly selected Units	
c. Training Program (managerial level/staff)	
d. Implementation of basic TQM activities	
e. Proposal for formulation of QC circle	
f. Formulation of QC circle	
g Implementaition of QC circle activities	



Planned Activities / Achieved Activities	2003												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
(3) TQM activities in Haripur & Baghabari P/S :													
a. Implementation of TQM activities													
(4) Follow-up Activities													
(5) Summary Progress Report on TQM activities in BPDB													
3. QC Circle Convention at Haripur P/S													
4. Task Team Meeting													
5. TQM Steering Committee Meeting													

T.Q.M Activities- Results & Benifits

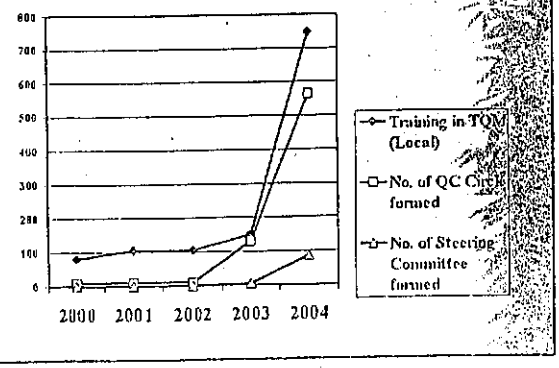
M.A. HASNAT
Deputy Director
TQM Promotion Office
BPDB, Dhaka.

* BPDB Different Offices : March/2003.
* Haripur Power Station : March/2000.

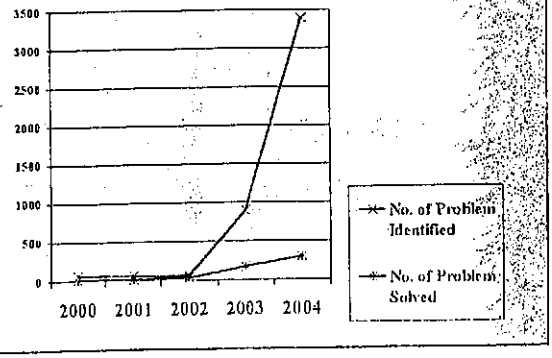
Some Result after Activities.

* Cultural change
* Improvement in Working Environment.
* Improvement in Maintenance
* Improvement in Revenue system.
* Improvement in Communication Skill.

Cultural Change



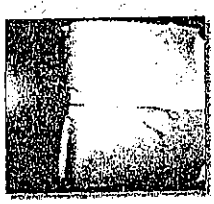
Cultural Change

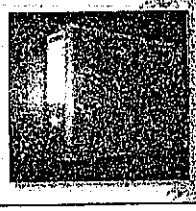


Improvement in Working Environment

- 5S Activity
  - Office, Work Place & Adjacent area become neat & clean
    - Old & Obsolete Records destroy
    - File & Register : 5,008 Nos.
    - Triplicate Copy Bill : 1,934,244 Nos.
    - Paper : 157 Bags.
    - Auctioned amount for old materials : Tk.- 447,455
- Friendly Environment Created.

Before and After 5S Activity

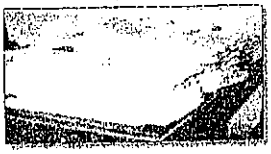


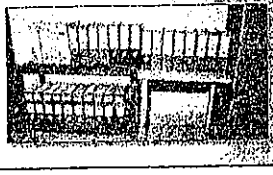


Before and After 5S Activity

Before

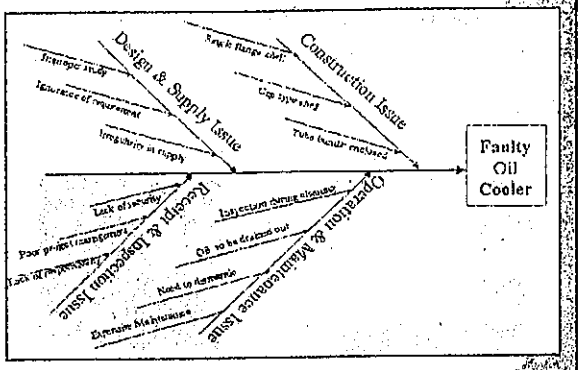
Present

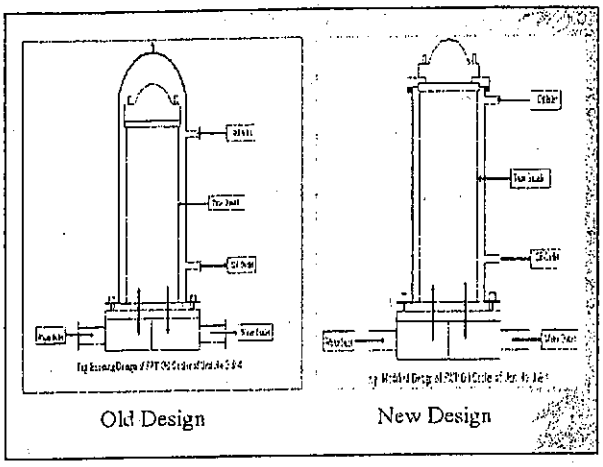




QC Presentation of 'SHAPLA' Circle (Ghorashal Power Station)

Cause -Effect Diagram

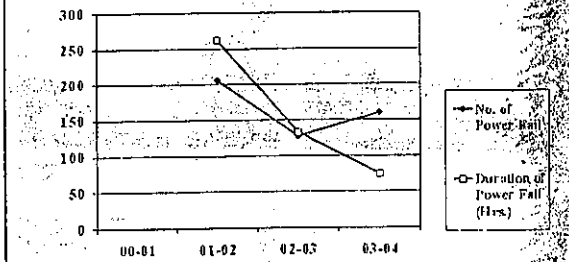




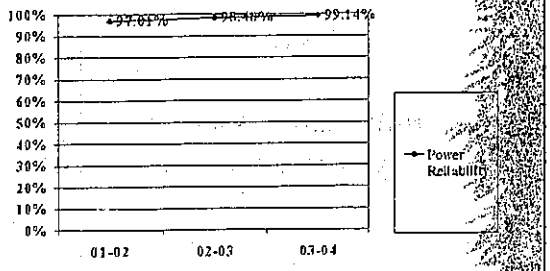
Direct saving per Cleaning per cooler Tk.1935.00

Yearly Direct Saving= **Tk. 2,78,640.00**

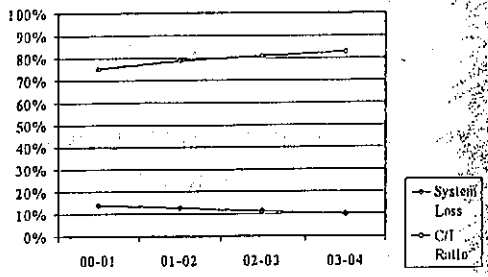
Improvement in Maintenance



Improvement in Maintenance



Improvement in Revenue System



Improvement in Communication Skill.

- Communication Skill of Employee developed through QC Circle Activity.
  - QC Presentation
  - QC Convention
  - Other QC circle visit.

Problem Identified & Counter Measure

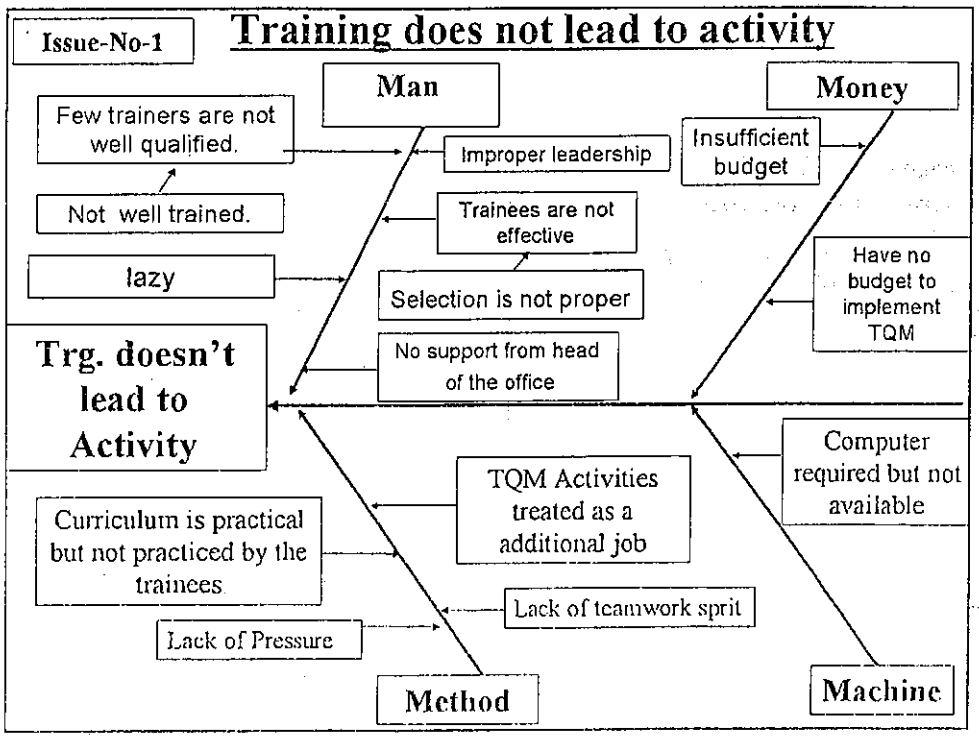
Issue-1

Training doesn't lead to activity.

Issue-2

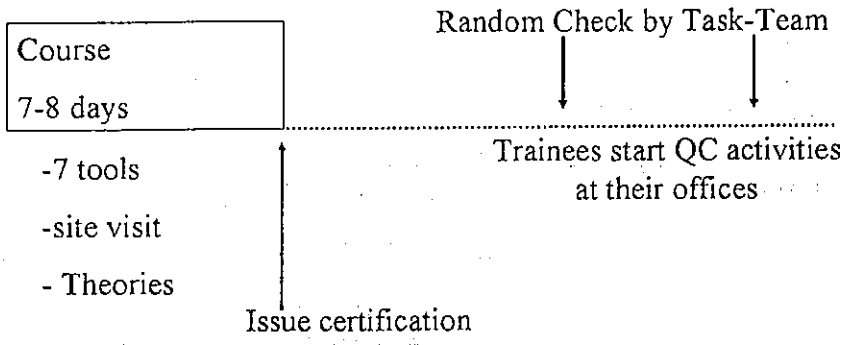
Information sharing system is not well

Engr.S.M.Haidar Ali
Director, TQM Promotion Office
PDB,Dhaka
Date:15th December



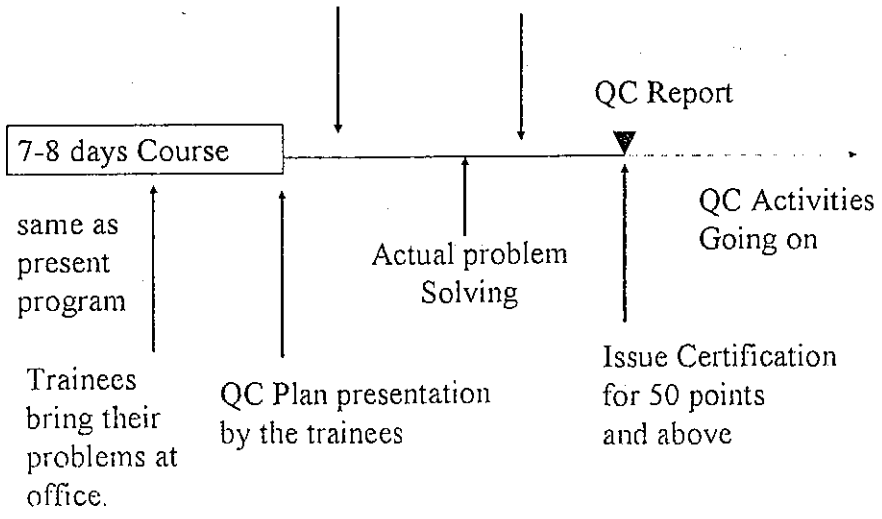
Counter measure : (1) Training Restructuring.

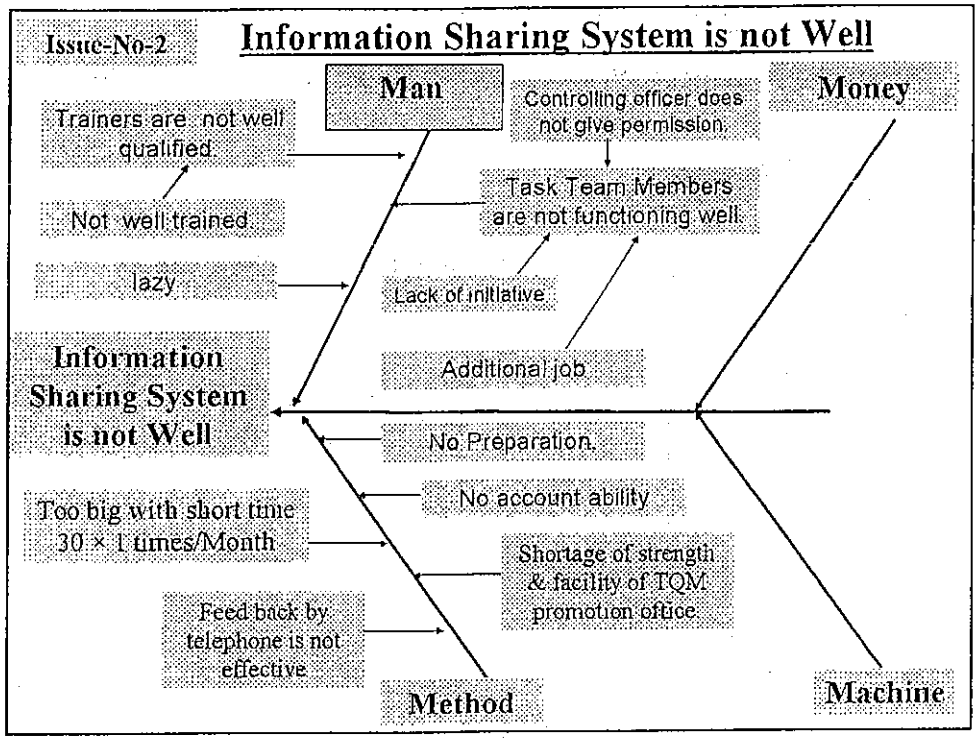
Current System.



Revised system

Progress monitoring /Reporting : 2/month





Counter Measure-1 : Information Sharing

➢ **Reform the Task Team Meeting**

Current

1/ month by all Member (30)

Revised

2/Month -15 from distribution office + Admn. Office

- 15 from power station + Planning & Design

Encourage information sharing based on specific problems occurred in sites

Counter Measure-2 : Information Sharing

- Create QC Procedure booklet

- Collect + Analyses problems that offices encountered –(Q)

- Prepare possible solutions based on other offices activities-(A)

- Possible Areas
  - How to find problems in offices (Q)
    - Data Monitoring Methods – (A)
  - How to involve XEN /SE in Activities (Q)
    - Monitoring 1/Month about problem identification (A)

Annual Action Plan, 2004-2005 (Revised)

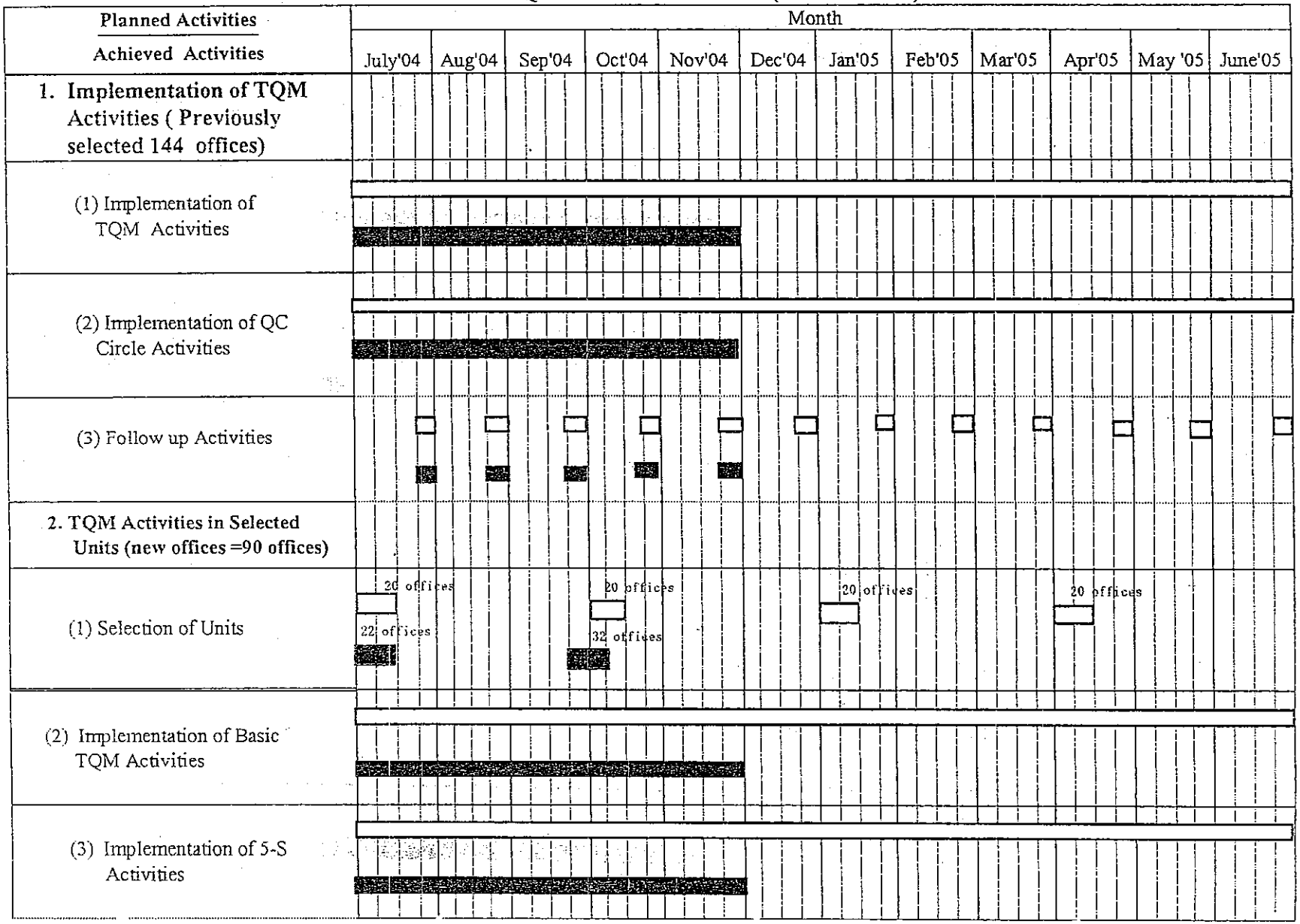
➢ Please follow the handouts

THANKS TO ALL

TQM promotion office, BPDB, Dhaka.

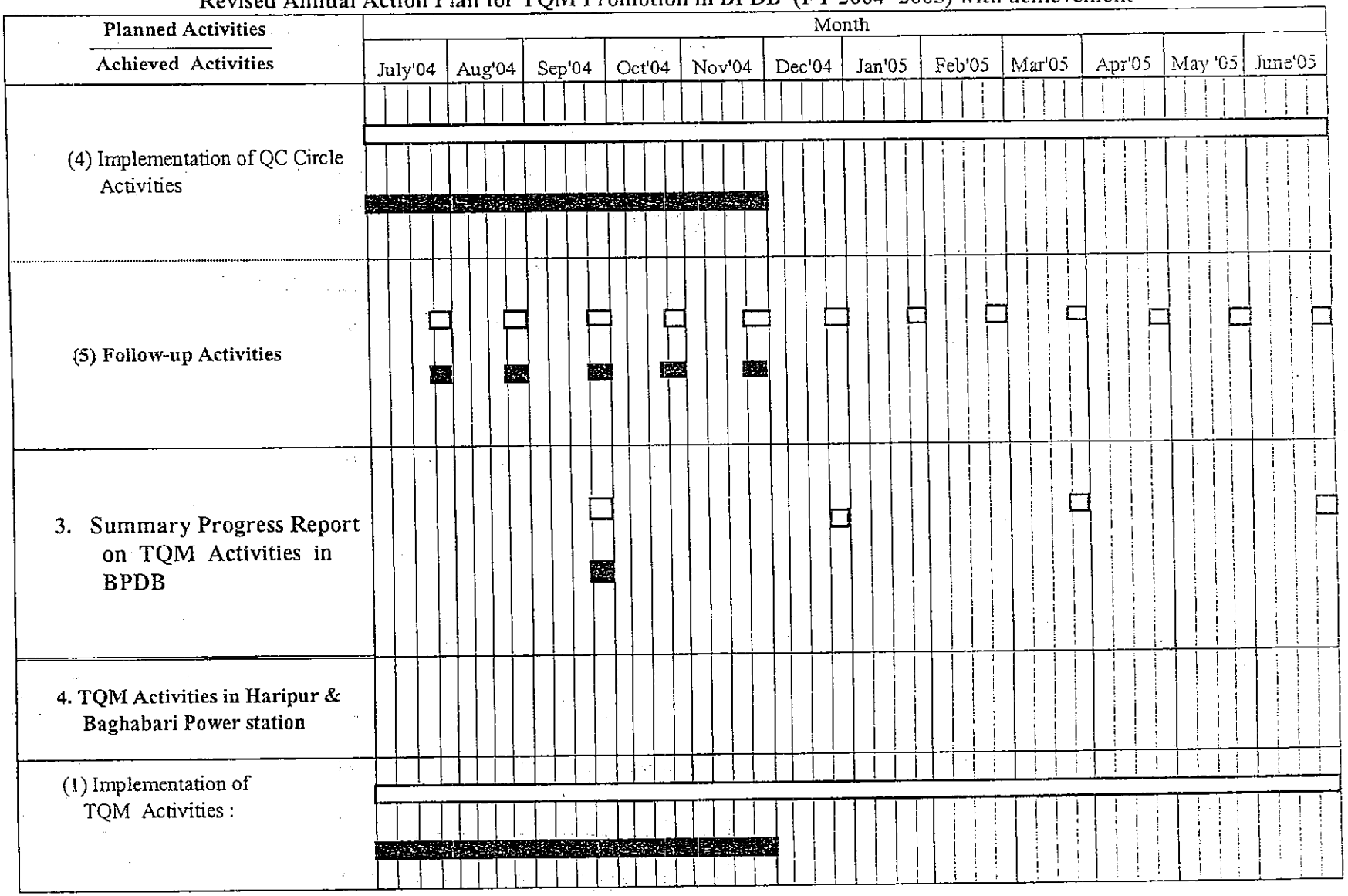
Reporting Period :15 Dec' 04

Revised Annual Action Plan for TQM Promotion in BPDB (FY 2004-2005) with achievement



TQM promotion office, BPDB, Dhaka.

Revised Annual Action Plan for TQM Promotion in BPDB (FY 2004- 2005) with achievement

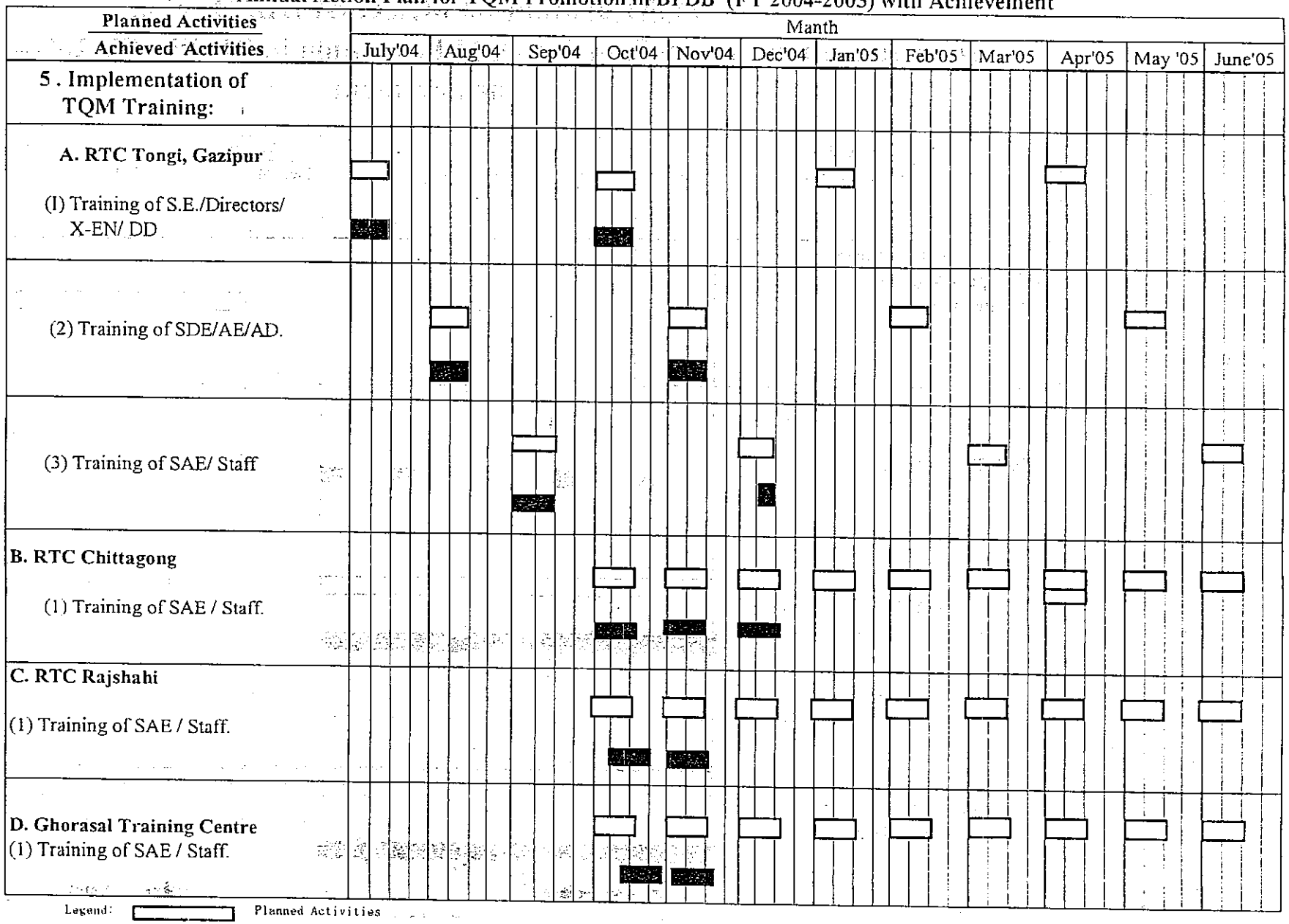


Legend: Planned Activities (Target)

Achieved Activities (Achievement)

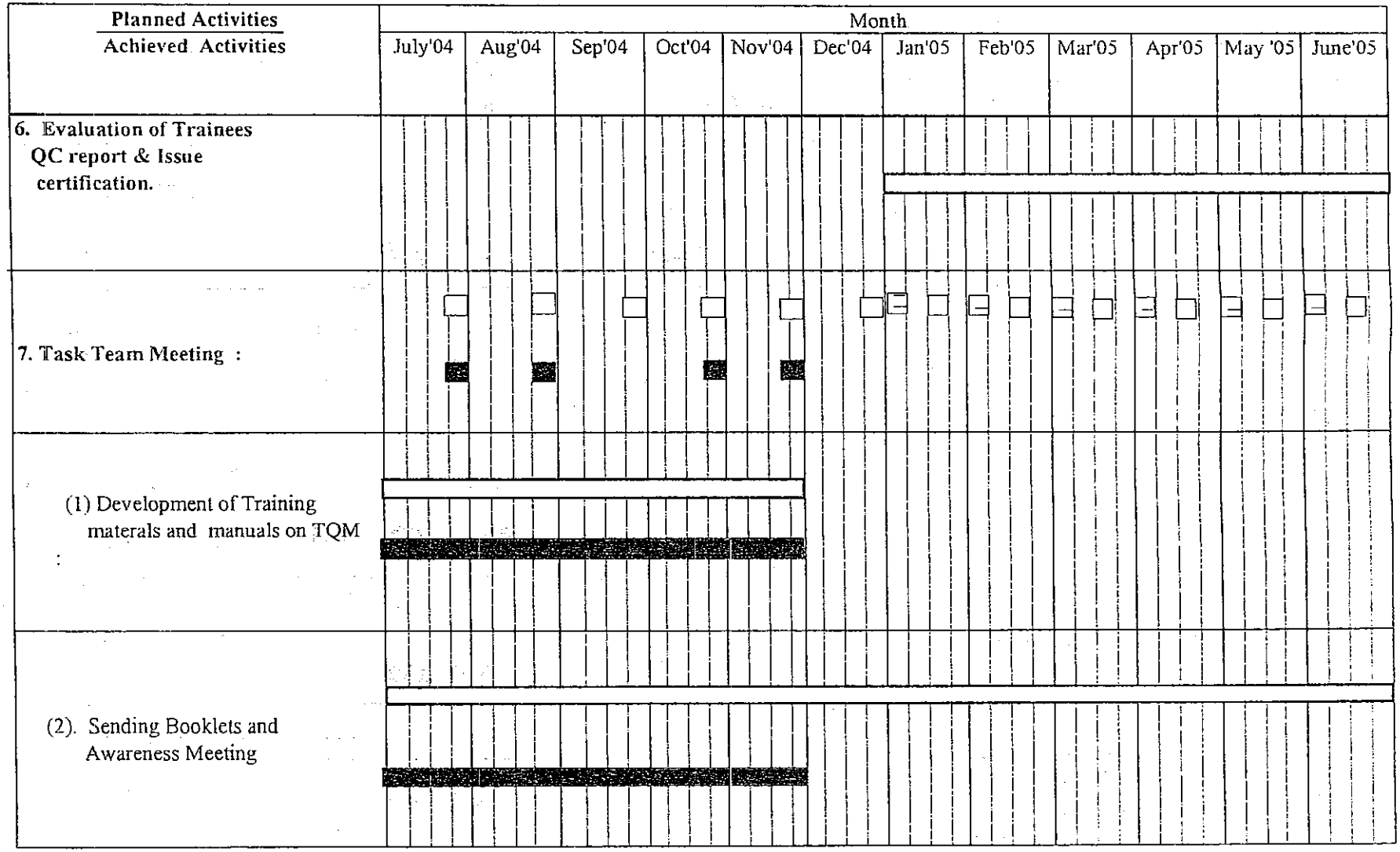
TQM promotion office, BPDB, Dhaka.

Annual Action Plan for TQM Promotion in BPDB (FY 2004-2005) with Achievement

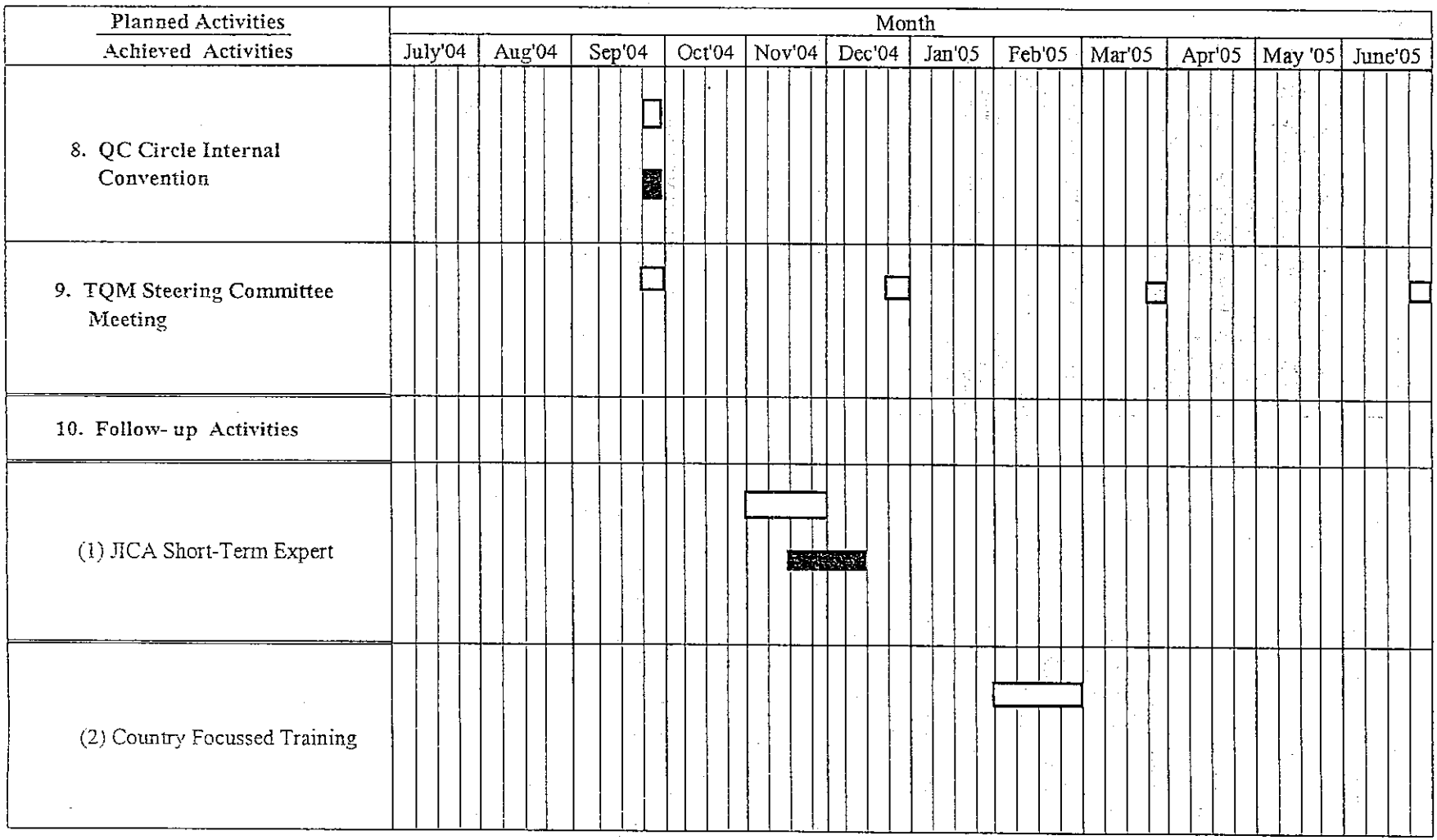


TQM promotion office, BPDB, Dhaka.

Revised Annual Action Plan for TQM Promotion in BPDB (FY 2004-2005) with achievement



Annual Action Plan for TQM Promotion in BPDB (FY 2004- 2005) with Achievement



Legend: Planned Activities(Target)

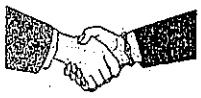
Achieved Activities(Achievement)

WELCOME TO THE PRESENTATION
RUPALI QUALITY CONTROL CIRCLE

CASE STUDY
LOAD BALANCING OF
DISTRIBUTION TRANSFORMER

ORGANIZED BY

SALES AND DISTRIBUTION DIVISION (NORTH)
POWER DEVELOPMENT BOARD
MYMENSINGH.



TOTAL SAVING : TK. 3,830.00 PER PROJECT

15 DECEMBER, 2004

SUPPORTED BY

O & M CIRCLE, PDB, MYMENSINGH.

ABOUT RUPALI QUALITY CONTROL CIRCLE :

1	Name of the Circle	: RUPALI QUALITY CONTROL CIRCLE
2	Working Division	: Sales and Distribution Division (N), Mymensingh
3	MOTO/SLOGAN	: "We ARE FOR-UNINTERRUPTED POWER SUPPL
4	Date of formation	: 10 JULY/ 2003
5	Starting date of project	: 11 JUNE/ 03
6	Total number of memb	: 8 (Eight)
7	Academic Qualification	: Grade 8 (Minimum)
8	Average age of memb	: 38 years
9	Weekly meeting	: Every Monday after office hour
10	Team Leader	: Mr. Lokman Hossain, Sub-Assistant Engineer.
11	Facilitator	: Jiten Acharjee, Sub-Divisional Engineer.
12	Head of the Division	: Mr. A.B.M. Abdullah, Executive Engineer.

INTRODUCTION OF MEMBERS OF THE Q. C. CIRCLE.

NAME	DESIGNATION
Mr.Shamsuduha Talukder	Assistant Accountant
Mr.Enamul Hoque	Electrician - C
Mr.Nurul Islam	Line man - A
Mr.Ranjan kumar	Line man - A
Mr.Ferdous Alam	Line man - A
Mr.Mohammed Rukunuzzaman	Line man - A
Mr.Mizanur Rahman	Line man - A
Mr.Arman Hossain	Helper

A. SELECTION OF THEME/TOPICS :

Generally, all members get together in monthly meeting with problems they experience while doing work/assignment in the field. They also bring some new ideas and suggestions on critical issues how to get rid of these problems for ensuring uninterrupted and stable power supply. A " Gradation List" is prepared on the basis of some practical and economical aspects considering nature and affects of the problems. Each member shares ideas, analytical thinking for fixing the Priority of the project, cost involvement, feasibility, available resource, effective results (Saving money and customer service) are considered as criteria of decision. Customer's satisfaction and organizational benefits are also counted for making gradation lists.

B. GRADATION OF PROBLEMS/ ISSUES

Sl. No.	Name of Issues	Costing	Effectiveness	Self efforts	Score	Position
1	Transformer Balancing	3	3	3	9	1st
2	Maintenance of transformers	2	3	3	8	2nd
3	Trimming of trees	2	3	2	7	3rd
4	Replacement of undersize co	1	3	1	5	4th
5	Rearrangement of poles	1	2	1	4	5th

C. SCORING METHOD.

01. For costing :
a) For least cost- Internal help -3 points
b) Medium cost- Int. help + Materials - 2 points
c) Most cost- External help + Materials - 1 points

02. Effectiveness :
a) Safety of equipment - 3 points
b) Decrease of Interruption - 2 points
c) System Improvement - 1 points

03. Efforts :
a) 100 % own efforts - 3 points
b) 50 % own efforts + 50% Ext. help - 2 points
c) 100% External help – 1 points

D. FINAL SELECTION AND NAMING THE PROJECT.

After grading the list of problems, SL. No 01 " Transformer balancing " got the position of topmost priority. So the team leader made the decision to take up the project for implementation. The title of the project got the name " Balancing of Distribution transformer "

How problem was identified and why it has got priority?

Operational work group observed that a few transformer connected with the 11 kV feeder giving them very hard time because of frequent burning of DOFC fuse on HV side and tripping of MCCB on LV side though the connected load on the transformer was O.K. One member measured the load of each phase of a 200 KVA, 11/04 kV Distribution transformer in a highly populated Shopping Complex Area, by a clamp meter and the current were found as follows: R= 210A, Y =305A, B=400A.The Q.C. Circle team found, after field inspection that some consumers experienced high voltage and some of them low voltage. Duration of interruption went abnormally high because of taking time for replacement DOFC fuse, LT loop or turning MCCB on.Major problem of unbalanced load is failure of valuable equipment which costs lots of money for replacement or repairing.

Generally our distribution transformers are of Delta-Star vector group with neutral grounding current flows through neutral because of unbalanced load on secondary side causes fatal accident or injury.

How Does A Distribution Transformer Get Unbalanced?

Q.C. Circle members discussed the cause of problem elaborately and wrap-up with the following decisions.

Usually LV side of transformer is connected with LT line of four conductors by PVC cable loop. Top three conductors are for red, yellow and blow phase and the bottom conductor is for neutral. All members inclined with the fact that a technical person (lineman) does not care for the phase load when new service connection is provided to consumer premises. It is common practice of lineman to provide service drop from bottom phase where they can reach easily and they avoid top phase because of laziness.

Another cause is that the consumer does not balance the load of installation, in their premises.

PROBLEM SOLVING PROCEDURE :

The procedure of Load balancing of Distribution transformer is as follows:

01. To shut down the transformer by isolating from 11 kV source HV side
02. To turn the MCCB off on LV side of X-former
03. Proper grounding the LT conductors
04. Shifting load form the most loaded phase to least loaded phase
05. Check the load by clamp meter
06. Re arranging service drops for more perfect.
07. Remove grounding
08. Close the DOF
09. Turn the MCCB on
10. Repeat the proceeding (if necessary) for future improvement.

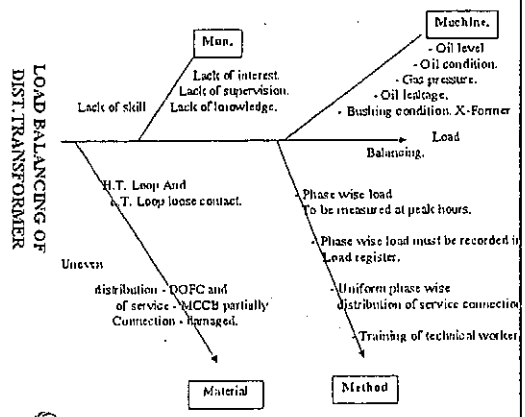
SCHEDULE :

Step	Description	Required time duration
01.	Total isolation of X-Former from source	10 Minutes
02.	Earthing/ Grounding of LT conductors	10 Minutes
03.	Rearrangement of service drop cable	60 Minutes
04.	Removing the earthing/grounding	10 Minutes
05.	Closing isolator (DOFC) and MCCB	10 Minutes
06.	Check the load of each phase	20 Minutes
07.	Repeat if necessary for improvement	30 Minutes
		2 hour 30 Minutes

COMPARISON OF SITUATION :

SL. No	Before	After
01.	Frequent burning of DOFC fuse/ tripping of MCCB.	Hardly need replacement of fuse or MCCB tripping early
02.	Probability of failure of X- Former was 80%.	Probability of failure is nil.
03.	Voltage problem was common	Rated voltage achieved
04.	Duration of interruption was 2 hour per Week.	Duration of interruption is almost nil.

Quality Tool :
Cause and Effect Analysis. (Fish Bone Method)



Best And Effective method to solve the problem.

a. Fish Bone Method have been analyzed.
b. Graph Method have been analyzed.
c. Different options have been analyzed.

Target:

a. To prevent failure of distribution transformer due to unbalanced load.
b. To ensure uninterrupted power supply.
c. To prevent damage of DOFC, MCCB and cable loop.
d. To prevent accident.
To improve voltage as per customer's need.

PROBLEM SOLVING STEPS :

a. Preparing proposal high lighting the problems and showing the cause of problems and suggesting the way of solution.
b. Placing the complete proposal with recommendation of facilitator to the competent authority for approval.
c. The proposal was approved by Executive Engineer Mymensingh for implementation.
d. Procurement of tools; safety device and materials.
Q. C Circle successfully completed assignment under the supervision of team leader.

Result After Completion of Work:

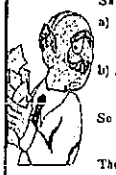
a) Overall system improved.
b) Probability of failure of X- Former is minimized.
c) Voltage problem of the Consumers one connected with this X-Former is eliminated.
d) Duration of interruption is decreased.
Customers receive voltage as per PDB's standard.

TEAM Work:

All members of the Q.C. Circle involved in discussion and analyzing the problem for finding the way of solutions by brain storming process. The team successfully completed the job by themselves to achieve quality. The team is very confident now and is prepared for the next project.

Effectiveness/ Gain:

a) The team did the job nicely by themselves.
b) Cost of material per transformer — TK. 500.00
Work equivalent to TK. (20.00 TK./hour x 4 hour x 4 Man) — TK. 320.00
Total expenditure = — TK. 820.00



Savings:

a) Price of the Transformer Tk =1,50,000.00
(-) Depreciation cost Tk =50,000.00
Say total TK =1,00,000.00

b) Av. savings of interrupted hour/ day and considering billing rate
= 100 Kws x 15 Hour x3.10 Tk/Kwh) = 4,650.00.00

So Net Gain = TK. (4,650.00-820.00)
= TK. 3,830.00

The RUPALI Q.C. Circle activity saves the transformer from damaging as wells as financial loss due to interruption and emphasizes customer satisfaction.

Effectiveness (Others) :

1. 2% of distribution transformer are damaged per year because of unbalanced load.
2. Repairing workshop of PDB spent Av. Tk. 20,000/- per transformer.
3. Consumer dissatisfaction because of frequents power failure.

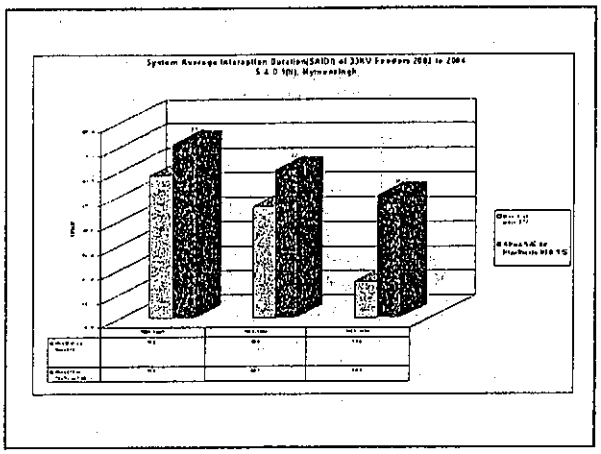
The problems as mentioned were solved by RUPALI Q.C. Circle It leads customer's satisfaction as well as saved financial loss of our organization.

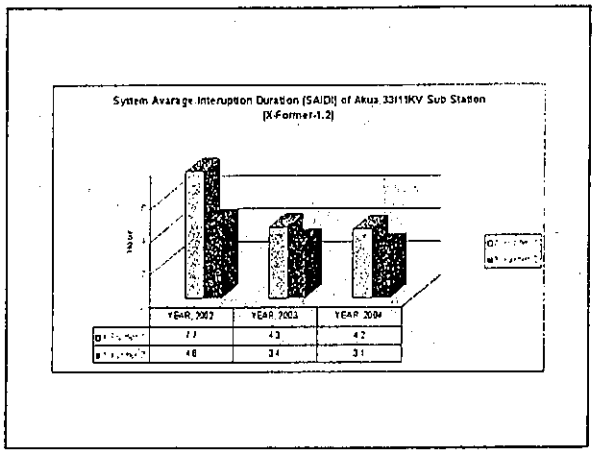
Member of our Quality Circle has been inspired now all the members of Quality Circle are motivated to achieve goal. Concerned members of Q.C. Circle have got Job training.

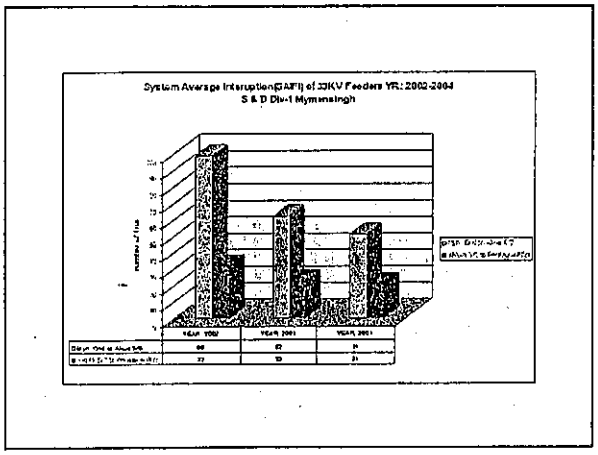
Next Project:

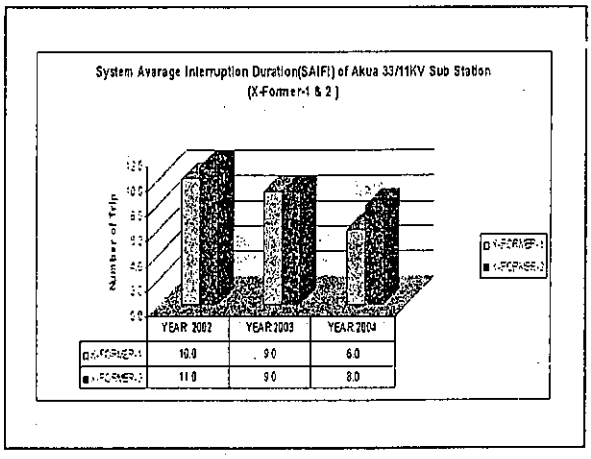
This team would continue to work following the above procedure. We have decided to take up next project as per priority gradation table " Maintenance of Transformer" which is now under progress of implementation.

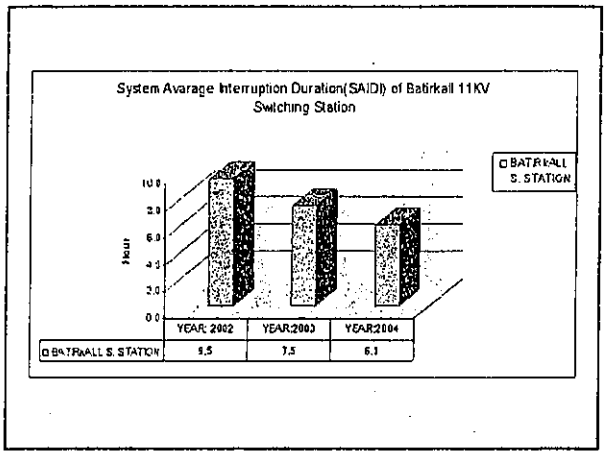
" Thank You All Again for Patient Hearing "

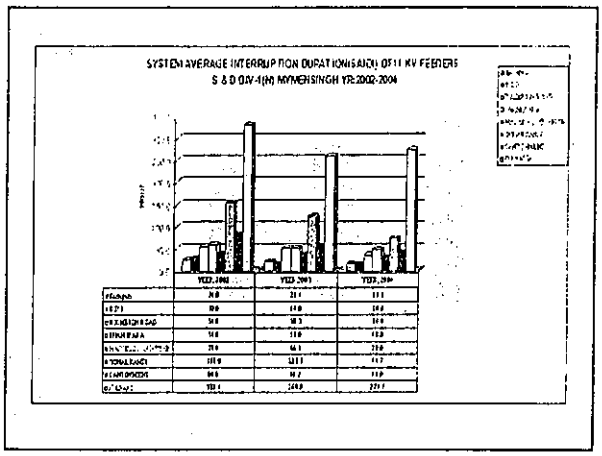


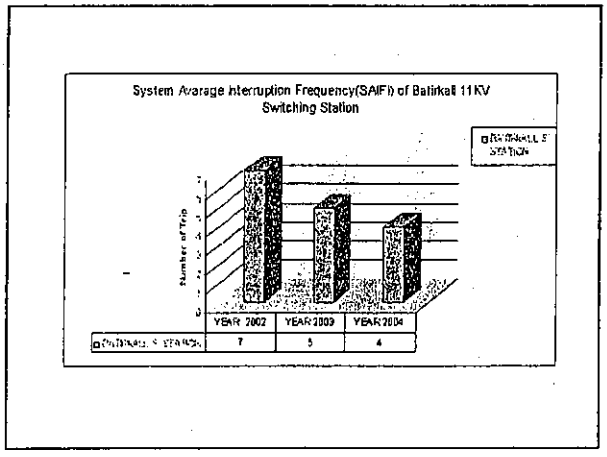

System Avarage Interruption Duration (SAIDI) of Akua 33/11KV Sub Station
(X-Former-1,2)
YEAR 2002
YEAR 2003
YEAR 2004
43
42
34
31

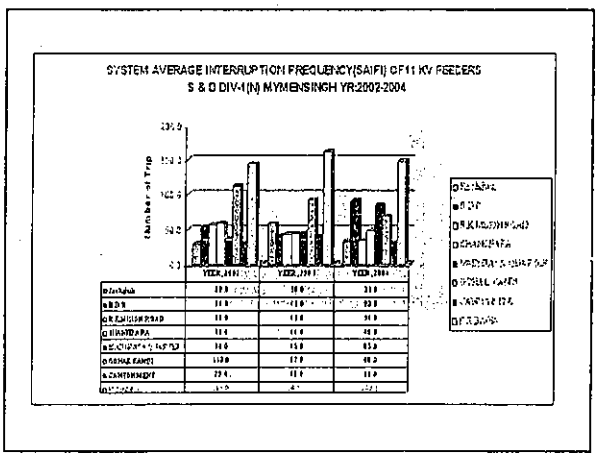

System Avarage Interruption(SAIFI) of 33KV Feeders YR: 2002-2004
S & D Div-I Mymensingh

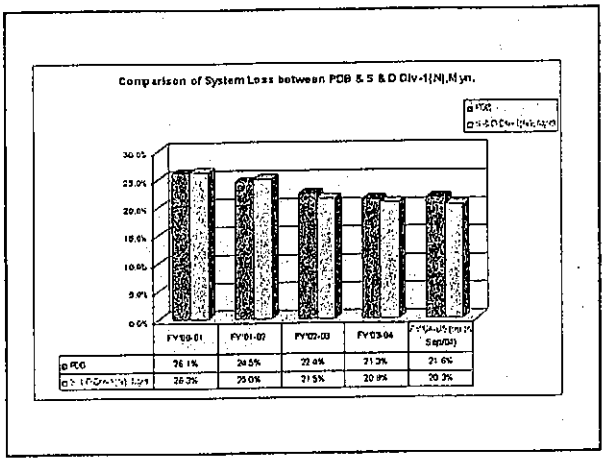

System Avarage Interruption Duration(SAIFI) of Akua 33/11KV Sub Station
(X-Former-1 & 2)
Number of Trip
YEAR 2002
YEAR 2003
YEAR 2004
10.0
9.0
6.0
11.0
9.0
8.0

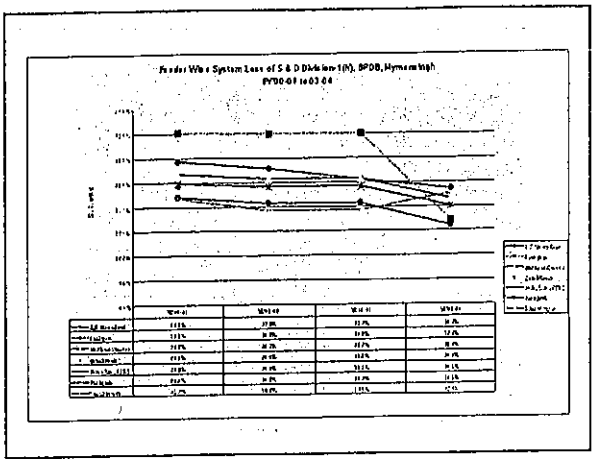

System Avarage Interruption Duration(SAIDI) of Batirkall 11KV Switching Station
Hour
YEAR: 2002
YEAR:2003
YEAR:2004
BATIRKALL S. STATION
5.5
7.5
6.1

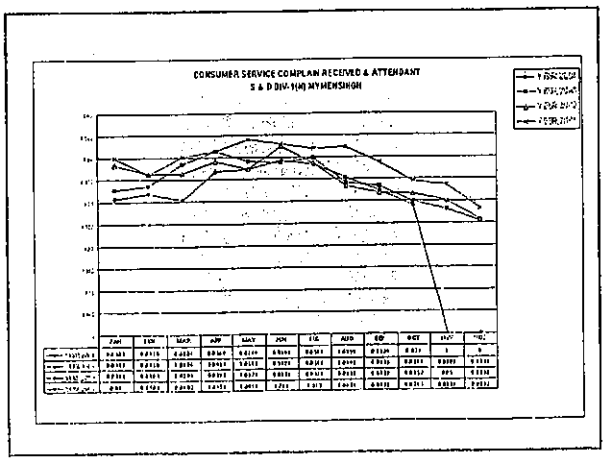

SYSTEM AVERAGE INTERRUPTION DURATION(SAIDI) OF 11 KV FEEDERS
S & D DIV-1(N) MYMENSINGH YR:2002-2004

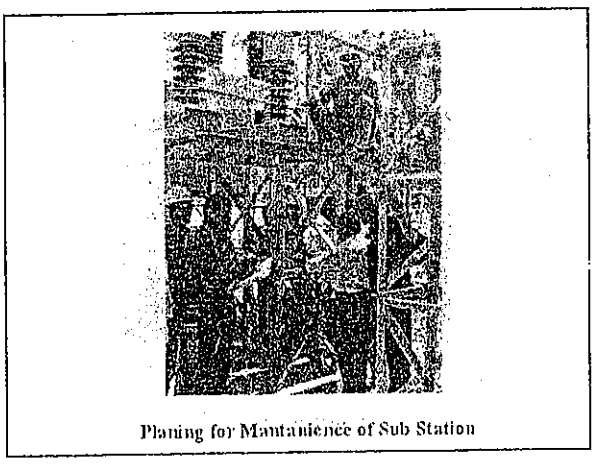

System Avarage Interruption Frequency(SAIFI) of Batirkall 11KV Switching Station
Number of Trip
YEAR: 2002
YEAR:2003
YEAR:2004
7
5
4


SYSTEM AVERAGE INTERRUPTION FREQUENCY(SAIFI) OF 11 KV FEEDERS
S & D DIV-1(N) MYMENSINGH YR:2002-2004

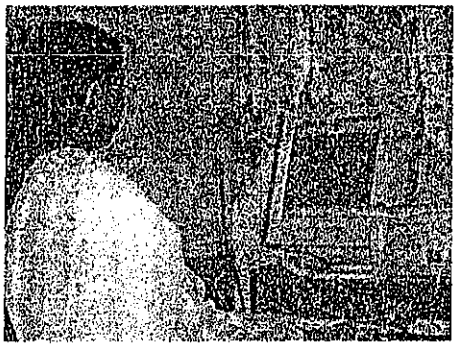




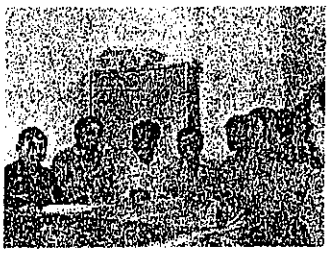




Planing for Mantanience of Sub Station



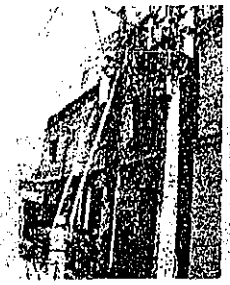
Computer Billing



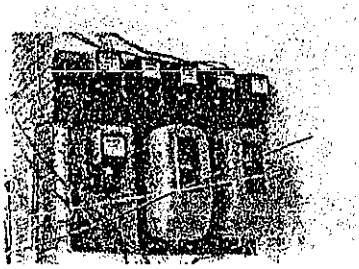
QC Circle Meeting

Computer Billing

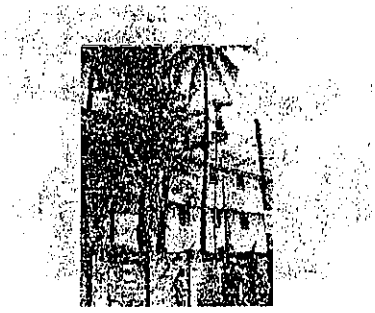
Maintenance of Sub Station



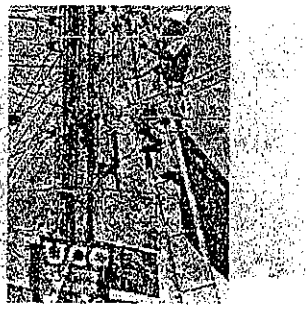
Load Measurement



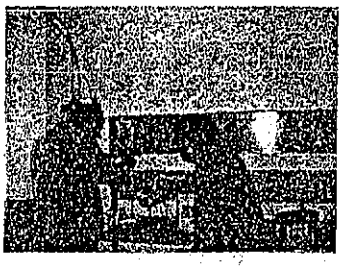
Meter Installed Out Side



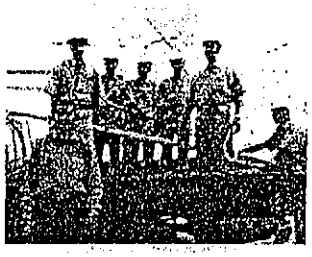
Tree Trimming



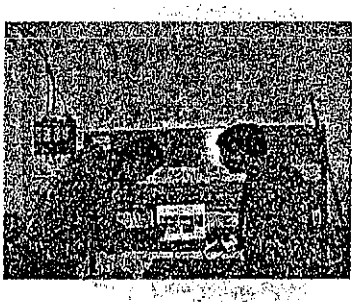
Load Balancing



Meter Testing

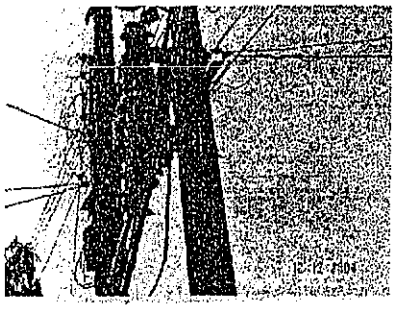


Ready to go for Work

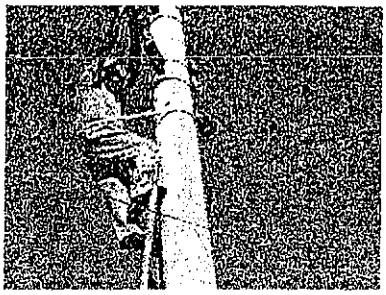


Meter Testing

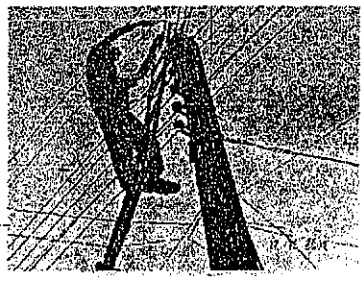
Planing for Work



Service Drop Standardizing

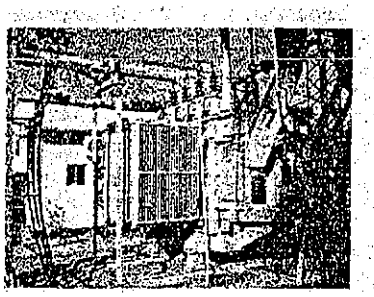


Use of Safety Device



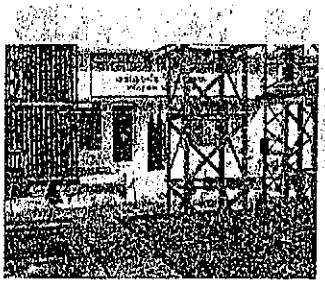
Tightening of Jumper

Switch Yard Landscape



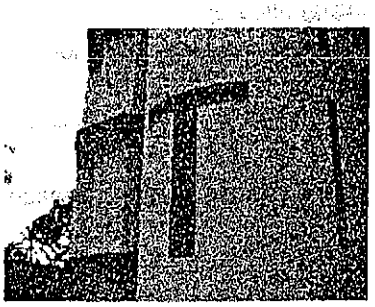
New Sub Station

Control Room



Tidy Switch Yard

Gardening



Administrative Building Mymensingh

Distribution O&M Activities
- for more improvement -

Y.TERAI
JICA Short-term Expert
15th Dec, 2004

Fact Findings

1.Achievement in Mymensingh Circle
- Changing Mindset
- Changing Atmosphere/Behavior

2.Gap between Guidelines and Actual Activities

3.Need for Improvement of Data Management

Gap between Guideline and Actual Activity

Manual and its Practice

Manual for O&M of Distribution System
- Good Guideline for Scheduled and Preventive O&M

Commercial Operation Procedures for ESU
- Good Procedure for Prevention of Corruption and Human Error

Manual is good but Practice is ・・・

What is the Problem ?

No Needs, No Motivation to follow manuals
- Problems of Operation System?
- Problems of Management?
- Problems of Culture?
- Problems of Implementation of Manual?
- Problems of Manpower?

Top & Middle Management should consider and take action immediately!

Supervising, Management

Monitoring & Feedback System should be implemented properly and thoroughly!

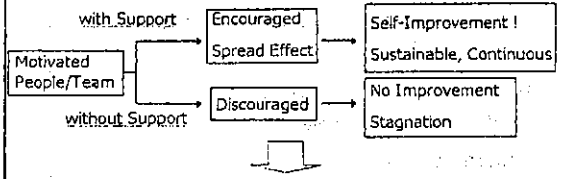
Who is responsible for?

Top & Middle Management

Awareness of - Responsibility, Leadership
- Scope of Your Work
- Management

Encouragement of Motivated People

With support from bosses, Motivated People/ Team will find and implement proper way!



Managerial People should initiate/change mindset

- Commitment - Involvement - Recognition of good job etc.

Need for Improvement of Data Management

Shift to Preventive O&M

JICA Experts' Suggestion : Preventive O&M

Type of O&M	Activity
Post Interruption/Failure (Before TQM)	Non Scheduled Activity Non Preventive O&M
Initial Preventive (After TQM)	Scheduled O&M e.g. Tree Trimming Balancing Load
Advanced Preventive (Future Target)	**Data Based & Scheduled with Data Management**

Data Based Activity

Present

Result Control

Data Collection → Reporting → Feedback? Providing Countermeasure ? Accountability?

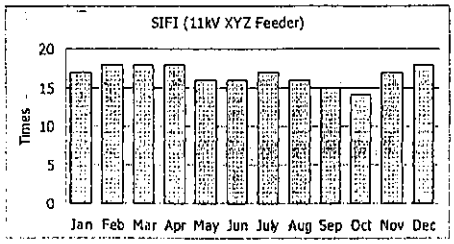
Ideal

Data Management and Data Based Activity

Data Collection & Management → Data Analysis → Effect Analysis Countermeasures

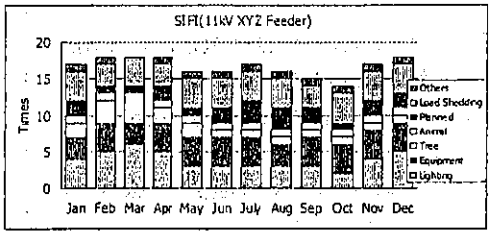
- ✓Accountability
- ✓Identification of Root Causes
- ✓Prevention of Similar Failure, Loss etc.

Data Based Activity



We understand actual situation and trend.
But what's next action?

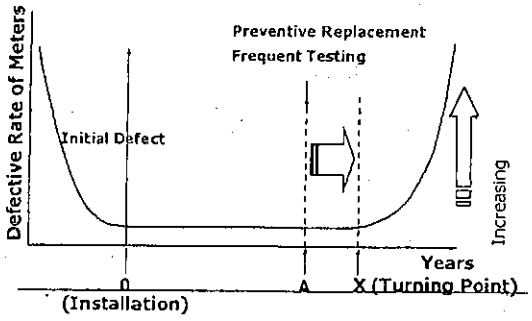
Data Based Activity



We can identify issues and discuss countermeasure!

Example: Defective Meter

Relation between Age of Meter & Defective Rate



Example: Defective Meter

- ✓ Data Collection
  - · No. of Defective Meter · Manufacturer
  - · Year of manufacture · Defective Point etc.
- ✓ Analysis
  - Trend of Initial Defect (Quality Problem)
  - Trend of Life Duration of Meter etc.
- ✓ Countermeasure
  - Suspending of Certification
  - Preventive and Periodical Replacement (Before Defective)
  - Frequent and Scheduled Testing for Aged Meter

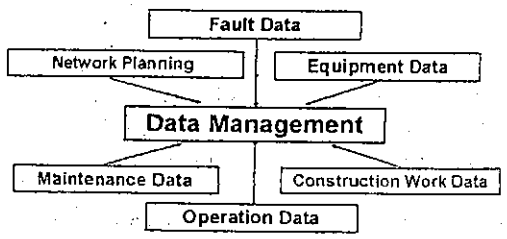
What is Required?

- ✓ Emphasis on Accountability
  - Changing Management Philosophy
  - Changing Culture
- ✓ Report & Analysis oriented Record
  - Review & Revision of Present Procedure/Format
- ✓ Data Maintenance

  e.g. Equipment Register

  (Year, Type, Manufacturer, Place etc.)

Data Management System



- ✓ Computerized Database (e.g. Geographic Information System)
- ✓ Information Sharing
- ✓ Decision Support System

Conclusion

- ✓ Gap between Guidance and Actual Activities
  - Proper & thorough Monitoring & Feedback
  - Encouragement of Motivated People
- ✓ Need for Improvement of Data Management
  - Data Management & Data Based Activity
  - Data Management System

Thank you

TQM
—Management Reinvention in BPDB—

S. Otaru
JICA Short-term Expert
15th Dec, 2004

About Presentation

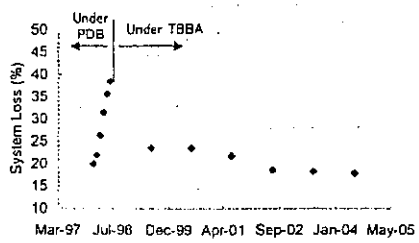
- Purpose: Encourage Top Commitment by:
  - Challenging current Management
  - Suggesting ideas for improvement
  - Questioning for the future
- Method: Open discussion based on Slides
  - I will call your opinion
  - Free to raise issues/questions during presentation (in clear English)

Why TQM? What is the Objective?

Why Necessary? What is the Driver?

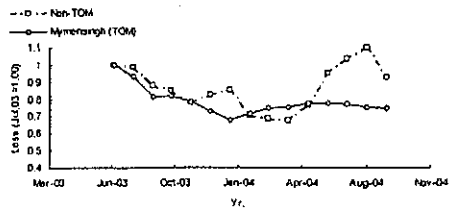
Example-1: Difference from other org.

Same Distribution Network (Hardware) with different Management (Soft)



Example-2: Difference within BPDB

System Loss (Excl. REB) in Two Circles



- Performance widely vary between offices
- One office has shown fluctuation in performance

Fluctuation=Uncertainty=Risk→Influence lender's decision

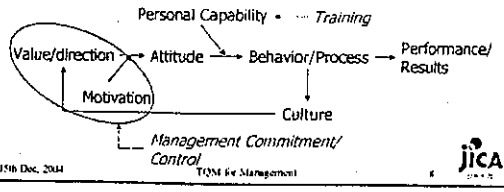
Mindset Change—For Management

- Your Business earns money NOT from developing facilities BUT from maintaining/ improving facilities
- Control not only by Results but also by quality of Process (=reduce uncertainty)
  - Quality of Process=Quality of People's behavior—*control by interaction*

Key Concept of TQM

Management under TQM

- Change from watching Number to Interacting your People
  - Have you visited all of your site offices?
  - Have you discussed openly with your people??
- How to Influence your people—behavior Model



TQM in Management: Interactive Control

Interactive Control System—address uncertainty
- Incorporating process data into management interaction
- Face-to-face meetings with employees
- Challenging data, assumptions and action plans of subordinates

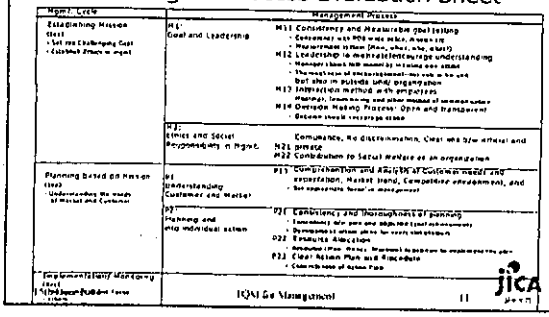
Communication Tool/Method
- Walk & Talk (Monitoring and Coaching)
- Pre Action Review and Monitoring (Annual/ Quarterly/ Monthly Business-Action Plan)
- Budgeting Process

Issues

- No clear direction/ guideline for desired Process and behavior
  - Top management should think through:
    - What activities are desired
    - What activities are likely under current management system
- Weak Communication b/w Top mgmt. & Field offices
  - PDB should restructure:
    - Budgeting System
    - Business Planning Process

Recom.(1): Incorporate Process Quality

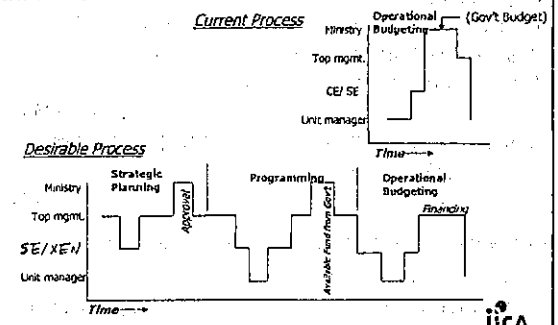
- Create Mgmt. Process Evaluation Sheet



Recom(2): Reform Budgeting/ Planning process

- Change your mindset:
  - Budget should be decided by the PURPOSE and NEEDS, not by Fund Availability
  - Budgeting is a Communication Process, not a Fund allocation system
- Change Process: Key—Involve field offices in decision making and Reviewing
  - Take time for communication (6months—TEPCO)
  - Systematize Budgeting/Planning process
    - Top management should suggest clear policy
    - Field Offices should be responsible for every budget item (needs and its cost efficiency) and commit it

Budgeting & Planning Process



Frequency of Budget Review (Data)

- US Industry: *How Frequently do you review budget for possible revision of goals, or evaluation purpose?*

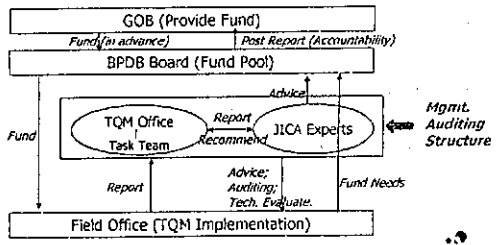
Reviewed	Budget Reviewed for Planning purpose (n=380) (%)	Evaluation purpos (n=365) (%)	
Monthly	32	34	] TEPCO, AES
Quartely	42	29	
Semi-Annually	13	12	
As-needed	7	9	
Never	7	16	— BPDB

Proposal (1): Training of Top Mgmt.

- Top Management should learn to:
  - Describe Desired Activity of their People (HOSHIN: *refer to Recom.-1*)
  - How to influence on them (Strategy)
  - How to control the quality and monitor it (KANRI: *refer to Recom.-2*)
- Start from Training:
  - Practical Training that you actually solve your own problem using QC methods
  - JICA may assist the formation and implementation of the training both in Bangladesh and in Japan

Proposal (2): Financial Empowerment for TQM

- Ministry may consider establishing 'Management Improvement Fund' to finance TQM activities in Field Offices



Future Issue

- Future Functions and Responsibility-Authority Scope of BPDB Shareholding Company (after reform) should be established.

  (For TQM)
  - How to promote TQM under unbundled structure?
  - What is the job scope of TQM Prom. Office?
  - What Org. Structure is appropriate?

Conclusion

- Crisis is Here. Without management reinvention NOW, BPDB will disappear.
- TQM is the method for Organizational Learning through Process Reinvention
- Learning occurs by Changing
- Top Management's job is NOT monitoring results BUT managing Changing Process in People (e.g., Jack Welch, Carlos Gohn)
- Work Hard, and You can do it

Management Process Monitoring Sheet (Example)

Mgmt. Cycle	Management Process	
Establishing Mission (key) - Set the Challenging Goal - Establish Ethics in mgmt	M1: Goal and Leadership	M11 Consistency and Measurable goal setting • Consistency with PDB wide policy, mission etc. • Measurement system (How, when, who, what?) M12 Leadership to motivate/encourage understanding • Manager shows role model by initiating own action • Thoroughness of encouragement--not only in his unit but also in outside unit/ organization M13 Interaction method with employees • Meetings, Interviewing and other method of communication M14 Decision Making Process: Open and transparent • Decision should encourage action
	M2: Ethics and Social Responsibility in Mgmt.	M21 Compliance, No discremination, Clear line b/w official and private M22 Contribution to Social Welfare as an organization
Planning based on Mission (key) - Understanding the needs of Market and Customer	P1: Understanding Customer and Market	P11 Comprehension and Analysis of Customer needs and expectation, Market trend, Competitive environment, and • Set appropriate 'focus' in management
	P2: Planning and into individual action	P21 Consistency and thoroughness of planning • Consistency b/w plan and objective (goal achievement) • Development action plans for every stakeholders P22 Resource Allocation • Resource (Man, Money, Machine) Acquisition to implement the plan P23 Clear Action Plan and Procedure • Concreteness of Action Plan
Implementation/ Monitoring (Key) - Thoroughness and Focus - others		
Evaluation (Key) - Effectiveness - Efficiency - Sustainability		See PCM Framework
Feedback/ Reporting (Key) - Call concrete action - Quality Reward		F31 Reward should be: • valued by the person being rewarded • large enough to have impact • why they are given, should be understandable • timely • memorable so that learning occurs • reversible • cost efficient

Welcome and thank you all

CASE STUDY PRESENTED BY

RUPALI Q.C CIRCLE
SALES AND DISTRIBUTION DIVISION (NORTH)
BPDB, MYMENSINGH.

TODAY 15TH DECEMBER/ 2004

Savings:

a) Price of the Transformer Tk.=1,50,000.00
(-) Depreciation cost Tk.=50,000.00
Say total TK.=1,00,000.00

b) Av. savings of interrupted hour/ day and considering billing rate
= 100 Kw×15 Hour×3.10 Tk/ Kwh) = 4,650.00.00

Net Gain = TK. (4,650.00 - 820.00)
= TK. 3,830.00

The RUPALI Q.C. Circle activity saved the transformer from damaging and financial loss as well of PDB.

Effectiveness (Others) :

1. 2% of distribution transformer are damaged per year because of unbalanced load.
2. Repairing cost Av. Tk. 20,000/- per transformer.
3. Consumer dissatisfaction because of frequents power failure.

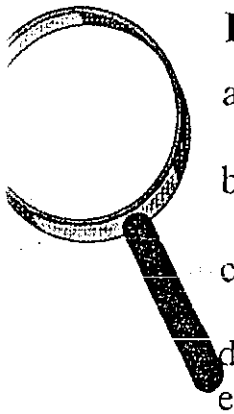
The problems as mentioned above were solved by RUPALI Q.C. Circle.

Member of our Q.C Circle was inspired. Now members of Q.C Circle are motivated to achieve goal. Members of Q.C. Circle have got job training.

Next Project:

This team would continue to work following the above procedure. We have decided to take up next project as per priority gradation table " **Maintenance of Transformer**" which is now under progress of implementation.

" Thank You All Again for Patient Hearing "



PROBLEM SOLVING STEPS :

a. Preparation of proposal highlighting the problems and showing th cause of problems and suggesting for possible solutions.
b. Placing the complete proposal with recommendation of facilitator t the competent authority for approval.
c. The proposal was approved by Executive Engineer Mymensingh for implementation.
d. Procurement of tools: safety device and necessary materials.
e. Successfully completed of the project under the supervision of Team Leader.

Result After Completion Of Work:

a) Overall system improved.
b) Probability of failure of Transformer is reduced.
c) Voltage problem of consumer is eliminated.
d) Duration of interruption is decreased.
e) Voltage improved according to consumer's need.

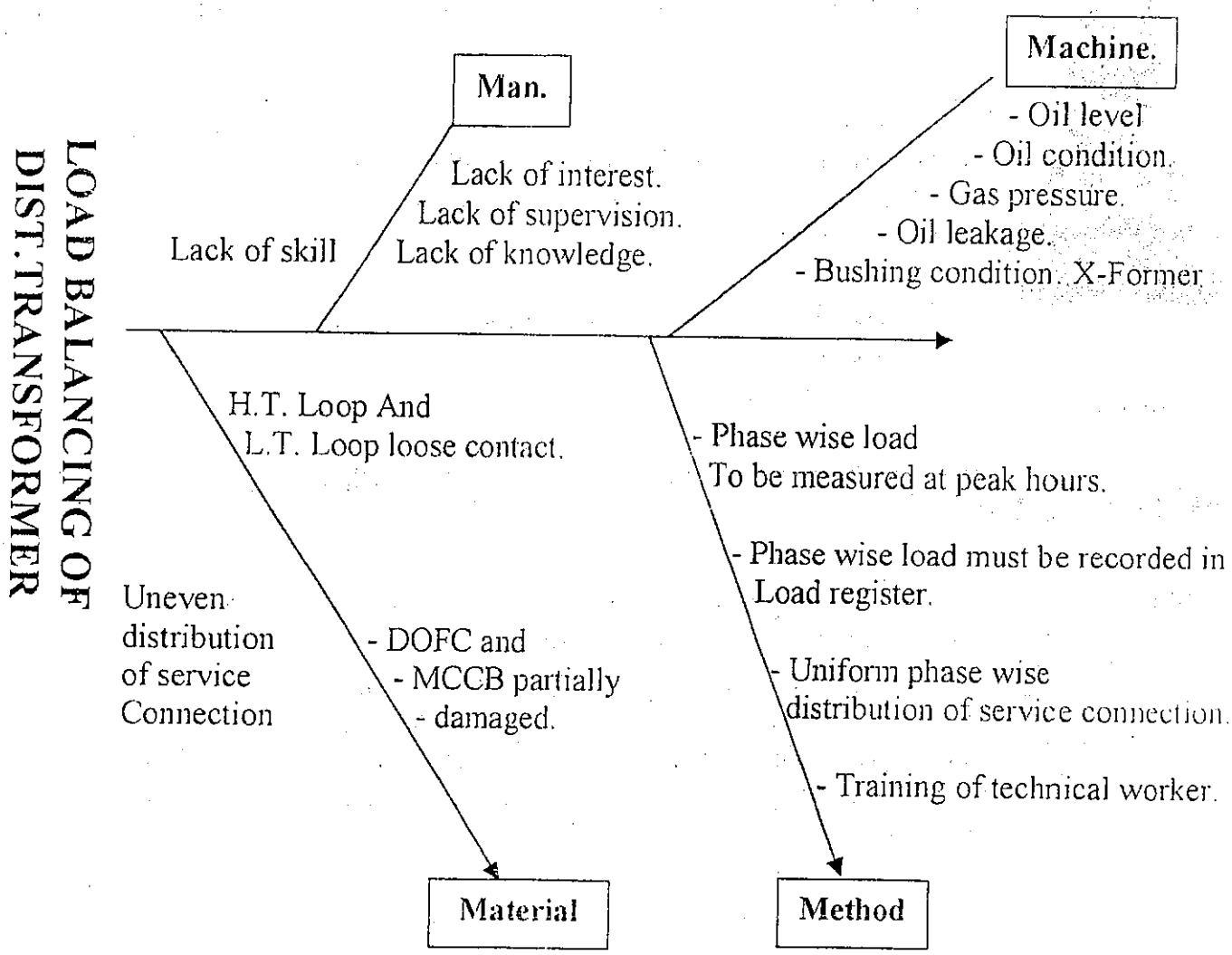
TEAM Work:

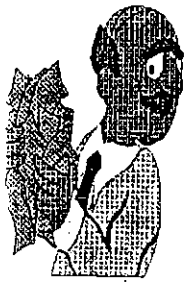
All members of the Q.C. Circle involved in discussion and analyzing the problem for finding the way of solutions by brain storming process. The team successfully completed the job by themselves to achieve quality. The team is very confident and is prepared for the next project.

Effectiveness/ Gain:

a) The team did the job nicely by themselves.
b) Cost of material per transformer (LS) TK. 500.00
Work equivalent to (TK. 20.00/ hour x 4 hour x 4 Man) TK. 320.00
Total expenditure = TK. 820.00

Quality Tool :
Cause and Effect Analysis. (Fish Bone Method)





Best And Effective method to solve the problem.

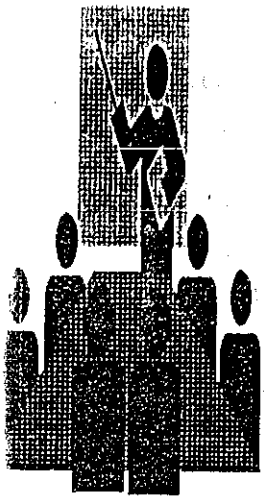
a. Fish Bone Method have been analyzed.
b. Graph Method have been analyzed.
c. Different options have been analyzed.

Target:

a. To prevent failure of distribution transformer due to unbalanced load.
b. To ensure uninterrupted power supply.
c. To prevent damage of DOFC, MCCB and cable loop.
d. To prevent accident.

To improve voltage as per customer's need.

PROBLEM SOLVING PROCEDURE :



The procedures of Load balancing of Distribution transformer are as follows:

01. To shut down the Transformer by isolating from 11 kV source.
02. To turn the MCCB off on LV side of Transformer.
03. Proper grounding the LT conductors.
04. Shifting load from the most loaded phase to least loaded phase.
05. Check the load by clamp meter.
06. Re arranging service drops for more perfectness.
07. Remove grounding.
08. Close the DOF.
09. Turn the MCCB Close.
10. Repeat the proceeding (if necessary) for further improvement.

SCHEDULE :

Step	Description	Required time duration
01.	Total isolation of Transformer from source	10 Minutes
02.	Earthing/ Grounding of LT conductors	10 Minutes
03.	Rearrangement of service drop cable	60 Minutes
04.	Removing the earthing/grounding	10 Minutes
05.	Closing isolator (DOFC) and MCCB	10 Minutes
06.	Check the load of each phase	20 Minutes
07.	Repeat if necessary for improvement	30 Minutes
		2 hour 30 Minutes

COMPARISON OF SITUATION :

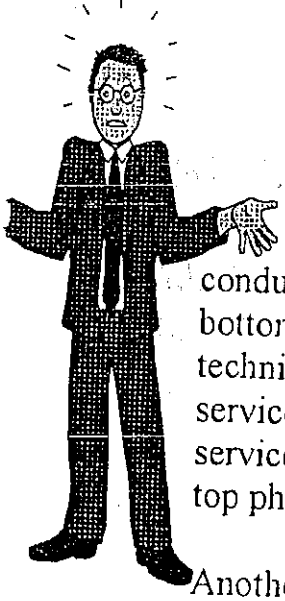
SL. No	Before	After
01.	Frequent burning of DOFC fuse/ tripping of MCCB.	Hardly need replacement of fuse or MCCB tripping early
02.	Probability of failure of Transformer was 80%.	Probability of failure is nil.
03.	Voltage problem was common	Rated voltage achieved
04.	Duration of interruption was 2 hour per Week.	Duration of interruption is almost nil.

How problem was identified and why it has got priority?

Operational work group observed that a few transformer connected with the 11 kV feeder giving them very hard time because of frequent burning of DOFC fuse on HV side and tripping of MCCB on LV side though the connected load on the transformer was O.K. One member measured the load of each phase of a 200 KVA, 11/04 kV Distribution transformer in a highl populated Shopping Complex Area. by a clamp meter and the current were as follows: R= 210A, Y =305A, B=400A. Some consumers experienced high voltage and some of them low voltage. Duration of interruption went abnormally high because of taking time for replacement DOFC fuse, LT loop or turning MCCB ON. Major problem of unbalanced load is failure of valuable equipment, which costs lots of money for replacement or repairing.

Generally our distribution transformers are of Delta-Star vector group with neutral grounding, current through neutral because of unbalanced load on secondary side causes fatal accident or injury.

How Does A Distribution Transformer Get Unbalanced?



Q.C. Circle members discussed the cause of problem.

Usually LV side of transformer is connected with LT line of four conductors. Top three conductors are for red, yellow and blue phase and the bottom conductor is for neutral. All members inclined with the fact that a technical person (lineman) does not care for the phase load when new service connection is provided. It is common practice of lineman to provide service drop from bottom phase where they can reach easily and they avoid top phase because of laziness.

Another cause is that the consumer does not balance the load of installation in their premises.

C. SCORING METHOD.

01.	For costing :	a) For least cost- Internal help -3 points b) Medium cost- Int. help + Materials - 2 points c) Most cost- External help + Materials - 1 points
02.	Effectiveness :	a) Safety of equipment - 3 points b) Decrease of Interruption - 2 points c) System Improvement - 1 points
03.	Efforts :	a) 100 % own efforts - 3 points b) 50 % own efforts + 50% Ext. help - 2 points c) 100% External help – 1 points

D. FINAL SELECTION AND NAMING THE PROJECT.

After grading the list of problems, SL. No 01 " **Transformer balancing** " got the position of topmost priority. So the team leader made the decision to take up the project for implementation. The title of the project got the name " Balancing of Distribution transformer "

A. SELECTION OF THEME/TOPICS :

Generally, all members get together in monthly meeting with problems they in the field. They also bring some new ideas and suggestions on critical issues. A " Gradation List'' is prepared on the basis of some practical and economical aspects considering nature and affects of the problems. Each member shares ideas, analytical thinking for fixing the Priority of the Project. Cost involvement, feasibility, available resource, effective results are considered as criteria of decision. Customer's satisfaction and organizational benefits are also counted for making gradation lists.

B. GRADATION OF PROBLEMS/ ISSUES

SL. No.	Name of issues	Costing	Effectiveness	Self efforts	Score
1	Transformer Balancing	3	3	3	9
2	Maintenance of transformers	2	3	3	8
3	Trimming of tress	2	3	2	7
4	Replacement of undersize conductor	1	3	1	5
5	Rearrangement of poles	1	2	1	4

ABOUT RUPALI QUALITY CONTROL CIRCLE :

1	Name of the Circle	: RUPALI Q.C CIRCLE
2	Working Division	: Sales and Distribution Division (N),PDB, Mymensingh
3	MOTO/SLOGAN	: "We ARE FOR-UN-INTERRUPTED POWER SUPPLY"
4	Date of formation	: 10 JULY/ 2003
5	Starting date of project	: 11 JUNE/ 03
6	Total number of members	: 8 (Eight)
7	Academic Qualification	: Grade 8 (Minimum)
8	Average age of members	: 38 years
9	Weekly meeting	: Every Monday after office hour
0	Team Leader	: Mr. Lokman Hossain, Sub-Assistant Engineer.
1	Facilitator	: MD. Lutfar Rahman, Sub-Divisional Engineer.
2	Head of the Division	: Mr. A.B.M. Abdullah, Executive Engineer.

MEMBERS OF THE Q. C. CIRCLE.

NAME	DESIGNATION
.Shamsudduha Talukdar	Assistant Accountant
.Enamul Hoque	Electrician - C
.Nurul Islam	Line man - A
.Ratan kumar Dash	Line man - A
.Ferdous Alam	Line man - A
.Rukunuzzaman	Line man - A
.Mizanur Rahman	Line man - A
.Arman Hossain	Helper