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NRECA/CAI ADVISORY TEAM

FIFTH ANNUAL  
EVALUATION REPORT

TO

RURAL ELECTRIFICATION BOARD  
DHAKA, BANGLADESH

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## I. INTRODUCTION

The purpose of the NRECA/CAI Fifth Annual Rural Electrification Project Evaluation is to objectively analyze the development of the project to date, by identifying the strengths as well as areas that need strengthening, to enable the REB to develop the absorptive capacity to continue the orderly development of the program as well as ensure that the PBSs develop into well managed, viable electric utilities.

This will enable NRECA/CAI to prepare a comprehensive technical assistance plan reflecting the real needs of the program over time and permitting the flexibility needed to achieve the stated purpose.

To achieve this purpose the evaluation will: (1) Identify the levels of operation now reached by the REB and PBS's and the targets to be achieved during the next six years. This will be accomplished through the use of administrative and financial and technical indicators. (2) A review of the existing staffing and proficiency levels and the levels required by the REB and the PBSs to achieve the operational efficiency for viable operations in the REB and the 33 PBS's under development.

These will enable NRECA/CAI to: (1) Recommend the levels and types of assistance to be carried out by expatriate staff in a continuing Technical Assistance Agreement, and (2) Develop a proposed phase-in of trained Bangladesh professionals in numbers adequate to reduce expatriate staff.

The result will be a logical work program with a clearly articulated work scope and statement of purpose.

We are appreciative of the imports of both AID and REB to this evaluation.

### A. RURAL ELECTRIFICATION BOARD (REB)

The Rural Electrification Board was established by Presidential Ordinance in October, 1977 and began to function in January 1978. The duties of the REB are to initiate, formulate, administer and supervise a program of approved projects with respect to the distribution of electric energy in the rural areas of Bangladesh. It was determined that this could be best accomplished through the formation of member-owned electric societies, Palli Bidyut Samities (PNSs), with the REB acting as the banker, prime contractor and advisor to the rural electric societies.

Plans for Phase-I, Phase-I Extension and Phase-II Area Coverage Rural Electrification have been completed, which have led to the commitment of funds to the rural electrification program from USAID, Kuwait, Finland and World Bank, to establish 33 PBSs in 117 Thanas of Bangladesh.

The REB developed the first 13 Phase-I PBSs from funding through the Agency for International Development. The 13th USAID funded PBS, under Phase-I, became operational in October 1982. Organizational development

and registration has been completed in 9 additional PBSs of RE Phase-I extension and RE Phase-II. It is anticipated that 4 of these PBSs will become operational the first quarter of 1984. The remaining 11 RE Phase-I Extension and RE Phase-II PBSs, are presently in various stages of organizational development.

The initial applications for membership in the PBSs has more than doubled the original estimates, therefore additional funding will be necessary to meet the requirements for additional basic facilities and system renovation to provide Area Coverage Rural Electrification for economic, domestic and productive uses for agricultural, irrigation and rural industries of Bangladesh.

#### B. PALLI BIDYUT SAMITY (PBS)

Each PBS is governed by a local 9 to 15 person Board of Directors, both men and women. Also, each Board of Directors may have a maximum of 5 Lady Advisors participating in board activities. Directors are initially selected, and then elected by the membership of their Elaka (area) on a rotating basis, beginning 18 months after energization. The Board appoints Board Standing Committees with an Office Bearer (Officer) chairing each committee. The committees are Executive, Policy, Finance and Member Services. The office bearers comprise the Executive Committee. Except for the Executive Committee, each committee member is rotated on an annual basis, accelerating their knowledge of the PBS functions and procedures, thereby allowing them to better perform their Board responsibilities. The program for the PBS development includes extensive management, administrative and technical training, along with on-the-job technical assistance and organizational and departmental planning. The Board of Directors are very representative of the rural area, being comprised of farmers, businessmen, teachers, social workers, doctors and attorneys.

Local control and autonomy of the PBS's is central to the rural electrification concept for providing efficient, reliable rural electric service. However, the application and implementation of this concept is very carefully weighed, because of the REB need to sufficiently guide, monitor and control new PBS's under the terms of the PBS development loans. As the PBSs develop with experience and achieve financial viability, the paternal rule of the REB will reduce accordingly.

## II. SUMMARY AND RECOMMENDATIONS

### A. Progress

The overall Bangladesh Area Coverage Rural Electrification project is proceeding quite rapidly. Progress to date is very impressive, and has been responsible for the major steps forward in the rural economic development of Bangladesh. This remarkable progress is due primarily to a strong national commitment at the highest level; capable and dedicated leadership of the REB; and the involvement and desire of the rural people.

Created in 1978, as a new and unique organization to Bangladesh, the REB has caused to be established, and sponsored the development of, several indigenous industries which supply: Mercury Vapor lights for security and street lighting; Treated Wood Products; selected line hardware; Single phase motors and electric starters of 5 and 7.5 hp. rating; 10KVA transformers; Cottage Industry and agricultural processing equipment including potters wheels; wheat thrashers, rice thrashers and grain dryers; duplex and quadrupled service conductor and improved house wiring and service entrance material, including conduit weather heads, main switches and ground rods.

The REB has developed both an Institutional and Technical Training Institute. The present curriculum of 57 courses, has been presented to 6,724 REB and PBS officials, board members, employees, PDB engineers and potential village electricians. These courses are in the fields of General Orientation, Management, Finance and Accounting, System Engineering, Construction, System Operations and Maintenance, Power Use, Lineman Training and Job Training and Safety. Course development materials include visual aids and special equipment, as well as text-books and manuals.

Finance Management has been developed, and implemented, within the program. An Electric Utility Uniform System of Accounts was developed very early in the program, including a series of Accounting and Finance Instructions with Procedure Manuals, for both REB and PBS. Within the REB Finance Management is the PBS Loan Branch, PBS Audit Branch and an Internal Audit Branch.

The REB has adopted Engineering and Construction Standards, and is presently developing a REB Material Standards and Specification Manual. The purpose of this manual is to standardize the material standards and specifications for the rural electrifications program of Bangladesh.

A Program Planning Directorate has been established and is preparing a Master Plan to determine, and monitor, the program objectives, strategies, goals and resource allocations which have been selected, so they may best be applied for the future development of rural electrification.

There are presently 13 PBSs energized and fully operational in RE Phase-I. The REB has established a PBS Management Operations, PBS Office Systems and PBS System Operation Directorates to advise, assist, train and monitor the development of all PBSs. These 13 PBSs are presently serving 60% of the villages, of 117 Thanas, lying within the mileage allocated through present funding. However, this is only 30% of the total villages within the boundry of the PBS service area. Work toward the achievement of goals, within the allocated funding, is progressing well; 86% of the allocated distribution line has been strung; 74% of the allocated distribution line is energized and 94% of the target-to-date connections have been made. The RE Phase-I Extension and RE Phase-II, now have 9 PBSs organized and registered. Four of these PBSs will be energized the first quarter of 1984. The remaining 11 PBSs are presently under organizational development.

B. REB Problems

The REB must function within certain constraints which make effective, efficient implementation of the total management function of the project difficult to administer. Many times delayed, or the lack of complete, accurate information from officers and staff, results in executive decisions for corrective action being untimely, inappropriate or contradictory. Many times verbal statements, or expressed ideas, from REB executive officers are mis-interpreted as "official orders" by both REB and PBS staff. In addition the indicated resistance to comply with the established elements of internal control.

Policy Instruction and Procedures are not always interpreted properly or adhered to. Often the intention of the instruction, or procedure, is circumvented by directives issued to cope with immediate "emergencies" or specific situations. This action leads to confusion and lack of direction in the implementation of the program. Past experience in the program indicates a continuing need in the development, review and revision of Instructions, Procedures, Standards and Specifications.

A lack of adequate total planning pervades the entire program. A draft of the Rural Electrification Master Plan has been developed, but has not been finalized nor officially presented to the GOB for approval. Distribution system planning has not been done with a view to total service area development requirements. Very little has been accomplished in the area of systematic construction planning. Inadequate systematic planning results in waste of valuable resources and inefficient management control of the project.

Some existing REB departments are not effectively managed, and coordinated, to encourage smooth work flow. Some related functions of administration and implementation are separated, resulting in internal competition, rather than the necessary cooperation and coordination, needed to adequately serve the PBS. Efficiency is further reduced by frequent rotation of personnel and the failure to fill vacant positions in a timely manner.

A need for personal job discipline proficiency has been observed throughout much of the program. Introducing a different concept for rural electrification development, has indicated there is little knowledge of an electric utility system application of special skills, technology and practices required to perform individual jobs on a specialized basis. Until personnel are trained, and develop proper job proficiency, will lead to a very high degree of dependancy upon the foreign advisors in the daily implementation of the program.

### RECOMMENDED REMEDIAL ACTION

Success of a program as complex as the rural electrification program, cannot be assured unless solutions to problems are developed and implemented on a broad program basis. Care must be exercised to avoid sudden changes to correct immediate emergencies, without consideration of the long term consequences of such action. The program of improvement recommended for REB is summarized as follows:

The REB needs to revise, and finalize, the Rural Electrification Master Plan. This plan must include program objectives, strategies, goals, and resource allocations which have been selected and decided on in the planning process. The implications of resource limitations and current policy decisions, as well as impact of both must be examined. Consideration should be given to a plan, to accelerate the development of PBSs to take over, and manage, existing rural PDB distribution facilities. The concept of the point at which REB ceases to provide Prime Contracting Construction Service to the PBS, and it is considered to have a completed base system, needs to be defined as the system required to serve the potential consumers existing when the PBS is first developed. It can be expected to take approximately 12 years and to cost Taka 239 million to reach this point with the Phase-I PBSs.

Certain specific additions in personnel, with some changes in organization, are recommended in this report. In addition, it is proposed that REB undertake, with advice of this consultant, a study of the internal organizations and develop a plan for structuring the organization in accordance with its needs. Attention should be given to providing a structure designed to avoid present duplication, conflict and fragmentation.

REB should review and revise its Policy Instructions, Procedures, Standards and Specifications in the light of past experience and future needs. Concise, clear policy statements should be issued and action taken to avoid issuing of directives in conflict with official REB policy. Top priority should be given to development of a comprehensive set of technical standards, specifications and procedures. The present technical manuals, standards, specification, procedures and instructions should be reviewed and revised, and if necessary new material developed as comprehensive guidelines. Step by step procedures are urgently needed for system planning and for construction management. The present program of developing REB material specifications should continue on a high priority basis.

It is imperative for REB to get an accurate assessment of the status of all construction activity. The PBSs are not able to take on responsibility for major construction activity now, or in the foreseeable future. REB must keep the responsibility for major construction activities in the PBS areas, until the facilities are built to serve the existing potential consumers. Consideration should be given to consolidating the position of the 33 PBSs that are already in the process of being developed before any new commitments are made. Long-range system plans and detailed construction work plans for

each of the 33 PBS must be given a high priority. The status of materials must be assessed before any additional materials are ordered. All materials delivered, in service, in stock, and in process need to be identified. Close-out documents on plant in service must be completed. Based on the above information a consolidated construction work plan must be completed. If necessary, construction may need to be slowed for a short period to catch up and consolidate REB's position. Without the development of proper construction management, the level of construction activity and equality can be expected to decrease, rather than increase, as required to achieve area coverage rural electrification.

The present REB system of training should be modified to meet the expanding needs of the program. The REB should work closely with existing educational and vocational institutions to utilize the resources of these organizations and to coordinate the development of a curriculum that will meet the expanding need for skilled technicians. The REB should also expand the REB training facilities and instruction personnel to provide the special skills training that is needed on a continuing basis. Advantage should be taken of every opportunity for key REB instructors to obtain specialized foreign training so that a systematic transfer of technology can take place on a continuing basis.

The training program should also provide for extensive training, with annual update courses for management, supervisory, professional or highly technical personnel. The time allowed for training an individual should be consistent with the responsibility and complexity of the job involved.

### C. PBS Problems

Several basic deficiencies exist within the program that underlie most of the problems encountered in the evaluation of the various organizational departments. There is a strong indication of resistance to comply with the established elements of internal control - PBS Policy Instructions and Procedures.

Often the PBS Policy Instructions and Procedures are circumvented by "emergency situation" REB directives, which result in loss of internal control, thus causing confusion and lack of direction in the proper implementation of the program.

Some of the PBSs indicate a lack of effective management and administration discipline. Departmental and inter-departmental responsibilities and functions have not been effectively coordinated to encourage smooth efficient work flow. Efficiency is further reduced by the rotation and attrition of Key personnel, and the failure to promptly fill these Key positions. Very little has been accomplished in the area of systematic general and departmental long range planning to meet immediate and anticipated future needs.

Often the employees demonstrate little knowledge of the electric utility system application of technology and special skills and practices necessary to perform their individual job related functions. It is also observed that those employees who have indicated their knowledge, have not developed the discipline for job proficiency and motivation necessary to effectively and successfully carry out their respective job responsibilities.

Pressures have been applied to provide electric line construction and connections regardless of the PBS commitments, shortage of materials, standard procedures or previously defined service areas. Many Government organizations fail to pay their bills, and the PBS is hesitant to discontinue service or enforce collection policies.

#### RECOMMENDED REMEDIAL ACTION

There must be a commitment and understanding of the rural electrification program concepts and systems among those who have been charged with its development.

Pronouncement of support and dedication to the Rural Electrification Program by Bangladesh Government leaders, cooperation with REB by other Government Agencies; development of a REB Master Plan including development of PBS on an accelerated rate to take over PDB rural distribution systems; and harsh penalties to obstructionists and those who violate rules and regulations both within and outside the program might help to establish an environment that could lead an improvement in the direction that the program is headed. Establishment of a coordinated PBS Development effort with common objectives, goals, and methods within REB is essential to provide direction and guidance as well as to improve motivation and commitment to the program.

Substantial personnel resources are available at the PBS. An indepth appraisal of existing skills and capabilities with appropriate utilization of proficiencies identified for employee development and promotions from within the PBSs, would enhance employee moral, provide incentive, and assist in building the momentum needed for job discipline productivity.

Priority should be given to the development of a highly skilled cadre of specialists to give hands-on assistance in developing and implementing each segment of the complex utility business operations. Comprehensive testing programs should be developed and periodic examinations be conducted to monitor development of personnel, to maintain an inventory of resources, to determine qualifications for promotions and to identify training needs. Within the Finance Department, the position of Commercial Supervisor should be added to supervise cashiers and collectors, to deal with customer inquiries and complaints, to train Meter Readers, and to expedite office business.

The Boards of Directors effectively serve as advisors on local condition to the PBS. However, additional emphasis must be placed on the importance of Board Standing Committees, their responsibilities and functions for the improved development of their PBS.

D. Consultants Role - Scope of Work

An Agreement between the Rural Electrification Board, Bangladesh (REB) and NRECA International, Ltd./Commonwealth Associates Inc. (Consultants) for Technical Consultant Services for Area Coverage Rural Electrification: Phase-I became effective January 11, 1978. An Amendment to the Original Agreement for Technical Consultant Services for Area Coverage Rural Electrification: Phase-II became effective 11 January 1982. The existing Amendment to the Technical Services Agreement terminates 10 January, 1984. Both the REB and the Consultant have requested the GOB to approve a simple no additional cost amendment extending the present Agreement termination date to 10 July, 1984. This would allow the Consultant to develop, and the REB and the GOB review, a comprehensive technical services plan reflecting the real needs of the program, and allowing the flexibility needed for the continued success of the rapidly expanding Rural Electrification Program in Bangladesh.

The Consultants existing Scope of Work provides for a very broad range of services required by the REB, to bring central station electric service to the rural areas of Bangladesh. The consultancy provided by the NRECA/CAI generally involves the Institutional Building Consulting Services to the REB; Institutional Building Consulting Services to the PBSs and Engineering Technical Consulting Services relating to both the REB and the PBSs. The services generally provided have been:

1. Development of REB and PBS Policy Instructions, Procedures, Standards and Specifications.
2. Training programs and manuals.
3. Direct participation in Program Implementation.
4. Monitoring.

From the beginning of the RE Phase-I program, every effort was made to expedite construction. The Consultant immediately began drafting REB/PBS Policy Instruction, Procedures, Construction Standards and Material Specifications. Tender documents were developed and material procurement started. Institutional and Technical Training courses were implemented for the REB, PBS, local engineering and contractor personnel. Orientation and basic training courses in the RE concept, Management, Finance, Engineering, Construction Practices, Material Control and Village Housewiring were conducted in the attempt to rapidly enable the local people to assume productive roles in the program.

In RE Phase-I, top priority was given to meeting construction schedules and requested energization dates. Because of these priorities, a different concept in management, engineering and construction design, the consultants services developed more into the role of superintending and implementing

the project, rather than that of advising as originally contemplated. As a result of this continuing condition, the REB did not properly utilize the advisor technology, time was not allowed to do an adequate job of overall planning, nor to develop a complete set of adequate construction standards and procedures needed for a uniform development of the program. Many REB and PBS Officers and Staff, Local Engineering Consultants and Construction Contractors have failed to assimilate new technology and assume responsible roles in the implementation of the RE program. This problem has been further compounded by the rotation of REB/PBS Officers and Staff; attrition of trained, key employees; discipline for job performance, failure to promptly fill key vacated positions and some of the constraints within which the REB must operate. With these shortfalls, however, RE Phase-I progress has been impressive by Bangladesh standards. RE Phase-I consisted of 13 PBSs, RE Phase-II consists of 20 PBSs and the proposed RE Phase-III will consist of 15 additional PBSs.

With the 13 RE Phase-I PBSs in various phases of operation and the 20 RE Phase-II PBSs presently in development and organizational stages, it is anticipated there will be 33 PBSs in different stages of operation in 1986. RE Phase-III is scheduled to commence in 1985. Unless positive action is taken by the REB and the GOB, to remedy the above mentioned shortfalls, the consultants will still be required to continue the role of superintending the implementation of the program. With the existing constraints and limitation which have been placed on the consultant in implementing the full development of consultant services scope of work, the resulting neglect of badly needed consulting services will cause irreparable damage to the program.

Therefore, it is proposed that total program needs be analyzed, priorities be established and a revised scope of services in the areas of Institutional Building Consulting Services to the REB, Institutional Building Consulting Services to the PBSs and Engineering Technical Consulting Services relating to both the REB and the PBSs, for a new Technical Consulting Services Agreement. Priorities should include, but not be limited to:

Relaxing of the constraints of the REB to develop the REB Organizational structure for effective development, recruitment and retention of capable, officers and staff, so the transfer of technology can be absorbed, allowing the REB to develop and phase-in better trained Bangladeshi professionals in numbers adequate to reduce expatriate staff at the appropriate time.

Concentration on the review, and development, of all Policy Instructions, Procedures, Standards, Specifications and Guidelines as needed in the program. This would also include Material Standards and Specifications necessary to standardize multi-donor procurement.

Re-direction of the training program, both Institutional and Technical, with emphasis on development of specialized skills necessary to meet

the expanding requirements of the program; and the development of a nucleus of specialists within the REB, to provide this training on a continuing basis.

Development and implementation of a system to monitor the total program, and provide the internal control necessary to the REB, as well as provide data for project evaluation required by present and future donors.

### III. A. STRUCTURE

The Rural Electrification Board was established by Presidential Ordinance on 29 October 1977, and began to function in January 1978. The Board consists of a Chairman, appointed by the Government; three full time Members, Engineering, Finance and PBS and Training appointed by the Government; one part-time member to represent the Bangladesh Power Development Board, nominated by the PDB; one part-time member to represent the Bangladesh Agricultural Development Corporation, nominated by BADC; one part-time member to represent Small and Cottage Industries Corporation, nominated by BSCIC; and one-part time member to represent the Intergrated Rural Development Program, nominated by the Local Government, Rural Development and Cooperatives Division. The Chairman, and other members, shall hold office on such terms, and conditions, as the Government may determine. The Board may appoint such officers and employees and engage such consultants, advisors, auditors and contractors as it may consider necessary for the performance of the REB functions and objectives.

To accomplish the REB objectives, the following REB structure was developed, approved and implemented.

#### 1. Chairmans Office

The Chairman of the REB is a full time, Chief Executive Officer of the REB. The three full time members, Engineering, Finance and PBS and Training; the Secretary of REB and the Director, Planning report directly to the REB Chairman. Under the Chief Executive Officer direction and guidance, the overall Bangladesh Area Coverage Rural Electrification Project is proceeding quite rapidly and has been very impressive. He has the responsibility to initiate, formulate, administer, supervise and monitor a program of approved projects with respect to the distribution of electric energy in the rural areas of Bangladesh.

#### 2. Member - REB Executive Officers

##### (A) Member Engineering

The Member, Engineering, is a full time Member of the Rural Electrification Board, reports to the Chairman of the REB and has the overall responsibility of the total REB Engineering and Constructions functions. The Chief Engineer; Director, Equipment and Materials; Director, System Engineering and Design; Timber Products Specialist;

and four Superintendent, Engineering and Construction personnel comprise the total Engineering Department senior officers.

The Member Engineering has the overall responsibility for the supervision and monitoring, the effective performance of the local Engineering Consultants and the local Construction Contractors of both electrical and civil projects for the REB. The responsibilities also include implementing engineering planning and system design; system coordination between the REB and the PDB; standards and specification for equipment and material; material quality control inspections; international and local procurement of materials and equipment; engineering studies; power supply analysis; system operations and maintenance and the repair of substation and distribution equipment. Other responsibilities include tendering for services of local construction contractors, services of local Engineering Consultants and processing of their contracts; customs clearance, receiving, custody, issue and movement of equipment and material for construction.

(B) Member Finance

The Member, Finance, is a full time member of the Rural Electrification Board, reports to the Chairman, REB and has the overall responsibility of the management functions of the total Finance Department of the REB. The senior Finance Management Officers are the Director, Finance; Director, PBS Loans and Audit; Director, Procurement and Deputy Director, Internal Audit.

The Member, Finance, has the overall responsibility for the supervision and monitoring the effective performance of the Directorates in the Finance Department. He also provides assistance to the REB Chairman in financial planning and in obtaining sufficient capital, including foreign and governmental financing, in the various phases of the rural electrification program. Included in the executive management function, is the responsibility for internal accounting and financial control of the REB funds according to the Uniform System of Accounts as adopted by the Rural Electrification Board of Directors; the consolidation and preparation of the annual REB budget and the preparation of necessary financial records and reports. Through the Deputy Director, Internal Audit, the Member Finance monitors the REB organization for compliance to REB approved policies, procedures, accounting and other financial historical records, standards of performance, organizational effectiveness and reports. The Member has the responsibility for the development of the PBS Loan Program, implementation of the Uniform System of Accounts in the PBSs and the periodic audits of the REB and the PBSs.

(C) Member PBS and Training

The Member, PBS and Training is a full time member of the Rural Electrification Board, reports to the REB Chairman, and has the overall responsibility of the management functions of the total PBS and Training

Department of the REB. Senior department heads are the Director, Management Operation; Director, Training and Director, Development.

The Member, PBS and Training has the overall responsibility for the supervision, monitoring and affective performance to achieve the desired results of each directorate under his supervision. Included in the executive management function is the planning and implementation of the institutional development of the PBS including advising, monitoring and assistance in management; member education; productive uses of electricity; administration; board of directors responsibilities, duties and functions and board/manager relations. Through the Training Directorate, is the development and administration of a formal institutional and technical training program, for all levels of officers and staff of the REB, PBS and for local engineering consultants, contractors and village electricians.

### 3. Secretariate

The Secretariat functions are General Administration, Board and Personnel. The Secretariat senior officer is the REB Secretary, who reports to the REB Chairman. The REB Secretary has the responsibility for the overall supervising and monitoring the performance of the Deputy Secretary, General Administration; Deputy Secretary, Board; and Deputy Secretary, Personnel.

Included in the Secretariat functions are the responsibilities for operation and maintenance of REB vehicles; aquisition and maintenance of all REB office facilities; protocol services to local and foreign guests and arrangement of REB functions. Additional Responsibilities include issuance of notice of the REB meetings, recording and preparation of proceedings of the Board meetings and dissemination of Board decisions to relevant parties and authorities. Maintenance of personnel reocrds which include data on appointment, transfer, posting and promotion are also the responsibilities of the Secretariate. Review and dispensation of inquiry and disciplinary cases and preparation of the seniority list of personnel are maintained in the Secretariate.

### 4. Directorates

There are fifteen departments, under the direction of either the REB Secretary, a Director or a Deputy Director. With the exception of the Secretary and Director, Planning, who report to the REB Chairman, the remaining officers report directly to their respective department member.

Each Directorate has a defined responsibility related to either Institutional Development, Engineering or Construction functions. The Directorates are further divided, having Deputy and Assistant Directors with defined responsibilities, reporting relations and specific tasks to be performed within the respective Directorate. (Volume II, Statistical Summary and System Review; Section 7, REB Organization, Staffing and Functions.)

The fifteen departments, or directorates with designated officer posts are as follows: (1) Program Planning: Deputy Director, Planning; Deputy Director Program; Deputy Director, Evaluation; and Deputy Director Publication. (2) Secretary: Deputy Secretary, General Administration; Deputy Secretary, Board; Deputy Secretary, Personnel, (3) Director Training: Deputy Director, Management Training, Deputy Director, Technical Training; Deputy Director, Planning and Records, (4) Director, PBS Development: Deputy Director, PBS Development. (5) Director, PBS Management; Operations: Deputy Director, Management Services; Deputy Director, PBS Rates; Deputy Director, Member Services/Power Use. (6) Director Finance: Deputy Director Controller; Deputy Director, General Accounting; Deputy Director, Treasurer; Deputy Director PBS Office System. (7) Director, PBS Loans and Audit: Deputy Director, PBS Loans and Review; Deputy Director PBS Audit and Evaluation. (8) Deputy Director, Internal Control: Reports to the Member Finance. (9) Director Procurement: Deputy Director Foreign Procurement; Deputy Director Local Procurement. (10) Chief Engineer: (11) Director Equipment and Materials: Deputy Director Clearance and Movement; Deputy Director Inspection; Deputy Director Warehouse. (12) Superintendent Engineer Construction: Deputy Director Construction; Executive Engineer - Project. (13) Director, PBS System Operations. (14) Director Engineering and Design: Deputy Director System Planning; Deputy Director Design and Standards; Deputy Director Engineering and Contracts. (15) Deputy Director Timber Products who reports to Member Engineering.

#### B. Organization and Staffing

There must be a recognition on the part of all concerned, that rural electrification is a long range, complex program and that a solid foundation of an adequate, well planned organization with well trained staff, must be developed to enable the rural electrification program, and the REB, to achieve its full potential.

One of the major difficulties that arise in PBS development is the fragmented and contradictory guidance given to the PBS by the various REB Directorates. Since the responsibility for various aspects of PBS development lie with different Directorates, if there is no coordination and communication between Directorates, it is only natural that inconsistencies would develop.

The responsibility for the various aspects of construction management are fragmented through several REB directorates. The role of REB as Prime Contractor is not formalized or clearly delineated. Overall construction planning and management is lacking. There is little or no coordination between the various construction functions. The technical standards, procedures, and guidelines are inconsistent and inadequate to meet the current needs of the program. Attempts to modify these instructions by circulars, orders, and the issuance of guidelines have resulted in contradictory policies, cumbersome procedures, and loss of uniformity.

Planned rural electrification program expansion requires planned staffing expansion. To meet the expansion program, the REB is continuing to meticulously screen applicants in an effort to employ the best qualified people.

Presently there are 13 PBSs energized and in various stages of operation. Nine additional PBSs have been organized and registered in the Phase-II program. Prior to the completion of Phase-II RE, there will be a total of 33 PBSs energized, all in different stages of development. These achievements and goals are very impressive by Bangladesh standards, however, the Consultant is very concerned that the REB will be under very severe pressure to perform beyond their existing capabilities. This is strongly evidenced by the high degree of dependence upon foreign consultants, by the REB, to superintendent rather than transfer their technology and experience through advising, assisting and monitoring. This role has assisted in achieving the short range goals of the program, however it may retard the ultimate long range goals of a viable, fully functioning and staffed REB. Progress toward assumption of the total responsibility and creditability of the rural electrification program by the REB, must keep pace with the rapid expansion of the total program.

1. Recommended Posts

To meet the expanding responsibilities and objectives of the rural electrification program, an indepth analysis has indicated the requirement for an additional 80 REB officers. Staffing priorities should be given to selecting personnel for the development of a highly skilled cadre of specialists to give hands-on assistance in the development and implementation of each segment of the complex electric utility field of Administration, Management and Technical Operations. The Scope of Work analysis indicate Construction Management Directorate should be created to provide centralized construction planning and management, to coordinate all facets of construction, to monitor all facets of construction, and to provide centralized accounting of construction costs. The establishment of a Technical Standards Directorate, responsible for the issuance and maintenance of all technical standards, procedures, and guidelines, as well as material specification and approval, is necessary to provide consistency and uniformity in all technical matters. Consideration should also be given to the creating of a second position of Chief Engineer for the REB Engineering Technical responsibilities.

To supplement the existing Directorates to meet the expanding needs for program development and implementation, there should be additional Assistant Directors in Training (Management and Technical) System Operations, Management Operations, Office Systems, Loans and Audit, Internal Audit, Equipment and Material, System Engineering and Design, Technical Standards and Procurement.

## 2. Sanctioned Posts

Since 1978, the REB has progressed from having an organizational responsibility to that of a functional organizational, developmental and operational responsibility. The REB has developed from 85 sanctioned posts in 1978, to 210 sanctioned posts in 1983.

The Government has not always sanctioned the REB recommended posts in a timely manner, yet all the sanctioned posts had not been filled by the REB as of June 1983. The Consultant does not take exception to the delay in sanctioning posts, nor to the approach that has been used by the REB to select the best qualified person. However, we must point out that if this total approach is continued, it will extend the requirement for expatriate advisors for a longer period of time than had been originally contemplated.

## 3. Posts Filled/Vacant

The statistics, as of June 1983, supplied by the REB, indicate there are 25 officer posts vacant. The statistics do not indicate when each post was sanctioned; when the post was first filled; if there has been more than one officer in the post; or if so, how many officers have served and if the officer had been terminated or rotated and how long was the post vacant. Therefore, the Consultant does not feel, from the statistics, that we can objectively evaluate what the impact of posts filled/vacant has been at this time. However, from individual advisor analysis and observation, counterpart positions in the Institutional Development areas of the REB, have not been filled in a timely manner.

## 4. Rotation

Competent staff who are well trained, motivated and highly skilled, are the key to the successful implementation of the rural electrification program in Bangladesh. A lack of sufficient, competent skilled personnel is probably the most serious single factor limiting the future growth and expansion of any organization.

To lose a competent, skilled officer through rotation, places a hardship on the directorate, and the organization. However, if rotation is a requirement, a careful study must be conducted to determine where the officer may be rotated within the REB, to best utilize the skills he has developed.

There is evidence that when an officer is rotated; he must have additional training to be effective in the new position. It is also evidenced that frequent changes, or rotation, of officers must be minimized to provide the continuity required in each position and to develop the special skills necessary for the successful implementation of the program.

## 5. Attrition

It has been difficult for the REB to retain officers below the position equivalent to that of Deputy Director. The REB has meticulously screened applicants in an effort to employ the best

qualified people to train in the rural electrification program. Most of the applicants are persons with College or University degrees. This has resulted in a quality of well trained REB Officers and staff that is superior to the average Government Organization in Bangladesh.

These officers and staff have gained valuable training in areas of engineering, technical training, finance, accounting, management and administration along with very the necessary practical experience for career development. Many of these officers have terminated their services with the REB for employment outside of Bangladesh. Others have terminated their services because of greater incentives offered elsewhere in Bangladesh.

An intensified effort must be made by the Government to enable the REB to relax constraints and offer incentives to retain these outstanding people, so their talents may be developed and expanded to provide the leadership that is desperately needed in development of the rural electrification program for Bangladesh.

#### DISCIPLINE

(Personal)

Discipline may be defined as an orderly training that improves, corrects, molds or perfects, the mental facilities relating to a particular field of study or skill. Formal education does not substitute, nor eliminate the need for personal discipline for job proficiency. Nor are there any specific programs to identify the sequence of formal education, training, work experience or seminars that will mold, or perfect, the mental facilities relating to the development of job responsibility discipline.

The best way to evaluate personal discipline effectiveness is to evaluate job performance. When officers are successfully, and efficiently, carrying out their job responsibilities and functions, then their discipline is effectively being demonstrated.

However, REB personal, PBS personnel, Local Engineering Consultants and Construction Contractors, in some situations, have frequently demonstrated a lack of job responsibility discipline to perform effectively.

Employee formal education is evident, however many organizational instructions, policies and procedures are not being properly implemented, even though continuous formal training and field assistance is being provided. With the rapid expansion of the program, and without officer personal discipline, the overall quality and progress of the program may be adversely effected.

The guidelines, and tools, for job responsibility discipline have been developed through organization Instructions, Procedures Policies, Organizational Charts, Position Descriptions and Training, both formal and field.

Whatever the skill, employee personal accountability for effective job responsibility, must be included to achieve successful personal discipline.

#### C - Administration

Planning, itself, is a function that must be planned. It is the thoughtful determination and systematic arrangement of all factors; including objectives, policies, standards and procedures that will be required in the successful operation of an enterprise in achieving the desired results of a project. Rural Electrification is one of the most successful, and best known, projects in Bangladesh. The REB basic administrative soundness has been well demonstrated, and has attracted donors including the World Bank, the Asian Development Bank, Kuwait, Finland and Denmark to have committed funds, or expressed intentions to support expansion of the program of rural electrification in Bangladesh. The short range plan used in developing selection criteria, which in turn establishes the priority of developing Rural Electric Societies, has been well established and implemented. Three of the main criteria are (a) Adequate, reliable power supply, (b) good road communication and (c) potential areas for the agro-based and cottage industries which are necessary for the economic development of rural Bangladesh.

Short range plans are necessary, however, long range, or a Master Plan, for Rural Electrification has not been completed. The Rural Electrification Master Plan was started in 1982. To date there is no formal project analysis, or study, for long range engineering, construction and institutional development or a comprehensive, coordinated development plan between the REB and PDB for power supply, transmission, substation, and distribution for the Government of Bangladesh Power Sector.

The REB must complete a Master Plan which includes total program objectives, strategies, goals and resource allocations for the total rural electrification program. Adequate, reliable power supply for rural Bangladesh can be assured only through a comprehensive engineering analysis and plan of action between the REB and the PDB. A good Master Plan will also be of value in attracting additional and potential donors for Rural Electrification in Bangladesh.

Organizing is grouping, dividing and assigning the work to be done to best accomplish the goals and objectives of the enterprise. The REB has developed an Organizational Manual which has been submitted to the GOB for review and approval. The Organizational Manual defines the

groups (Directorates), positions and functions of the position. Each person knows what they are responsible for, who they are responsible to and for what they are accountable. Presently the GOB has approved approximately 185 officer positions in the REB. (Section 7, REB Organization, Staffing and Functions, Statistical Summary and System and System Review) In organizing, each group (Directorate) has a special function in relation to the entire structure of the organization (REB).

It has been difficult for the REB to keep the sanctioned posts for junior officers filled. The REB meticulously screens applicants in an effort to employ the best qualified people to train in the Rural Electrification Program. Once a person has been employed, trained and has gained valuable practical experience within the REB, about 25% of the junior officers will leave the REB for enhanced wages or seek employment in an organization which offers greater incentives. The quality of officers and staff remaining with the REB is far superior to the average Government Organization in Bangladesh. However, the exodus and rotation of junior officers within the REB, has forced expatriate advisors into the role of a superintendent rather than that of an advisor. Because of the exodus of officers from the REB and the rotation of officers within the REB, the Consultant must point out, more expatriate advisors may be needed for a longer period of time than had been contemplated.

An Organizational Manual must be approved for the REB. The organizational plan and structure should be reviewed periodically and manpower requirements met as best suited to carry out the objectives of the REB. An intensified effort must be made to identify outstanding employees within the organization, train them in management and technical skills and develop incentives to retain outstanding employees to provide the leadership that is so desperately needed. Rotation of officers must be kept to a minimum.

Directing is the day-to-day execution of plans and projects, to ensure the activities and the people of an organization are working together. The rural electrification program has started to expand and becoming more of a complex program. The challenges of directing a program of planning, organizing, directing and measuring results of engineering, construction, operation, maintenance, training and institutional development had not been satisfactorily met by the REB. Thirteen PBSs are now energized and nine additional PBSs are in various stages of institutional development, engineering design and construction.

However, it is observed there is a great need for the learning of job discipline, coordination, cooperation, motivation, planning and communication between most directorates within the REB.

To meet the challenges of an expanding and complex rural electrification program, there should be developed, and presented, an indepth training program on the Management Functions for the senior officers of the REB. Directing is almost an art, and involves building team work, moral, personnel development and improving productivity.

Controlling is having standards to appraise or measure with; being informed of progress as measured against standards; interpreting trends and results and knowing where, when and how to initiate correction action in time. The overall rural electrification project has proceeded very rapidly and the rate of progress has been very impressive. There has been short falls on targets; i.e. mileage and connections; however, this has been due mainly to a shortage of material, and is now being rapidly caught up. The REB has adopted Policy Instructions, Engineering and Construction Standards, Utility Uniform System of Accounts, Accounting Procedures, implemented an Internal Audit Cell, developing a Material Specification and Standard Manual, established a Coordination Committee with the PDB, a Material Standards and Specifications Committee, Engineering Consultant and Line Construction evaluation committee which have standards that performance may be measured.

The policies, standards, specifications and procedures which were originally developed, in the formative years of the REB, were those using the REA policies, standards, specifications and procedures as a guide, experience in other countries, then extracting the best and modifying them for the Bangladesh Rural Electric Program.

Mults-donor funding procurement requirements, and four years of engineering design and construction experience, is now requiring a review and revision of material quality control, line design, material standards and specifications and procurement procedures. Corrective action, by reviewing and revising engineering, construction and design standards, should be initiated immediately.

#### D. FINANCIAL MANAGEMENT

##### Finance Directorate

Very early in its development, REB adopted the Utility Uniform System of Accounts. This system is almost universally utilized by public utilities around the world, but new to Bangladesh. Accordingly, extensive instruction to all accounting personnel was required. A series of Accounting and Finance Directives (Instructions) were developed alongwith required Procedures Manuals for the effective implementation of the Utility Uniform System of Accounts which will be enable to REB executives of properly monitor and control the Rural Electrification Program. Numerous workshops were held, followed-up by on-the-job training.

PROBLEM:

Substantial progress has been made in system implementation, however, compliance with all the established elements of internal control continues to be a problem, which effects work flow. (Improvement is needed in the maintenance of accounting records as required by the Uniform System of Accounts (REB Inst. 600-16) and the Accounting Procedures Manual (REB Inst. 600-9). The Internal Auditor set forth recommendations regarding the Uniform System of Accounts as stated above. The Accounting Procedure Manual includes a procedure to be followed when changes are required, however, verbal instructions were given for system changes which were implemented and forms which were re-designed, without any revision to this manual. The result is ineffectiveness of this element of control. Internal Audit Reports have set forth in detail, both verbally and in system flow chart form, control problems caused by this, and recommendations for adequate system and procedure manual revision, however no progress has been made. Additionally material accounting records are not current or reconcilable with the General Ledger Control Account. Construction Work Orders are not being closed out currently, consequently the PBSs and REB financial statements are inaccurate and misleading. Additional improvement in assisting the PBSs with booking of Accounts Receivable billings is needed through the supplying of more detailed and analytical billing information. Statements on Accts. Rec. and Loan Rec. balances should be sent regularly to the PBS for reconciliation. All General Ledger Accounts are not being maintained in accordance with the Uniform System of Accounts as set forth in Audit Reports. The Organizational Manual is still with the Ministry after undergoing another revision in November 1982, thus leaving this element ineffective. Instructions for the financial operation of REB have been issued, however, are not being entirely complied with resulting in a weakness in this element of control. One of these instructions is 600-8, Internal Control of REB. This instruction requires that the adequacy of internal control be reviewed by REB. Use of this instruction and the checklist included would greatly assist in the current identification of problem areas.

RECOMMENDATIONS:

Internal Audit reports are for the purpose of assisting all areas of management in the strengthening of internal control. Recommendations contained therein should receive proper attention and follow-up to assure development of a strong system of internal control.

All REB Instructions and Procedures should be complied with, and adequately monitored by management. REB Instruction 600-8 approved 8 April 1980 concerns Internal Control of REB operations. Instructions for establishment of internal control procedures, enforcement and remedial action are clearly set forth including a checklist for assisting in reviewing the adequacy of Internal Control. Management should establish and maintain a program for compliance with this Instruction.

Continued follow-up should be maintained to assure prompt submission to the PBSs of plan costs and related documents.

All accounting transactions should be recorded, and General Ledger accounts adequately supported, in accordance with the Uniform System of Accounts and accepted accounting principles.

Prior to implementation of any change in the maintenance of accounting records, the applicable instruction or procedure should first be revised. The Accounting Procedure Manual provides for a definite procedure to be followed for revision and this should be complied with.

All billings and related support sent to the PBSs should be in sufficient detail to facilitate accurate booking.

Continued follow-up should be maintained on the Organizational Manual approval for prompt implementation of this element of internal control.

Budgets are an example of "Standards of Performance", one of the elements of Internal Control. For reports to be of maximum usefulness all items of income and expense should be budgeted so that what has happened, may be accurately compared with what was planned.

Reports are a major means of control by management. As with records, reports must be prompt, accurate concise and complete. These should be adequately reviewed by management to detect any probable problem areas (such as large variances over prior year, abnormal relationships, negative balances, all items not budgeted, etc.) and appropriate remedial action taken.

#### PBS Loan & Audit Directorate

##### PBS Loan Branch

During the early stages of development, the activities of this directorate were centered around the processing of PBS loans. This function was, for the most part, performed by Management Operations with PBS Loans functioning only in a reviewing capacity. During 1981, organizational meetings were held as well as meetings with MO for the orderly transfer of loan activities. The policies covering this branch's functions relating to loans are set forth in REB Instructions 600-11 and PBS Instruction 200-16,17 and 19. Unfortunately, these instructions were not complied with from inception and loan records were limited to General Ledger Accounts maintained by Finance. System flow charts were then prepared from these instructions showing how the system is designed to accomplish the various tasks involved. Step-by-step procedure then were written to effectively implement the system. Workshops were held and implementation began. This work was temporarily delayed due to assistance given the PBS Audit Branch because of lack of personnel.

### PROBLEMS

The main problem is the gathering of data to establish proper loan fund records and commence system operations. The records PBS Management Operations was to turn over were found to be virtually non-existent, requiring extensive re-construction. This is time consuming, requires the consistent application of diligent effort and close monitoring.

### RECOMMENDED REMEDIAL ACTION

It is recommended that work continue toward the objective of establishing adequate loan fund records and effective system implementation as documented. Progress should be continually monitored by management. With application of consistent effort and stable staffing, effective system implementation and work flow should be accomplished by 1986.

### PBS Audit Branch

An Audit Manual and work paper guide was published in October 1980 setting forth the requirements for PBS audits. At that time this branch was not functioning. The Organizational Manual indicating required staffing had not yet been implemented. Early in 1981 organizational meetings were held, plans formulated, a projected audit schedule for the 13 PBSs prepared and staffing commenced. The first PBS audit began on 20 July 1981 with the auditors receiving extensive classroom training prior to commencement, but with no prior experience in electric utility accounting or auditing. Extensive training was conducted both in the field and office together with comprehensive workpaper review. Staffing problems were experienced throughout. A "Accounting Interpretations Manual", which provides REB/PBS personnel with interpretations to specific accounting problems and a vehicle for submission of their questions, has been published.

Individual audits are taking much longer than anticipated. In order to provide maximum assistance to the PBSs and be effective for REB use, these audits should be conducted annually for each PBS and within the time frame required by REB Instruction 600-25.

### RECOMMENDED REMEDIAL ACTION

It is recommended that management continue the training program of personnel in their respective functions and duties as set forth in the organizational manual and improvement of the office system to increase efficiency, emphasizing adherence to published instructions and procedures. The assignment of tasks and required training be reviewed with the objective of complete effective coverage of this branches assigned functions and duties as set forth in the organizational manual and respective position descriptions.

### Internal Auditing

Internal Auditing is defined as an independent appraisal activity within REB for the review of accounting, financial and other operations as a basis for service to management. It is a managerial control, which functions by measuring and evaluating the effectiveness of other controls. The overall objective of internal auditing is to assist all members of management in the effective discharge of their responsibilities, by furnishing them with objective analysis, appraisals, recommendations and pertinent comments concerning the activities reviewed.

In December 1978 REB established a policy through REB Instruction 400-17 requiring a continuous internal audit of the REB program and functions. This instruction defined the scope of the audit as "an objective review of REB implementation functions set forth in the Rural Electrification Board Ordinance - 1977". Responsibility for the conduct of this was assigned to the Deputy Director Internal Audit under Member Finance. Authority was given the DD to utilize the services of REB personnel in the various Directorates during the conduct of the audit and the Directors instructed to cooperate in making personnel available as needed.

During the last half of 1980, REB revised its organizational chart to include this branch in the Finance Departments organizational structure. Staffing requirements and position descriptions were prepared. As recommended in our 1980 annual evaluation report staffing and training commenced early in 1981.

<u>Date Completed</u>	<u>Description of Task</u>
1. May 1981	- Publish "Orientation and Training Manual".
2. June 1981	- Commence training of Deputy Director.
3. June 1981	- Prepare "Operational Audit Program of REB" as per REB Instruction 400-17.
4. July 1981	- Commence Field Assgn.#1 of 14 in REB Operational Audit Program.
5. October 1981	- Submit Report to Director Finance on FA #1.
6. November 1981	- Commence Field Assgn. #2 of 14.
7. December 1981	- Design Form for Special Assignments.
8. December 1981	- Publish "Organizational Manual."
9. January 1982	- Obtain Member Finance approval of Deputy Director position description.
10. January 1982	- Submit Report to Director Finance on Part I & II of Field Assgn. #2 (Directorate Objectives and Organization).

<u>Date Completed</u>	<u>Description of Task</u>
11. April 1982	- Conduct "Review Financial Activities of Khulna Warehouse" for Director Finance.
12. June 1982	- Commence Phase-I of Part III FA #2 (Directorate Operations Cash Receipts Functions.)
13. September 1982	- Commence "Follow-Up" of Field Assgn. #1 Recommendations.
14. October 1982	- Submit Report on "Khulna Warehouse".
15. November 1982	- Submit Report on "Follow-Up" of Field Assgn. #1.
16. December 1982	- Complete Phase-I and Commence Phase-II of Part III FA #2 (Cash Disbursement function).
17. December 1982	- Submitted Response to Finance Directorates Comments on "Follow-Up Report of FA #1".

The Operational Audit Program prepared in June 1981 includes 14 separate sub-programs, called Field Assignments, in order to provide complete coverage of the REB functions and is reproduced as follows:

RURAL ELECTRIFICATION BOARD  
FINANCE DEPARTMENT  
INTERNAL AUDIT BRANCH

- OPERATIONAL AUDIT OF REB -

SCOPE:

The audit will be an objective review of REB's implementation of its functions as set forth in the Rural Electrification Board Ordinance - 1977. Included shall be a review and report on the adequacy of REB & PBS Instructions for the guidance of REB personnel and their compliance therewith, including any recommendations for revision; adequacy of REB accounting records; adequacy and effectiveness of the REB program for implementing REB's objectives as stated in the ordinance.

FIELD ASSG.		ESTIMATED		ACTUAL	
		START	FINISH	START	FINISH
1.	Review the balances shown in the GL balance sheet accts. for determination of adequate support as required by the Uniform System of Accts (REB Instruction 600-16).	22. 7.81	15.10.81	22. 7.81	13.10.81
2.	Determine whether (1) Standards have been prescribed for the operation and management of REB and the PBS's (2) They are adequate and being complied with. This will include a review of REB & PBS Instructions and recommendations for any revisions.	17.11.81	16.10.83	17.11.81	
3.	Determine whether systems were acquired from other utilities and the acquisition properly accounted for and administered.	13. 3.83	15. 4.83	13. 3.83	14. 6.83
4.	Review the development and implementation of the loan and grant programme from the Govt. and others to the PBS's.	5. 7.83	30. 8.83		
5.	Determine whether by-laws were prescribed for all PBS's and their adequacy.	5. 7.83	25. 8.83		
6.	Determine whether completed schemes were published for the operation and maintenance of PBS's.	5. 7.83	25. 8.83		

FIELD ASSG.	PURPOSE	ESTIMATED		ACTUAL	
		START	FINISH	START	FINISH
7.	Review the programmes developed for preparation, execution, operation and management of the rural electrification program and related works. Determine their adequacy and effectiveness.	16.10.83	30.11.83		
8.	Review the establishment of electric generation, transmission, transformation and distribution system in the rural areas of Bangladesh.	1. 9.83	30.10.83		
9.	Review the measures takep by the Board for the effective use of electricity which fosters rural development and the use of electrical poser for economic pursuities.	28. 8.83	30.10.83		
10.	Review the criteria established for rural electrification and associates works.	28. 8.83	16.10.83		
11.	Determine whether sruveys, feasibility studies and schemes, were implemented for the establishment of electrical system in rural areas.	1.12.83	29.12.83		
12.	Review the organization of consumers into formal PBS's.	1.11.83	20.12.83		
13.	Determine whether plans have been developed and implemented for cooperation with various agencies in rural development works.	1.11.83	23.12.83		
14.	Determine whether research and evaluation methods have been established to measures the effectiveness of Board Programs and others in the relevant fields.	16.10.83	20.12.83		

In addition to the Operational Audit Program a Form to control "Special Assignments", which may be requested by management as needs dictate, was designed and implemented in December 1981. A schedule of the activities performed in this category is shown below:

INTERNAL AUDIT BRANCH  
SCHEDULE OF SPECIAL ASSIGNMENTS

<u>NO.</u>	<u>SUMMARY STATEMENT OF PURPOSE</u>	<u>START</u>	<u>FINISH</u>	<u>DATE OF REPORT</u>
1.	Khulna Warehouse Financial Review	19.4.82	29.9.82	7.10.82
2.	Field Assign. #1 Reconn. - Follow-Up	15.9.82	14.10.82	16.11.82
3.	Bank Reconciliation Review	30.1.83	7.2.83	9.2.83
4.	Chittagong Warehouse Financial Review	13.3.83	6.4.83	24.4.83
5.	Imprest Fund Review-Finance Directorate	10.2.83	2.3.83	3.3.83
6.	Dhaka Warehouse Financial Review	12.4.83	2.6.83	22.6.83

The overall result of the audit programs completed thus far has been acceptance by management of the Directorate of Audit recommendation, resulting in a strengthening of the internal control system.

PROBLEMS

One of the problems confronting this branch is limited practical internal auditing knowledge and experience. Internal Auditing is new to the country of Bangladesh and not taught in the universities, however this management control is vital to the development of REB. Extensive workshop instruction is being conducted on a continuous training program, which includes on the job training in audit techniques, work paper preparation and report writing. Progress for the most part is satisfactory and more importantly employees appear strongly motivated to perform this management control function effectively; and efficiently. The audits performed by this branch are very broad in scope and requires a full staff of qualified auditors. This leads us to the second problem which is staffing.

As of 31 December 1982 the number of Auditors was one. This auditor was posted on 20 November 1981, received extensive training, was developing well, but was transferred to another directorate after an investment of 1½ years of training. Development is adversely effected in situations of understaffing or transferring of staff. Under the present system it has been projected that the development of a professional staff would take approximately 8 to 10 years under the guidance of a qualified advisor. This is however, contingent upon individual ability and stability of staffing. If this branch was fully staffed initially and remained fairly stable, full development should be achieved by 1986. If the system is changed, as with the advent of computerization, etc., development time would be extended according to training requirements.

## RECOMMENDATIONS

As previously recommended, this branch should be fully staffed according to sanctioned posts. Training programs should continue with the objective of developing a fully qualified staff that will perform this management control function effectively and efficiently. Complete and stable effective staffing facilitates training and development time which should be a prime consideration of management.

### E. Engineering

The subject of engineering is discussed in other sections of the report as it relates to various systems within the program, such as construction, operations, etc. Evaluation of the effectiveness in which these systems are working provides tangible measurement of the quality of engineering. Therefore, the discussion here will be limited to some general comments on the proficiency in which the technology imparted to engineers and technicians is being applied on a day to day basis.

Between 1978 and the end of June, 1983 REB offered eleven types of engineering or technical courses related to construction, operations or maintenance. These courses were attended by a total of 1,165 REB, PBS, Consultant, contractor or other personnel, compiling a total of 16,080 man-days in the classroom, for an average of just under 14 days of training for each individual. A review of the subject matter offered in these courses indicates that the training was heavily oriented toward construction related subjects with only about 9 percent of the man-days spent in the classroom on subjects related to system operations and maintenance, and very little effort spent on system planning. In addition to the engineering and technical courses a total of 61,237 man-days was accumulated by 2687 participants in power use, job training and PBS linemen's training courses.

## PROBLEMS

There is a general reluctance on the part of many individuals within REB to make technical decisions or recommendations. When such decisions or recommendations are made, they usually reflect the consensus of group of people, rather than the thoughts of an individual. Often the technical recommendations promulgated by the REB engineering staff do not reflect mature engineering judgment, but are made spontaneously in response to immediate problems with little regard for future consequences. The expatriate advisors are often depended upon, not only for advise, but to make technical decisions and to initiate action.

This may be attributed in a large part to cultural factors affecting the way Bangladeshi engineers think and work. The approach to engineering and technology offered in training people for the RE Program is a departure from traditional though in the engineering profession in Bangladesh. The

emphasis on standardization, insistence on quality, and the practical, results oriented approach to technology are in many ways contrary to the way they have been trained. It is difficult, and often impossible for an engineer who has been indoctrinated with a highly theoretical approach to his profession to adapt his thinking to the methods set forth by expatriate advisors.

Most of the engineers prefer office work to field work, making it difficult for REB to keep competent front line construction supervision in the field. The problem is further compounded by the REB practice of personnel rotation which often leaves responsibility for control of the project in the hands of people poorly equipped to cope with the responsibility.

#### RECOMMENDED REMEDIAL ACTION

There are no simple solutions to these problems, but solutions must be found if the program is to succeed. Operating within the framework of constraints and long standing tradition makes it difficult for REB to initiate substantial changes. But every effort must be exerted by REB to establish the necessary incentives to attract, and maintain, the technical talent needed to continue the program.

The present approach to technical training must be closely examined and appropriate changes made. It is apparent from experience in the program so far, that the transfer of technology is not taking place at a rate commensurate with the needs.

Education of this nature must be a continuing program, rather than a "one shot" affair, with a small group of foreign advisors conducting a series of short courses on various subjects. Instead, REB must begin immediately to build within the Directorate of Training a nucleus of well versed instructors capable of carrying on the systematic, continuing program needed for an adequate transfer of technology. Foreign advisors should not be depended upon as instructors, but rather to develop the standards, training systems, manuals and aids needed in the program.

REB should also work more closely with the local educational community, using whatever influence it can to develop curricula to be used in technical courses offered by the local colleges and universities. If REB can influence the basic technical training given future engineers and technicians, it will not be faced with the presently impossible task of re-training engineering graduates to suit its needs.

#### F. Construction

Compared to all other electric distribution systems previously built in Bangladesh, the Rural Electrification construction program is an outstanding success both in the quality of construction and in the volume of construction work being completed.

REB serves as prime contractor in building distribution systems for the PBS. REB engages local consultants to do the construction engineering, procures construction materials and distributes them to local PBS warehouses, and engages contractors to do the construction work. After completion the completed plant is turned over to the PBS on a "turnkey" basis.

As of June 30, 1983, 4080 miles of distribution line out of a targeted goal of 6338 miles had been completed for the first 13 PBS in Phase-I, with 64,811 consumer connections completed out of a targeted goal of 73,200. Construction progress by PBS to date is tabulated in the statistical annex to this report.

### PROBLEMS

Notwithstanding the many achievements of the program, there is considerable room for improvement. Many problems plague the construction program which, if not addressed, will cause continued deterioration in construction quality and make it increasingly difficult to meet construction schedules.

The central deficiency is a lack of good construction management. There is virtually no systematic construction planning. The results of this deficiency are manifest in a myriad of ways throughout the entire construction program from engineering to material procurement, disbursement and quality control, to the actual building of distribution stations and lines.

The local consulting engineers are handicapped by inadequate construction engineering standards. The design guidelines and specifications for 6.35/11 KV construction initially adopted by REB sufficed at the start of the program, but now need to be reviewed and revised in view of actual experience in Bangladesh. The present engineering standards should be expanded and supplemented to include more comprehensive engineering guidelines for renovation of PDB systems as well as for construction of substations, secondary systems and 33KV transmission lines. All of this work is now being done without the benefit of adequate standards.

The quality of construction engineering is also adversely affected by inadequate training of office and field engineering personnel. The problem has been compounded by the inability of REB, and some local consultants, to maintain continuity by keeping competent engineers in the field to monitor the work. Closeout of completed work is commonly neglected, making it impossible to maintain control of materials, fix contractor responsibility or to establish meaningful PBS plant records.

Material flow within the country from the central warehouse to the job sites is not smooth. Because of delays in moving information from the field to REB's central offices, it is impossible to maintain accurate, timely records of materials issued, returned, and in stock. These problems serve to further hinder construction progress as well as limiting financial control.

Material quality control is a growing problem which poses a serious threat to the quality of construction. The original REB technical specifications relied heavily upon references to U.S. Manufacturers' catalog numbers, REA Specifications and American Industry Standards. With only USAID funding and primarily American Manufacturers, a reasonable control of quality was maintained with a minimum of policing by REB.

Now, with multi-donor funding and procurement being done on the Asian international market, quality control has become a serious problem. At the insistence of some donors, some of the references establishing quality levels have been deleted. Some of the manufacturers, given the simple technical specifications in the REB tender documents, have furnished materials of inferior quality. Unfortunately, many of these inferior materials have found their way into the construction program. REB has taken some action to correct the situation by making preshipment inspections and making tests on certain items, but a much more comprehensive program is urgently needed.

Like the engineering consultants, the contractors are often unable to keep competent field people on the job. Lack of training and a high rate of turnover are common. The problem is further compounded when REB awards new work to contractors who have shown a poor record on earlier construction. REB's practice of doling out small sections of line on a fragmented basis to several contractors scattered over a wide area also makes good construction supervision and material control impossible. With the contractors working on "labor only" contracts, and given the lack of contract closeouts, it is impossible to fix responsibility for material loss, theft or breakage upon the contractor. Also, there is little recourse if the contractor's work is found to be unsatisfactory if he has already left the job.

#### RECOMMENDED REMEDIAL ACTION

It is recommended that the present construction standards, specifications and guidelines be reviewed, updated and augmented to include all types of construction. These should include engineering and construction standards for 33KV, 11KV and LT lines, for PDB line renovation, and for substation construction. Using training materials developed from the new engineering standards, an intensified training program should be developed for REB, PBS, Consultant and contractor personnel.

It is imperative that a comprehensive construction management program be developed, including policies, guidelines and procedures for all construction related activities. The program should provide for the planning and implementation of material procurement and control engineering, and construction as well as for monitoring and responsibility accounting for these functions.

The role of REB as a prime contractor for PBS construction should be formalized in a construction contract with each PBS. Contracts between REB

and the construction contractors should be revised to make the contractors responsible for materials under their control. All REB construction functions should be consolidated within the organization.

It is further recommended that REB continue and expand its present efforts to establish a quality control program for procurement of foreign and local materials. The program should include complete material technical specifications, testing specifications and procedures, and inspection of manufacturing facilities and commodities.

#### G. PBS Management Operations

The PBS Management Operations Directorate has the responsibility to provide technical assistance to the PBSs in the areas of management, administration, rates, personnel administration, member services/power use and to monitor their compliance with the REB Policy Instruction to the PBS.

The directorate has conducted management audits of the Phase-I PBSs. These reports were presented to the individual PBS Board of Directors for their review and necessary action. New Policies for PBS have been developed and existing Policies have been reviewed and up dated to meet the changing needs of the PBS. The PBSs have provided input for changes in Wage and Salary Plans; Wiring Standards; Staffing requirements; Accounting Procedures and PBS Retail Rates. Power Use maintains an intensive training program in the PBS service areas that has resulted in up grading consumer wiring installations to above average in Bangladesh. Power Use has also been very successful in assisting the development of several indigenous industries which will assist in the economic development of rural Bangladesh.

#### PROBLEMS

The rotation, attrition, motivation and untimely recruitment of staff has caused a high degree of dependence on expatriate advisors to perform the REB work, rather than fulfill their duties as advisors to the REB. Officers of other Directorates are not communicating to or coordinating with the Directorate, activities related to and involving PBS Management Operations responsibilities and functions. Most written communication are in Bengali, which is in accordance to the GOB, but violates the Technical Assistance Agreement between the REB and Consultant. Electric rate schedules were revised in an attempt to simplify the rate structure, however, retail rates still are difficult to interpret and implement by the PBS personnel.

#### RECOMMENDED REMEDIAL ACTION

All written and oral communications of responsibilities relating to PBS Management Operations must be coordinated and communicated through the Director, PBS Management Operations. Copies of these communications must be translated into English, and forwarded to the appropriate expatriate

advisor. The REB must reduce rotation of staff to a minimum, implement timely recruitment and develop incentives to retain and motivate outstanding employees within Government regulations. A short term rate specialist should be considered to review and revise the PBS rate schedules. The Directorate should properly utilize the expatriate staff for training, and to advise and assist in policies relating to the functions of management.

#### H. System Operations

The REB/PBS System Operations Directorate has the responsibility to provide technical assistance to the PBSs in the areas of PBS Construction, Operation and Maintenance, including substation operation and maintenance, and to monitor their compliance with the REB Policy Instructions to the PBS.

The System Operations Directorate has divided the area of responsibility geographically, between eastern and western zones, for operation and line maintenance personnel. Those assigned to a given zone are to advise, assist and monitor the PBS Construction, Operation and Maintenance functions within their zone. A third group within the Directorate, has been assigned to a specific System Operational task, which includes central meter testing, line and station OCR testing and repair, oil filtering, substation pre-energization inspection and tests and annual substation inspections. Plant improvements are in progress to fully equip an OCR testing lab, oil filtering center and an oil test lab. A substation maintenance program is being evaluated and a scheduled plan for implementation is being developed. REB System Operations is defining and consolidating its role within the organization.

#### PROBLEMS

Areas of responsibility have been identified, however areas of responsibility for personnel are not clearly defined. Technical expertise to provide assistance to the PBS is deficient. Data and records of PBS substations are not compiled. The meter testing facility has only one trained technician. Specialized training is required for the operation of the OCR test equipment and subsequent repair of OCRs. Additional training will be required in a timely manner for other equipment under System Operations responsibility. Field personnel need better mobilization and specialized training in instructional techniques.

#### RECOMMENDED REMEDIAL ACTION

It is recommended that short term advisors who are specialists in the field of meter testing, line and station OCR testing and maintenance and Regulator testing and maintenance be engaged when proper facilities for such training are made available. It is further recommended that System Operations personnel, attend the "Teachers Training Course" developed by the REB Training Directorate. System Operation personnel must establish and maintain data evaluation, data retrieval and record keeping systems for electrical system grids and substations.

## I. Training

A centralized training program, with both administrative and technical training facilities, has been included as an integral part of the rural electrification program. There has been 57 courses developed and 6,724 trainees enrolled (Statistical Summary and System Review, Section I - Program Development - Training). There is a projected program of formal training for all levels of leaders and employees in both the REB and the PBS, as well as local engineering consultants, line construction contractors, village electricians and PDB engineers. The REB Training Institute is oriented to help develop training in all aspects and segments of the rural electrification program. Training programs have included the areas of general engineering, technical training, finance, accounting, management and administration. Progress in institutionalizing training has been excellent.

### A. Transfer of Technology

It is evident that the scope of work for training must be reviewed and re-evaluated. The general training program must continue. However, training priorities must now be considered in directing a transfer of technology for the development of a highly skilled cadre of specialists in Engineering, with emphasis on Material Quality Control, System Planning, Design, Standards and Specifications; Construction Design, Standards and Specifications and Institutional Planning and Development. Expatriate advisors must be utilized more in this training role, and less in the superintending role, which will then allow maximum technology transfer and developing a more effective, successful rural electrification program for Bangladesh.

Only when REB officers are successfully carrying out their responsibilities, goals are being attained and desired results are being achieved, has the transfer of technology been successful.

## PROBLEMS

### A. REB Officers

Formal education cannot substitute, nor eliminate, the need for training for job proficiency. The previous formal education and experience which all officers and employees have obtained is basically general in nature and focused on developing the general capabilities of individuals. The rural electrification program is general, however the officers and staff are specialists with specific areas of responsibility. For the most part, REB officers have exhibited a lack of discipline for learning the techniques and practices related to their specific areas of responsibility in rural electrification. They must attend programs relating to their areas of responsibility.

### B. Facilities

The present administrative, technical training and hostel facilities are widely separated, resulting in poor communication and valuable time lost. Office, library, classroom and hostel space is very minimal. The facilities for conducting outside technical training courses are not adequate. There should be plans developed for a future training center

that can accommodate the central training needs for the total rural electrification program. There should also be given consideration to establish area, or district, training centers, to supplement the training facilities as the rural electrification program expands.

G. Staffing

The expanded demands on training, not only affects facilities, but staffing as well. Presently the Training Directorate is not fully staffed. The greatest difficulty to date has been staffing with capable trainees. There has developed a great need for on-the-job training to meet the needs of local Engineering Consultants, Contractors, the REB technical personnel and the PBS technical personnel. As a result, the training staff must be increased and develop into a highly skilled cadre of specialists. Expatriate advisors must also be properly utilized so a transfer of technology can be effected.

J. Program Planning

Program Planning is the process of deciding the program objectives, strategies, goals and resource allocations, which have been selected, so they may best be applied for the future development of rural electrification.

The Program Planning Directorate is developing and providing studies of proposed rural electrification projects; planning for each phase of the rural electrification program; coordination with project donors to ensure adequate funding; coordination with concerned Bangladesh Government Agencies to gain approval of rural electrification project areas; analysis, design and implementation of the program management information system; monitoring of program progress and impact to support planning activities, to gauge the effectiveness of program implementation, and to support management decision making; disseminates information on the rural electrification program; preparation of the annual development plan and comprehensive program planning.

Plans for Phase-I, Phase-I Extension and Phase-II Area Coverage Rural Electrification have been completed which have led to the commitment of funds to the rural electrification program as follows:

	<u>No.</u> <u>PBS</u>	<u>No.</u> <u>Thanas</u>	<u>Foreign</u> <u>Assistance</u> <u>(US\$ Million)</u>	<u>Local</u> <u>Currency</u> <u>(Taka Million)</u>
Phase-I (USAID)	13	50	79.20	800.00
Phase-I Extension (KFAED)	8	24	29.30	296.40
Phase-II (USAID/Finland)	5	17	36.00	508.30
Phase-II (IDA)	<u>7</u>	<u>26</u>	<u>40.00</u>	<u>674.30</u>
TOTAL	33	117	195.10	2,279.00

Baseline Surveys for the 13 Phase-I (USAID) PBS have been completed providing an extensive data base to allow study of the impact of rural electrification in Bangladesh.

## PROBLEMS

The Rural Electrification Master Plan has been under development since early in 1982, however, it has yet to be completed. Some of the assumptions made in the various forecasts within the draft are inconsistent or contain errors. In addition, the absorption of the PDB rural distribution responsibilities by the REB has not been a project analysis for each phase of the rural electrification program.

Funding for the rural electrification program is one of the major resource limitations affecting the continued development of the PBSs. Donors are willing to provide the funds for the initial development of the PBS, but hesitate to continue funding beyond the initial level. This may be due, in part, by the implications of planning documents that indicate the completion of projects based on funding expectations rather than building facilities to serve potential consumers.

The REB must finalize the Rural Electrification Master Plan. This plan must include program objectives, strategies, goals, and resource allocations which have been selected and decided on in the planning process. The implications of resource limitations and current policy decisions as well as the impact of both must be examined. Master Plan computer models need to be modified to provide a more automated process to make them more responsive and easier to use.

Procedures and guidelines must be developed to fully define the work that needs to be done in Project Analysis for each Phase of the rural electrification program. The level of detail must be sufficient to properly assess the required resources for developing the recommended PBSs. They must also be in sufficient detail to support the development of long-range PBS plans that will be prepared by Engineering Consultants for the PBS once funding has been approved.

The Project Analysis for each Phase of the rural electrification program must provide detailed information and analysis of the existing PDB generation, transmission, and grid substation facilities and planned future improvement, the adequacy of these facilities to serve PBS needs, and the existing PDB distribution system. This study must be completed prior to the development of final project plans and funding agreements to accurately assess the true cost of developing a PBS. In addition, it is necessary to consider the total cost of developing a PBS to serve all potential consumers existing in the PBS at the time of the system study. In the past, project plans were based on an allocation of the funding available at the time of the project study. This has caused confusion over the resources that will eventually be required to develop a PBS fully.

#### IV. PBS EVALUATION

##### A. Board of Directors

Generally individual directors demonstrate an eagerness to perform their duties and responsibility. They will quite frequently inform the General Manager of member concerns and problems. Discussion in board meetings is satisfactory. Generally the REB officers attend the board meetings as observers and the expatriate advisor will periodically monitor board meetings. Each of the PBSs are conducting Annual Membership Meetings and director elections are held in accordance with PBS By Laws and Regulations.

##### PROBLEMS

Several Boards of Directors have tried to achieve the role of a "Management Committee" rather than that of a policy making board. All directors are not attending the formal training courses provided by the REB Training Directorate.

Poor road communications, distances and weather conditions, quite frequently result in board meetings being poorly attended or not starting promptly. Generally, Board Standing Committee functioning has deteriorated substantially.

##### RECOMMENDED REMEDIAL ACTION

In some situations, poor Manager/director relations has created, a feeling of need for a "Management Committee" within the board. The REB Management Operations Directorate must develop a cadre of trained, highly skilled and motivated staff, on the function of management and Board/Manager Relations, to work with the PBS Boards.

Road communication, distances and weather must be taken into consideration when boards establish a time for convening board and Standing Committee Meetings. Active participation by Board and Standing Committee Meeting is essential to the successful development of a PBS.

There should be an evaluation of the overall performance of the Board of Directors, Standing Committees and individual directors, on an annual basis, to measure their results in achieving the objectives of the PBS.

##### B. Management and Administration

Generally the Management and Administrative Staff communication and working relationship continues to move in a positive direction. Management Audits, by the REB, have been conducted in the RE Phase-I PBSs. Also, appraisal teams, comprised of officers of the different REB Directorates responsible for the implementation of the PBS Management and Administrative functions, assisted by the expatriate advisory team, reviewed and evaluated the performance of each PBS by department. Progress, and all areas of

administration requiring immediate attention and corrective action were discussed. Management and the Administrative staff, were advised on how to implement necessary improvements and the corrective action required to meet the standards of sound business practices and program objectives.

Management staff and departmental meetings are held to discuss progress, problems and to develop a plan for remedial action. Employee performance appraisals are conducted on the employment anniversary date of the employee.

Institutional training programs have begun to be implemented in the PBSs, planned and coordinated by PBS Management and implemented with the assistance, and cooperation, of the REB Training Department, the appropriate REB Directorates and expatriate advisors.

The rapid Transition from Organizational Management and Administration to that of Operational Management and Administration, however, is creating many challenges in the functions of management.

#### PROBLEMS

There is evidence that many PBS Management and Administrative officers have not complied with established PBS Instructions and Procedures. Earlier Management Audits have indicated some PBS officers have not demonstrated effective management with the administrative proficiency necessary to establish and implement basic, efficient operational practices. Some management personnel have "short cut" approved procedures, thus causing additional administrative confusion.

Many officers have resigned, been terminated or have been rotated, which has hampered performance, efficiency and effectiveness in carrying out the rural electrification program. Efficiency has further been reduced by the failure of the REB and PBS to promptly fill these key positions.

In RE Phase-II, Management and Administrative efficiency is adversely effected due to untimely staffing and training of management personnel.

#### RECOMMENDED REMEDIAL ACTION

Approved PBS Policy Instructions and Procedures must be correctly implemented. Each Manager, new or experienced, will find his job much easier if he studies and applies approved PBS Policy Instructions and Procedures in the day-to-day operations of the PBS.

There must be a study and solution that is acceptable for timely staffing of vacant and new positions within the PBS.

An intensified technical and on-the-job skills training program must be carried out with PBS Management personnel. This training should include a well planned and organized training, testing and performance evaluation program for individual development and performance.

Staff and Departmental Meetings must be continued to be conducted on a regular basis.

C. Office Systems (PBS Finance and Accounts)

Office Systems is under the responsibility of the REB Director, Finance, and has the responsibility of advising, assisting and monitoring the Finance Department of each PBS. The Uniform System of Accounts are being implemented in all PBSs. The accounting procedure, as approved by the REB, is being implemented and Subsidiary Records are being maintained. Operating and Capital Expenditure Budgets are being prepared and Financial and Statistical Reports are prepared on a monthly basis for submission to the PBS Board of Directors and the REB. Permanent Membership Registers have been established. Member Account numbers are assigned to all energized meters.

PROBLEMS

Delays by REB in presentation of charges for materials and property delivered and/or constructed for the PBS is a major obstacle in the development of the PBS plant accounting. When charges are eventually received, supporting documentation is usually insufficient for proper accounting and is often illegible and unintelligible. Therefore, Capital Property Records have not been completed, depreciation expense is greatly understated, and Plant in Service is undervalued. The PBSs are not utilizing work order procedures for accounting of work in progress; labor, transportation, stores expense, and materials and supplies that should be capitalized are expensed. Inventory records have not been established.

Meter Readers are employed on a contract basis for four months subject to extension of up to one year. Meter Readers exhibit a lack of dedication and enthusiasm as indicated by a large turnover requiring constant training. Meter Readers work under quite severe conditions. They are not given travel or living allowances and their wages are minimal. Adequate training in detection of pilferage, theft, or other irregularities has not been given - nor is zeal for reporting irregularities evident. Meter Readers are not rotated among routes as is required for adequate control. Supervisors fail to insist that every meter is read each month and their work is not closely monitored. Some PBSs, upon verbal orders from REB, require reading of three phase meters by personnel other than Meter Readers - usually Wiring Inspectors. This complicates billing, delivery of bills, and collecting since these accounts are not billed along with other accounts.

The customer accounting system is extremely labor intensive and owing to a large volume of transactions to be recorded, implementation of composite controls is a deficiency. Billing Assistants are, all too often, not provided needed tools. Rate schedules are complicated as well as confusing, contracts are incomplete or unexecuted - making

application of rates and accurate billing very difficult. Staffing of Billing Sections is inadequate for the customer accounting procedures and record keeping system as set forth in the Accounting Procedures Manual.

Constant vigilance over collections is essential. Since virtually all payments received are in cash, it is not uncommon for Cashiers and Collectors to hold large sums of money without any safeguards. Delivery to the Billing Section of receipts bills collected outside the headquarters is often delayed. Collectors are not full-time PBS employees. Linemen find the task of disconnecting service for non-payment distasteful and at times dangerous (due to irate customers who may use physical force to prevent disconnection). Delinquent accounts are increasing as service is not disconnected when delinquent. This causes the number of disconnect orders to increase to a point where there are not enough linemen available to disconnect the meters even if it was given a higher priority.

From time to time, it has been necessary to alter the PBS Accounting Instructions to meet the needs of changing conditions and dynamic growth of the PBSs. Many of these modifications and changes have been, and continue to be implemented by circulars or orders issued from the various REB Directorates. The documentation of original PBS Instructions remains unchanged. REB officers, who due to inexperience, may not comprehend or clearly visualize the composite purpose of Instructions, or may be unaware of changes, often given verbal directions that result in system breakdown, cumbersome procedures, loss of control, or loss of uniformity.

Slowness in staffing, excess rotation of department heads and attrition has caused a delay in the development of the PBS Finance Department.

#### RECOMMENDED REMEDIAL ACTION

The procedures REB follows in processing debit/credit memos and close out documentation for completed construction should be studied and reviewed for improvements in furnishing documents to the PBSs in a timely manner. The PBSs need to implement and utilize the work order procedures to properly account for work in progress.

The pay scale for Meter Readers must be increased to an adequate level to attract and retain capable, qualified personnel. The Meter Readers should be placed on a full-time, permanent basis. Meter reading routes should be rotated among the Meter Readers and the number of meters read as 'special cases' should be reduced. A study should be conducted to see if the meter reading program should shift to a bi-monthly program. Meter Readers should be trained in detection of irregularities and encouraged to report them.

The improvement in customer accounting is essential to the financial viability of the PBS. Elementary instructions on customer accounting with detailed step-by-step procedures with essential controls are needed. All Billing Assistants must be provided with the needed tools to complete the work assigned. Retail rates must be greatly simplified and based on the marginal cost of service. Disconnect fees must be increased and

penalties assessed for non-payment of bills including a more vigorous enforcement of disconnection for non-payment of bills.

The establishment of Collectors as full-time, permanent employees would likely improve the bill collecting efficiency. Collectors should be rotated among collection stations and the performance of both Collectors and Cashiers must be strictly monitored. Wherever possible, bank accounts should be opened and collections should be deposited daily in banks in the locality of collection stations. The schedules and locations of collection stations should be advertised to improve customer awareness. Collectors need extensive training in collection procedures and public relations techniques. A vigorous campaign needs to be undertaken to promptly disconnect service when payment is not forthcoming within the prescribed limits. More severe penalties for late payment must be included. Any attempt at interference in disconnecting services must to be prevented by cooperation from local law enforcement agencies. Once a customer has been disconnected it should be more expensive to restore service than at present. These changes should be clearly stated to the consumers to make them aware of the consequences of not paying their bills in a timely manner.

A review of PBS Accounting Instructions is necessary to reinforce and update them. Alterations of PBS Instructions should be made by either issuance of revised Instructions or revising pages of Instructions. Authority for issuance and alteration of Instructions should be instituted and strictly enforced. Competency of REB officers to give sound and supportive advice and direction to the PBSs should be established, with appropriate testing, before being assigned to work independently.

PBS Staffing must be accomplished in a timely manner and Departmental Head rotation must be kept at a minimum.

D. Member Services and Power Use

The Member Services and Power Use Department was established in the Directorate of Management Operations, to develop guidelines, advise and assist the PBS AGM, Member Services, to develop and carry out a service to the PBS Member. The Member Service and Power Use priorities were established, approved and issued in PBS Policy Instruction 300-2.

The Standard Wiring Manual, PBS Policy Instruction 300-19 has been revised, approved and issued to the PBS Member Service Department. This Manual establishes definite wiring standards and clear instructions concerning procedures for PBS consumer wiring. An intensive wiring training program has been maintained, which has upgrade wiring installations to well above average for Bangladesh. Progress and improvement is continuing in this area. There has been approximately 3,900 village electrician receive training in the 13 USAID funded PBSs. There are three manufacturers of single phase motor-pump sets for STWs and LLPs now in Bangladesh. With the marketing of these three manufacturers, we anticipate no shortage of motor-pump sets in the future. Several indigenous industries have been

developed in response to the development of rural electrification. Other than motor-pump sets, wood poles, mercury vapor lights, house wiring materials, limited line hardware, limited quantities of insulated conductor and various cottages industry and several types of agricultural processing equipment are now being manufactured.

#### PROBLEMS

With the demand for Power Use assistance, the total Member education such as safe use of electricity, PBS services, rural health and family planning, electricity uses in the home, village advisor and farmer organization are being neglected.

The need for additional training on phase converters, motor application and load calculation is very evident. PBS Policy Instructions are not being adhered to by PBS personnel and REB counterparts. Slowness in staffing, rotation and attrition, creates delay in the development of PBS personnel, which requires the consultant to superintendent, rather than advise.

#### RECOMMENDED REMEDIAL ACTION

To implement the priorities of the Member Services and Power Use Department, as approved by the REB in PBS Policy Instruction 300-2, a Member Services Advisor position should be staffed, Field on-the-job training should be implemented on Phase Converters, motor application and load calculations. PBS Policy Instruction must be adhered to. PBS staffing must be accomplished in a timely manner. Connection fees for single-phase and three-phase motor installations should be reviewed.

#### E. System Engineering and Design

Prior to commencement of construction of a new PBS system, REB engages a local consultant who develops and submits for REB approval an engineering design for the system. This consists of base maps showing substation locations and primary line routine, and one-line schematic diagrams showing voltage drop, fault current, and voltage regulating and sectionalizing devices.

The system designs thus developed for the existing PBS were used as guides for staking and construction design of the systems, utilizing the materials which had been allocated by REB for construction on each system. The design was based on voltage levels and loading criteria set forth in PBS Instruction 100-21, "Engineering and Staking Manual," which used some of the basic design criteria developed by the Rural Electrification Administration in the U.S. with some modification to adapt it to the Bangladesh situation.

## PROBLEMS

The goal of the PBS planning is to establish an electrical distribution system to provide safe, reliable electric power at a reasonable cost. The PBS electrical system must serve the needs of potential consumers in the PBS area; it must have adequate capacity to serve electrical demand well into the future; it must be a system which can be expanded and added to easily; it must be properly interconnected to the PDB transmission system; it must be properly protected according to good engineering practice; and it must be designed to provide an adequate return for the investment.

It is essential to have a long-range plan developed for the PBS in order to anticipate future development needs, to determine immediate development requirements, and to establish a systematic development schedule. It is necessary that the plans include proper analysis of the interconnection and integration requirements of the PDB/PBS systems at both the 33KV and 11KV levels. Without this type of planning, it is impossible to get adequate materials to do necessary work, to establish proper system coordination, or to determine substation capacity and feeder requirements.

At the present time, there is no long-range planning and only some work planning being done for the PBS. The PBS Planning function has not been clearly defined; standards and procedures have not been adequately developed. In addition, the responsibility for PBS planning within REB is not aligned organizationally with other PBS development functions which leads to fragmented and contradictory decisions regarding the development of the PBSs.

As a result the PBS system is sometimes overloaded before the basic system is completed. Substations and backbone feeders are not always located properly with respect to load centers. Some power transformers are underloaded, some require changout soon after energization, and unplanned substation construction work needs to be done on an emergency basis.

System sectionalizing plans are not always completed, and failure of sectionalizing and protective devices is commonplace. Often these devices do not properly coordinate with each other or with those on the PDB system. This results in unnecessary major service interruptions as well as safety hazards to the public and to PBS personnel.

In many cases there are more distribution lines taken over from PDB and renovated than originally planned. The PDB systems to renovation were not adequately researched to determine capacity requirements, system physical condition, transformer configuration (wye or delta), consumer connection needs, or other pertinent data necessary for proper integration of the PDB distribution line into the PBS system.

In many cases more PDB distribution line than originally intended are taken over by the PBS to be renovated and incorporated into the PBS system. Often proper study is not made of these facilities to determine capacity requirements, physical condition or other pertinent information necessary for integration into the PBS system. PDB lines are often energized from a PBS system without a proper job of renovation. This lack of renovation planning has resulted in more material being used than originally anticipated, and in PBS systems being prematurely overloaded. These have also been service problems and safety hazards resulting from the rush to energize these lines without installation of a neutral conductor or other work needed to make them compatible with the PBS system.

#### RECOMMENDED REMEDIAL ACTION

Responsibility for PBS system plans must be clearly fixed, both within REB and in the PBS. Planning guidelines must be developed to orient the system planning and design function to the concept of long range service are development.

It is recommended that the system design criteria in PBS Instruction 100-21 be reviewed with a view to the actual conditions experienced on the PBS systems, and developed into a comprehensive standard for system design. This material should be incorporated in a system design manual, separate from the staking and construction design guidelines.

It is further recommended that a comprehensive set of system planning procedures be developed for use by the PBS and the Local Consultants. Training materials should then be developed around the revised criteria and new procedures, and an intensified training program carried out with key REB personnel, PBS personnel and the local consultants. Very close monitoring by REB will then be necessary to ensure the quality of system planning and the results of its implementation.

#### F. Construction, Operation and Maintenance

The first PBS system was energized in June 1980. Since that time, all 13 USAID funded P1 s have now been energized, the last October 1982. The goal of the PBS Construction, Operation and Maintenance Department is to keep the PBS electrical distribution system in safe working order; to keep consumer service interruptions within reasonable limits; to provide maximum electrical system service life within economically feasible limits; to monitor the system for acceptable performance; and to provide electric connections at the consumers request.

To perform these functions, the PBSs have established consumer complaint centers within the service area. These complaint centers have been up graded to attend service outages in a more timely manner. Each PBS is initiating surveys for right-of-way clearing. In most cases, tree trimming is a scheduled activity, classes in basic OCR maintenance and operation are being taught in the Training Institute and the field. Formal classes on record keeping for PBS Operation and Maintenance is

being implemented. It may be pointed out, none of the CO & M Department personnel have had prior electric utility experience in climbing, operations or maintenance.

#### PROBLEMS

Because of communication problems (Travel constraints), the response time to an electrical outage is lengthy, once the problem has been located and isolated. Linemen do not always possess the necessary tools and skills to complete their job efficiently. The right-of-way is not effectively maintained. Maintenance of line equipment, OCS in particular, is overdue. Records and data on system operations and maintenance are not compiled and up to date. Annual CO&M work plans and budgets are not developed.

#### RECOMMENDED REMEDIAL ACTION

Prepare a list of approved linemen's tools, materials and climbing equipment from Bangladesh Manufacturers which may be purchased locally. Develop annual work plans and departmental budget which would include plant improvements and equipment additions. Implement training and on-site assistance in problem solving, personnel dispatching, departmental coordination, equipment operation and maintenance and proficiency improvement, including job safety, for linemen. Improve monitoring and assist in record keeping, data collection and evaluation.