

**BANGLADESH RURAL ELECTRIFICATION BOARD**

**PBS INSTRUCTION 100-30**

**DISTRIBUTION OPERATION, INSPECTION AND MAINTENANCE**

**BANGLADESH RURAL ELECTRIFICATION BOARD**  
**PBS INSTRUCTION 100-30**

Approval Date: 07/03/1979  
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**SUBJECT: DISTRIBUTION OPERATION, INSPECTION AND MAINTENANCE**

**1.0: INTRODUCTION**

These introductions recommend a systematic program of inspection, record keeping and follow-up to provide reliable information of the condition of electric lines and equipment and maintenance that is needed. Experience has shown that such information leads to orderly planning, good maintenance and lower costs of maintenance and replacement.

Each PBS should have a systematic, complete line inspection program, including records such as those described in these instructions.

In reporting results, it is recommended that a summary of line inspection progress, inspection results and maintenance progress be included in regular reports of the General Manager to the board of directors.

These instructions are divided into three parts:

- (1) Distribution Operation;
- (2) Distribution Inspection and Maintenance;
- (3) References.

**2.0: DISTRIBUTION OPERATIONS**

**2.1 SCOPE**

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This section will set forth some operating guidelines for:

- Safe work procedures.
- Equipment operations.
- Inspection and maintenance of equipment.
- Distribution records.
- Emergency procedures and disaster management.

As the system grows, additional management tools will be required and these tools must be developed as required in the future.

## 2.2 OPERATING RESPONSIBILITIES.

Responsibility for operation of the distribution system will be assigned to the Senior General Manager/ General Manager of each PBS. Some of this responsibility can be delegated to the DGM (HQ Tech./Respective Zonal Office) and AGM (Operation and Maintenance), but the overall responsibility must be maintained by the Senior General Manager/General Manager.

## 2.3 OPERATION PLANNING.

Careful planning is necessary to develop a good operating plan for varied conditions that must be dealt with. Procedures must be developed and records maintained to assure that those responsible for the system are informed at all times what is happening on the distribution system. Each Zonal/Area office must be maintained the same record keeping procedure. Each Zonal/Area office will send it to the DGM (Tech-HQ) of PBS. Summarize of the detailed records and procedures that must be maintained in each PBS are:

Re-closer records

Emergency plans

Meter records

Distribution feeder loads

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Regulator records  
Inspections reports and records  
Transformer records  
ACR/ OCR/ Breaker records

Voltage recorder records  
Line patrol records  
Maintenance records

## 2.3.0 SAFE WORK PROCEDURES

### 2.3.1 GENERAL

Each employee must accept responsibility for his own safety as well as safety to fellow-workers and the public. Safe operating conditions shall be maintained at all times. Poor "housekeeping" cannot be tolerated since it generally leads to accidents. The rules set forth in the BREB Safety Manual shall be observed.

### 2.3.2 TOOLS AND CONSTRUCTION EQUIPMENT

All tools and construction equipment shall be kept in good working order. Tools or construction equipment found to be broken or damaged shall be reported immediately and replaced or repaired to good working condition before they are again used. Workmen's climbing tools and equipment that will be issued to individuals must be maintained in good condition. An office order shall be issued for distribution of tools for individuals. The person to whom the equipment or tool is assigned shall be responsible for proper care of such tools or equipment. Damaged or broken tools and construction equipment can cause serious accidents. These accidents can be prevented by a "common sense" approach to safety in using tools and construction equipment. Tools and construction equipment shall be used only for the function for which they were designed. Do not use tools or equipment those are unfamiliar. Before using an unfamiliar tools one must know how to use the tools or equipment. PBS must retain adequate tools and equipment for operation and maintenance of its Electrical Distribution System. The functionality and capacity of each tool and equipment must be checked before

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### 2.3.3 PERSONAL SAFETY

Working in the vicinity of electric facilities can be performed safely if good judgement is used. Linemen, when properly trained, can work safely on a pole. Short cuts, however, cause accidents. No one's personal safety shall be jeopardized to allow for short cuts or unsafe acts. Personal protective equipment shall be used at all times, hard hats, gloves, safety belts, long sleeved shirts, long pants and safety glasses.

**2.3.3.1** When line personnel are working above ground, special hazards are introduced, not only to the men on the pole, but also to the men working on the ground. Falling tools or other objects constitute such hazards. Hand lines shall be used for raising or lowering material from the pole. Do not throw material up (or down) the pole. Hard hats shall be worn when working in the area of activity.

**2.3.3.2** The tagging and clearance procedure as described in the Substation Operation and Maintenance Manual (PBS Instruction 100-29) shall be used on distribution lines to enhance safety.

### 2.3.4 TRANSPORTATION EQUIPMENT

Transportation equipment presents some special hazards when operated in congested areas or on rough roads or terrain. Every effort shall be made to keep the equipment properly maintained and in good working order. The person assigned to operate the equipment shall be responsible for its safe operation. Speeding, rough handling, or other abuse of equipment shall not be allowed. Any equipment defect shall be promptly reported and repaired. To operate mechanical vehicle/transport, license from BRTA (Bangladesh Road Transport Authority)

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must be obtained, when required and should be updated timely.

Unsafe, improperly maintained equipment shall not be used on the PBS systems.

## 2.4.0 DISTRIBUTION EQUIPMENT OPERATION

### 2.4.1 GENERAL

There are varied types of equipment installed on the PBS network systems and it is necessary that all persons that are required to operate this equipment be instructed in its function and operation. Some of the less familiar equipment will be discussed in this section together with points to remember in its operation.

### 2.4.2 DISTRIBUTION EQUIPMENT.

The distribution equipment items to be discussed are as follows :

1. Transformers
2. Voltage Regulators
3. Switches and fused cutouts
4. Oil circuit re-closers (OCR)
5. Automatic circuit re-closers (ACR)
6. Breaker
7. Meters
8. Street lights
9. Distribution line equipment.
10. Lightning Arrester
11. Capacitor
12. CT & PT

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#### 2.4.2.1 Distribution Transformers

Mainly single phase pole mounted distribution transformers are used in the PBS systems. It is the Conventional type transformers. In course of time load in rural Hat Bazar, growth center has been increased rapidly. As a result now a day Three phase Transformers are also being used in PBS system.

##### A) Conventional Type Single phase Transformers:

This transformer has the following features

- A single high voltage bushing
- Two low voltage bushings
- Tank mounted ground lug
- Pressure Relief device

Conventional type single phase transformers are used in three phase power bank installation (3 transformers). These transformers do not have the protecting features like the modified protected transformer. Externally mounted surge arresters and fused cutouts must be installed for three-phase power bank installation.

**CAUTION:** Do not remove the tank ground when the transformer is energized. It will cause death for line crew.

**B) Three phase Transformers:** Normally 3-phase distribution transformers are not purchased in RE system but BREB had taken-over huge amount of electric lines along with 3-phase distribution transformers. To replace and rehabilitate taken-over 3-phase distribution transformers and to connect densely loaded area, BREB has recently purchased 100 KVA and 200 KVA 3-phase distribution transformers under UREDS project. Very recently BREB has started to use 3-phase distribution transformers to connect densely loaded Hat- Bazar area. But RE people are not habituated of using

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