

## **The Maintenance System**



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## THE MAINTENANCE SYSTEM

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### Operation

This Maintenance Standards Manual provides information regarding procedures for maintaining system equipment, and indicates how often maintenance should be carried out.

The persons responsible for maintenance of system equipment will use this manual as a guide to arrange to have maintenance performed.

Upon completion of all maintenance, a report is completed and sent, for evaluation, to the maintenance supervisor.

### Files and Records

A filing system has been set up which consists of two parts:

1. A computerized asset management system called Avantis, which carries nameplate and maintenance data;
2. A hardcopy maintenance record filing system intended to maintain a complete maintenance history of all substation equipment. Each area will have a file on each piece of equipment in the area, and the Electrical Maintenance Center (EMC) shall maintain a master file of all equipment in all areas.

### Supervision

The responsibility for the care and well being of all Company assets within a Division, including those covered by this manual, rests with the appropriate Maintenance Coordinator.

This Manual establishes the cycles for the appropriate maintenance procedures. It is the responsibility of the appropriate Maintenance Coordinator to plan, budget, and schedule each Maintenance III, IV or V that is called for in these Standards. Since a Maintenance I is associated with Commissioning of new installations, the Engineering Department will normally take responsibility for this type of maintenance. The Superintendent of Area Operations or his delegate will be responsible for evaluating reports on work done in their areas, initiating corrective action, documentation, and record keeping.

### Description of Maintenance Types

#### 1. Maintenance I

This type of maintenance is carried out on new equipment or any other equipment that is being relocated before it is released to go into service. All procedures, as outlined in the Maintenance Standards Manual and the Substation Acceptance Guidelines, shall be carried out before the equipment is put into service. Transportation damage shall be thoroughly investigated. The objective of this procedure is to ensure the equipment has been correctly maintained and installed and is operating properly (\*).

#### 2. Maintenance II

This periodic routine inspection is of paramount importance so that abnormal conditions and potential problems can be detected at an early stage and corrected as quickly as possible. These inspections provide information for our records and verify that conditions are as they should be. To ensure that this routine inspection takes place and is carried out routinely throughout the Company, we have established a set of guidelines that are listed in the Standard Procedures.

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The routine inspections are our first line of defense against equipment failure. The ensuing reports will provide continuous monitoring of the equipment. The appropriate Maintenance Coordinator will evaluate the Substation Inspection Report. The objective at this time is to detect any abnormal condition that may be developing (\*).

### 3. Maintenance III

All equipment is subjected to detailed inspections at routine intervals prior to its next Maintenance IV. These inspections provide information for our records and verify that equipment is operating as required. To ensure that this routine inspection takes place and is carried out routinely throughout the Company, we have established a set of guidelines that are listed in the Standard Procedures.

The Maintenance Coordinator will evaluate the ensuing reports. The objective at this time is to detect any abnormal condition that may be developing (\*).

### 4. Maintenance IV

All equipment is subjected to a major overhaul when it has reached the end of its cycle, as indicated by the Maintenance Standards, or as a result of faults detected during another type of maintenance. The procedure for Maintenance IV on each type of equipment is detailed in the Standard Procedures.

The Maintenance Coordinator will evaluate the ensuing reports. The objective at this time is to detect any abnormal condition that may have developed, and to prepare the equipment for another service cycle (\*).

### 5. Maintenance V

Occasionally equipment has to be taken out of service to replace a part or to make minor adjustments or modifications. A limited amount of maintenance may be done at this time. If the work takes on a more substantial nature then the next Maintenance III or IV should be done, as appropriate (\*).

Note (\*): During each maintenance procedure the appropriate report form will be filled out. This report will be as detailed as possible, giving an accurate account of work done, complete with pictures or references to diagrams in the manufacturer's instruction books. The person responsible for maintenance will evaluate these reports. If further action is required, a copy of the report will be sent to the Substation Asset Management Group.

A copy of all reports will be filed in the Regional and Head Office Master Files, and a record of the procedure will be entered in AVANTIS.

## Clearance Procedures

The Standard Protection Code covers switching equipment in and out of service. If there is any conflict between these Standards and the Standard Protection Code, then the latter shall be followed.

## Updating the Maintenance Standards

Attempts have been made to make our maintenance system expandable and flexible. Improvements and changes will be made as experience dictates.

Personnel are highly encouraged to submit constructive ideas/suggestions for our Maintenance Standards. Suggestions concerning system equipment maintenance should be directed to the Maintenance Coordinator.

Manual update transmittals will be sent via e-mail as required to the persons responsible for maintenance. It will be the responsibility of regional personnel to update and maintain these Standards.

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### Maintenance System Diagram

