

CHAPTER 6

SOFTWARE DESCRIPTIONS AND REQUIREMENTS

1. GENERAL. The operation of UMCS is controlled by software at the central station, island station, and field equipment panels. UMCS are distributed processing networks that provide increased operational reliability through the use of distributed software and computing power by executing application programs while processing and storing information at field equipment panels. The distributed processing approach also provides increased operator convenience through the graphical interface available at each workstation.

2. CENTRAL STATION AND ISLAND STATION.

a. Four types of software may be implemented in the central station and island stations:

(1) Operating system software controls operations of the CPU and performs functions such as control of its peripheral devices, file management, service interrupts, diagnostics, and software development.

(2) Command and graphical user interface software enables the operator to monitor, control, and interact with the system via any workstation using a graphical interface or simple English language commands. Command software is designed to generate reports, display alarms, display system graphics, and exchange data between field equipment and island stations and between island stations and central station.

(3) Applications software consists of energy conservation and other support programs affecting equipment operations.

(4) LAN software includes a network operating system which controls communication between network devices, including the central station or island station computer, workstations and shared peripheral devices such as network printers.

b. The operating system software, the command software and the graphical user interface software, and the LAN software are always running at the central station regardless of the type of applications software implemented. Under normal conditions, the command software updates the central station database whenever a change in data is entered into the system.

c. The type of applications software programs resident in the central station and island stations varies according to the type of equipment and utility systems monitored and controlled by the UMCS. A copy of all applications software installed in the field equipment panels will also be maintained at the central station and updated to the island station and field equipment panels whenever changes are made to the programs. Software such as demand limiting applications involving equipment at multiple geographical locations will be executed at the central station. Other demand limiting applications involving equipment monitored and controlled by multiple field equipment panels will be executed at the island station.

3. FIELD EQUIPMENT PANEL.

a. Two types of software are implemented in the field equipment panel.

(1) Operating system software controls and schedules the operation of the microprocessor, interfaces, and diagnostics in real time.

(2) Applications software monitors and controls the utility systems and equipment connected to the field equipment panel and exchanges data with other field equipment panels and with the island station.

b. The field equipment panel uses stored operational data, measurements from local instruments and time of day to execute applications programs. Software generated values must be checked against field equipment panel stored constraints to prevent equipment damage due to improper commands. In the event that software generated values exceed the constraints, the stored constraint values must prevent issuance of that command.

c. Field equipment panel system software must be capable of detecting hardware and software failures and forcing all outputs to a predetermined state, consistent with the failure mode requirements defined on the drawings.