

- (3) It must be able to communicate planning and performance information to all parties involved.
- (4) It must identify objectives and highlight important operations leading to these objectives.

The best management system available to fulfill the above requirements is network planning, which uses the "network analysis techniques" of "critical path scheduling" and "precedence diagramming" as described later in this appendix. In this system, the activities making up the project are shown on a network diagram, which displays in a graphical manner the interrelationship of the activities.

The organized manner of assembling information on the network diagram forces the planner to think through the project in detail. When the network is completed, the project is effectively portrayed on paper. Problems which might otherwise be overlooked are identified at an early date, allowing time for alternative plans to be developed to avoid the difficulties. The effect of altering the time or sequence of any activity can be related to other activities and the project as a whole, thus allowing alternative programs to be evaluated.

The diagram indicates which activities are critical to completion of the project and the amount of tolerance in the case of non-critical activities. This permits the project to operate on a "management by exception" principle whereby attention is focused on only those activities requiring close control. Critical items on a project will usually not exceed 20% of the total activities. Thus, although all details are taken into consideration in developing the schedule, the system identifies the priority items and permits management to achieve maximum benefits for effort expended by concentrating on these.

By constantly monitoring progress in relation to the critical path schedule, deviations from the schedule can be reported early, allowing immediate action to be taken to adjust for the lost time and return to the original schedule.

The varied and detailed reports provided by critical path computer reports makes it possible to communicate the schedule and performance information to all personnel involved in the management of the project.

The various network analysis techniques used under network planning are shown in Exhibit A1 facing this page. These techniques can be divided into "activity oriented" systems and "event oriented" systems. In the case of activity oriented systems, activities are identified on the network diagram and are related to the performance of some task over a period of time. In the event oriented systems, the network is developed with emphasis on events, an event being a point in time when certain conditions have been fulfilled, usually the start or completion of one or more activities.

There are two activity oriented systems in use, - Critical Path Method (CPM), and Precedence Diagrammings - whereas, PERT (Programme Evaluation