



# Project Time Control

## ■ Definition: Controlling

*Control = Monitor + Compare + Analysis + Action*

- Controlling involves making sure that the results achieved are in line with the planned results.
- The main feature of control is action to correct performance deviations and to insure that expected results are forthcoming.

# ■ Project Time Control

## **PURPOSE:**

The successful attainment of set time objective is the essential purpose of the time-management system.

## **AVAILABLE:**

An **operational** plan and a detailed calendar is prepared to:

- meet project objective and
- level resource requirements.

## **WHY?**

- No plan can ever be perfect.
- No planner can anticipate every future circumstances.
- Problems arise that could not have been foreseen.

## ■ *Process of Project Time Control*

1. Establish an *operational schedule*.
2. Measure and report progress (Establish a progress *monitoring* and information feedback procedure).
3. *Compare* actual achievement with planned.
4. Check and *analyze* time progress and determine effect on completion date and milestones.
5. Plan *corrective action*
  - Bring work back to schedule.
  - Modify schedule.
6. *Implement* corrective action.
7. *Update* operational schedule.

# ***1. Establish Operational Schedule***

For project control purposes a hierarchy of schedules may be needed, depending on who will use it.

## ***➤ Key Dates Schedule***

- For owners and top-level management in terms of MILESTONES or KEY DATES.

## ***➤ Detailed Schedule***

- For engineers, work supervisors, material suppliers and subcontractors.
- A schedule of that particular engineer/supervisor work responsibility.
- Provide him with a day-to-day forecast of field operations.
- Critical activities and free float values should be noted.
- Covers limited time spans (2 weeks or 30 days).
- Tabular listings and computer-printed bar charts are common forms.

## ***2. Measure and Report Progress***

### **Methods**

- Estimated number of working days req. to complete the activity.
- Estimated % completion of the activity.
- Quantities of work units put in place.

### **Equations**

- ❑ Working days to complete =  $d (1 - P/100)$
- ❑ Working days to complete =  $d (1 - (W/T))$

#### **Where**

d= total activity duration in working days

P = estimated percentage of completion

W= number of work units put into place.

T= total number of work units associated with the activity.

***Based on the assumption of straight-line variation between time and work accomplishment***

## 2. Measure and Report Progress

### ■ *How often?*

- Balance between management benefits and costs and efforts.
- To serve other reports benefits such as cost control.
- According to project characteristics and peculiarities.

### ■ *Weekly Progress reports*

- A common procedure in many industries.
- Listing those activities that started, finished, or were in progress during the week and indicating their stages of completion.
- Must include procurement, material delivery information, .....
- Chose a cutoff date, to be selected to serve both time management and labor cost accounting.

## 2. Measure and Report Progress

### ***WEEKLY PROGRESS REPORT***

***Project:*** Highway bridge

***Week ending:*** Wednesday, July 21 (working day 27)

***Job. No:*** 7903-50

***Prepared by:*** K.M.

<b>Activity</b>	<b>Activity Number</b>	<b>Date Started</b>	<b>Date Completed</b>	<b>Percent Complete</b>	<b>Working days to complete</b>
<b>A</b>	110	-	July 15	<b>100</b>	<b>0</b>
<b>B</b>	115	-	-	<b>-</b>	<b>13</b>
<b>C</b>	130	-	-	<b>80</b>	<b>2</b>
<b>D</b>	150	July 15	July 15	<b>100</b>	<b>0</b>
<b>E</b>	160	July 16	July 21	<b>100</b>	<b>0</b>



## 2. Measure and Report Progress

### ■ *Field Progress*

- To accompany weekly progress reporting.
- Discussion of projected project features.
- General statement about time status.
- Critical or low float activities in difficulty.
- Potential trouble spots.
- Exceptionally well project areas.

### ***3. Compare and Analysis of Project Progress***

Concerned primarily with determining the effect of the latest information on the project completion date and any milestone goals.

- ☐ 1<sup>st</sup> - A quick and simple check for critical activities status.
- ☐ 2<sup>nd</sup> - Check the possibility of a new critical path.

#### ***SIGNS OF DANGER:***

- Activities fall behind LS schedule.
- Resource availability delays.
- Realizing that time duration of future activities have been materially underestimated.
- Change logic becomes necessary.

## 4. Corrective Actions

- When there are small delays that are within network time contingency, no action is usually required.
- Otherwise use *Time Reduction Technique* to bring project back on schedule.
- Make periodic job progress meetings to enhance time management efficiency.
  - Weekly, biweekly, monthly.
  - Project managers, field supervisors, major subcontractors, material suppliers, and owner representative.

## 5. Network Updating (Rescheduling)

- Making necessary network corrections and re-computing activity times and float times.
- Concerned with determining the effect of schedule deviations and plan changes on the portions of the project yet to be constructed.

### **INFORMATION NEEDED:**

- New activities to be added.
- Existing activities to be deleted.
- Changes in the resource availability and delivery dates.
- Changes in the job logic.
- New estimate of the time required to finish unfinished activities.
- Changes in the scope of work.
- .....

## ■ Example

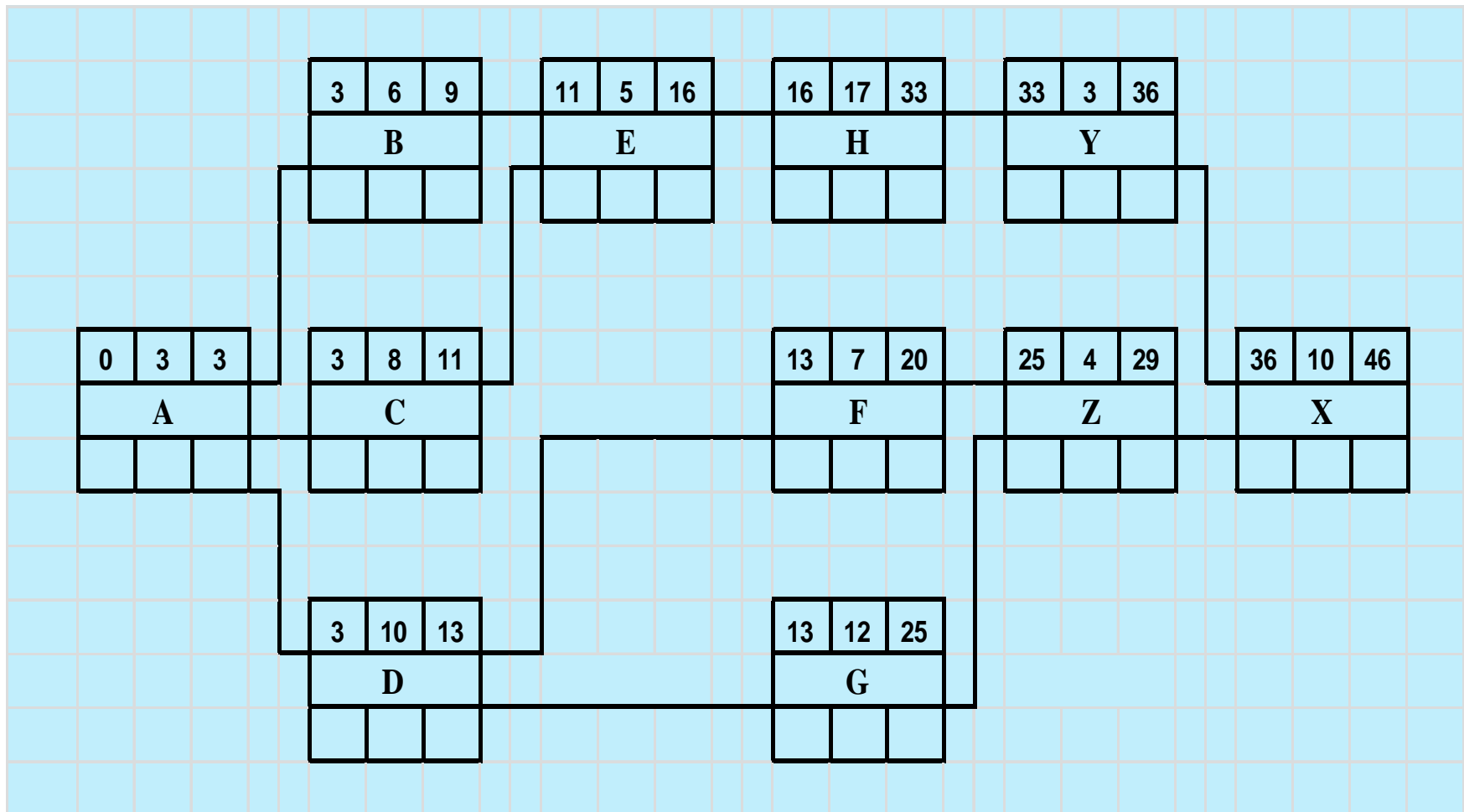
The initial AON diagram for a small engineering project is shown below with planned activity times in days. *At the end of the 15<sup>th</sup> day*, the field progress report gives you the following information:

- Activity “A” was completed on schedule.
- Activity “B” started as planned but four days were lost due to waiting for the required resources.
- Activity “C” was completed one day earlier.
- The remaining duration of Activity “D” is 2 days.
- The duration of activity “H” will be reduced to 12 days instead of 17 days.
- The activity “F” cannot start until the morning of day 22.
- Activity “Z” is expected to take two days more.
- Due to owner requirement the volume of work of activity “X” will be increased by 50%

*required:*

*Construct the updated AON diagram, calculate the early and late start times on each activity, and indicate the critical path.*

# ■ Example



# Example

