

CHAPTER 12

THE SCHEDULE

1. INTRODUCTION

The schedule is one of the building blocks for project development. A schedule helps determine the duration of the project, the critical activities, and when funds are required. This chapter will briefly discuss some scheduling basics.

2. SCHEDULE ELEMENTS/BASIC REQUIREMENTS

The basic elements comprising the schedule consist of the activities in the project, the duration of each activity, and the sequence in which those activities occur.

A. Activities

The activities from a work breakdown structure become the building blocks for a schedule. An activity is any specific element of work.

It is important that activities not be confused with schedule events. Events are indicators of the beginning or completion of an activity. An event milestone is usually one specific point in time, whereas an activity occurs over a period of time.

B. Durations

The activity duration is simply the time required to complete the work involved in a specific activity.

C. Sequence

The sequence of activities refers to the order in which the activities are scheduled to be performed.

D. Critical Path

The longest series or path of interdependent activities of a project is connected end to end. The critical path of a project may change from time to time as activities are completed ahead or behind schedule.

3. SCHEDULE PORTRAYAL

Portrayal of the schedule can occur in a variety of forms. Examples of schedules are bar charts, networks, and lists.

A. Bar Chart

A bar chart represents graphically the different work activities involved in a project. Each activity is usually represented by a time-related bar. See Figure 12-1 for an example of a bar chart.

B. List

Scheduling by means of a list simply involves creating a list of the different activities involved. A list, although easy to prepare and maintain, actually conveys very little information about the job since it does not show the interdependency of activities or constraints.

C. Network

Like the bar chart, a network represents graphically the different work activities. The difference is that the more sophisticated network depicts the activities and their independence and interdependence. Typically, a logic network contains the activities, their durations, their interdependence, and a calculated critical path. Today networks are generated by computer and may also be time scaled.

D. Programmed Evaluation and Review Technique

The Programmed Evaluation and Review Technique (PERT) was developed in the early 1950s for the United States Navy. It was originally developed as a method for expediting completion and has since been modified to include cost. PERT simply employs arrow diagrams to portray a network.

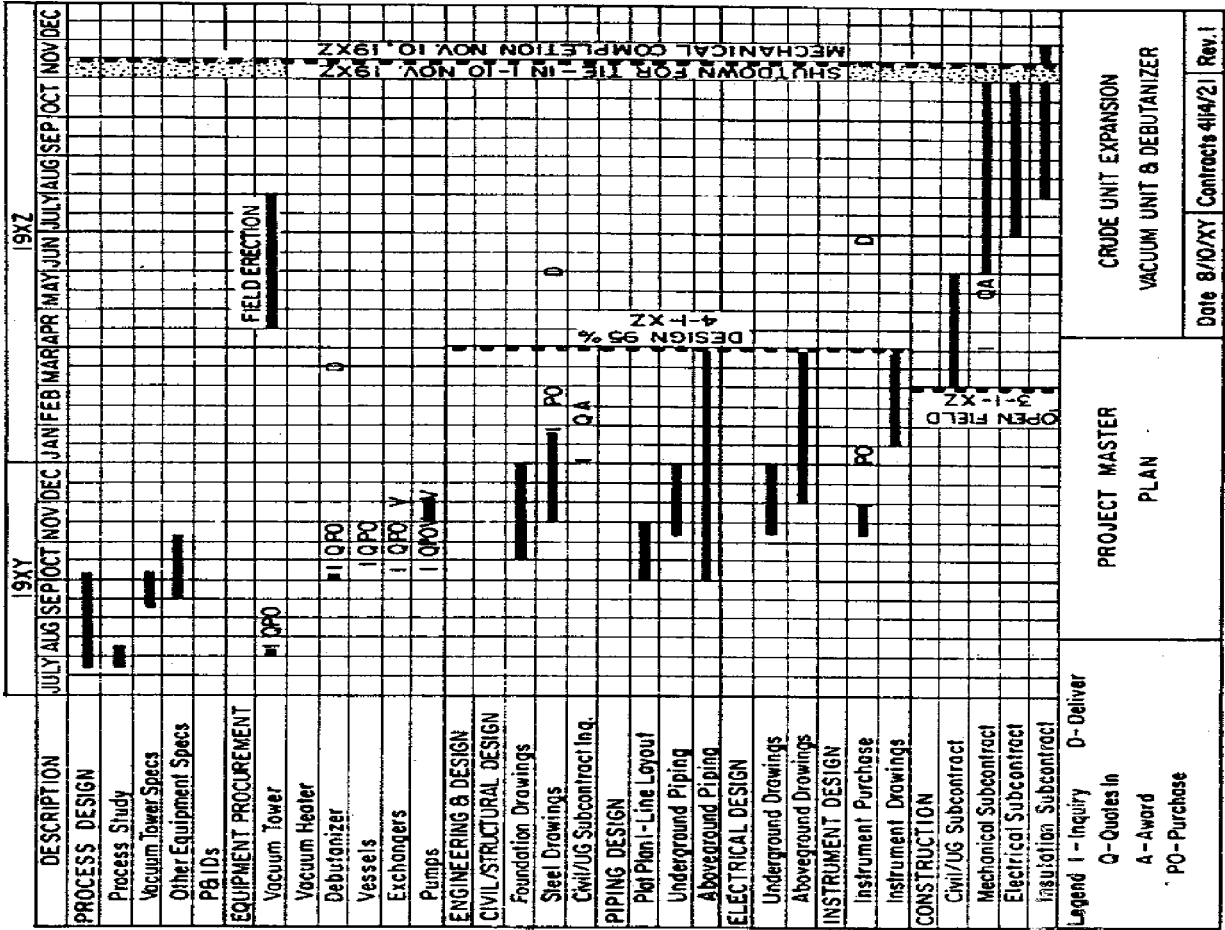


Figure 12-1. Bar Chart Example

4. KEY DECISIONS

Project milestones are called key decisions at DOE. They are as follows.

A. Key Decision 0 (KD-0) - Approval of Mission Need

1. Prerequisite for requesting conceptual design funding in the internal review budget cycle.
2. Approval must occur prior to the planning stages of the annual internal review budget cycle and submission of initial funding requests to OMB and Congress.

3. Documentation Requirement: justification of mission need (JMN).
4. Prerequisite for release of appropriated funding by the Chief Financial Officer (CFO).

B. Key Decision 1 (KD-1) - Approval of New Start

1. Prerequisite for requesting project line item funding in the internal review budget cycle.
2. Approve project plan, including initial project baselines. Initial technical cost and schedule baselines for the project will be based on the CDR and its support documentation.
3. Implement a change control system delineating specific responsibilities, authority, and accountability at the appropriate management levels for changes affecting the project baselines.
4. Other input to the decision process includes completion of the budget validation, the independent cost estimate, and the project data sheet.
5. Prerequisite for release of appropriated funding by the CFO.

It should be noted that for Environmental Management (EM) projects, subsequent key decisions (KD-2, KD-3, and KD-4) have been eliminated in order to streamline the process. After KD-0 and KD-1, the project reports its status with annual Energy System Acquisition Advisory Reviews (ESAARs). The project ESAAR must address the prior year's accomplishments against the year's work plan and present the upcoming fiscal year's work plan, scope, schedule, and cost. In addition, proposed remediation alternatives to support the records of decision scheduled during the fiscal year should also be addressed.

C. Key Decision 2 (KD-2) - Approval to Commence Title II, or Final/Detailed Design

1. Scheduled prior to start of Title II or final/detailed design as identified in data sheet.
2. Input to decision process includes update to the project baselines reflecting completion of preliminary design (Title I) and an independent cost estimate (ICE).
3. Current project plan reflecting approved baseline changes, as appropriate.
4. Approval to begin long-lead procurement, if applicable.

5. Prerequisite for release of appropriated funding by the CFO.

D. Key Decision 3 (KD-3) - Approval to Commence Construction or Enter Full-Scale Development

1. Scheduled prior to date in approved project plan schedule for starting construction or entering full-scale development.
2. Input to decision process is evidence of readiness to proceed, appropriateness of timing, and firm baseline and includes the update of project baselines reflecting the completion of final/detailed design (Title II) and an ICE.
3. Current project plan reflects the approved baseline changes, as appropriate.
4. Prerequisite for release of appropriated funding by the CFO.

E. Key Decision 4 (KD-4) - Approval to Commence Operation/Production

1. Scheduled prior to date in approved project plan schedule for transition from acquisition to operation/production; transition is not formally made until demonstrated capability to meet technical performance goals approved in baseline.
2. Input to decision process is evidence of operational readiness.
3. Prerequisite for release of appropriated funding by the CFO.

5. FUNDING PROFILE

A funding profile indicates costs over time for a project.

A. Definition

A funding profile shows the incremental funds over time required to complete a project. The sum of these incremental amounts equals the total project cost. If a project's life is several years, all the money required for that project would not be committed when it was initially approved. Based on the initial estimated costs, an amount of money would be set aside to start the project. As the project progresses, money would be allocated to the project. Thus, the schedule and estimate must have a common basis. This common basis is usually the activities that make up the project. Each activity has a duration and a cost associated with it. When the two are linked together, they produce a profile that indicates the cost over time. This can be used to obtain the funding prior to when it is needed. An example of a funding profile is shown as Figure 12-2.

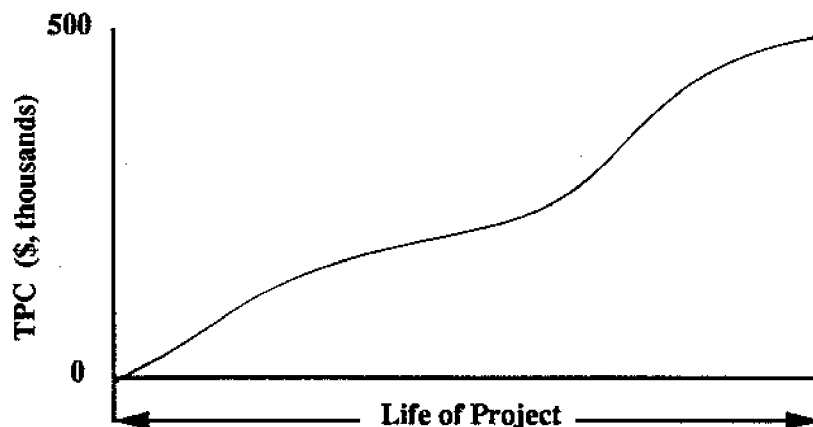


Figure 12-2. Example of a Funding Profile

B. Developing Costs for the Activities

A funding profile is not developed using the greatest level of detail. Therefore, costs must be included in the summary activity. Costs must also be escalated to reflect the dollars that will be needed a few years from today and not what is needed in today's dollars (i.e., unless the entire project is being funded today). Thus, the future activity costs must be escalated.

In summary, each activity will have an escalated cost associated with it. When the costs for each activity are summed in the schedule sequence, a funding profile will be developed.

6. BUDGETARY CONSIDERATIONS

For DOE projects, it is important to forecast not only the expenditures, but also when funds will have to be appropriated by the Congress to support the project schedule. Budget appropriations (BA) is the amount of money that was appropriated by the Congress for the project. Budgetary outlay (BO) is anticipated costs (expenditures). These can be factors to consider when updating the project funding profile. The BO funding profile will always lag the BA profile.