3600
3800

COMPUTER SYSTEMS
PERT/COST

REFERENCE MANUAL

CONTROL DATA
CORPORATION

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Additional copies of this manual may be obtained
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INTRODUCTION

Program Evaluation and Review Technique (PERT) is used to plan, monitor, and evaluate projects and programs. The PERT/COST computer program designed for use on the CONTROL DATA® 3600/3800 computer systems, provides effective project control from the standpoint of cost. A companion PERT/TIME program is compatible with this system.

PERT APPLICATIONS

PERT can be used in an extensive variety of situations, for example:

- Computer program development
- Engineering design
- New automobile tool-up
- Weapons development
- Advertising compaigns
- Sales programs

Particularly suited to PERT processing are developmental and other projects which produce a limited quantity of output. Uncertainty is another general characteristic of most projects using PERT. The system is especially useful where unknown or unpredictable factors are concerned. PERT was originally created to meet the needs of the government in massive and complex military projects; current applications are widespread throughout industry.

PERT/COST SYSTEM

The PERT/COST system utilizes a cost-oriented work breakdown structure to define the end items and the functional sub-elements that are combined to produce the end items. Work packages, which are the lowest level of input to the work breakdown structure, are assigned charge numbers that are also associated with one or more activities of the PERT/TIME network.

The use of PERT/COST requires a precise plan. Cost estimates are created for work packages; relationships between work breakdown structure blocks are established. The cost estimates together with data on work breakdown structure relationships are prepared as input for a PERT/COST computer run. A summary tape prepared by the companion PERT/TIME program is also input to the PERT/COST program. The computer program produces reports for analysis by management.

PERT can formalize planning and serve as a guide for controlling. PERT provides management with the means to evaluate accurately the status of a project. It points up current and potential problem areas; it allows for adjustment, refinement, and rescheduling of effort. It increases the probability of success in reaching the project objectives.

The PERT method is dynamic; it assumes conditions change during the life of the project. The actual completion of work packages may alter estimates of work to come; parts of the original plan may be discarded. As variables in the plan change, new data is prepared and new reports produced. PERT is, therefore, a continuing cycle of revision and review.

PERT/COST COMPUTER PROGRAM

The PERT/COST system offers the following features:

Flexible sorts (sort keys are input)

Option to enter committed costs as well as actual costs

Option to list master tape file

Random assignment of work package and summary numbers

Automatic editing for errors and inconsistencies

Diagnostic printouts for errors and inconsistencies

Update capability using file maintenance feature

Option to input a tape containing summarized time information which was created by a companion PERT/TIME program

Option to use either input work package start date or start date from PERT/TIME tape

All PERT/COST computer output reports specified in Supplement No. 1 to DOD/NASA PERT/COST Guide:

1. Management Summary Report
2. Program/Project Status Report
3. Organization Status Report
4. Financial Plan and Status Report
5. Manpower Loading Report
6. Cost Category Status Report

Additional PERT/COST computer output reports as follows:

1. Summary Financial Forecast Report
2. Budget Authorization and Updating Form
3. Cost Estimating and Updating Form
4. Rainbow Category Report

PERT/COST is a fully integrated system of programs which are overlayed as they are needed in the processing of the network. Data entered into the system is stored on the master file. Information placed in the master file remains until deleted or modified by the user. In any one PERT/COST run, it is necessary to supply only that data which has changed since the previous run.

Whenever the user alters the work breakdown structure, the system re-analyzes the structure and places the results in the master file.

PERT/COST 1

The PERT/COST system permits the incorporation of costs with the PERT/TIME network. Costs are allocated according to the structure of the organization performing the work.

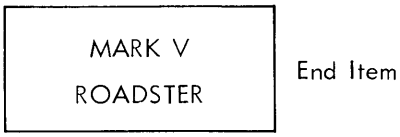
1.1 WORK BREAKDOWN STRUCTURE

The objectives of the project are first defined in terms of end items. End items may be hardware, services, equipment, or facilities that are deliverable or that constitute a contract commitment. Subsequent division of each end item into its component parts creates a project work breakdown structure. This structure serves as the framework for planning and control.

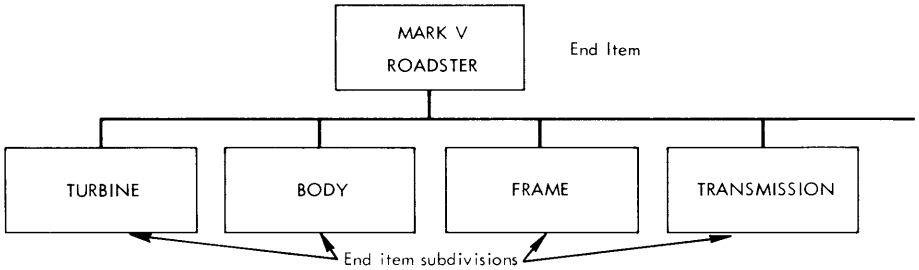
Development of the work breakdown structure defines the program tasks and their relationship to the project end items. This development establishes the framework for integrated cost and schedule planning and control. It serves as the basis for summarizing cost and schedule status of the project for progressively higher levels of management.

1.2 END ITEM SUBDIVISION

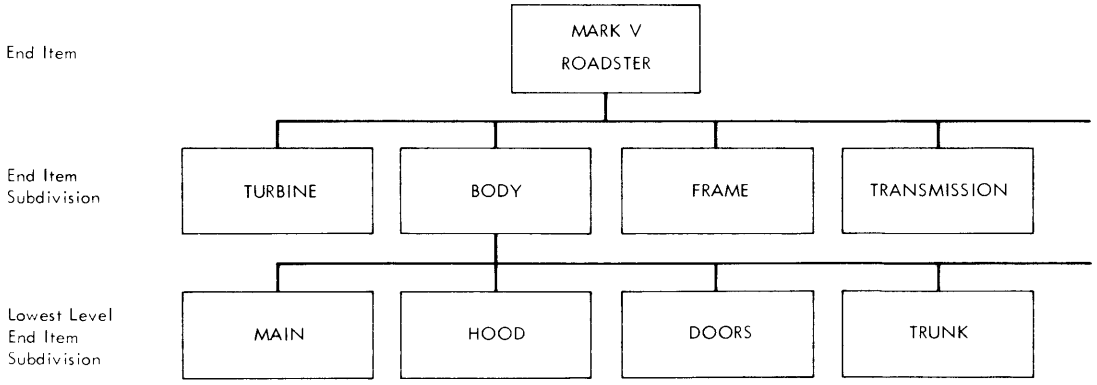
The development of the work breakdown structure begins at the highest level of the project with the identification of the end item.



Each end item is then divided and further subdivided into more detailed units. The Control Data PERT/COST system allows up to eight levels of subdivision below a project end item.



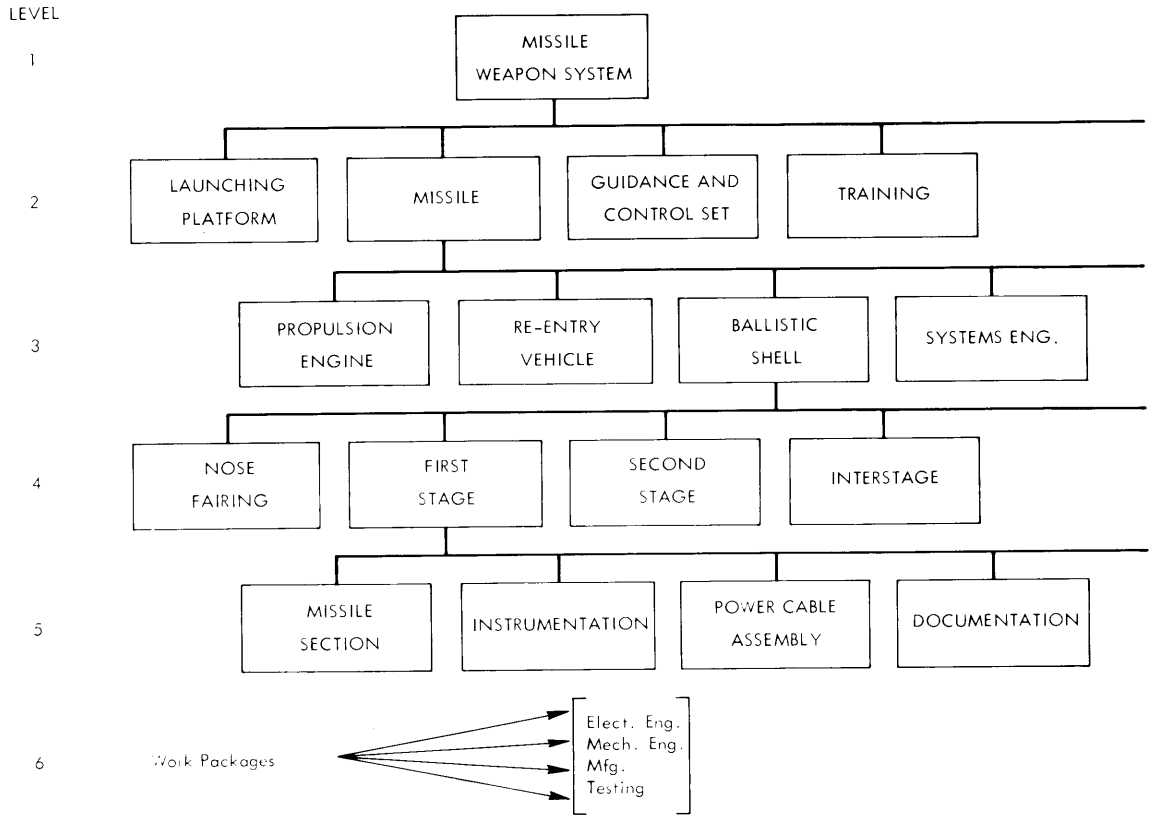
The lowest level end item subdivision is attained when the subdivisions finally become manageable units for planning and control purposes. One or more work packages are developed for each low level end item subdivision.



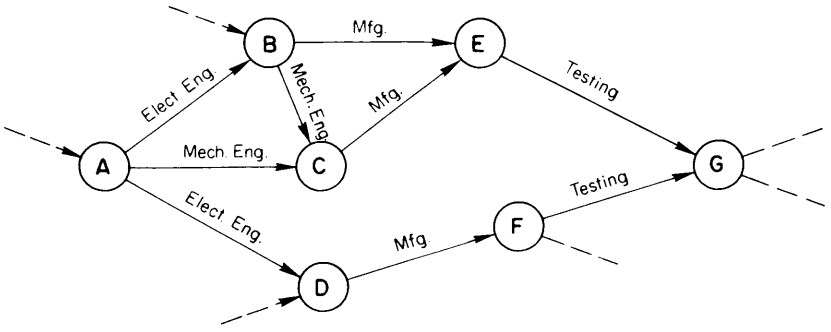
1.3 WORK PACKAGE

The work package is related to the PERT/TIME network by assigning the charge number associated with the work package to one or more activities. Costs attributed to the work package are defined in terms of performing organizations, resources required (manpower, material), unit description code (dollars, man-hours), and duration of time.

Following is a sample work breakdown structure adopted from DOD and NASA GUIDE (to) PERT/COST:



This illustration represents the segment of the total project network which pertains to Instrumentation.



1.4 CHARGE AND SUMMARY NUMBERS

Account codes for the PERT/COST system consist of summary numbers and charge numbers. Summary numbers identify all blocks of the work breakdown structure except for the work packages, which are identified by charge numbers. Costs are planned and collected for the work packages. Summary numbers are used to group costs for each end item subdivision on the next higher level. In addition to charge or summary numbers, each block is assigned a level number corresponding to its position in the work breakdown structure; these numbers are used when requesting PERT/COST reports. The highest level (end item) is assigned 1 with progressively higher numbers assigned to lower subdivision levels. Summary numbers may be assigned levels from 1-8. Work packages may be assigned levels from 2 to 9.

1.5 ACTIVITY COSTS

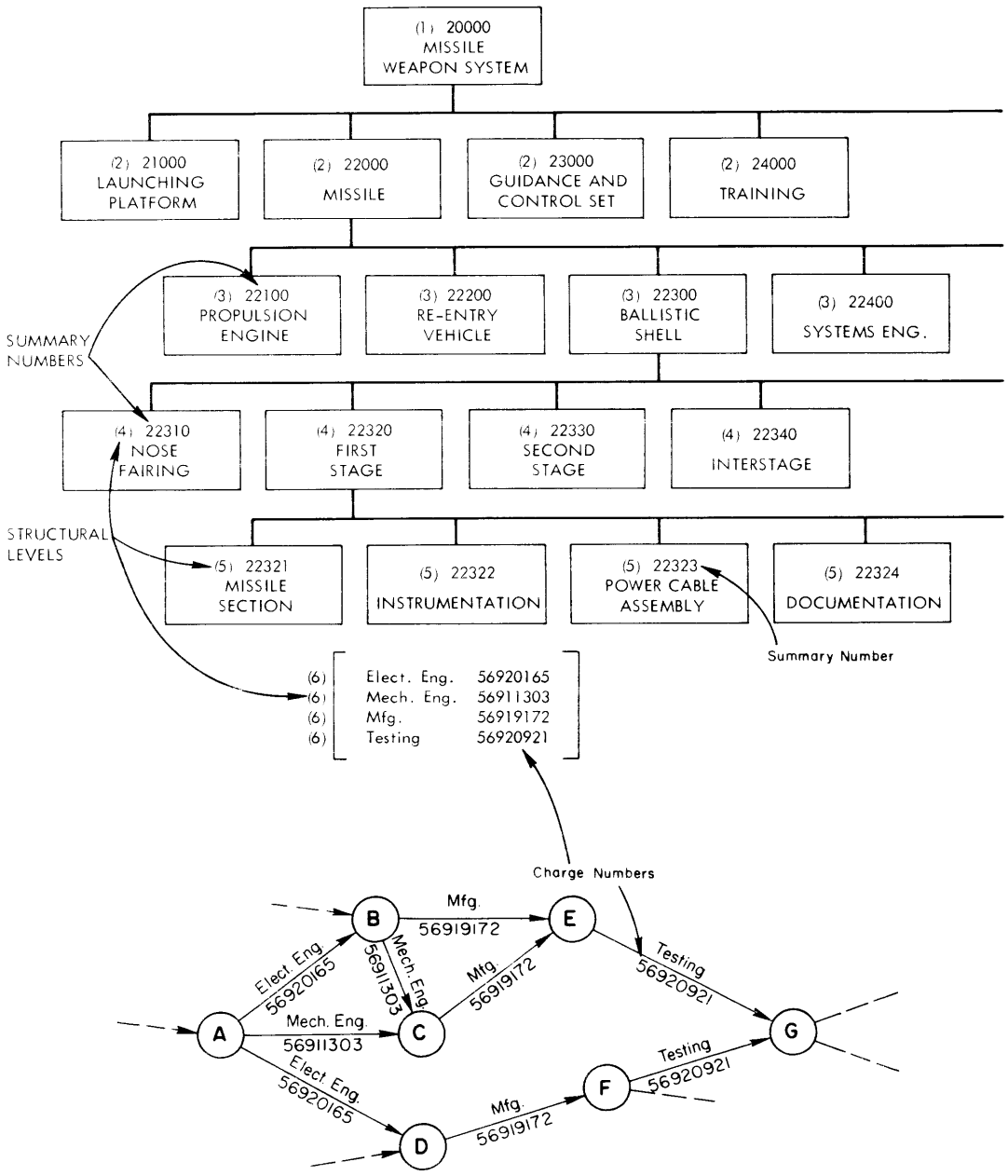
The PERT/COST system does not require costs to be estimated and collected separately for each activity on the PERT/TIME network, but only for each work package. There may be zero cost activities. A zero cost activity represents a precedence or time relationship only. Two or more activities may be grouped as joint cost activities when further subdivision of the work package is unwarranted. In some instances, where the activity is of greater significance, it may have individual costs, provided it is set up in a one-activity work package.

1.6 COST RECORDING

The Control Data PERT/COST system allows four categories of costs: budget, revised estimates, committed, and actual. Costs are estimated by months during the project. Cost information for a work package may be specified for a span of up to five years. However, work packages of six months or less are recommended as the program is designed to be more efficient when work packages do not exceed six months. The completed estimate is the contract cost for the delivery of the project end item.

As the project progresses, actual and committed costs are collected and processed by the PERT/COST system. PERT/COST reports provide figures for value of work to date, actual and committed costs to date, planned total cost, and latest revised total cost. Revised costs are calculated from new forecasts which reflect re-allocation of resources. Costs may be changed at any time; they may be entered, deleted, increased, or decreased.

Following is the sample structure showing accounting identification:



PERT/COST INPUT 2

The PERT/COST system requires six classes of card input:

Control cards which identify, control, and label a particular computer run

Cards which define the relationships in the work breakdown structure

Cost cards to specify budget costs, revised estimates of costs, actual costs, and committed costs

Rate table cards to specify unit rates and overhead rates

Cards to group costs into summarization categories

Cards to request the output reports described

Input cards must be presented to the PERT/COST computer program in the following order:

1. A control card
2. B control card (optional)
3. C control card (optional)
4. D control card (optional)
5. Work breakdown structure cards, cost cards, rate table cards, rainbow category cards and cost category cards. These cards may be entered in any order; they are sorted by the PERT/COST program as necessary.
6. Report request cards

2.1 CONTROL CARDS

The PERT/COST system uses four control cards. The A control card is required for each computer run; the B, C and D control cards are optional.

2.1.1 A CARD

The A card must be the first card in the input deck. It enters report and release dates as well as term, classification, and unit information into the PERT/COST system and specifies run options as follows:

1. Update a previously established master tape. The computer program assumes this tape (old master tape) is logical unit 2 unless a different logical unit number is assigned in columns 4-5 of the C control card. If a previously established master tape is not used, a master tape is created from card input.

2. Run from a previously established master tape without updating. The computer program assumes this tape (new master tape) is logical unit 3 unless a different logical unit number is assigned in columns 9-10 of the C control card. This option bypasses the execution of the update phase of the computer program.

3. List the new master tape created by the update phase or the master tape entered with the preceding option.

4. Work package start dates can be calculated by the PERT/TIME program if a time summary tape is entered, or they can be adjusted to the date of the first actual cost entered for the work package. If a start date is also entered for the work package, the earliest date is used.

5. Committed costs entered into the system may be printed as a separate line below the actual costs on the management summary and project status reports.

6. Time summary information on a previously established master tape can be retained if no time summary tape is entered during an update run. The additional option to enter a time summary tape is described under the D control card.

The format for the A card is as follows:

cc	Content	Description
1	A	Denotes A control card
2-7	mmddyy	Date of report (cut off date)
8-13	mmddyy	Release date; if date is illegal (e.g., 023067) or blank, it is set equal to the report date.
14	blank	Not used
15	d_1	Update a previously established master tape
16	d_2	Run from a previously established master tape without update

cc	Content	Description
17	d_3	List new master or master tape entered with option d_2
18-20	ddd	PERT/COST master tape designation; unless this field is blank, its contents are compared to the second word on the previously established master tape.
21-26	mmddyy	PERT/COST master tape date; unless this field is blank, its contents are compared to the first word on the previously established master tape. The first word of the master tape contains the report date of the run which generated the master tape.
27	d_4	Use the work package start date calculated by PERT/TIME. If a start date has been entered for the work package or if option d_5 is in effect, the earliest date will be used.
28	d_5	Adjust work package start date to date of first actual cost entered for this work package. If a start date has been entered for the work package or if option d_4 is in effect, the earliest date will be used.
29	d_6	Print committed costs
30	d_7	Retain time summary information on new master file. If a time summary tape is entered or if $d_1 = 0$, this option has no effect.
31-32	blank	Not used
33-48	(term)	Alphanumeric term (span) information, part of output report heading
49-64	classification	Alphanumeric project classification
65-80	(units)	Alphanumeric cost units description (e.g., DOLLARS)

In columns 15-17 and 27-30, 0 or blank indicates the option is not to be used; 1 indicates the option is to be used.

2.1.2 B CARD

This card enters the project designation, description, contract number, and reporting organization into the PERT/COST system. The information in this card is saved in the first record of the PERT/COST master tape; therefore, unless the information changes, this card need be entered only once. New information can be placed in the first record of the master tape during any update run by entering a new B card. If a B card is entered as part of a run which does not perform an update, the information in the B card is used for all report headings; but the first record of the master tape is not changed. The input format is as follows:

cc	Content	Description
1	B	Denotes B card
2-4	ddd	Alphanumeric program or project designation; saved as the second word of the master tape when a tape is created
5-36	description	Alphanumeric program or project definition (description)
37-48	contract no.	Alphanumeric contract number
49-64	report.org.	Alphanumeric reporting organization

All other columns are blank.

2.1.3 C CARD

This card specifies logical unit numbers for input and output files used by the PERT/COST systems. Logical unit numbers entered in this card replace logical unit numbers built into the system. Any or all logical unit numbers specified in this card can be changed. This card is optional, since the following logical unit numbers are built into the system.

Logical Unit Number	Use
01	Overlay tape; this logical unit assignment cannot be changed.
02	Old master tape, the previously established master tape to be updated
03	New master tape, the tape to be created by an initial or update run; it can be saved for the next update run. Also, may be the previously established master tape used by option d_2 in the A card.
04	First scratch file

Logical Unit Number	Use
05	Second scratch file
06	Third scratch file
07	Time summary input tape, can be changed by the D control card
60	Data input unit; can be changed to input PERT/COST data from a specified logical unit. Control cards are always read from logical unit 60.
61	Output unit; can be changed to output report listings on a specified unit making it possible to create multiple report listings with the use of utility tape to printer routines.

If a logical unit number field is blank in the following input format, the corresponding logical unit number above is used. Logical unit number 2 through 49 can be entered. When using the C control card, care must be taken to avoid conflicting logical unit assignments (e.g., assigning the new master tape as logical unit 1 would terminate the run since logical unit 1 must be assigned to the overlay tape).

cc	Content	Description (entries must be right justified)
1	C	Denotes C card
4-5	uu	Logical unit assignment for old master tape
9-10	uu	Logical unit assignment for new master tape
14-15	uu	Logical unit assignment for first scratch unit
19-20	uu	Logical unit assignment for second scratch unit
24-25	uu	Logical unit assignment for third scratch unit
29-30	uu	Logical unit assignment for data input unit
34-35	uu	Logical unit assignment for output unit

All other columns are blank.

2.1.4 D CARD

This card controls the option to input a time summary tape from the PERT/TIME program. If a D card is input, the PERT/COST program processes a time summary tape; otherwise, a time summary is not processed. Once a time summary tape has been entered, it is possible to retain this information on the master tape from update to update (option d_7 in A control card). Therefore, it is not necessary to enter a time summary tape with each update run. The computer program assumes this tape is logical unit 7 unless a different logical unit number is assigned in columns 14-15.

The input format is as follows:

cc	Content	Description
1	D	Denotes D card.
2-4	ddd	PERT/TIME summary tape network designation. Unless this field is blank, its contents are compared to the first word on the time summary tape.
5-10	mmddyy	Report date of PERT/TIME summary tape. Unless this field is blank, its contents are compared to the second word on the time summary tape.
11-13	blank	Not used
14-15	uu	Logical unit assignment for time summary tape; if blank, logical unit 7 is assumed.
16	d_1	A 1 in this column indicates the PERT/TIME summary tape was created by PERT/TIME type B card input
17	d_2	A 1 in this column indicates the PERT/TIME summary tape was created by PERT/TIME Version 1.0 type A input (rather than Version 1.1 or 1.2).

In columns 16 and 17 a 0 or blank indicates the option is not to be used. All other columns are blank.

2.2 WORK BREAKDOWN STRUCTURE CARDS

This card enters the work breakdown structure into the PERT/COST system. The card code is a 1 punch in column one. The system requires two types of work breakdown structure cards, type code S for summary numbers and type code W for work package or charge numbers. It is not necessary to pre-sort these cards for input.

2.2.1 SUMMARY NUMBER CARD

This card identifies summary numbers and specifies their relationship to the work breakdown structure. A maximum of 2700 summary number cards can be entered. The computer program sorts these cards by level number and by summary number and processes them in order. The input format is as follows:

cc	Content	Description
1	1	Denotes work breakdown structure card
2-13	sssssssssss	Summary number which designates a particular item or element of the work breakdown structure. May contain up to 12 alphanumeric characters. Entries may be justified as desired, but all references to the summary number in this field must be justified in like manner.
14-25	blank	Not used
26-57	(any)	Summary number description
58-69	pppppppppppp	Parent summary number; number of the higher-level summary item in the work breakdown structure that is directly linked with the summary number appearing in columns 2-13. This field remains blank for summary numbers at level 1. Alphanumeric characters may be used. See columns 2-13 regarding justification.
70	blank	Not used
71	ℓ	Level number (1-8)
72-77	rrrrrr	Responsible organization for work identified by this summary number; up to six alphanumeric characters
78	S	This column combined with column 1 uniquely identifies the summary number card.
79	blank	Not used

cc	Content	Description
80	u	Update code for summary number: u = A Add a summary number which is not already in the work breakdown structure. u = D Delete an existing summary number. Only columns 1-13, 71 and 78 need be punched. u = R Replace all information concerning an existing summary number with information on this card.

2.2.2 WORK PACKAGE CARD

Costs can be entered into the system only through the work package charge numbers described by this card which identifies work packages and specifies their relationship to the work breakdown structure. A maximum of 5000 work package cards can be entered. The computer program sorts the cards by charge number and processes them in order.

The input format is as follows:

cc	Content	Description
1	1	Denotes work breakdown structure card
2-13	cccccccccccc	Charge number used for planning and collecting costs for this work package. May contain as many as 12 alphanumeric characters. Entries may be justified as desired but all references to the charge number must be justified in like manner.
14-19	mmddyy	Charge number start date. Establishes the time references for the budgeted and estimated values of the performing organization-resource codes associated with this charge number. Use of this field is governed by options d_4 and d_5 discussed in the A card description.
20-25	mmddyy	Charge number end date
26-57	(any)	Charge number description

cc	Content	Description
58-69	ppppppppppp	Parent summary number; the higher-level summary number in the work breakdown structure that is directly linked with the work package charge number appearing in columns 2-13. Alphanumeric characters may be used. See summary number card description regarding justification.
70	blank	Not used
71	ℓ	Level number (2-9)
72-77	rrrrrr	Organization responsible for accomplishment of the work package; up to six alphanumeric characters
78	W	This column combined with column 1 uniquely identifies the work package card.
79	blank	Not used
80	u	Update code for work package u = A Add a work package charge number to the work breakdown structure. u = D Delete an existing work package charge number. Only columns 1-13 and 78 need be punched. u = R Replace all information concerning an existing work package charge number with information on this card.

2.3 COST CARDS

All costs used in the PERT/COST system are entered on cost cards. The card code is a 2 punch in column 1. The system requires three types of cost cards: budget authorization card, cost estimate card, and actual or committed cost card. It is not necessary to pre-sort these cards for input. The computer program sorts them by performing organization, resource code, charge number, card type, and extension number before processing.

2.3.1 BUDGET AUTHORIZATION CARD

This card establishes the budgeted hours and costs for the various work package charge numbers and relates them to performing organization-resource code combinations. There are no restrictions as to the number of performing organizations and resource codes that may be assigned to a particular charge number.

Man hours, direct costs, or total costs may be allocated in monthly increments for each combination. Direct and total costs may be generated by the computer through use of the rate table discussed in section 2.4.

Once the budget values have been entered, the program produces, on request, an input form known as the Budget Authorization and Updating Form (section 3.1). A separate form is printed for each charge number. The purpose of this computer-produced input form is to display the budget values that are being retained in the master file for each charge number.

A maximum of six cost month increments may be contained on one input card. If a performing organization-resource code combination for a particular charge number extends beyond a six-month period, up to nine extension cards can be used. These additional cards make it possible to enter costs for a 60-month period for each performing organization-resource code combination for a particular charge number. Each card must contain identical information in columns 1-30 as well as the appropriate card number in column 79. The input format is as follows:

cc	Content	Description
1	2	Denotes cost card
2-13	cccccccccccc	Work package charge number; up to 12 alphanumeric characters. See work package card description (section 2.2.2) regarding justification.
14-19	blank	Not used
20-25	pppppp	Performing organization. Up to six alphanumeric characters identify department or organization responsible for the work. Entries may be justified as desired but all references to this performing organization must be justified in like manner.

cc	Content	Description
26-29	rrrr	Resource code; up to four alphanumeric characters identify the manpower skill or material type used. Entries may be justified as desired but all references to this resource code must be justified in like manner.
30	c	Unit description code: c = H units are in labor (man) hours c = D units are in direct dollars c = T units are in total dollars The same unit description code must be used in all extensions for a performing organization-resource code combination for a particular charge number.
31-36 37-42 43-48 49-54 55-60 61-66	bbbbbb	Budget estimates in monthly increments. Must be whole positive numbers; decimal points and minus signs are not permitted. All values must be right justified. Values in these six fields are automatically assigned to specific calendar months in reference to the scheduled start date of the charge number.
67-77	blank	Not used
78	B	Type code; this column combined with column 1 uniquely identifies a Budget Authorization Card.
79	x	Card extension number. To maintain the sequence of monthly increments, each card must be assigned a unique number, 0-9, in ascending order beginning with zero. If only one card is used, this field can remain blank.
80	u	Update code for modifying the corresponding elements of data in the master file. This field must contain one of the following characters: u = A Add costs for a performing organization-resource code-charge number combination which is not already on the master tape. u = D Delete all budget authorizations for all extensions for an existing performing organization-resource code-charge number combination. Only columns 1-29 and 78 need be punched.

cc	Content	Description
80	u (Cont'd)	u = R Replace the budget authorizations for an existing performing organization-resource code-charge number combination with data from this card. If the master tape contains extensions, only the extension being updated need be entered when using the R code. Each extension represents one record on the master tape. Only the record corresponding to the extension code entered is updated.

2.3.2
COST ESTIMATE CARD

The cost estimate card establishes the estimated hours and costs for the work package charge numbers and relates them to performing organization-resource code combinations.

There are no restrictions on the number of performing organizations and resource codes that may be assigned to a particular charge number.

Man hours, direct costs, or total costs may be allocated in monthly increments for each of these combinations. Direct and total costs may be generated by the computer through use of the rate table discussed in section 2.4.

Once the estimated values have been entered, the program produces, on request, an input form known as the Cost Estimating and Updating Form (section 3.2). A separate form is printed for each charge number. The purpose of this computer-produced input form is to display the estimated values that are being retained in the master file for each charge number.

A maximum of six cost month increments may be contained on one input card. If a performing organization-resource code combination for a particular charge number extends beyond a six-month period, up to nine extension cards can be used. These additional cards make it possible to enter costs for a 60-month period for each performing organization-resource code combination for a particular charge number. Each card must contain identical information in columns 1-30 as well as the appropriate card number in column 79.

The input format is as follows:

cc	Content	Description
1	2	Denotes cost card
2-13	cccccccccccc	Work package charge number; up to 12 alphanumeric characters may be used. See work package card description (section 2.2.2) regarding justification.
14-19	blank	Not used
20-25	pppppp	Performing organization; up to six alphanumeric characters identify the department or organization responsible for the work. Entries may be justified as desired but all references to this performing organization must be justified in like manner.
26-29	rrrr	Resource code; up to four alphanumeric characters identify manpower skill or material type used. Entries may be justified as desired but all references to this resource code must be justified in like manner.
30	c	Unit description code: c = H units are in labor (man) hours c = D units are in direct dollars c = T units are in total dollars The same unit description code must be used in all extensions for a performing organization-resource code combination for a particular charge number.
31-36 37-42 43-48 49-54 55-60 61-66	eeeeee	Cost estimates in monthly increment; must be whole positive numbers; decimal points and minus signs are not permitted. All values must be right justified. Values in these six fields are automatically assigned to specific calendar months in reference to the scheduled start date of the charge number.
67-77	blank	Not used
78	E	Type code. This column combined with column 1 uniquely identifies a cost estimate card.

cc	Content	Description
79	x	Card extension number. To maintain the sequence of monthly increments, each card must be assigned a unique number, 0-9, in ascending order beginning with zero. If only one card is used, this field can remain blank.
80	u	Update code for modifying the corresponding elements of data in the master file. This field must contain one of the following characters: u = A Add costs for a performing organization-resource code-charge number combination which is not already on the master tape. u = D Delete all cost estimates for all extensions for an existing performing organization-resource code-charge number combination. Only columns 1-29 and 78 must be punched. u = R Replace the cost estimates for an existing performing organization-resource code-charge number combination with the data on this card. If the master tape contains extensions, only the extension being updated need be entered when using the R code. Each extension represents one record on the master tape. Only the record corresponding to the extension code entered is updated.

2.3.3 ACTUAL OR COMMITTED COST CARD

This card enters the actual hours and dollars expended, or committed hours and dollars to be expended, for a particular month associated with a performing organization-resource code-charge number combination. All values entered for months equal or prior to the report month (cc. 2-7 of A control card) are considered as actual costs. All values entered for months after the report month are considered as committed costs. As the report date is changed, committed costs are automatically converted to actual costs.

Each value entered on this card is regarded as a separate entity with its own unit description code, update code, and calendar reference. This permits each value to be uniquely defined, positioned in time, and modified. Therefore, the values need not be entered in chronological order.

The card format is as follows:

cc	Content	Description
1	2	Denotes cost card
2-13	ccccccccccc	Work package charge number. Up to 12 alphanumeric characters. See work package card description (section 2.2.2) regarding justification.
14-19	blank	Not used
20-25	pppppp	Performing organization; up to six alphanumeric characters identify the department or organization doing the work. Entries may be justified as desired but all reference to this performing organization must be justified in like manner.
26-29	rrrr	Resource code; up to four alphanumeric characters identify the manpower skill or material type used by the performing organization. Entries may be justified as desired but all references to this resource code must be justified in like manner.

Four 12-column fields, beginning with column 30, are available for entering cost values. The format of the first field is described in detail. The format of the remaining three fields is identical to the first.

30	c	Unit description code: c = H units in labor (man) hours c = D units in direct dollars c = T units are in total dollars
31	u	Update code. u = A Add the actual or committed cost value in this field to the master tape. When this code is used, the master tape should not have a cost for the specified month for the performing organization-resource code-charge number combination entered. u = D Delete an existing actual or committed cost value for the month specified for the performing organization-resource code-charge number combination entered. A combination of a D update code and blank month and year column in the first field results in deletion of <u>all</u> actual or committed cost values for the performing organization-resource code-charge number combination entered.

cc	Content	Description
31	u	u = R The value in this field replaces the existing actual or committed cost value for the specified month for the performing organization-resource code-charge number combination.
		u = T The actual or committed cost value in this field is added algebraically to the existing value for the specified month for the performing organization-resource code-charge number combination entered. When a minus sign precedes the value in this field, the existing value on the master tape is decreased. If the result of this update is negative, a diagnostic is given.
32-35	mmyy	Month and year associated with the value entered in this field. A combination of a D update code with a blank month and year specified in these columns deletes all actual and committed cost values for the performing organization-resource code-charge number combination entered.
36-41	aaaaaa	Actual or committed cost value;up to six numeric characters. All values must be in the form of whole numbers. Decimal points are not permitted. The number may be negative only if the T update code is used in card column 31. Entries must be right justified.
42-53	cummyyaaaaaa	Second cost field
54-65	cummyyaaaaaa	Third cost field
66-77	cummyyaaaaaa	Fourth cost field
78	A	Type code. This column combined with column 1 uniquely identifies an actual or committed cost card.
79-80	blank	Not used

2.4 RATE TABLE CARDS

The rate table card (4 punch in column one) enters unit (hour) and overhead rates into the PERT/COST system for each performing organization-resource code combination given. These rates are used for converting the resource estimates given in the budget authorization, cost estimating, and actual or committed cost cards. The unit rate is used for converting manhours (H) into direct dollars. The overhead rate is used for converting direct dollars (D) into total dollars.

Rates are entered for a performing organization-resource code on a quarterly basis for up to 21 quarters. If a rate is not entered for a particular quarter, the next earliest rate specified is used. Unit rates are assumed if no rates are entered or no next earliest rate is specified. Rates may be entered for a performing organization-resource code combination or for a specific resource code. In the latter case, the rates apply to all performing organizations associated with this resource code.

A maximum of 300 resource codes or performing organization-resource code combinations may be entered. Rates need not be entered in chronological order. The rate cards are sorted by the computer program in performing organization-resource code order before they are processed. The input format follows:

cc	Content	Description
1	4	Denotes a rate table card
2-6	blank	Not used
7-12	pppppp	Performing organization; up to six alphanumeric characters identify the department to which these rates apply. Entries may be justified as desired but all references to this performing organization must be justified in like manner. If this field is blank, the rates apply to all performing organizations associated with the resource code in card columns 13-16.
13-16	rrrr	Resource code; up to four alphanumeric characters identify the manpower skill or material type used. Entries may be justified as desired but all references to this resource code must be justified in like manner.
17	blank	Not used
18-20	qyy	Quarter and year for first rate

cc	Content	Description
21-27	uuuu.uu	First unit rate (decimal point must be in column 25)
28-32	ø.øøø	First overhead rate (decimal point must be in column 29)
33-35	qyy	Quarter and year for second rate
36-42	uuuu.uu	Second unit rate (decimal point must be in column 40)
43-47	ø.øøø	Second overhead rate (decimal point must be in column 44)
48-50	qyy	Quarter and year for third rate
51-57	uuuu.uu	Third unit rate (decimal point must be in column 55)
58-62	ø.øøø	Third overhead rate (decimal point must be in column 59)
63-65	qyy	Quarter and year for fourth rate
66-72	uuuu.uu	Fourth unit rate (decimal point must be in column 70)
73-77	ø.øøø	Fourth overhead rate (decimal point must be in column 74)
78-79	blank	Not used
80	u	Update code: u = A Add rates for the specified quarters for the performing organization-resource code combination. u = D Delete rates for the specified quarters for performing organization-resource code combination. If only columns 1-16 are punched, all rates for this performing organization-resource code combination are deleted. u = R Replace rates for the specified quarters for performing organization-resource code combination entered with the rates in this card.

2.5 MANPOWER SKILL/RAINBOW CATEGORY CARD

The manpower skill/rainbow category card (5 punch in column 1) groups resource codes (manpower skills) into various categories for use in preparation of the Rainbow Report. A maximum of 50 rainbow categories may be entered, and a maximum of 1000 resource codes may be distributed among the 50 categories. If more than 13 skill codes are associated with a rainbow category, multiple cards may be used. The rainbow category description must appear in identical format on all cards. A specific resource code may not appear with more than one rainbow category.

Since the rainbow categories are saved on the master tape, these cards need be input only with the initial computer run. If the rainbow categories must be changed in any way, a complete new set of manpower skill/rainbow category cards must be input. The computer program sorts the cards by description before they are processed. The card format follows:

cc	Content	Description
1	5	Denotes a manpower skill/rainbow category card
2-25	any	Rainbow category description
26	blank	Not used
27-30		Four-character alphanumeric resource code fields associated with the category. Entries may be justified as desired but all references to these resource codes must be justified in like manner.
31-34		
35-38		
39-42		
43-46		
47-50		
51-54	rrrr	
55-58		
59-62		
63-66		
67-70		
71-74		
75-78		
79-80	blank	Not used

2.6 PERFORMING ORGANIZATION — RESOURCE CODE/ COST CATEGORY CARD

Performing organization-resource code combinations or resource codes are grouped into cost categories with this card (6 punch in column 1). If no performing organization is specified for a particular resource code, all performing organizations associated with that resource code are placed in the same cost category. A maximum of 50 performing organization-resource code cost categories may be entered. A maximum of 2500 performing organization-resource code combinations may be distributed among the 50 categories.

If a category has more than six performing organization-resource code combinations, multiple cards may be used; the cost category description must appear in identical format on all cards. A specific performing organization-resource code combination may not appear with more than one cost category.

Since the categories are saved on the master tape, these cards need be input only with the initial computer run. If the cost categories must be changed in any way, a complete new set of performing organization-resource code/cost category cards must be input. The computer program sorts the cards by description before they are processed.

The card format is as follows:

cc	Content	Description
1	6	Denotes a performing organization-resource code/cost category card
2-19	any	Cost category description
20-25	pppppp	These fields are used to enter up to six performing organization-resource code combinations associated with the cost category. If any performing organization fields are blank, all performing organizations associated with the corresponding resource code are placed in this cost category. All entries are alphanumeric and may be justified as desired, but all references to the performing organizations and resource codes entered must be justified in like manner.
26-29	rrrr	
30-35	pppppp	
36-39	rrrr	
40-45	pppppp	
46-49	rrrr	
50-55	pppppp	
56-59	rrrr	
60-65	pppppp	
66-69	rrrr	
70-75	ppppp	
76-79	rrrr	
80	blank	Not used

2.7 CHARGE NUMBER/ COST CATEGORY CARDS

Work package charge numbers are grouped into cost categories with this card (7 punch in column 1). A maximum of 50 charge number cost categories may be entered. A maximum of 5000 charge numbers may be distributed among the 50 categories. If a category has more than five charge numbers, multiple cards may be used; the cost category description must appear in identical format on all cards. A specific charge number may not appear with more than one cost category.

Since the categories are saved on the master tape, these cards need be input only with the initial run. If the cost categories must be changed in any way, a complete new set of charge number/cost category cards must be input. The computer program sorts the cards by description before they are processed. The card format follows:

cc	Content	Description
1	7	Denotes a charge number/cost category card
2-19	any	Cost category description
20-31 32-43 44-55 56-67 68-79	cccccccccccc	These fields are used to enter up to five charge numbers associated with the corresponding cost category. Up to 12 alphanumeric characters for each field. Entries must be justified in the same manner as the corresponding entry in the work package card. See section 2.2.2.
80	blank	Not used

2.8 REPORT REQUEST CARDS

Nine types of reports may be requested. The output report generated by each of the following requests is described in Chapter 3.

Type	Report Request Card
1	Budget Authorization and Updating Form/Cost Estimating and Updating Form
2	Summary Financial Forecast Report
3	Organization Status Report
4	Cost Category Report
5	Management Summary Report
6	Project Status Report
7	Manpower Loading Report
8	Financial Plan and Status Report
9	Rainbow Category Report

The type number is entered in columns 2-3 of each report request card. The report request cards must be pre-sorted by type number. An end-of-file on the standard input unit terminates input of report request cards, and indicates completion of the PERT/COST computer run.

2.8.1 TYPE 1 CARD

This card requests a computer generated Budget Authorization and Updating Form or a Cost Estimating and Updating Form. The program produces a separate form for each charge number in the work breakdown structure. Two separate type 1 cards must be prepared if both these forms are requested. The input format follows:

cc	Content	Description
1	R	Denotes report request card
2-3	01	Denotes type 1 card
4	d	d = 1, generate Budget Authorization and Updating Forms
		d = 2, generate Cost Estimating and Updating Forms

All other columns are blank.

2.8.2 TYPE 2 CARD

This card requests a Summary Financial Forecast Report by summary item level number or by cost category. Also, the aggregate costs may be shown by fiscal year only, or by current fiscal year with a breakdown by month.

The summary description field (columns 4-35) allows a special title to be printed in the report heading for the summary number entered in columns 36-47. If the summary description field is blank or if the summary number is blank, the summary number description entered on the S card is printed.

If the summary number (columns 36-47) is blank, a report is printed for all summary numbers at that level.

Except as indicated in the foregoing, a separate type 2 card is prepared for each Summary Financial Forecast Report requested. The input format is as follows:

cc	Content	Description
1	R	Denotes report request card
2-3	02	Denotes Summary Financial Forecast Report
4-35	any	Summary description
36-47	sssssssssss	Summary number
48	ℓ	Summary level number
49	d_1	d_1 = 1, Report by summary number breakdown on next lower level
		d_1 = 2, Report by performing organization-resource code/cost category grouping
		d_1 = 3, Report by charge number/cost category grouping
50	d_2	d_2 = 1, Report by fiscal year
		d_2 = 2, Report by current fiscal year, by month

All other columns are blank.

2.8.3
TYPE 3 CARD

This card requests an Organization Status Report. The following sort keys may be specified.

Charge number

Responsible organization

Performing organization

Resource code

The summary description field (columns 4-35) allows a special title to be printed in the report heading for the summary number entered in columns 36-47. If the summary description field is blank or if the summary number is blank, the summary number description entered on the S card is printed.

If the summary number (columns 36-47) is blank, a report is printed for all summary numbers at that level.

Except as indicated in the foregoing, a separate type 3 card is prepared for each Organization Status Report requested. The input format is as follows:

cc	Content	Description
1	R	Denotes report request card
2-3	03	Denotes Organization Status Report
4-35	any	Summary description
36-47	sssssssssss	Summary number
48	ℓ	Level number
49-52	$S_1S_2S_3S_4$	Sort keys: S_1 = Major sort; S_2 = 2nd sort; S_3 = 3rd; S_4 = 4th 1, Charge number 2, Responsible organization 3, Performing organization 4, Resource code

All other columns are blank.

2.8.4 TYPE 4 CARD

This card requests a Performing Organization-Resource Code/Cost Category Report or a Charge Number/Cost Category Report. The summary description field (columns 4-35) allows a special title to be printed in the report heading for the summary number entered in columns 36-47. If the summary description field is blank or if the summary number is blank, the summary number description entered on the S card is printed.

If the summary number (columns 36-47) is blank, a report is printed for all summary numbers at that level.

Except as indicated in the foregoing, a separate type 4 card is prepared for each Cost Category Report requested. The input format is as follows:

cc	Content	Description
1	R	Denotes report request card
2-3	04	Denotes Cost Category Report
4-35	any	Summary description
36-47	sssssssssss	Summary number
48	ℓ	Summary level number

cc	Content	Description	
49	d	d = 1	Performing Organization-Resource Code/Cost Category Report
		d = 2	Charge Number/Cost Category Report

All other columns are blank.

2.8.5 TYPE 5 CARD

This card requests a Management Summary Report. The report is prepared for each subdivision of the given summary number at the next lower level of the work breakdown structure.

The summary description field (columns 4-35) allows a special title to be printed in the report heading for the summary number entered in columns 36-47. If the summary description field is blank or if the summary number is blank, the summary number description entered on the S card is printed.

If the summary number (columns 36-47) is blank, a report is printed for all summary numbers at that level.

Except as indicated in the foregoing, a separate type 5 card is prepared for each Management Summary Report requested. The input format is as follows:

cc	Content	Description
1	R	Denotes report request card
2-3	05	Denotes Management Summary Report
4-35	any	Summary description
36-47	sssssssssss	Summary number
48	ℓ	Summary level number

All other columns are blank.

2.8.6 TYPE 6 CARD

This card requests a Project Status Report. The report is prepared for a specified summary number and for each subdivision of that summary number down to the level of the work breakdown structure specified.

The summary description field (columns 4-35) allows a special title to be printed in the report heading for the summary number entered in columns 36-47. If the summary description field is blank or if the summary number is blank, the summary number description entered on the S card is printed.

If the summary number (columns 36-47) is blank, a report is printed for all summary numbers at that level.

Except as indicated in the foregoing, a separate type 6 card is prepared for each Project Status Report requested. The input format follows:

cc	Content	Description
1	R	Denotes report request card
2-3	06	Denotes Project Status Report
4-35	any	Summary description
36-47	sssssssssss	Summary number
48	ℓ_1	Summary level number
49	ℓ_2	Lower level number

All other columns are blank.

2.8.7 TYPE 7 CARD

This card requests a Manpower Loading Report which may be sorted in one of three ways:

Resource code, month, performing organization, charge number

Resource code, month

Performing organization, month, resource code

The summary description field (columns 4-35) allows a special title to be printed in the report heading for the summary number entered in columns 36-47. If the summary description field is blank or if the summary number is blank, the summary number description entered on the S card is printed.

If the summary number (columns 36-47) is blank, a report is printed for all summary numbers at that level.

Except as indicated in the foregoing, a separate type 7 card is prepared for each Manpower Loading Report requested. The input format is as follows:

cc	Content	Description
1	R	Denotes report request card
2-3	07	Denotes Manpower Loading Report
4-35	any	Summary description
36-47	sssssssssss	Summary number
48	ℓ	Summary level number
49	c	Code for output sort:
		c = 1 Resource code, month, performing organization, charge number
		c = 2 Resource code, month
		c = 3 Performing organization, month, resource code

All other columns are blank.

2.8.8 TYPE 8 CARD

This card requests a Financial Plan and Status Report which may be sorted in two ways:

Month, charge number

Month

The summary description field (columns 4-35) allows a special title to be printed in the report heading for the summary number entered in columns 36-47. If the summary description field is blank or if the summary number is blank, the summary number description entered on the S card is printed.

If the summary number (columns 36-47) is blank, a report is printed for all summary numbers at that level.

Except as indicated in the foregoing, a separate type 8 card is prepared for each Financial Plan and Status Report requested. The input format follows:

cc	Content	Description
1	R	Denotes report request card
2-3	08	Denotes Financial Plan and Status Report
4-35	any	Summary description
36-47	sssssssssss	Summary number
48	ℓ	Summary level number
49	c	Code for output sort:
		c = 1 Month, charge number
		c = 2 Month

All other columns are blank.

2.8.9
TYPE 9 CARD

This card requests a Rainbow Category Report.

The summary description field (columns 4-35) allows a special title to be printed in the report heading for the summary number entered in columns 36-47. If the summary description field is blank or if the summary number is blank, the summary number description entered on the S card is printed.

If the summary number (columns 36-47) is blank, a report is printed for all summary numbers at that level.

Except as indicated in the foregoing, a separate type 9 card is prepared for each Rainbow Category Report requested. The input format is as follows:

cc	Content	Description
1	R	Denotes report request card
2-3	09	Denotes Rainbow Category Report
4-35	any	Summary description
36-47	sssssssssss	Summary number
48	ℓ	Summary level number

All other columns are blank.

PERT/COST OUTPUT 3

The PERT/COST system provides ten types of output reports:

Budget Authorization and Updating Form

Cost Estimating and Updating Form

Summary Financial Forecast Report

Organization Status Report

Cost Category Status Report

Management Summary Report

Project Status Report

Manpower Loading Report

Financial Plan and Status Report

Rainbow Category Report

3.1 BUDGET AUTHORIZATION AND UPDATING FORM

Budget Authorization and Updating Forms (figure 3-1) are requested by type 1 report request cards (section 2.8.1). These forms are prepared for each charge number; the charge number, responsible organization, and work package start date are included in the heading of the report.

Keypunch Input Form

Modifications may be entered directly on this form and subsequently keypunched in the format of a budget authorization card (section 2.3.1). When data is modified on this form, the update rules of the budget authorization card apply. Lines on this form that are computer generated are indicated by an "X" after the unit description code (UDC). These lines contain costs extended with rates by the computer and may not be modified directly. After modifications have been marked on the form, it may be used as a keypunch input form to produce cards in the following format:

PERT/COST
BUDGET AUTHORIZATION AND UPDATING FORM

AB3 STAT REPORT PERT COST TEST CASE

REPORTING ORGN.
PROJ. ENGR.

CONTRACT NO.
PERT-123456

TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65
RESP ORGN 1100

LEVEL / SUMMARY ITEM - 2 / 1100 TRANSPONDER
LEVEL / CHARGE NUMBER - 3 / 11000010 DESIGN TRANSPONDER

EVENT FIRST - 2 LAST - 13

BUDGET
REVISION NUMBER

SCHEDULED DATE

START DATE 2/ 1/65

APPROVED BY -
DATE -

IDENTIFICATION

RESOURCE ESTIMATES / UNITS - DOLLARS
MONTHS BEGINNING WITH SCHEDULED START DATE

CC	PERF ORGN	RES CODE	UDC	FEB	MAR	APR	MAY	JUN	JUL	EXT. NO.	AUG	SEP	OCT	NOV	DEC	JAN	EXT. NO.	TOTAL
2	2005	LB05	H	160	160	160	320	320	320	B0	320	320	320				B1	2400
2	2005	LB05	DX	600	600	600	1200	1200	1200	B0	1200	1200	1200				B1	9000
2	2005	LB05	TX	1240	1240	1240	2479	2479	2479	B0	2479	2479	2479				B1	18594
2	2010	LB04	H	520	520	520	360	360	360	B0							B1	2640
2	2010	LB04	DX	2470	2470	2470	1710	1710	1710	B0							B1	12540
2	2010	LB04	TX	5103	5103	5103	3533	3533	3533	B0							B1	25908
2	2010	LB09	H	160	160	160	160	160	160	B0	160	160	160	160	160	160	B1	1920
2	2010	LB09	DX	896	896	896	896	896	896	B0	896	896	896	896	896	912	B1	10768
2	2010	LB09	TX	1851	1851	1851	1851	1851	1851	B0	1851	1851	1851	1851	1851	1901	B1	22262
2	2010	MAT1	D	100	100	100	400	400	400	B0							B1	1500
2	2010	MAT1	TX	112	112	112	448	448	448	B0							B1	1680
2	2010	TRA1	D		75		75			B0							B1	150
2	2010	TRA1	TX		84		84			B0							B1	168

NOT CLASSIFIED

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Figure 3-1 Budget Authorization and Updating Form

cc	Item	Position on Budget Authorization and Updating Form
1	2	Under column heading CC (card code)
2-13	Charge number	In report heading
14-19	blank	Not used
20-25	Performing organization	Under column heading PERF ORGN
26-29	Resource code	Under column heading RES CODE
30	Unit description code	Under column heading UDC
31-36	1st month budget	Under column heading of 1st month (of six months)
37-42	2nd month budget	Under column heading of 2nd month
43-48	3rd month budget	Under column heading of 3rd month
49-54	4th month budget	Under column heading of 4th month
55-60	5th month budget	Under column heading of 5th month
61-66	6th month budget	Under column heading of 6th month
67-77	blank	Not used
78-79	Type code and extension number	Under heading EXT. NO.
80	Update code	A, D, or R is entered by hand after the extension number according to the modifications marked on the form

Information for two cards is given on a single line of the output form. Card columns 1 through 30 are the same for these two cards.

3.2 COST ESTIMATING AND UPDATING FORM

Cost Estimating and Updating Forms (figure 3-2) are requested by type 1 report request cards (section 2.8.1). These forms are prepared for each charge number; the charge number, responsible organization, and work package start date are included in the heading of the report.

PERT/COST
COST ESTIMATING AND UPDATING FORM

AB3 STAT REPORT PERT COST TEST CASE

REPORTING ORGN.
PROJ. ENGR.

CONTRACT NO.
PERT-123456

TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65
RESP ORGN 1300

LEVEL / SUMMARY ITEM - 2 / 1300 X-BAND ANTENNA
LEVEL / CHARGE NUMBER - 3 / 13000010 DESIGN X-BAND ANTENNA

SCHEDULE DATE

EVENT FIRST - 4 LAST - 20

START DATE 2/ 1/65

IDENTIFICATION

RESOURCE ESTIMATES / UNITS - DOLLARS
MONTHS BEGINNING WITH SCHEDULED START DATE

CC	PERF ORGN	RES CODE	UDC	FEB	MAR	APR	MAY	JUN	JUL	EXT. NO.	AUG	SEP	OCT	NOV	DEC	JAN	EXT. NO.	TOTAL
2	5010	LB04	H	300	300	360	360	360	320	E0	320	180	180	180			E1	2860
2	5010	LB04	DX	1425	1425	1710	1710	1710	1520	E0	1520	855	855	855			E1	13585
2	5010	LB04	TX	2944	2944	3533	3533	3533	3140	E0	3140	1766	1766	1766			E1	28065
2	5010	LB05	H	160	160	160	160	160	160	E0							E1	960
2	5010	LB05	DX	600	600	600	600	600	600	E0							E1	3600
2	5010	LB05	TX	1240	1240	1240	1240	1240	1240	E0							E1	7440
2	5010	MAT1	D	200	200	500		400		E0							E1	1300
2	5010	MAT1	TX	224	224	560		448		E0							E1	1456
2	5010	TRA1	D		75		150		75	E0							E1	300
2	5010	TRA1	TX		84		168		84	E0							E1	336

NOT CLASSIFIED

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Figure 3-2 Cost Estimating and Updating Form

Keypunch Input Form

Modifications may be entered directly on this form and subsequently keypunched in the format of a cost estimate card (section 2.3.2). When data is modified on this form, the update rules of the cost estimate card apply. Output lines on this form that are computer generated are indicated by an "X" after the unit description code (UDC). These lines contain costs extended with rates by the computer and may not be modified directly. After modifications have been marked on the form, it may be used as a keypunch input form to produce cards in the following format:

cc	Item	Position on Cost Estimating and Update Form
1	2	Under column heading CC (card code)
2-13	Charge number	In report heading
14-19	blank	Not used
20-25	Performing organization	Under column heading PERF ORGN
26-29	Resource code	Under column heading RES CODE
30	Unit Description Code	Under column heading UDC
31-36	1st month budget	Under column heading of 1st month (of six months)
37-42	2nd month budget	Under column heading of 2nd month
43-48	3rd month budget	Under column heading of 3rd month
49-54	4th month budget	Under column heading of 4th month
55-60	5th month budget	Under column heading of 5th month
61-66	6th month budget	Under column heading of 6th month
67-77	blank	Not used
78-79	Type code and extension number	Under heading EXT. NO.
80	Update code	A, D, or R is entered by hand after the extension number according to the modifications marked on the form

Information for two cards is given on a single line of the output form. Card columns 1 through 30 are the same for these two cards.

3.3 SUMMARY FINANCIAL FORECAST REPORT

Summary Financial Forecast Reports are requested by type 2 report request cards (section 2.8.2). This report presents actual and planned (budgeted) costs, grouped by summary item and cost category for a specified level of the work breakdown structure. The aggregate costs are shown by fiscal year (figures 3-3 and 3-4) or by month for the current fiscal year (figures 3-5 and 3-6). Reports grouped by cost category also show totals for labor hours, direct labor dollars, direct dollars, Overhead G and A Fee, and total dollars. The Overhead G and A Fee value is derived by subtracting direct costs from total dollars.

The column headings are as follows:

Heading	Description	Report Using
SUMMARY ITEM/ COST CATEGORY	Name and number of summary item or name of cost category for which costs are to be summarized	All
LEV	Level on work breakdown structure at which charge or summary number appears	All
PRIOR FYS	Contains all actual costs for fiscal years prior to current fiscal year	Fiscal year reports only
CURRENT FY	Current fiscal year total	All
	Divided into months starting with July, ending with June	Monthly reports only
CURRENT FY + n	Contains the planned costs for fiscal years subsequent to the current fiscal year where n is from 1 to 6.	Fiscal year reports only
TO COMPLETE	Contains the planned costs for all fiscal years beyond the current fiscal year plus 6.	Fiscal year reports only

PERT/COST
SUMMARY FINANCIAL FORECAST
BY SUMMARY ITEM BY YEAR

AB3 STAT REPORT PERT COST TEST CASE | REPORTING ORGN. PROJ. ENGR. | CONTRACT NO. PERT-123456 | TERM-TOTAL PROGRAM | CUT-OFF DATE 5/ 3/65 | RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 2 / 1200 TRAVELING WAVE TUBE

COST UNITS - DOLLARS

SUMMARY ITEM/ COST CATEGORY	LEV	PRIOR FYS	CURRENT FY	CURRENT FY+1	CURRENT FY+2	CURRENT FY+3	CURRENT FY+4	CURRENT FY+5	CURRENT FY+6	TO COMPLETE	TOTAL
TRAVELING WAVE TUBE 1200	2		42972	87784	62647	17808					211211
DESIGN TRAVELING WAVE TUBE 12000010	3		42972	36860							79832
FABRICATE TRAVELING WAVE TUBE 12000020	3			38482							38482
ASSEMBLE TRAVELING WAVE TUBE 12000030	3			12442	44839						57281
TEST TRAVELING WAVE TUBE 12000040	3				17808	17808					35616

Figure 3-3 Summary Financial Forecast by Summary Item by Year

PERT/COST
SUMMARY FINANCIAL FORECAST
BY COST CATEGORY BY YEAR

AB3 STAT REPORT PERT COST TEST CASE | REPORTING ORGN. PROJ. ENGR. | CONTRACT NO. PERT-123456 | TERM - TOTAL PROGRAM | CUT-OFF DATE 5/ 3/65 | RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 2 / 1400 COMMUNICATIONS S/S ASSEM + INTEG

COST UNITS - DOLLARS

SUMMARY ITEM/ COST CATEGORY	LEV	PRIOR FYS	CURRENT FY	CURRENT FY+1	CURRENT FY+2	CURRENT FY+3	CURRENT FY+4	CURRENT FY+5	CURRENT FY+6	TO COMPLETE	TOTAL
COMMUNICATIONS S/S ASSEM + INTEG											
1400	2			16645	78876	15747					111268
ASSEMBLY - HOURS					2440	640					3080
ASSEMBLY - DIR $					20468	5508					25976
ASSEMBLY - TOT $					33981	9069					43050
DRAWINGS - HOURS				2080							2080
DRAWINGS - DIR $				7992							7992
DRAWINGS - TOT $				16645							16645
QUAL CONTL - HOURS					3360						3360
QUAL CONTL - DIR $					16200						16200
QUAL CONTL - TOT $					33765						33765
TEST - HOURS					1200	720					1920
TEST - DIR $					5340	3204					8544
TEST - TOT $					11130	6678					17808
TOTAL LABOR HOURS				2080	7000	1360					10440
TOTAL DIRECT LABOR $				7992	33008	6212					47212
TOTAL DIRECT DOLLARS				7992	42008	8712					58712
TOTAL OVHO, G+A, FEE				8653	36868	7035					52556
TOTAL DOLLARS				16645	78876	15747					111268

NOT CLASSIFIED

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Figure 3-4 Summary Financial Forecast by Cost Category by Year

PERT/COST
SUMMARY FINANCIAL FORECAST
BY SUMMARY ITEM BY MONTH

AB3 STAT REPORT PERT COST TEST CASE | REPORTING ORGN. PROJ. ENGR. | CONTRACT NO. PERT-123456 | TERM - TOTAL PROGRAM | CUT-OFF DATE 5/ 3/65 | RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 1 / 1000 COMMUNICATIONS SUBSYSTEM

SUMMARY ITEM/ COST CATEGORY	LEV	CURRENT FY	FISCAL YEAR JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
COMMUNICATIONS SUBSYSTEM														
1000	1	109938								20254	20905	21531	23021	24227
TRANSPONDER														
1100	2	42776								8911	8873	8286	8395	8311
TRAVELING WAVE TUBE														
1200	2	42972								7013	7217	8362	9685	10695
X-BAND ANTENNA														
1300	2	24190								4330	4815	4883	4941	5221
COMMUNICATIONS S/S ASSEM + INTEG														
1400	2													

NOT CLASSIFIED

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Figure 3-5 Summary Financial Forecast by Summary Item by Month

PERT/COST
SUMMARY FINANCIAL FORECAST
BY COST CATEGORY BY MONTH

AB3 STAT REPORT PERT COST TEST CASE

REPORTING ORGN.
PROJ. ENGR.

CONTRACT NO.
PERT-123456

TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 2 / 1300 F COST CATEGORY

SUMMARY ITEM/ COST CATEGORY	LEV	CURRENT FY	FISCAL YEAR JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
X-BAND ANTENNA														
1300	2	24190								4330	4815	4883	4941	5221
PO 5000 F	- HOURS	2460								450	500	470	520	520
PO 5000 F	- DIR $	10896								1988	2195	2093	2310	2310
PO 5000 F	- TOT $	22510								4106	4535	4323	4773	4773
RC MAT F	- DIR $	1300								200	200	500		400
RC MAT F	- TOT $	1456								224	224	560		448
RC TRA F	- DIR $	200									50		150	
RC TRA F	- TOT $	224									56		168	
TOTAL LABOR HOURS		2460								450	500	470	520	520
TOTAL DIRECT LABOR $		10896								1988	2195	2093	2310	2310
TOTAL DIRECT DOLLARS		12396								2188	2445	2593	2460	2710
TOTAL OVHD, G+A, FEE		11794								2142	2370	2290	2481	2511
TOTAL DOLLARS		24190								4330	4815	4883	4941	5221

NOT CLASSIFIED

Figure 3-6 Summary Financial Forecast by Cost Category by Month

3.4 ORGANIZATION STATUS REPORT

Organization Status Reports (figure 3-7) are requested by type 3 report request cards (section 2.8.3).

The column headings listed on the report are as follows:

CHARGE NUMBER

Noun description and charge number of each work package for which time information and cost information are presented in the report. This number (shop order number, account number, work order number) identifies the work package for purposes of estimating and accumulating costs. The title or short description of the charge number is printed immediately above the number.

RESPONSIBLE ORGANIZATION

Organization responsible for management of the work package

PERFORMING ORGANIZATION

Department or organization responsible for the work package

RESOURCE CODE

Code for a particular manpower skill or material type

MANHOURS

Cost information in this area of the report may be used for services and facilities, such as computer usage, as well as for direct labor. No totals are shown in these columns.

ACTUAL (work to date)

Actual manhour expenditures assigned to a work package

PLANNED (totals at completion)

Approved planned manhours for the work package

LATEST REVISED ESTIMATE (totals at completion)

Latest estimate of manhours for the work package. This estimate is the sum of actual manhour expenditures plus estimates-to-complete; it is also known as anticipated final cost. For a completed work package or work package subdivision, the latest revised estimate equals the actual-to-date.

PERT/COST
ORGANIZATION STATUS REPORT
BY PERF ORGN, RES CODE, CHARGE NUMBER, RESP ORGN

AB3 STAT REPORT PERT COST TEST CASE | REPORTING ORGN. PROJ. ENGR. | CONTRACT NO. PERT-123456 | TERM - TOTAL PROGRAM | CUT-OFF DATE 5/ 3/65 | RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 1 / 1000 COMMUNICATIONS SUBSYSTEM

IDENTIFICATION				MANHOURS				DIRECT COSTS - DOLLARS				TIME	
				TOTALS AT COMPLETION				TOTALS AT COMPLETION				MOST CRIT	SCHD OR ACT(A)
CHARGE NUMBER	RESP ORGN	PERF ORGN	RES CODE	ACTUAL WORK TO DATE	PLANNED	LATEST PROJECTED REV, EST.	(OVERRUN) UNDERRUN	ACTUAL WORK TO DATE	PLANNED	LATEST PROJECTED REV. EST.	(OVERRUN) UNDERRUN	SLACK (WKS)	COMPL DATE
DESIGN TRANSPONDER													
11000010	1100	2010	LB04	1680	2640	2760	(120)	7980	12540	13110	(570)	8.0	
											(0.05)		
			TOTAL					7980	12540	13110	(570)		
DESIGN TRANSPONDER													
11000010	1100	2010	LB09	510	1920	1950	(30)	2856	10768	10936	(168)	8.0	
											(0.02)		
			TOTAL					2856	10768	10936	(168)		
DESIGN TRANSPONDER													
11000010	1100	2010	MAT1					240	1500	1440	60	8.0	
											04		
			TOTAL					240	1500	1440	60		
DESIGN TRANSPONDER													
11000010	1100	2010	TRA1						150	75	75	8.0	
											.50		
			TOTAL						150	75	75		
											(0.02)		
	TOTAL							11076	24958	25561	(603)		

Figure 3-7 Organization Status Report

PROJECTED (OVERRUN) UNDERRUN (totals at completion)

Planned manhours minus the latest revised estimate. When planned manhours exceed latest revised estimate, a projected underrun condition exists. When latest revised estimate exceeds planned manhours, a projected overrun condition exists. Parentheses are used to indicate overruns.

DIRECT COSTS

Cost information in this area of the report represents direct labor, materials, and other costs.

ACTUAL COST (work to date)

Actual expenditures charged or assigned to a work package

PLANNED COST (totals at completion)

Approved planned cost for the work package

LATEST REVISED ESTIMATE (total at completion)

Latest estimate of cost for the work package. This estimate represents the sum of actual costs plus estimates-to-complete; it is also known as anticipated final cost. For completed work, the latest revised estimate equals the actual cost.

PROJECTED (OVERRUN) UNDERRUN (totals at completion)

Planned cost minus the latest revised estimate. When planned cost exceeds latest revised estimate, a projected underrun condition exists. When latest revised estimate exceeds planned cost, a projected overrun condition exists. The projected (overrun) underrun is also expressed as a percentage of the planned cost immediately above the dollar amount on total lines. Parentheses are used to indicate overruns.

MOST CRITICAL SLACK (WEEKS)

Worst (least algebraic) slack with respect to designated program or project end points, in weeks, for any of the activities within the work package. Slack pertains only to the work package (charge number) not to the further cost element breakouts shown in this report. If the work package has been completed, this column is blank.

SCHEDULED OR ACTUAL (A) COMPLETION DATE

Calendar date on which all work contained in the work package is scheduled for completion or was actually completed.

3.5 COST CATEGORY STATUS REPORT

Cost Category Status Reports (figure 3-8) are requested by type 4 report request cards (section 2.8.4). This status report presents a grouping of significant cost elements in specified categories. The cost categories are established by relating work packages (charge numbers) on elements of cost within work packages (performing organizations and resource codes). This report provides, for each cost category, a manpower and total dollar comparison of the planned versus actual expenditure to date and the planned versus latest revised estimate at completion.

The column headings listed on the Cost Category Status Reports are as follows:

COST CATEGORY

Name and/or number of the category for which costs are to be summarized

MANHOURS

Information in this area of the report may represent services and facilities usage, as well as direct labor. Totals are shown at completion only.

PLANNED (to date)

Approved planned manhours assigned to all work packages or work package subdivisions identified with the indicated cost category

ACTUAL (to date)

Actual manhour expenditures incurred, charged, or assigned to all work packages or work package subdivisions identified with the indicated cost category

PLANNED (totals at completion)

Approved planned manhours assigned to all work packages or work package subdivisions identified with the indicated cost category

LATEST REVISED ESTIMATE (totals at completion)

Latest estimate of manhours for all work packages or work package subdivisions identified with the indicated cost category. This estimate is the sum of actual manhour expenditures plus estimates-to-complete. When all work packages associated with the cost category are completed, latest revised estimate equals actual to date.

PERT/COST
COST CATEGORY STATUS REPORT

AB3 STAT REPORT PERT COST TEST CASE

REPORTING ORGN.
PROJ. ENGR.

CONTRACT NO.
PERT-123456

TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 1 / 1000 COST CATEGORY G

	MANHOURS					TOTAL COSTS / UNITS - DOLLARS				
	TO DATE		TOTALS AT COMPLETION			TO DATE		TOTALS AT COMPLETION		
COST CATEGORY	PLANNED	ACTUAL	PLANNED	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN	PLANNED	ACTUAL	PLANNED	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN
ANTENNA					.00					.00
	1440	1420	11780	11760	20	14233	14028	136764	136559	205
ASSEMBLY			3080	3080				43050		
DRAWINGS			2080	2080			11645	11645		
QUAL CONTL			3360	3360			33765	33765		
TEST			1920	1920			17808	17808		
TRANSPONDER					(0.01)					(0.01)
	2520	2620	15680	15780	(100)	25002	26070	161763	162831	(1068)
WAVE TUBE					.01					.01
	2320	2080	18520	18280	240	24447	22592	213066	211211	1855
										.00
TOTAL						63682	62690	622861	621869	992

NOT CLASSIFIED

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Figure 3-8 Cost Category Status Report

PROJECTED (OVERRUN) UNDERRUN (totals at completion)

Planned manhours minus the latest revised estimate. When planned manhours exceed latest revised estimate, a projected underrun condition exists; when latest revised estimate exceeds planned manhours, a projected overrun condition exists. The projected (overrun) underrun is also expressed as a percentage of the planned cost immediately above the number of manhours. Parentheses are used to indicate overruns.

TOTAL COST

Cost information in this area of the report represents materials, other direct costs, labor dollar value of manpower, and overhead

PLANNED (to date)

Approved planned cost assigned to all work packages or work package subdivisions identified with the indicated cost category

ACTUAL (to date)

Actual expenditures charged or assigned to work packages identified with the indicated cost category

PLANNED (totals at completion)

Approved planned cost assigned to all work packages identified with the indicated cost category

LATEST REVISED ESTIMATE (totals at completion)

Latest estimate of cost for all work packages identified with the indicated cost category. This estimate is the sum of actual expenditures plus estimates-to-complete. When all work packages associated with the cost category are completed, latest revised estimate equals actual to date.

PROJECTED (OVERRUN) UNDERRUN (totals at completion)

The planned cost minus the latest revised estimate. When planned cost exceeds latest revised estimate, a projected underrun condition exists. When latest revised estimate exceeds planned cost, a projected overrun condition exists. The projected (overrun) underrun is also expressed as a percentage of the planned cost immediately above the dollar amount. Parentheses are used to indicate overruns.

3.6 MANAGEMENT SUMMARY REPORT

Management Summary Reports (figure 3-9) are requested by type 5 report request card (section 2.8.5). This report shows current and projected schedule and cost status of the total program and of each major component item within the program. The report can be prepared at any level of the work breakdown structure. The first line of each report shows total costs and significant schedule information for the summary item given in the title block. Subsequent lines show each subdivision of that summary item at the next lower level of the work breakdown structure; thus, each page of the report shows the time and cost status and all the next level information for a single summary item.

The column headings listed on the Management Summary Report are as follows:

ITEM

Level number, noun description, and summary number of each summary item on the work breakdown structure for which time information and cost information are presented in the report. The first item shown is the highest item for which the particular report is prepared and is identical with the item named in the level summary item block.

VALUE (work performed to date)

Total planned cost for work completed within the summary item. This value is determined by summing the planned cost for each completed work package. If a work package is in process, the part of its total planned cost which applies to work completed is approximated by applying the ratio of actual cost to latest revised estimate for that work package.

ACTUAL COST (work performed to date)

Actual expenditures charged or assigned to the work packages within the summary item. An option (d_6 in the A control card) is available to list committed costs (section 2.3.3) as a separate line, below the actual cost, for each summary item.

(OVERRUN) UNDERRUN (work performed to date)

Value for work performed to date minus actual cost for that work. When value exceeds actual cost, an underrun condition exists. When actual cost exceeds value, an overrun condition exists. The (overrun) underrun is also expressed as a percentage of the value of work performed to date immediately above the dollar amount. Parentheses are used to indicate overruns.

PERT/COST
MANAGEMENT SUMMARY REPORT

AB3 STAT REPORT PERT COST TEST CASE

REPORTING ORGN.
PROJ. ENGR.

CONTRACT NO.
PERT-123456

TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 1 / 1000 COMMUNICATIONS SUBSYSTEM

ITEM	COST OF WORK / UNITS - DOLLARS							SCHEDULE	
	WORK PERFORMED TO DATE			TOTALS AT COMPLETION				S- SCHED COMPL DATE - TOTAL ITEM A- ACTUAL COMPL DATE - TOTAL ITEM E- EARLIEST COMPL DATE - CRIT ITEM L- LATEST COMPL DATE - CRIT ITEM	
	VALUE	ACTUAL COST	(OVERRUN) UNDERRUN	PLANNED COST	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN	MOST CRIT SLACK (WKS)	COMPL DATE	P 1965 1966 7890L YRJFMAM JJASONDJFMAMJJASOND YR
COMMUNICATIONS SUBSYSTEM								10/17/66	. S
LEVEL 1			.00			.00		10/17/66	. E
1000	62893	62690	203	622861	621869	992	0.0	10/17/66	. L
COMMITTED		300							
TRANSPONDER								5/20/66	. S
LEVEL 2			(0.02)			(0.01)		5/20/66	. E
1100	25670	26070	(400)	161763	162831	(1068)	8.0	7/19/66	. L
COMMITTED		300							
TRAVELING WAVE TUBE								7/19/66	. S
LEVEL 2			.02			.01		7/19/66	. E
1200	23117	22592	525	213066	211211	1855	0.0	7/19/66	. L
COMMITTED									
X-BAND ANTENNA								3/18/66	. S
LEVEL 2			.01			.00		3/18/66	. E
1300	14106	14028	78	136764	136559	205	17.1	7/19/66	. L
COMMITTED									
COMMUNICATIONS S/S ASSEM + INTEG								10/17/66	. S
LEVEL 2								10/17/66	. E
1400				111268	111268		0.0	10/17/66	. L
COMMITTED									

Figure 3-9 Management Summary Report

PLANNED COST (totals at completion)

Approved planned cost for the total summary item. This is the total of the planned costs for all work packages within the summary item.

LATEST REVISED ESTIMATE (totals at completion)

Latest estimate of cost for the total summary item. This estimate is the sum of the actual costs plus estimates-to-complete for all work packages in the summary item. This estimate is also known as anticipated final cost. For a completed item, the latest revised estimate equals the actual cost.

PROJECTED (OVERRUN) UNDERRUN (totals at completion)

Planned cost minus the latest revised estimate for the total summary item. When planned cost exceeds latest revised estimate, a projected underun condition exists. When latest revised estimate exceeds planned cost, a projected overrun condition exists. The projected (overrun) underrun is also expressed as a percentage of the planned cost immediately above the dollar amount. Parentheses are used to indicate (overruns) underruns.

MOST CRITICAL SLACK (WEEKS)

Slack, in weeks, associated with the E and L notations in the Schedule Completions section. This represents the worst slack (least algebraic) with respect to designated program or project end points for any of the activities within the summary item.

COMPLETION DATE

Day, month, and year of the S, A, E, and L positions in the Schedule Completions section.

SCHEDULE CALENDAR

Calendar time reference for display of schedule completions. The calendar contains one division for all prior years, two years divided by months, four years by years, and one division for all later years. One space is left between the months before and after the cut off date. A time now line is printed in this space. If the cut off date falls between the 10th and the 30th of a month, that month is considered to be the past month and it appears to the left of the time now line. If the cut off date falls between the 1st and 10th of a month, that month is considered to be the next future month and it appears to the right of the time now line. Each year the calendar is adjusted so that two years (by months) appear ahead of the time now line.

SCHEDULE COMPLETIONS

The following types of schedule completions are displayed in this section:

Scheduled (S) or actual (A) completion of all work contained within the summary item shown in the item column.

Earliest (E) and the latest (L) completion for the most critical schedule element or effort with respect to designated program or project end points within the summary item.

3.7 PROJECT STATUS REPORT

Project Status Reports are requested by type 6 report request cards (section 2.8.6). The Project Status Report is organized to reflect the end item of the work breakdown structure and provide time and cost information from the work package level to the top of the project. For each work package and summary item in the report, a line of item description is followed by a line of time and cost information. The first data presented is for the summary item shown in the title block. Subsequent data shows all subdivisions of that item down to the work package levels. Work packages may appear at different levels of the work breakdown structure. The Project Status Report contains information similar to the Management Summary Report: the Management Summary Report highlights information for the manager; the Project Status Report retains detail for the analyst. Figure 3-10 illustrates a typical Project Status Report.

The column headings listed on the Project Status Report are as follows:

CHARGE OR SUMMARY NUMBER

Noun description and charge or summary number of each work package or summary item for which time information and cost information are presented. For a work package, the charge number (shop order number, account number, work order number) identifies the work package for estimating and accumulating costs. The title or short description of the charge number is printed immediately above the number. For the summary item, the summary number identifies the end item on the work breakdown structure above the work package level. The title or description of the summary item is also printed directly above the summary number.

LEVEL

Number of the level on the work breakdown structure at which the charge or summary number appears.

PERT/COST

PROGRAM/PROJECT STATUS REPORT

REPORTING ORGN. CONTRACT NO. TERM - TOTAL PROGRAM

AB3 STAT REPORT PERT COST TEST CASE PROJ. ENGR. PERT-123456 CUT-OFF DATE 5/ 3/65

RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 1 / 1000 COMMUNICATIONS SUBSYSTEM

IDENTIFICATION				TIME STATUS			COST OF WORK / UNITS - DOLLARS					
							WORK PERFORMED TO DATE			TOTALS AT COMPLETION		
CHARGE OR SUMMARY NUMBER	L E V	FIRST EVENT NO.	LAST EVENT NO.	SCH OR ACT (A) COMPL DATE	EARLIEST -LATEST COMPL DATE	MOST CRIT SLACK (WKS)	VALUE	ACTUAL COST	(OVERRUN) UNDERRUN	PLANNED COST	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN
COMMUNICATIONS SUBSYSTEM					10/17/66	0.0			.00			.00
1000	1	3	42		10/17/66	42	62893	62690	203	622861	621869	992
						COMMITTED		300				
TRANSPONDER					5/20/66	8.0			(0.02)			(0.01)
1100	2	2	31		7/19/66	31	25670	26070	(400)	161763	162831	(1068)
						COMMITTED		300				
DESIGN TRANSPONDER					1/13/66	8.0			(0.02)			(0.02)
11000010	3	2	13		3/10/66	13	25670	26070	(400)	68612	69680	(1068)
						COMMITTED		300				
FABRICATE TRANSPONDER					10/27/65	24.0						
11000020	3	5	12		4/14/66	12				26954	26954	
						COMMITTED						
ASSEMBLE TRANSPONDER					5/20/66	8.0						
11000030	3	11	31		7/19/66	31				48389	48389	
						COMMITTED						
TEST TRANSPONDER					5/19/66	8.0						
11000040	3	25	28		7/18/66	28				17808	17808	
						COMMITTED						
TRAVELING WAVE TUBE					7/19/66	0.0			.02			.01
1200	2	3	32		7/19/66	32	23117	22592	525	213066	211211	1855
						COMMITTED						
DESIGN TRAVELING WAVE TUBE					2/17/66	0.0			.02			.02
12000010	3	3	16		2/17/66	16	23117	22592	525	81687	79832	1855
						COMMITTED						
FABRICATE TRAVELING WAVE TUBE					10/20/65	23.0						
12000020	3	7	15		3/31/66	15				38482	38482	
						COMMITTED						
ASSEMBLE TRAVELING WAVE TUBE					7/19/66	0.0						
12000030	3	14	32		7/19/66	32				57281	57281	
						COMMITTED						
TEST TRAVELING WAVE TUBE					7/18/66	0.0						
12000040	3	26	29		7/18/66	29				35616	35616	
						COMMITTED						

NOT CLASSIFIED

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Figure 3-10 Project Status Report

FIRST EVENT NUMBER

Number of the first event in time (based on T_E) for the work package or summary item. This event number defines the beginning of the work package or summary item in relation to the network.

LAST EVENT NUMBER

Number of the last event in time (based on T_E) for the work package or summary item. This event number defines the end of the work package or summary item in relation to the network.

SCHEDULED OR ACTUAL COMPLETION DATE

Calendar date on which all work contained in the work package or summary item is scheduled for completion or was actually completed. The scheduled completion date (T_S) is established by management as an internal control on the completion of the work. If no scheduled completion date has been established for the work package or summary item, the column is blank. The actual completion date (T_A) is the date on which all work in the work package or summary item has been completed. When this column contains the actual completion date, an "A" precedes the date.

EARLIEST COMPLETION DATE (T_E) AND LATEST COMPLETION DATE (T_L)

The earliest calendar date on which the work package or summary item can be completed and the latest completion date on which the work package or summary item can be scheduled for completion without delaying the completion of the program or project. When the work package or summary item has been completed, this column is blank.

MOST CRITICAL SLACK (WEEKS)

The worst (least algebraic) slack, in weeks, with respect to the designated program or project end points for any of the activities within the work package or summary item. This slack is based on a comparison of T_L minus T_E for each activity. The slack indicated will not necessarily be the difference between the T_L and T_E for the end of a work package or summary item, since the worst slack situation may be associated with an activity within the work package or summary item. Printed below the slack value is the number of the network event at the end of the worst slack path within the work package. If the work package or summary item has been completed, this column is blank.

VALUE (work performed to date)

Total planned cost for work completed within the summary item or work package. This value is determined by summing the planned cost for each completed work package. If a work package is in process, the part of its total planned cost which applies to work completed is approximated by applying the ratio of actual cost to latest revised estimate for that work package.

ACTUAL COST (work performed to date)

Actual expenditures charged or assigned to a work package. For summary items, the appropriate work package data is summed. An option (d_6 in the A control card) is available to list committed costs (section 2.3.3) below the actual cost as a separate line for each summary item.

(OVERRUN) UNDERRUN (work performed to date)

Value for work performed to date minus actual cost for that same work. When value exceeds actual cost, an underrun condition exists. When actual cost exceeds value, an overrun condition exists. The (overrun) underrun is also expressed as a percentage of the value of work to date immediately above the dollar amount. Parentheses are used to indicate overruns.

PLANNED COST (totals at completion)

Approved planned cost for the total work package. The appropriate work package data is summed for summary items.

LATEST REVISED ESTIMATE (totals at completion)

Latest estimate of cost for the total work package. This estimate is the sum of actual costs plus estimates-to-complete for each work package. The appropriate work package data is summed, for summary items. This estimate is also known as anticipated final cost. The latest revised estimate equals the actual cost for a completed work package or summary item.

PROJECTED (OVERRUN) UNDERRUN (totals at completion)

The planned cost minus the latest revised estimate. When planned cost exceeds latest revised estimate, a projected underrun condition exists. When latest revised estimate exceeds planned cost, a projected overrun condition exists. The projected (overrun) underrun is also expressed as a percentage of the planned cost immediately above the dollar amount. Parentheses are used to indicate overruns.

3.8 MANPOWER LOADING REPORT

Manpower Loading Reports are requested by type 7 report request cards (section 2.8.7). This report presents manpower loading at various levels of summary within the program. The report lists actual, planned, and latest estimated monthly manhours for the desired level of summary (figure 3-11). The report can be prepared for higher levels of management by printing only monthly totals for each resource code (figure 3-12) or by printing totals for months and resource codes for each performing organization (figure 3-13).

The column headings listed on the Manpower Loading Report are as follows:

MONTH

Accounting time period for which estimates and actuals are shown

RESOURCE (SKILL) CODE

Organization code for a particular manpower skill

PERFORMING ORGANIZATION

Organization responsible for the work package

CHARGE NUMBER

Organization charge number (shop order number, account number, work order number) which identifies the work package for purposes of estimating and accumulating costs

ACTUAL (manhours)

Actual manhour expenditures incurred or assigned to a work package. When charge numbers are not shown in the report, the actual manhours expenditure information appears only as a total figure.

PLANNED (manhours)

Manhours planned for a work package during the indicated month. When charge numbers are not shown in the report, the planned manhours information appears only as a total figure.

LATEST REVISED ESTIMATE (manhours)

Latest estimate of manhours for a work package during the indicated month. When charge numbers are not shown in the report, the latest revised manhours estimate appears only as a total figure.

(OVER) UNDERPLAN (manhours)

Planned manhours minus the latest revised estimate. When planned manhours exceed latest revised estimate, a projected underplan condition exists.

PERT/COST
MANPOWER LOADING REPORT
BY RESOURCE, MONTH, PERF ORGN, CHARGE NO.

AB3 STAT REPORT PERT COST TEST CASE | REPORTING ORGN. | CONTRACT NO. | TERM - TOTAL PROGRAM
PROJ. ENGR. | PERT-123456 | CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 1 / 1000 COMMUNICATIONS SUBSYSTEM

IDENTIFICATION				MANHOURS				TIME
MONTH	RES (SKILL) CODE	PERF ORGN	CHARGE NUMBER	ACTUAL	PLANNED	LATEST REVISED ESTIMATE	(OVER) UNDER PLAN	MOST CRIT SLACK (WKS)
PRIOR	LB04	2010	11000010	1680	1560	1680	(120)	8.0
		2510	12000010	1000	1040	1000	40	0.0
		5010	13000010	950	960	950	10	17.1
TOTAL				3630	3560	3630	(70)	
MAY 65	LB04	2010	11000010		360	360		8.0
		2510	12000010		400	400		0.0
		5010	13000010		360	360		17.1
TOTAL					1120	1120		
JUN 65	LB04	2010	11000010		360	360		8.0
		2510	12000010		520	520		0.0
		5010	13000010		360	360		17.1
TOTAL					1240	1240		
JUL 65	LB04	2010	11000010		360	360		8.0
		2510	12000010		520	520		0.0
		5010	13000010		320	320		17.1
TOTAL					1200	1200		
AUG 65	LB04	2510	12000010		520	520		0.0
		5010	13000010		320	320		17.1
TOTAL					840	840		
SEP 65	LB04	2510	12000010		520	520		0.0
		5010	13000010		180	180		17.1
TOTAL					700	700		
OCT 65	LB04	2510	12000010		520	520		0.0
		5010	13000010		180	180		17.1
TOTAL					700	700		
NOV 65	LB04	2510	12000010		400	400		0.0

NOT CLASSIFIED

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Figure 3-11 Manpower Loading Report by Resource Code, Month, Performing Organization, Charge Number

PERT/COST
MANPOWER LOADING REPORT
BY RESOURCE, MONTH

AB3 STAT REPORT PERT COST TEST CASE

REPORTING ORGN.
PROJ. ENGR.

CONTRACT NO.
PERT-123456

TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 2 / 1100 TRANSPONDER

	IDENTIFICATION			MANHOURS				TIME
MONTH	RES (SKILL) CODE	PERF ORGN	CHARGE NUMBER	ACTUAL	PLANNED	LATEST REVISED ESTIMATE	(OVER) UNDER PLAN	MOST CRIT SLACK (WKS)
PRIOR	LB09			510	480	510	(30)	
MAY 65					160	160		
JUN 65					160	160		
JUL 65					160	160		
AUG 65					160	160		
SEP 65					160	160		
OCT 65					160	160		
NOV 65					160	160		
DEC 65					160	160		
JAN 66					160	160		
	TOTAL			510	1920	1950	(30)	

NOT CLASSIFIED

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Figure 3-12 Manpower Loading Report by Resource Code, Month

PERT/COST
MANPOWER LOADING REPORT BY PERF ORGN, MONTH, RESOURCE

AB3 STAT REPORT PERT COST TEST CASE | REPORTING ORGN. PROJ. ENGR. | CONTRACT NO. PERT-123456 | TERM-TOTAL PROGRAM | CUT-OFF DATE 5/ 3/65 | RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 1 / 1000 COMMUNICATIONS SUBSYSTEM

	IDENTIFICATION			MANHOURS				
MONTH	RES (SKILL) CODE	PERF ORGN	CHARGE NUMBER	ACTUAL	PLANNED	LATEST REVISED ESTIMATE	(OVER) UNDER PLAN	TIME MOST CRIT SLACK (WKS)
PRIOR	LB04	2010		1680	1560	1680	(120)	
	LB09			510	480	510	(30)	
	MAT1							
	TRA1							
TOTAL				2190	2040	2190	(150)	
MAY 65	LB04	2010			360	360		
	LB09				160	160		
	MAT1							
	TRA1							
TOTAL					520	520		
JUN 65	LB04	2010			360	360		
	LB09				160	160		
	MAT1							
TOTAL					520	520		
JUL 65	LB04	2010			360	360		
	LB09				160	160		
	MAT1							
TOTAL					520	520		
AUG 65	LB09	2010			160	160		
TOTAL					160	160		
SEP 65	LB09	2010			160	160		
TOTAL					160	160		
OCT 65	LB09	2010			160	160		
TOTAL					160	160		
NOV 65	LB09	2010			160	160		
TOTAL					160	160		

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NOT CLASSIFIED

Figure 3-13 Manpower Loading Report by Performing Organization, Month, Resource Code

When latest revised estimate exceeds planned manhours, a projected overplan condition exists. Parentheses are used to indicate an overplan condition.

MOST CRITICAL SLACK (weeks)

Worst (least algebraic) slack, in weeks with respect to designated program or project end points for any of the activities within the work package. Slack pertains only to the work package or charge number itself, not to the further cost element detail shown in this report. If the work package has been completed or if the charge number is not shown, this column is blank.

3.9 FINANCIAL PLAN AND STATUS REPORT

Financial Plan and Status Reports are requested by type 8 report request cards (section 2.8.8). This report provides a monthly comparison of actual costs and/or latest revised estimates against planned costs. Incremental and cumulative costs by charge number are shown for each month equal to or beyond the report month. Historical (prior months) costs are shown for each charge number (figure 3-14). The report can be prepared for higher levels of management by printing only totals for each month (figure 3-15).

The column headings listed on the Financial Plan and Status Report are as follows:

MONTH

Accounting time period through which estimates and actuals are shown

CHARGE NUMBER

Number (shop order number, account number, work order number) which identifies the work package for purposes of estimating and accumulating costs

ACTUAL (incremental cost)

Actual expenditures charged or assigned during the indicated month. When individual charge numbers are included in the report, the actual (incremental) expenditures value is shown for each of them.

PLANNED (incremental cost)

Approved planned cost for the indicated time period. When individual charge numbers are included in the report, the approved planned (incremental) cost value is shown for each of them.

PERT/COST
FINANCIAL PLAN AND STATUS REPORT
BY MONTH, CHARGE NUMBER

AB3 STAT REPORT PERT COST TEST CASE
REPORTING ORGN.
PROJ. ENGR.
CONTRACT NO.
PERT-123456
TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 2 / 1200 TRAVELING WAVE TUBE

		INCREMENTAL COST/UNITS-DOLLARS				CUMULATIVE COST/UNITS-DOLLARS			
MONTH	CHARGE NUMBER	ACTUAL	PLANNED	LATEST REV. EST.	(OVER) UNDER PLAN	ACTUAL	PLANNED	LATEST REV. EST.	(OVER) UNDER PLAN
PRIOR	12000010	22592	24447	22592	1855	22592	24447	22592	1855
	TOTAL	22592	24447	22592	1855	22592	24447	22592	1855
MAY 65	12000010		9685	9685		22592	34132	32277	1855
	TOTAL		9685	9685		22592	34132	32277	1855
JUN 65	12000010		10695	10695		22592	44827	42972	1855
	TOTAL		10695	10695		22592	44827	42972	1855
JUL 65	12000010		10062	10062		22592	54889	53034	1855
	TOTAL		10062	10062		22592	54889	53034	1855
AUG 65	12000010		5103	5103		22592	59992	58137	1855
	TOTAL		5103	5103		22592	59992	58137	1855
SEP 65	12000010		5103	5103		22592	65095	63240	1855
	TOTAL		5103	5103		22592	65095	63240	1855
OCT 65	12000010		5103	5103		22592	70198	68343	1855
	TOTAL		5103	5103		22592	70198	68343	1855
NOV 65	12000010		3925	3925		22592	74123	72268	1855
	TOTAL		3925	3925		22592	74123	72268	1855
DEC 65	12000010		3925	3925		22592	78048	76193	1855
	12000020		4934	4934			4934	4934	
	TOTAL		8859	8859		22592	82982	81127	1855
JAN 66	12000010		3639	3639		22592	81687	79832	1855
	12000020		5584	5584			10518	10518	
	TOTAL		9223	9223		22592	92205	90350	1855

NOT CLASSIFIED

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Figure 3-14 Financial Plan and Status Report by Month, Charge Number

PERT/COST
FINANCIAL PLAN AND STATUS REPORT
BY MONTH

AB3 STAT REPORT PERT COST TEST CASE
REPORTING ORGN. PROJ. ENGR.
CONTRACT NO. PERT-123456
TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 1 / 1000 COMMUNICATIONS SUBSYSTEM

		INCREMENTAL COST/UNITS-DOLLARS				CUMULATIVE COST/UNITS-DOLLARS			
MONTH	CHARGE NUMBER	ACTUAL	PLANNED	LATEST REV. EST.	(OVER) UNDER PLAN	ACTUAL	PLANNED	LATEST REV. EST.	(OVER) UNDER PLAN
PRIOR		62690	63682	62690	992	62690	63682	62690	992
MAY 65			23021	23021		62690	86703	85711	992
JUN 65			24227	24227		62690	110930	109938	992
JUL 65			22837	22837		62690	133767	132775	992
AUG 65			12573	12573		62690	146340	145348	992
SEP 65			11199	11199		62690	157539	156547	992
OCT 65			11199	11199		62690	168738	167746	992
NOV 65			7542	7542		62690	176280	175288	992
DEC 65			20453	20453		62690	196733	195741	992
JAN 66			21915	21915		62690	218648	217656	992
FEB 66			17298	17298		62690	235946	234954	992
MAR 66			21276	21276		62690	257222	256230	992
APR 66			36266	36266		62690	293488	292496	992
MAY 66			37705	37705		62690	331193	330201	992
JUN 66			17162	17162		62690	348355	347363	992
JUL 66			22648	22648		62690	371003	370011	992
AUG 66			18388	18388		62690	389391	388399	992
SEP 66			13348	13348		62690	402739	401747	992
OCT 66			14680	14680		62690	417419	416427	992
NOV 66			14680	14680		62690	432099	431107	992
DEC 66			16856	16856		62690	448955	447963	992

NOT CLASSIFIED

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Figure 3-15 Financial Plan and Status Report by Month

(OVER) UNDERPLAN (incremental cost)

Planned cost minus the latest revised estimate. When planned cost exceeds latest revised estimate, a projected underplan condition exists. When latest revised estimate exceeds planned cost, a projected overplan condition exists. Parentheses are used to indicate an overplan condition.

ACTUAL (cumulative cost)

Actual expenditures charged or assigned from the beginning of the program or project to the end of the indicated month. When individual charge numbers are included in the report, the actual (cumulative) expenditures value is shown for each of them.

PLANNED (cumulative cost)

Approved planned cost from the beginning of the program or project to the end of the indicated month. When individual charge numbers are included in the report, the approved planned (cumulative) cost value is shown for each of them.

LATEST REVISED ESTIMATE (cumulative cost)

Latest estimate of cost from the beginning of a program or project to the end of the indicated month. This estimate is the sum of actual costs plus estimates through the end of the indicated month. For the period prior to the cut off date, the latest revised estimate equals the actual. When individual charge numbers are included in the report, the latest revised (cumulative cost) estimates are shown for each of them.

(OVER) UNDERPLAN (cumulative cost)

Planned cost minus the latest revised estimate. When planned cost exceeds latest revised estimate, a projected underplan condition exists. When latest revised estimate exceeds planned cost, a projected overplan condition exists. Parentheses are used to indicate overplans.

3.10 RAINBOW CATEGORY REPORT

Rainbow Category Reports are requested by type 9 report request cards (section 2.8.9). The Rainbow Category Report (figure 3-16) shows manpower loading at various levels of summary within the program. The report lists actual, planned, and latest estimated monthly manhours for the desired level of summary by rainbow category.

The column headings listed on the Rainbow Category Report are as follows:

MONTH

Accounting time period for which estimates and actuals are shown

PERT/COST
RAINBOW CATEGORY REPORT

AB3 STAT REPORT PERT COST TEST CASE

REPORTING ORGN. PROJ. ENGR.

CONTRACT NO. PERT-123456

TERM - TOTAL PROGRAM
CUT-OFF DATE 5/ 3/65
RELEASE DATE 5/14/65

LEVEL / SUMMARY ITEM - 2 / 1100 TRANSPONDER

IDENTIFICATION		MANHOURS			
MONTH	RAINBOW CATEGORY	ACTUAL	PLANNED	LATEST REVISED ESTIMATE	(OVER) UNDER PLAN
PRIOR	SUPERVISION AND MGMT	510	480	510	(30)
MAY 65			160	160	
JUN 65			160	160	
JUL 65			160	160	
AUG 65			160	160	
SEP 65			160	160	
OCT 65			160	160	
NOV 65			160	160	
DEC 65			160	160	
JAN 66			160	160	
	TOTAL	510	1920	1950	(30)

NOT CLASSIFIED

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Figure 3-16 Rainbow Category Report

RAINBOW CATEGORY

Manpower category composed of one or more resource codes

ACTUAL (manhours)

Actual manhours incurred or assigned to the rainbow category during the indicated month

PLANNED (manhours)

Manhours planned (budgeted) for the rainbow category during the indicated month

LATEST REVISED ESTIMATE (manhours)

The latest estimate of manhours for the rainbow category during the indicated month

(OVER) UNDERPLAN (manhours)

Planned manhours minus the latest revised estimate. When planned manhours exceed latest revised estimate, a projected underplan condition exists. When latest revised estimate exceeds planned manhours, a projected overplan condition exists. Parentheses are used to indicate an overplan condition.

PROCESSING PHASES AND TAPE FILES 4

The Control Data PERT/COST system is a fully integrated system of programs which are overlayed as needed to process the work breakdown structure and associated costs, and prepare reports.

Data entered into the system is stored on the master file. Information placed on the master file remains until deleted or modified.

4.1 PROCESSING PHASES

The PERT/COST system consists of four basic processing phases:

PHASE 1 reads all control cards which identify, control, and label a particular computer run. The information provided by the control cards determines which overlays must be executed to complete processing. This phase also reads and validates the input data and sorts it into the required processing sequence. Diagnostics are printed when invalid data is encountered.

PHASE 2 creates a master tape containing all information necessary for PERT/COST processing. If a master tape is not available for update, it is created from card input. Otherwise a new master tape is formed by merging the old master tape with the card input in an updating operation. During updating, errors in update logic are checked and diagnostics are printed when any error condition is encountered. Each file of the master tape is updated separately. When card input is not entered for a file during update, that file is copied onto the new master tape. All hierarchy relationships are calculated in this phase and carried in table form as the first record of the second file of the master tape.

Phase 2 also merges the information contained in the PERT/TIME summary tape with the second file of the master tape when the D control card indicates that a PERT/TIME summary tape has been entered.

PHASE 3 merges all the files on the master tape into one file containing all information necessary for PERT/COST processing: the charge number start dates and time summary information from the second file; the appropriate rates from the fourth file; and the cost category and rainbow category descriptions from the fifth, sixth, and seventh files, are all merged with the cost information of the third file.

PHASE 4 generates all PERT/COST reports. Rates are applied to cost values input and the resulting cost values are sorted and summarized as required for each report requested.

4.2 TAPE FILES

The master tape consists of seven files:

Summary Number File

Charge Number File

Cost File

Rate File

Rainbow Category File

Performing Organization-Resource Code/Cost Category File

Charge Number/Cost Category File

SUMMARY NUMBER FILE consists of data sets of 26 words each. The first record contains the master tape report date, the project designation and description, contract number, and reporting organization for the program. All other records contain the following words:

Word	Description
1-2	Summary number
3	Level number
4-5	Parent
6	Responsible organization
7-10	Description
11-26	Hierarchy table

CHARGE NUMBER FILE The first record of the charge number file is a summary table which relates each summary number to its parent. All other records in this file contain 39-word data sets:

Word	Description
1-2	Charge number
3	Level number
4-5	Parent
6	Start date
7	End date
8	Responsible organization
9-12	Description
13-28	Hierarchy table
29-39	11-word time information

COST FILE consists of records with data sets of 38 words each:

Word	Description
1	Performing organization
2	Resource code
3-4	Charge number
5	Extension number
6	Start date
7	Unit description code (budgets)
8-13	Budgets
14	Unit description code (estimates)
15-20	Estimates
21-26	Actuals in hours
27-32	Actuals in direct dollars
33-38	Actuals in total dollars

RATE FILE consists of records with data sets of 65 words each:

Word	Description
1	Performing organization
2	Resource code
3-5	Quarter and year, unit rate, overhead rate
6-8	
9-11	
12-14	
. . .	
63-65	

RAINBOW CATEGORY FILE consists of a table relating each manpower skill (resource code) to its category name.

PERFORMING ORGANIZATION-RESOURCE CODE/COST CATEGORY FILE consists of a table relating each performing organization-resource code combination to its category name.

CHARGE NUMBER/COST CATEGORY FILE consists of a table relating each charge number to its category name.

OPERATING PROCEDURES 5

5.1 MEMORY REQUIREMENTS

The PERT/COST system is designed to operate on Control Data® 3600 and 3800 computers with a minimum of 32K core storage memory.

5.2 TAPE AND EXTERNAL STORAGE REQUIREMENTS

Tape and external storage requirements are determined by the hardware configuration and operating system being used. Tape oriented systems such as 3600 Tape SCOPE require seven magnetic tape drives in addition to those required by the operating system. Systems with rotative storage devices such as Drum SCOPE require three magnetic tape drives if the update features of the PERT/COST system are to be used. The system is designed to operate with the minimum external storage devices, other than magnetic tape drives, required by the operating system being used.

Nine logical units are referenced by the PERT/COST system. Except for the overlay unit, these logical unit numbers can be changed using the C and D control cards.

Logical Unit Number	Description
01	Overlay file
02	Old master file
03	New master file
04	First scratch file
05	Second scratch file
06	Third scratch file
07	Time summary file
60	Data input unit
61	Output unit

These logical units may be assigned to magnetic tape drives or to other external storage devices by using the appropriate operating system control cards. Normally, logical units used for master files or the time summary file will be assigned to magnetic tape drives so this information may be saved for future use.

DIAGNOSTICS 6

The PERT/COST system contains a comprehensive set of procedures to check for error conditions. Diagnostic messages, provided for each error detected, are classed into the following categories.

Control Card

Input Validation

Update

Processing

Report Request

Within each class, the diagnostics are listed as fatal or nonfatal. Fatal diagnostics terminate the computer run.

6.1 CONTROL CARD DIAGNOSTICS

Fatal Diagnostics

CONTROL CARD A MISSING OR NOT FIRST CARD INPUT

REPORT DATE (mmddyy) ILLEGAL

PERT/COST MASTER TAPE DESIGNATION OR REPORT DATE DOES NOT MATCH THAT ON MASTER TAPE. (Master tape designation, report date)

The information in columns 18-26 of the A control card does not match the information in the first record of the master tape. Verify that the correct master tape is being used and that it is properly assigned.

PERT/TIME SUMMARY TAPE NETWORK DESIGNATION OR REPORT DATE DOES NOT MATCH THAT ON THE TIME SUMMARY TAPE. (Summary tape designation, report date)

The information in columns 2-10 of the D control card does not match the information in the first record of the time summary tape. Verify that the correct summary tape is being used and that it is properly assigned.

ILLEGAL LOGICAL UNIT NUMBER (uu) ENTERED ON C CONTROL CARD.

ILLEGAL LOGICAL UNIT NUMBER (uu) ENTERED IN CC 14-15 ON D CONTROL CARD.

Non-Fatal Diagnostic

RELEASE DATE (mmddyy) ILLEGAL
The release date entered on the A control card is illegal or blank; it will be set equal to the report date.

6.2 INPUT VALIDATION DIAGNOSTICS

Non-Fatal Diagnostics

iNPUT CODE IN CC-1 ILLEGAL. CARD IGNORED. (input card)

ILLEGAL SUMMARY NUMBER UPDATE CODE. CARD IGNORED. (input card)

ILLEGAL WORK PACKAGE UPDATE CODE. CARD IGNORED. (input card)

ILLEGAL START DATE ON WORK PACKAGE INPUT. CARD IGNORED. (charge number)

ILLEGAL UPDATE CODE ON BUDGET OR ESTIMATE CARD. CARD IGNORED. (input card)

ILLEGAL UPDATE CODE FOR ACTUAL COST. COST IGNORED. (charge number, performing organization, resource code, cost field)

ILLEGAL RATE TABLE UPDATE CODE. CARD IGNORED. (input card)

ILLEGAL WORK BREAKDOWN LEVEL ON SUMMARY NUMBER OR WORK PACKAGE CARD. CARD IGNORED. (input card)

ILLEGAL TYPE CODE IN CC-78 OF WORK BREAKDOWN STRUCTURE CARD. CARD IGNORED. (input card)

ILLEGAL TYPE CODE IN CC-78 OF COST INPUT CARD. CARD IGNORED. (input card)

ILLEGAL EXTENSION NUMBER IN CC-79 OF COST INPUT CARD. CARD IGNORED. (input card)

ILLEGAL QUARTER AND/OR YEAR IN RATE TABLE CARD. RATE IGNORED.
(performing organization, resource code, rate field) Any year less than 50 is considered illegal; 1, 2, 3 or 4 must be entered in the quarter.

ILLEGAL UNIT DESCRIPTION CODE ON BUDGET OR ESTIMATE CARD. CARD IGNORED. (input card)

ILLEGAL UNIT DESCRIPTION CODE FOR ACTUAL COST. COST IGNORED. (charge number, performing organization, cost field)

6.3 UPDATE DIAGNOSTICS

Fatal Diagnostics

NUMBER OF SUMMARY NUMBERS EXCEEDS LIMIT. (last summary number read)

NUMBER OF CHARGE NUMBERS EXCEEDS LIMIT.

Non-Fatal Diagnostics

SUMMARY NUMBER PARENT CANNOT BE FOUND. SUMMARY NUMBER IGNORED. (summary number, level, parent)

CHARGE NUMBER PARENT CANNOT BE FOUND. CHARGE NUMBER IGNORED. (charge number, level, parent)

ATTEMPT MADE TO ADD SUMMARY NUMBER ALREADY ON MASTER FILE. CARD IGNORED. (summary number, level)

SUMMARY NUMBER REVISION OR DELETION NOT ON MASTER FILE. CARD IGNORED. (summary number, level)

CHARGE NUMBER REVISION OR DELETION NOT ON MASTER FILE. CARD IGNORED. (charge number)

ATTEMPT MADE TO ADD CHARGE NUMBER ALREADY ON MASTER FILE. CARD IGNORED. (charge number)

ATTEMPT TO ADD BUDGET OR ESTIMATED COST ALREADY ON MASTER TAPE. CARD IGNORED. (charge number, performing organization, resource code)

BUDGET OR ESTIMATED COST REVISION OR DELETION CANNOT BE FOUND ON MASTER TAPE. CARD IGNORED. (charge number, performing organization, resource code)

TIME SUMMARY CHARGE NUMBER DOES NOT MATCH A WORK PACKAGE CHARGE NUMBER. TIME SUMMARY RECORD IGNORED. (time summary charge number)

SUMMARY NUMBER HAS BEEN ENTERED ON MORE THAN ONE CARD. CARD IGNORED. (summary number, level)

CHARGE NUMBER HAS BEEN ENTERED ON MORE THAN ONE CARD. CARD IGNORED. (charge number, level)

RATE TABLE ADDITION CAUSES PROGRAM TO EXCEED 21 QUARTER CAPACITY. CARD IGNORED. (performing organization, resource code)

6.4 PROCESSING DIAGNOSTICS

Fatal Diagnostics

PARITY ERROR WHILE READING MASTER TAPE.

PARITY ERROR WHILE READING TIME SUMMARY TAPE.

PERFORMING ORGANIZATION-RESOURCE CODE/COST CATEGORY TABLES EXCEED CAPACITY.

CHARGE NUMBER/COST CATEGORY TABLES EXCEED CAPACITY.

RAINBOW CATEGORY TABLES EXCEED CAPACITY.

Non-Fatal Diagnostic

ACTUAL COST ENTERED FOR MONTH EARLIER THAN WORK PACKAGE START DATE. COST IGNORED. (charge number, performing organization, resource code, cost field)

6.5 REPORT REQUEST DIAGNOSTICS

Non-Fatal Diagnostics

REPORT REQUEST CARD OUT OF SEQUENCE. CARD IGNORED. (report request card)

REPORT REQUEST CARD INCORRECT. CARD IGNORED. (report request card)

The report request card has illegal level numbers or option codes; check card format.

GLOSSARY

account code structure	The system used to assign summary numbers to elements of the work breakdown structure and charge (account) numbers to individual work packages.
account number	See: charge number.
activity	A work effort represented on a network by a line. Also an activity may simply represent a connection or interdependency between two events in the network. An activity cannot be started until the event preceding it has occurred.
actual costs	The actual expenditures incurred plus any prespecified types of unliquidated commitments charged or assigned to a program or project.
charge number	A 12-character alphanumeric identification of the costs charged to a work package (also known as shop order number, account number, or work order number). A charge number may be assigned to one or more activities.
contract number	The numeric designation, or a representative code, for the contract included in each report.
cost category	The name and/or number of a functional, hardware, or other significant cost category for which costs are to be summarized.
direct cost	Costs charged directly to an activity or work package in the contract.
expected date (T_E)	The calendar date on which the completion of an activity work package or summary item is expected to occur. It is calculated by adding activity times to the date of each start event, or completed event of the network, along each possible path up to and including the activity under consideration. The latest of these computed dates is the expected date of completion for the activity. Syn: earliest expected date.
estimate-to-complete	The estimated manhours, costs, and time required to complete a work package or summary item (includes applicable overhead unless only direct costs are specified).

event	A specific, definable accomplishment in a program plan, recognizable at a particular instant in time. Events do not consume time or resources.
expenditure	Actual disbursement of funds for expense pertaining to a contract.
first event number	The number of the first event in time (based on T_E) for a work package or summary item. This event number defines the beginning of the work package or summary item in relation to the network.
item	A summary item on the work breakdown structure.
last event number	The number of the last event in time (based on T_E) for a work package or summary item. This event number defines the end of the work package or summary item in relation to the network.
latest allowable date (T_L)	The latest date on which the completion of an activity can occur without creating a delay in the completion of the program. The T_L value for a given activity is calculated by subtracting the sum of the expected elapsed activity times (t_e) for the activities on the longest path from the latest allowable date or scheduled completion date for the entire program. All activities with the same successor event number have the same T_L.
latest revised estimate	The sum of the actual incurred costs plus the latest estimate-to-complete for a work package or summary item as currently reviewed and/or revised (including applicable overhead except where direct costs are specified).
level	The number of the level on the work breakdown structure at which a charge or summary number appears.
manhours	The common unit of direct labor used in PERT/COST reports.
most critical slack (weeks)	The worst (least algebraic) slack with respect to designated program or project end points, in weeks, for any of the activities within the work package or summary item. This slack is based on T_L minus T_E for each activity. The slack indicated will not necessarily be the difference between the T_L and T_E for the end of a work package or summary item, since the worst slack situation may be associated with an activity within the work package or summary item rather than at the end of the work package.

network	A flow diagram consisting of the activities and events which must be accomplished to reach the program objectives, showing planned sequences of accomplishment, interdependencies, and interrelationships.
(over) underplan	The planned cost to date minus the latest revised estimate of cost to date. When planned cost exceeds latest revised estimate, a projected underplan condition exists. When latest revised estimate exceeds planned cost, a projected overplan condition exists.
(overrun) underrun (projected)	See: projected (overrun) underrun.
(overrun) underrun (work performed to date)	The value for the work performed to date minus the actual cost for that same work. When value exceeds actual cost, an underrun condition exists; when actual cost exceeds value, an overrun condition exists.
performing organization	The contractor or organization which is to perform work on a work package.
planned cost	The approved planned cost for a work package or summary item. This cost, when totaled with the planned costs for all other work packages, results in the total cost estimate committed under contract for the program or project.
projected (overrun) underrun	The planned cost minus the latest revised estimate for a work package or summary item. When planned cost exceeds latest revised estimate, a projected underrun condition exists. When latest revised estimate exceeds planned cost, a projected overrun condition exists.
resource code	The code for a particular manpower skill or material type.
responsible organization	The organization responsible for management of a work package.
scheduled completion date (T_S)	A date assigned for completion of an activity or accomplishment of an event for purposes of planning and control within an organization. (When no specific date is assigned, $T_E = T_S$.)
starting event (beginning event)	An event which signifies the beginning of one or more activities on a network.
summary item	An item appearing in the work breakdown structure.
summary number	A number which identifies an item in the work breakdown structure.

value (work performed to date)

The planned cost for completed work, including that part of work in process which has been finished. This value is determined by summing the planned cost for each completed work package. If a work package is in process, the part of its total planned cost which applies to work completed is approximated by applying the ratio of actual cost to latest revised estimate for that work package.

work package

The unit of work required to complete a specific job or process, such as a report, design, document, piece of hardware, or service. The content of a work package may be limited to the work which can be performed by a single operating unit in an organization or which may require the contributing services of several operating units. The overall responsibility for the work content of a work package should be assigned to a single organization or responsible individual.

work breakdown structure

A family tree subdivision of a program; it begins with the end objectives and subdivides them into successively smaller end item subdivisions. The work breakdown structure establishes the framework for:

- defining the work to be accomplished
- constructing a network plan
- summarizing the cost and schedule status of a program for progressively higher levels of management

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COMMENT AND EVALUATION SHEET

3600/3800/PERT/COST
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