

AD-A052 127

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA
GUIDE FOR PROGRAM CONTROL OPERATIONS. (U)
NOV 77 E H COYLE

F/6 5/1

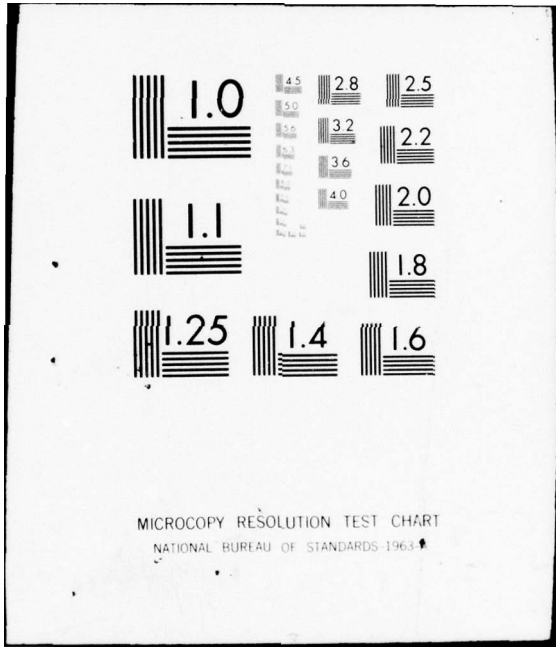
UNCLASSIFIED

NL

1 OF 1
AD
A052127



END
DATE
FILMED
5 - 78
DDC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A052127

1

DEFENSE SYSTEMS MANAGEMENT COLLEGE



PROGRAM MANAGEMENT COURSE INDIVIDUAL STUDY PROGRAM

GUIDE FOR PROGRAM CONTROL OPERATIONS

STUDY PROJECT REPORT
PMC 77-2

Edward H. Coyle
GS-12 DAFC

DDC
RECEIVED
APR 4 1978
REGISTRY
D

FORT BELVOIR, VIRGINIA 22060

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) GUIDE FOR PROGRAM CONTROL OPERATIONS		5. TYPE OF REPORT & PERIOD COVERED Study Project Report 1977-2
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) EDWARD H. COYLE		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060		12. REPORT DATE 1977-2
		13. NUMBER OF PAGES 47
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) UNLIMITED		
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>DISTRIBUTION STATEMENT A Approved for public release; Distribution Unlimited</p> </div>		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) SEE ATTACHED SHEET		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) SEE ATTACHED SHEET		

DEFENSE SYSTEMS MANAGEMENT COLLEGE

STUDY TITLE:

Guide for Program Control Operations

STUDY PROJECT GOALS:

To outline and develop a general guide for program control management. Suggest techniques and methods for accomplishing effective program control operations.

STUDY REPORT ABSTRACT:

This study project was undertaken to provide a guide for those unfamiliar with Program Control operations, and to serve as a summary review checklist for those currently involved in Program Control. The project reflects the author's own experience in Program Control and supplements this with the opinions and recommendations of other Program Control/Business Management personnel throughout the Air Force and Navy. Further information is obtained from various business management, systems acquisition, and financial management, regulations and publications.

While not all encompassing, the study project does present a basis for determining the essential functions of Program Control and recommendations for effectively fulfilling these functions.

SUBJECT DESCRIPTORS:

Planning & Control Systems (10.02.05)
Financial Management (10.06)

ACCESSION FOR	
NTIS	White Section <input checked="" type="checkbox"/>
DDC	Buff Section <input type="checkbox"/>
UNANNOUNCED	<input type="checkbox"/>
JUSTIFICATION.....	
BY.....	
DISTRIBUTION/AVAILABILITY CODES	
Dist.	AVAIL and/or SPECIAL
A	

NAME, RANK, SERVICE

EDWARD H. COYLE, GS-12, DAFC

CLASS

PMC 77-2

DATE

November 1977

GUIDE FOR PROGRAM CONTROL OPERATIONS

Individual Study Program
Study Project Report
Prepared as a Formal Report

Defense Systems Management College
Program Management Course
Class 77-2

by

Edward H. Coyle
GS-12 DAFC

November 1977

Study Project Advisor
Mr. A. G. McManamon

This study project report represents the views, conclusions and recommendations of the author and does not necessarily reflect the official opinion of the Defense Systems Management College or the Department of Defense.

EXECUTIVE SUMMARY

One of the key divisions within the Program Management Office is the Program Control Division, or as recent terminology would have it, the Business Management Office. With responsibility for financial operations and program schedule maintenance, it is, perhaps, the most important division within the Program Office.

Such a significant role in the acquisition process requires that the personnel involved in Program Control have a comprehensive knowledge of the program which exceeds that pursued in the other program divisions. This division is the "right arm" of the Project Manager and, therefore, the Division Chief and his people must be able to respond to the Program Director's inquiries in a positive and meaningful manner.

This report will attempt to focus on those matters and activities paramount in conducting an effective program control office. As the various responsibilities - organization, financial management, program analysis - are addressed, it is intended that the accompanying comments will act as a reference for those who currently toil in program control. For those contemplating assignment to Program Control, it is intended that this document will act as an effectual guide through the complexities of system program business management.

TABLE OF CONTENTS

EXECUTIVE SUMMARY.	ii
LIST OF FIGURES.	iv
<u>Section</u>	
I. INTRODUCTION AND BACKGROUND	1
II. Organizations and Functions	4
Functions	4
Organization.	9
Points to Remember.	13
III. FINANCIAL MANAGEMENT.	15
Cost Estimate	15
Budget.	17
Forecasting	23
Cost Tracking	24
Points to Remember.	25
IV. PROGRAM ANALYSIS AND DOCUMENTATION.	26
Analysis.	26
Documentation	30
Points to Remember.	32
V. Administration.	33
Points to Remember.	35
VI. SUMMARY	36
APPENDIX	38
FOOTNOTES.	41
BIBLIOGRAPHY	42

LIST OF FIGURES

FIGURE 1	Financial Plan.	21
FIGURE 2	Budget Process.	22
FIGURE 3	CPR Analysis Executive Summary.	29

INTRODUCTION AND BACKGROUND

Until recently Program Control was looked upon as a stepchild of Program Management. Very few Program Managers had any confidence in its function and fewer understood its purpose at all. In some instances it was a means for military personnel requiring their ticket to be punched in systems management and ~~the~~ haven for civilian employees caught in periodic Reductions In Force occasioned by the Department of Defense. In short, Program Control contributed little to the acquisition of weapons systems.

Purists would say that Program Control always had responsibility for estimating, budgeting, scheduling, planning, analyzing, and forecasting. This is quite true. The responsibilities were there but the consequences of these responsibilities were of little value or non-existent. In the author's opinion Program Managers tended to rely on their own judgement and knowledge rather than risk the uncertainty of a remiss Program Control Office.

However, as systems became more complex and the Program Manager's time became more valuable, it was apparent that the Program Control/Business Management offices would, indeed, have to perform in the manner prescribed in countless organizations and function documents residing in the various service program offices.

The scarcity of defense dollars and the need to better utilize the resources available gave further impetus to the rejuvenation of business management within the program office. Programs suddenly found themselves with more requirements than dollars available. No longer were the coffers open to indifferent dipping should a program come up with a shortfall because of aimless forecasting. The word was out. Only those programs would survive which demonstrated to DoD and the Congress that they indeed could do the job within levied dollar, schedule, and technical constraints. Others would cease to exist.

Throughout the various Research and Development commands the hue and cry was heard. Directives and policy letters cascaded down into program offices as though the door to a huge closet of paper had burst open. Cost estimates were to have relevant meaning; forecasting would have substance; analysis would no longer be a buzz word but a reality.

Program Directors looked at Program Control with renewed emphasis. Increased management responsibilities forbade the "one man show" syndrome. Program Control out of necessity would have to act in the manner for which it was created. Emphasis was placed on training personnel in the skills of business management which heretofore had been ignored or glossed over. The quality of the potential individual program control incumbent was determined in more certain and specific

terms. Plans and procedures were initiated and management began to function in the generic sense of the word within program control offices.

In the following pages some of the more pertinent aspects of Program Control/Business Management will be discussed. This paper will not be all encompassing and answer every question that may rise regarding Program Control and its functions. There are too many diverse and complex probabilities to attempt such a treatise. Each program is unique. Rather, it is intended that this study will act as a reference guide for those involved with Program Control and its business management functions. Program Control tasks and objectives will be treated in a common manner and the adaptation of their inference to a particular program will be left to the initiative and imagination of the individual.

ORGANIZATION AND FUNCTIONS

Functions.

The first question that comes to most people's minds is, "What is Program Control?" The title itself is quite nebulous to the layman and even those in program management have been uncertain of its connotation. The newly acquired title of Business Management Office (AF, Navy) clarifies the responsibility somewhat, but within that title is hidden a myriad of tasks. In principal Program Control is responsible for the following functions:

ESTIMATING: reflects all the basic program decisions and all considerations represented by those decisions.

Tasks. Estimators participate as members of teams which validate contractor cost/schedule control systems, evaluate reasons for cost growth, instruct contractors respecting cost reporting, and create system estimates.

- Program Evaluation of Estimates. Over the entire acquisition cycle the Program Office can expect to receive estimates, including Engineering Change Proposal estimates, contract change estimates, and alternative implementation estimates. Each must be judged as to its accuracy.

- Tracking. Maintenance of a current cost estimate

and documentation of reasons for changes to estimates as they occur.

- Creation of independent estimates as a basis for decision making.

- Preparation of the Program Work Breakdown Structure (PWBS).

- Sensitivity Analysis, i.e., predicting results when program parameters are changed. (1)(2)

ANALYZING: gauges program progress; provides the manager with the data he needs to direct a program; provides status information for reporting.

Tasks.

- Data Acquisition. Determine the kinds of data needed for effective analysis, arrange delivery of that data, and instruct sources in proper submission of required data.

- Preparation of Reports.

- Data Analysis. Comparison of current program status to current acquisition implementation documents.

- plans, budgets, estimates, schedules - evaluating progress and determining reasons for variation from plan, recommending action to correct deviations.

- Program Visibility. Preparation of displays to compare planned progress vs actual progress. (1)(2)

FORECASTING: most important function of program control; the looking downstream to see where a program is going and proposing alternatives to accommodate threats or hasten progress.

Tasks.

- Identifying Data. Develop a data base needed to make accurate projections and arranging for its routine provision.

- Evaluating Data. Measuring data provided to determine its degree of validity.

- Establishing Assumptions. Determining the basis for a forecast; that is, the elements upon which a forecast rests.

- Determining Probabilities. Testing overall forecasts and individual events to determine probabilities associated with occurrence of events/results on or near schedule.

- Identifying Potential Problems.

- Forecasting. Making projections of program progress.

- Decision Proposals. Making alternative impact analyses and evaluating, coordinating, and proposing decisions. (1)(2)

BUDGETING: budget formulation and execution; the annual plan of funding for a program; the annual statement

of acquisition planning in dollar terms; expresses acquisition tasks for a particular year in terms of costs.

Tasks.

- Annual Calls. Preparation and update of annual budget submissions. Assemble and verify requirements, prepare narrative justifications, define priorities and impacts of failure to provide various funding levels.

- Initiation of all allotted funds and tracking their progress throughout commitment, obligation and expenditure.

- Determination of the propriety of using certain funds for particular tasks.

- Proposing financial strategy and preparing, coordinating, updating and obtaining approval of annual financial plans.

- Programming. Entering a program into the Five Year Defense Plan.

- Keeping financial records.

- Requesting new funding requirements, providing supporting justification, and requesting release of approved funds for timely execution of the program.

- Analyzing contractor budgets to assure that total

contractor requirements correlate to SPO budget submissions and where divergence exists, to react to resolve any differences noted.

- Submitting annual forecasts for obligating funds. (1)(2)

SCHEDULING: represents the allocation of time to acquisition activity; time management.

Tasks.

- Scheduling Needs/Styles. Evaluates schedule needs of management; determines appropriate schedule styles that fit current needs; establishes the schedules that fulfill requirements; determines and arranges for data needed to update schedules.

- Tracking contract manpower loading vs time as it relates to various milestones.

- PWBS/Schedule Interface.

- Updating Schedules. Report deviations from plan together with real or potential impact and possible solutions. (1)(2)

PLANNING: tasks are described and assigned so all acquisition participants can mutually understand who is responsible for each acquisition action.

Tasks.

- Program Management Planning. Includes responsibility for integrating all program plans; prepara-

tion of a Program Management Plan.

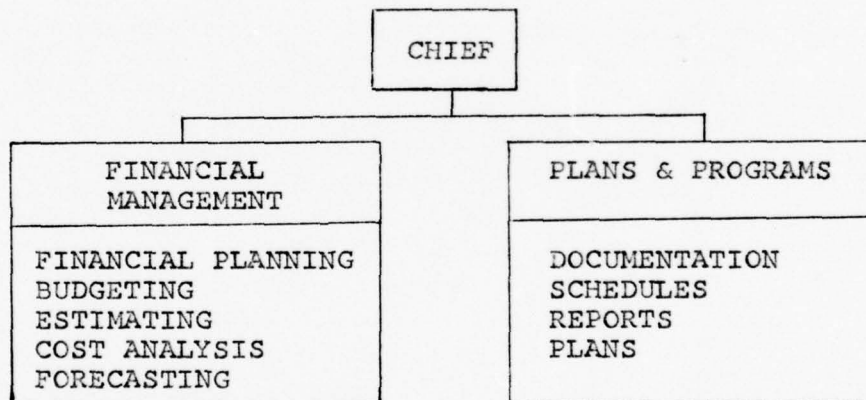
- Prepare and issue formal arrangements with participants in the acquisition.
- Maintain informal relations with key officials in the hierarchy of acquisition and other external activities.
- Review and analyze program direction to identify the tasks needed to carry out the direction.
- Maintain the official documentation file for the program office. (1)(2)

In addition to these principal functions, many program control offices find themselves in charge of the program office's administrative functions. Included in this is the internal distribution of correspondence, maintenance of the SPO Master Publications library, and personnel actions.

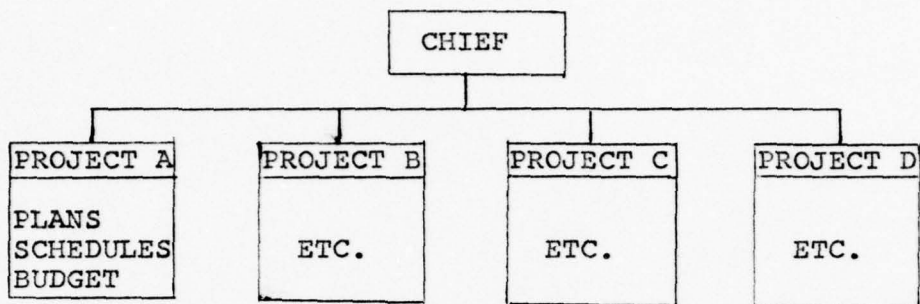
Organization.

Organizing a Program Control/Business Management Office depends on a number of conditions. The complexity of the program, size of the program office, availability of resources and urgency of the program are all factors to be considered. Also, the Program Manager's personal management style will affect the organization of Program Control. The following are examples of Program Control/Business Management organizations currently in vogue in the Air Force, Navy, and some Army offices.

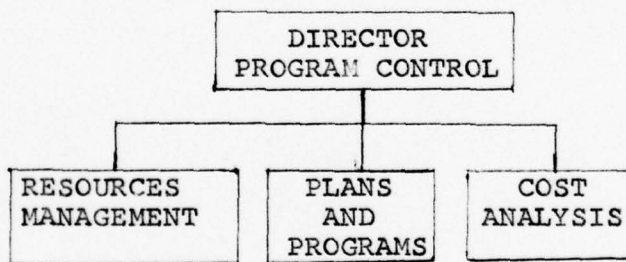
Functional Organization: Program Control is divided into functional branches, usually a Financial Management Branch and a Program Management/Analysis Branch, sometimes called Plans and Programs, or Management Operations. The Air Force's E-4 (Advanced Airborne Command Post), SATIN IV, and ASO/Systems programs are representative of this type:



Project or Task Organization: This style is indicative of "basket" program offices, where several projects are on going at the same time. In this style, an individual is responsible for both the financial and plans/programs elements of the project. Integration of the various project analysts actions and determinations is required. The Air Force's Combat Grande program is similiar to this type organization:

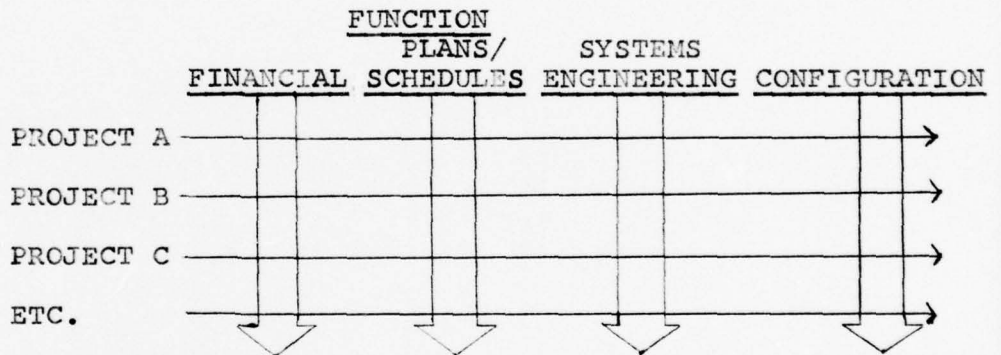


Functional Organization in three branches. Similar to the two branch organization with further splitting of functions. This style requires additional manpower resources. The Air Force's F-15 program is organized as shown.



Matrix Organization. This style of organization is being used more frequently in situations where manpower resources are scarce. Functional organizations, i.e. Comptroller, Configuration Management, Systems Engineering, etc., either co-locate personnel in the project office or assign people within their offices to work on the various projects. This style

requires a great deal of coordination and understanding between the Project Manager and the functional heads. The Navy has many of its programs established along these lines, e.g. F-18, MK-48 Weapons Systems, and the Army and Air Force have recently begun to adopt variations of this management technique. Graphically it would look like this:



Once physically organized it is necessary that the Program Control/Business Management Office personnel prepare themselves to undertake the operations consistent with effective business administration. This should begin with a perusal of the program direction and conclude with a firm understanding of the tasks involved, fiscal and schedule direction, documentation requirements, and other requirements that may be unique to the program. Supplement this information with continuous coordination with the other divisions, e.g. Systems Engineering, Test, Configuration, Logistics. A careful review of other program documentation which may contain further policy and/or direction pertinent to system acquisition is recommend-

ed. The Decision Coordinating Paper (DCP), requirements documentation, logistics plans, test concepts, and configuration plans are examples of such documentation. When the program is sufficiently understood, it is time to contemplate how it is going to be accomplished. The Program Manager will usually hold meetings with key personnel, including the Program Control Division Chief, and determine a coordinated position on the approach that will be taken to accomplish the program's objectives. Each division will be made cognizant of its tasks and the acquisition process will get underway. For the Program Control Division, it will start with a determination of the finances.

Points to Remember.

- . Program Control is responsible for estimating, analyzing, forecasting, budgeting, scheduling, planning, and, possibly, administration.
- . Formal organization depends on the complexity and size of the program and the Program Manager's individual style.
- . There is no one particular style organization for every program.
- . Organizations may be functional, task oriented, or matrix.

- . Complete understanding of the program direction and associated documents is essential.

FINANCIAL MANAGEMENT

Before a program can go anywhere, it is necessary to establish funding for the accomplishment of the program effort. In order to get funds for the program, it must first be determined how much is required and at what point in time. From that start, an input is made into the DoD budget cycle and continuous refinement made by Program Control at each annual budget call. Throughout the fiscal year, the financial section of Program Control will monitor, track, and forecast the obligation and expenditure of funds. The next few paragraphs will outline an approach to the management and control of program funds.

COST ESTIMATE.

There are different types of cost estimates, e.g. bottoms-up, parametric, done by a variety of offices. There is an estimate completed by the program office; there is an Independent Cost Estimate (ICE) made by the Cost Analysis Division within the command; there can be an estimate done by the Cost Analysis Improvement Group (CAIG) of the DoD Comptroller; and the program contractor will run a cost estimate. It is important to realize that the cost estimate must be as realistic as the facts at the time permit. As the program becomes more detailed in design and proceeds through the Conceptual, Validation, Full Scale Engineering Development, and Production/

Deployment phases, it is essential that each cost estimate be updated to reflect each new development, change, or requirement. Program Control/Business Management will be particularly concerned with costs in order that authentic life cycle costs and design to cost targets may be set. In general, a cost estimate should include the following paragraphs as a minimum: (3)

- I. Introduction - a general indication of what the estimate will entail.
- II. **S**ystem Description - a resume of the system and its more profound characteristics.
- III. Methodology - an explanation of the methods used to derive the costs. This may be parametric (top-down using the WBS), bottom-up (piece by piece), historical, or a combination of these. Computerized price models have been used quite frequently in the past few years.
- IV. Estimate Results - a rundown of the costs via the Work Breakdown Structure.
- V. Funding - a discussion of the various types of appropriations (RDT&E, Procurement, Operational & Maintenance, Military Construction, etc.) that will be required and in what time period.
- VI. Summary - a synopsis of the estimate which identifies any risks or uncertainties in the estimate

and recommendations for resolving the same.

Quite frequently an estimate will have numerous tables, charts, graphs, and explanations attached to it for further clarity of the estimate.

BUDGET.

The cost estimate eventually becomes annualized as a budget. The budget must reflect the totals shown in the estimate, but, also, allowance must be made for program risks, engineering change proposals, and "unknown-unknowns". This is called Management Reserve and is usually estimated at 10-25% of Prime Mission Equipment costs.(4) For those programs which use extensive software in its system, management reserve is a critical factor. This is due primarily to the imperfect calculations associated with estimating software costs. It is wise to converse frequently with the program's Procurement Contracting Officer (PCO) and the contractor to avoid unpleasant fiscal surprises.

When the costs are determined and applied against the program schedule, the resulting profile is matched against the service's budget projections for a five year time period. Unless some quirk of fate has intervened, there will be a disparity. Since it is easier to re-arrange the program's work flow than the service's budget, a re-arrangement will usually take place. This is usually the case in the near years when budgets are virtually locked in. If the program does have

high visibility and strong interest at high government levels, it is possible that funds will be re-allocated in the budget to satisfy the cost/schedule package presented by the program office and to meet the required field operation dates. In any event during each annual budget call and service Program Objective Memorandum (POM) cycle, a revised cost estimate and budget forecast should be submitted to higher headquarters.

As an aid in determining adequate funding at the appropriate time, it is advisable to initiate a financial plan for the program. There are any number of ways to accomplish this, and the following is only one:

1. Establish a data base:
 - a. Program Direction
 - b. System Description
 - c. Program Work Breakdown Structure
 - d. Cost Estimates (Breakout of funds requirements by PWBS)
 - e. Implementation Schedule
 - f. Budget
 - g. Approved Program (Current funding profile according to the FYDP)
 - h. Contracts (Budget should be oriented to contractor's budget)
2. Data base established:
 - a. At 9 months prior to forthcoming Fiscal Year,

conduct a meeting with the Program Manager and key personnel:

- (1) Review approved program and status of current program
 - (2) State parameters upon which plans for the forthcoming fiscal year will be made
 - (3) Discuss management reserve requirements
 - (4) State assumptions (funds released when required, no program perturbations, etc.)
 - (5) Review and adjust the shopping list for the upcoming fiscal year
 - (6) Discuss obligation strategy:
 - (a) What is to be procured?
 - (b) Who will buy it?
 - (c) Method of obligation
 - (d) What type of contract?
 - (e) Purchase Request (PR) packages and inputs
 - (f) Schedule of events leading to each obligation
 - (g) Schedule of funds requirements
 - (h) Source Selection preparations (if required)
- b. Ninth to the seventh month prior to the fiscal year, draft a financial plan.
- c. Six months prior to the fiscal year, review

draft financial plan with Program Manager and key personnel (Division Chiefs, FCO, Liaison Officers, etc.).

- (1) Validate or reaffirm assumptions
- (2) Assure correlation of plan with the approved program of funds
- (3) Resolve internal problems
- (4) Determine actions to be taken or review those in process
- (5) Assure integration of all efforts

d. Prepare the financial plan.

e. 90 days prior to the start of the fiscal year conduct a briefing for the Program Manager and key personnel to include:

- (1) Status of funds in fiscal year ending
- (2) Status of fiscal actions being taken or required
- (3) Final adjustments
- (4) Final approval

f. Distribute plan - internal and external (user, participants, etc.).

g. Throughout the fiscal year refer to fiscal plan in briefings to the Program Manager. (5)

Figure 1 is an outline of a typical financial plan.

Figure 2 indicates the budget process.

FINANCIAL PLAN

Heading

Date

FINANCIAL PLAN FY _____ (Program Element No. _____)

A. Purpose:

- 1.
- 2.
- 3.
- etc.

B. Assumption:

- 1.
- 2.
- 3.
- etc.

C. Planning Factors:

(Discuss funding of contract items, spares, data, test equipment, program funding, funding sources, and other pertinent information relative to financial status.)

D. Funding Schedule:

(Usually an attachment)

E. Coordination:

(List by personnel)

Signature

Approved:

Program Manager

FIGURE 1

BUDGET PROCESS

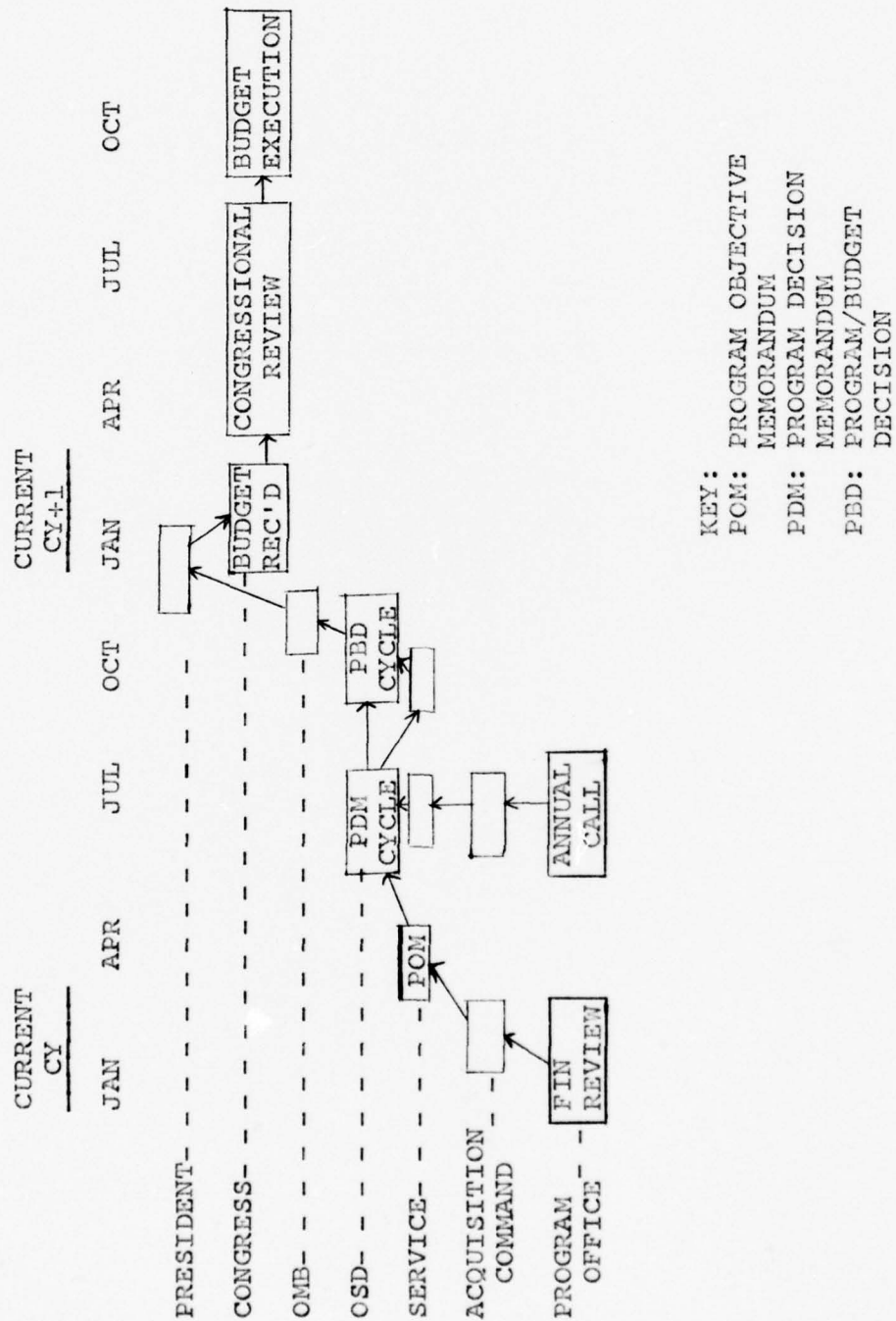


FIGURE 2

FORCASTING.

Until a data base - estimate, budget, schedule, Program Management Plan - is established little or no real forecasting can be accomplished. Upon receipt of contractor cost and schedule data and establishment of the above items, initiate a forecast schedule that will cover a 30-90 day period, a 90 day and beyond period, and a special activities occurrence, e.g. actions associated with particular problems.

The Electronics System Division of the Air Force has suggested: "It is a good business practice to adopt the same approach as weather forecasters. Set up a long-range forecast for a trial period, say 6 months. Then, establish a moving 6 months schedule. Put into this schedule those key events occurring in the time frame plus clusters of events which will indicate whether or not the key event will occur on time. This, then, is the long-range forecast. For the short range extract, for example, one month. Add to 'clusters' for key events 'indicators' for the cluster events. In other words, recognize a third level of events which will provide information on validity of cluster events occurring on time. The forecast now deals with more or less day to day events. Whenever problems exceed the scope of short range management, they become candidates for special forecasts. These latter forecasts should cover the time frame through 'Get Well' date." (5)

COST TRACKING.

Accurate cost tracking can be invaluable in financial management. It is especially helpful in constructing a chronology of program changes and their associated costs. The Contract Cost Performance Report (CPR) and Cost/Schedule Status Report (CSSR) reflect monthly and cumulative variances in contract line items. These reports will be addressed in the next section. However, there is a more simplified version to reflect changes in the various appropriation dollars associated with the program. Inspectors are especially interested in these reports since they cover not only contract costs but other costs associated with the program such as travel, Federal Contract Research Center costs, etc. The format simply states the following:

<u>Appropriation</u>	<u>Baseline Dollars</u>	<u>Present Costs</u>	<u>Change + or -</u>	<u>Remarks</u>
RDT&E				(Reasons for changes)
Procurement				
Mil. Con.				
O & M				

These formats are chronologically updated each time a cost change occurs with the "Present Costs" totals of the prior report becoming the "Baseline Dollars" for the succeeding report. It is a good idea to forecast and track travel as a separate item. Some offices use computers to do this but a tailored accounting form is just as easy and not that time consuming. With the squeeze on funding in the current DoD

atmosphere, travel is one area that is watched very closely by program managers. With that in mind it is advantageous to have complete breakouts of travel expenditures and running quarterly forecasts of proposed trips available for the program manager's scrutiny.

Points to Remember.

- . Initiate a detailed cost estimate as early as possible.
- . Be certain that the budget coincides with the estimated costs.
- . Be prepared to adjust the program to Approved funding.
- . Have a program financial plan.
- . Maintain a long-range, short-range, and special activities funds forecast.
- . Maintain current cost track on appropriations as well as contract line items costs.
- . Keep a close watch on program travel funds.

PROGRAM ANALYSIS AND DOCUMENTATION

This section elaborates on a subject that has been of significant interest in acquisition management over the past few years. Until the money crunch, analysis of costs and schedules was of little importance as long as the technical side of the system was accomplished. Those times have passed and now analysis and program documentation have become serious concerns to most program managers.

ANALYSIS.

Analysis of program costs varies from program to program. At present there is no regulation describing to what extent analysis should be completed. Rather, the extent of analysis is an individual effort. It can be as cursory as possible or as detailed as desired. What prompts managers to seek a particular level of analysis is largely dependent on the motivation, initiation, and training of his program/financial analysts. Analyses will only be as good as the individuals performing them. Many of the Program Control/Business Management offices claim that present workloads leave little time to perform the quality analysis necessary. Others maintain it is still more important to accomplish the technical aspects of the program first and foremost. Managers have learned that it is much easier to explain cost overruns

than failure to achieve the technical performance parameters of a system.

There is little similarity between services or program offices in accomplishing cost analysis and the following paragraphs describe only a method of accomplishing the task. Large programs will use sophisticated computer techniques; other programs will largely ignore their CPR/CSSR reports and analyze by "gut feeling" alone.

A data base is essential for effective cost analysis. The CPR and CSSR have been mentioned. The Contract Funds Status Report is another and the Appendix lists the Data Item Description (DID) numbers of those more useful reports to the Cost/Program Analyst. Each DID adequately describes what the particular report reveals and it is essential that these DID's be reviewed prior to release of the Request for Proposal. At the program "data call" those reports considered beneficial to the analyst should be included in the Contract Data Requirements List (CDRL). Each program should tailor its needs accordingly to avoid excessive and expensive data.

Consideration should be given to the following thoughts before embarking upon a Cost Analysis procedure:

1. Type of contract.
2. Contractor's motivation on cost vs schedule vs technical performance.
3. The extent to which work is defined in the contract.

4. Tracking visibility of the contractor's effort.
5. Fiscal year funding levels.
6. Definitization of authorized work within the 180 day limit established by the AFPI.
7. A valid Cost/Schedule Control System within the contractor's organization. DoDI 7000.2
8. Reporting data (timeliness, format, relation to WBS, relation to contractor's internal reporting system).

Analyses do not serve any useful purpose within themselves. Their results must be promulgated so that program management decisions may be made. Some program control offices elect to give oral briefings to the Program Manager on their findings. Other offices utilize charts and graphs displayed in a Program Control Room. One effective method is a detailed briefing preceded by an executive summary which is a succinct, written report forwarded to the Program Manager three days after receipt of the contractor's data. It is a prelude to the formal briefing and highlights the significant events of the current cost report. Figure 3 is a representative outline of such a summary.

The extensive work involved in cost analysis precludes a detailed treatment of the subject in this paper. Therefore, this has been a brief, general look at the subject. It is recommended that the DoDI 7000 series listed in the Appendix be reviewed for more detailed information as well as the appropriate DID's.

CPR ANALYSIS EXECUTIVE SUMMARY

TITLE
 CPR No. _____
 Inclusive Dates of Report

I. Current Status (Level 1)

Budget Cost Work Scheduled	}	+	schedule	(dollars and percentage)
Budget Cost Work Performed				
Actual Cost Work Performed	}	±	cost	(dollars and Percentage)

Variance at completion: ± (dollars and percentage)

	<u>Based on BAC</u>	<u>Based on LRE</u>
% Work Scheduled to Date	%	%
% Work Completed to Date	%	%
% Budget at Completion Spent	%	%
% Latest Revised Estimate Spent	%	%

Cost at Completion

	<u>Target Cost</u>	<u>Target Profit</u>	<u>Target Price</u>
Target (Contract)	\$	\$	\$
LRE	\$	\$	\$

II. Rationale for Current Status:
 (Narrative of variance causes)

III. Program Schedule Impacts:
 (Narrative of contractor's current cost situation on
 the program)

FIGURE 3 (7)

DOCUMENTATION.

The Program Control/Business Management office will function as the central repository for all official program documentation. In addition this office will be responsible for inputs into various plans as well as being held accountable for the updating and maintenance of selected documents. Again the number of formal documents administered will depend upon the complexity and size of the program and the desires of the service under which the program functions. Some of the more prevalent documents are described here.

Program Management Plan - the principal management baseline document which details the time-phased tasks and resources required to accomplish the task specified in the formal direction from higher headquarters. Program Control will be responsible for the funding section, schedules, and possibly manpower. Updating and revision lies with Program Control.

Integrated Logistics Support Plan - defines the integrated tasking of support with the system. Program Control will be responsible for reviewing the cost estimates of Spares, GFE, Peculiar Support Equipment and other costs peculiar to Logistics that may be identified.

Advanced Procurement Plan - principal long-range procurement planning document prepared by the Program Manager under the auspices of the Procurement Contracting Officer. Program Control is responsible for the funding and schedule information.

Decision Coordinating Paper - prepared by OSD and functions as a Contract between the program office and OSD. Program Control provides funding information and schedules.

Test and Evaluation Master Plan - establishes the role of test agencies and contractors in the program. Program Control writes the Purchase Request.

Memoranda of Agreement - formal agreements between the program office and various agencies that definitize the responsibilities of each. Program Control maintains and updates as required as well as defining funding requirements.

Cost Control Plan - not a formal document, but initiated by some program offices to define responsibilities for contractor and internal program costs. Usually identifies purpose, objective, contract data resources, cost performance analysis, supporting tools (automated CPR analysis, etc.) procedures, cost estimating, internal funds management, external agency

funding, FCRC funding, reviews, and formats.

Points to Remember.

- . Make the analysis meaningful to the Program Manager.
- . Train personnel in the proper analytical procedures.
- . Know the contractor's internal management system.
- . Converse frequently with the contractor, the DCAS rep or AFFRO/NAVPRO, and other divisions within the program office.
- . Know the documentation for which Program Control is responsible.
- . Tailor reporting requirements to fit the program's need.
- . Determine a plan to control and track cost/schedule changes.

ADMINISTRATION

Most Program Control/Business Management offices are fortunate enough not to be saddled with program office administrative responsibilities. However, in the smaller programs it is not unusual for Program Control to be delegated with this responsibility. Purists will argue that administration does not belong in the Business Management office, that their primary functions of financial management and program analysis are more than enough work. One could scarcely agree more, but the fact remains, when all is said and done and the PM has to find a place for his administration functions, it's going to wind up in Program Control. Since this role is secondary, administration will not be belabored here. It is sufficient that only certain administrative procedures be highlighted.

The amount of data that is processed through a program office is, at times, staggering. The more complex a program, the more hectic the operation. A formal management information and distribution system is essential. This can be either a simple flow diagram or a computerized information/distribution system. The complexity of the situation and the dollars available will determine what type of system is to be employed. The essential point to remember is that information must get to the right people on time. It is recommended that the Pro-

gram Control division work closely with the Configuration/
Data division if the roles are separated. Close cooperation
between these two offices will avert many hours of untold
anguish and frustration.

Program Control must keep orderly, up to date files.
There is nothing more agonizing than to be looking for a
critical piece of correspondence and find it is either mis-
filed or mislaid. Proper, immediate filing should be a pri-
mary duty of the Program Control Clerk.

Daily read files should be maintained and routed by
Program Control. All key personnel should have seen by each
day's end the pertinent message traffic and correspondence
of that day. Much embarrassment can be avoided by making sure
of this.

Suspense items must be tracked and followed daily. A
suspense file should be kept by the Program Control Clerk
and offices or individuals notified of their action at least
two days prior to the action date. This task is especially
important when the program is moving rapidly and people be-
come involved with endeavors of the moment and tend to forget
what happened yesterday or what must be finished by tomorrow.

When assigned administrative responsibilities, Program
Control should approach it with the same commitment to ex-
cellence as it does its other responsibilities.

Points to Remember.

- . Establish an information and distribution plan or standard operating procedure.
- . Do not delay information.
- . Maintain current and complete files.
- . Prevent suspenses from slipping.

SUMMARY

This paper has identified some of the more pertinent tasks associated with the Program Control/Business Management office. It is not all inclusive nor is that the intention. No two programs are the same and each will develop its own, unique style of management.

The items discussed in this paper are likely to be found in any program office. They are basic and it is quite impossible to manage the program without them. By revealing the more profound responsibilities of Program Control and discussing them in the light of program management, it is hoped that those unfamiliar with Program Control will be alerted to the fundamental responsibilities involved. From this starting point they can embellish or modify the principles to fit their own programs. For those currently working in Program Control/Business Management offices, perhaps this paper will serve as a reminder or checklist of items inadvertently ignored or long forgotten.

Financial management has been described as a discipline requiring the utmost attention in today's dollar scarce environment. Costs are something that must be analyzed and tracked to fine detail. Program survival depends on it.

Program analysis and documentation are essential to sound program management. Short will be the tour of the

Program Manager who does not properly plan his program nor analyze his program efforts.

Administration is secondary or non-existent to most Program Control offices. However, for those Business Management offices assigned such responsibilities, it is imperative that they react in the same spirited manner as they would in financial management. Lack of or untimely information can be the start of many problems.

Program Control/Business Management offices are the hub of program offices. How well they perform their function determines to a great degree the success of the program. No program should fail or falter because the Program Control/Business Management office did not or could not perform its tasks.

APPENDIX

(8)

Dept. of Defense

DoDI 7000.2 25 Apr 72 Performance Measurement for Selected Acquisitions

DoDI 7000.10 6 Aug 74 Contract Cost Performance, Funds Status, and Cost/Schedule Status Reports

DoDI 7000.11 5 Sep 73 Contractor Cost Data Reporting

U.S. Army

AR 1-1 25 May 76 The Army Planning, Programming and Budgeting with the DA

AR 11-18 10 Oct 75 Cost Analysis Program

AR 37-15 31 Mar 66 Budget Development and Review

AR 37-200 14 Aug 68 Management Control Systems for use in the Acquisition Process

AP 11-2 1 May 76 Investment Cost Guide

AP 11-3 12 Apr 76 Investment Cost Guide

AP 11-25 21 May 75 Life Cycle System Management Model for Army Systems

AP 37-43 6 Jul 73 The Army Comptroller Handbook

DARCOM R 715-2 23 Feb 73 Cost/Schedule Control and Information Systems for use in the Acquisition Process

DARCOM R 715-22 4 Apr 75 Independent Government Cost Estimates

DARCOM R 715-92 10 Feb 75 Should Cost Analysis

DARCOM P 715-5 1 Oct 76 C/SCSC Joint Implementation Guide

DARCOM P 715-10 1 Jul 74 C/SCSC Joint Surveillance Guide

U. S. Navy

7000.15B 5 Dec 74 Contract Cost Performance, Funds Status and Cost/Schedule Status Reports

7000.17A 26 Jul 72 Contractor Cost Performance Measurement

7000.19B	12 Mar 75	Cost Analysis Program
7000.20	10 Apr 74	Contractor Cost Data Reporting
OPNAVI 7000.17A	15 Sep 76	Cost Analysis
NAVMATI 7000.17B	30 Jan 74	Contractor Cost Performance Measurement
NAVMATI 7000.19A	20 Jul 76	Cost Analysis Program
NAVMATI 7000.20	15 Jun 73	Contractor Cost Performance & Funds Status Report
NAVMATI 7000.23	9 Dec 74	Contractor Cost Data Reporting

U.S. Air Force

AFM 172-1-1	15 Mar 74	USAF Budget Manual - Policies and Procedures
AFM 172-1-2	10 Feb 75	USAF Budget Manual - Estimating Instructions
AFR 172-2	29 Aug 75	Economic Escalation
AFR 173-1	10 Oct 75	AF Cost Analysis Program
AFR 800-6	7 Sep 76	Program Control - Financial
AFR 800-11	3 Aug 73	Life Cycle Costing
AFSCR 27-6	20 Sep 74	AFSC Programming Process
AFSCR 57-7	30 Sep 74	PR and MIPR Operations
AFSCM 172-1	30 Nov 76	USAF Budget Manual: Vol. I, Chap. 14 - RDT&E Appropriation
AFSCM 173-1	17 Apr 72	Cost Estimating Procedures
AFSCP 173-3	1 Oct 75	Cost Management for Small Projects
AFSCP 173-5	31 Mar 72	C/SCSC Joint Implementation Guide
AFSCP 173-6	1 Jul 74	C/SCSC Joint Surveillance Guide
AFSCR 600-1	11 Mar 70	Management Control Systems

AFSCP 800-3 9 Apr 76 A Guide for Program Management

AFSCR 800-6 4 Sept 74 Program Control - Financial

Data Item Descriptions

DI-F-6000, Cost Performance Report

DI-F-6010, Cost/Schedule Status Report

DI-F-60004A, Contractor Funds Status Report

DI-F-6006, Cost Data Summary Reports

DI-F-6007, Functional Cost Hour Report

DI-A-30007, Program Schedule

DI-A-3009, Program Milestones

DI-A-3023, Contract Work Breakdown Structure

FOOTNOTES

1. Air Force Systems Command Pamphlet 800-3 A Guide For Program Management (Andrews AFB, O.C.: Headquarters Air Force Systems Command, 9 April 1976), p.p. 6-2 - 6-3
2. Electronics System Division, AFSC/USAF, Program Control Handbook (HANSKOM AFB, MA: Comptroller, Electronics System Division, Air Force Systems Command, April 1976), p.p. 25-29
3. Cost Estimate, SATIN IV Program, April 1976
4. Electronics System Division, AFSC/USAF, op. cit., p. 36
5. Ibid, p.p. 49-52
6. Ibid, p. 42
7. Electronics System Division, SATIN IV Program Control Division
8. Tateyama, Major Joseph T. "A Defense Systems Acquisition Management Taxonomy and Inventory of Official Acquisition Management Documents." Study Project Report PMC 77-1, Defense Systems Management College, Ft. Belvoir, Virginia, 1977, p.p. E-1 - P-2

BIBLIOGRAPHY

1. Air Force Systems Command Pamphlet 800-3, A Guide for Program Management, Air Force Systems Command, Andrews Air Force Base, Maryland, 9 April 1976
2. Electronics System Division, Program Control Handbook, Air Force Systems Command, Hanscom Air Force Base, Massachusetts, April 1976
3. Tateyama, J. T. Major USA "A Defense Systems Acquisition Management Taxonomy and Inventory of Official Acquisition Management Documents." Defense Systems Management College, Fort Belvoir, Virginia, 1977
4. George, J. F-15 Budget Analyst. Interview conducted 11 Oct 1977
5. Haight, R. Business Manager MK-48 Weapons System. Interview conducted 11 Oct 1977
6. Jingling, R. LTC, USAF. Director of Program Control, Deputy for Systems, Aeronautical Systems Division, USAF. Interview conducted 5 Oct 1977
7. Krieg, W. CMDR, USN. Business Manager F-18. Interview conducted 11 Oct 1977
8. Macy, P. Chief of Requirements Branch, Electronics Systems Division, USAF. Interview conducted 29 Sep 1977
9. McQuinn, D. LCDR, USN. Business Manager REWSON Project. Interview conducted 30 Sep 1977
10. Sherwood, R. Former Deputy Program Control Division, E-4 (Advanced Airborne Command Post) Program. Interview conducted 7 Oct 1977
11. Fisch, W. Maj, USAF. Chief of Program Control, Combat Grande Program. Interview conducted 7 Oct 1977