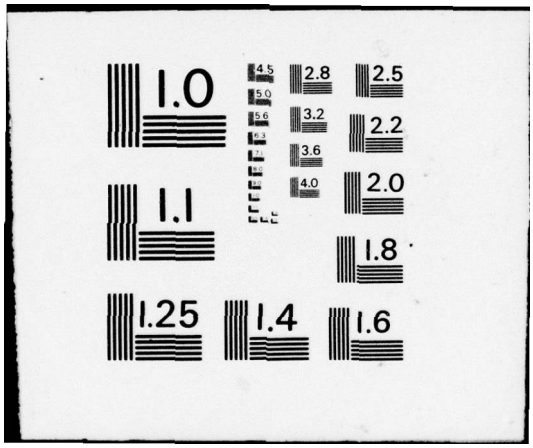
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PROBE System Development — Phase 3

(PROBE Interface Study)

INTERIM REPORT

Submitted to:

Program Analysis and Evaluation Directorate
Office of the Chief of Staff, US Army
The Pentagon
Washington, D. C. 20310

Attention:

Major William J. Silvey

Contract Number: MDA 903-76-C-0175

July 1976

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OPERATIONS ANALYSIS DIVISION

GENERAL RESEARCH CORPORATION
WESTGATE RESEARCH PARK, McLEAN, VIRGINIA 22101

INTERIM REPORT

PROBE System Development — Phase 3

(PROBE Interface Study)

by

Leonard L. Keene
John W. Callaghan
Joseph D. Czarny
Dan S. Grimes
Michael A. Miller
Richard L. Somers
Robert Watt

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The Program Optimization and Budget Evaluation (PROBE) Interface Study has been conducted for the Department of the Army by the General Research Corporation since December 1974. The overall study objective has been to define major problem areas and develop solutions essential to bring discipline to the Planning, Programing, and Budgeting System (PPBS) processes. Section 1 of this one volume interim report provides background information on the study as a whole. Remaining sections of the report address the specific task of further defining major deficiencies impacting the PPBS, developing appropriate solutions, and

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20. defining a feasible subset of the total PPBS process which can be fulfilled by PROBE. An alternative PROBE subset is defined in detail in Section 5. Section 6 of the report describes other completed and on-going PPBS/PROBE-related studies and links them to specific problem areas being addressed. Conclusions and recommendations are furnished in Section 7.



EXECUTIVE SUMMARY

I. BACKGROUND

The Program Optimization and Budget Evaluation (PROBE) System is conceived as a real-time, interactive system to provide resource management tools in support of the DOD Planning, Programing and Budgeting System (PPBS) within the Department of the Army. General Research Corporation (GRC) was tasked to define and document an efficient PROBE interface with Army staff systems and agencies involved in the PPBS. In accomplishing the contractual work, it soon became evident that PROBE could only be a subset of the PPBS and that PPBS functions and responsibilities were not sufficiently defined to permit effective documentation. Hence, the research effort was redirected to develop the requisite understanding and problem definition essential to bring discipline to the PPBS process and to promote efficient and useful PROBE design.

II. REPORT CONTENT

This report covers Phase 3 of the GRC PROBE interface study, which has involved the following tasks to date:

- Preparation of specifications for selected functions of the BUDGTRACK subsystem of PROBE.
- Definition of specifications for selected functions of the BUDGTRACK subsystem of PROBE.
- Definition of the PROBE subset of PPBS.
- Integration of PROBE-related study efforts to assure that actions associated with PPBS improvements are cohesive and coordinated.

As a result of the latter task, this report encompasses not only specific tasks accomplished by the GRC PROBE team, but also other efforts related to PROBE development and PPBS performance.

III. PPBS/PROBE PROBLEMS SURFACED

Earlier research findings identified multiple internal organizational, procedural, and system deficiencies which impacted the PPBS and PROBE system development. These are summarized below in the four broad problem categories of:

- PPBS Process.
- Management Languages.
- Resource Management.
- Systems and Data Bases.

Solutions to many of the problems are being found; these are discussed in paragraph IV.

III.A PPBS

The PPBS is not the well-defined and efficient system implied by conceptual documentation; it has characteristics that preclude its reduction to a simple and rigid set of procedures and responsibilities for managing resources. No one individual has complete knowledge encompassing the totality or interrelationships of the events that are necessary to produce the key documents during each PPBS cycle. There is a lack of current documentation and action officer training programs. Events in the process are so time sensitive that even knowledgeable action officers cannot fully develop or coordinate all information essential to decision-making. Finally, there is no disciplined feedback mechanism between program/budget development and budget execution activities.

III.B Management Languages

Management languages (e.g., program element, AMSCO) are used for communicating, relating, aggregating, or structuring resource data in planning, programing, budgeting, and administering the Army's forces, funds, manpower, and materiel. The fundamental management language problem is that a multiplicity of different structures is

used for similar purposes to address the same or related classes of resources. This causes distortion in communication within the Army and between the Army, OSD, and OMB. A high potential exists for redundancies, distortions, and communications disconnects.

III.C Resource Management

Various PPBS resource management problems exist in the critical areas of force structure and manpower management, materiel planning, program balance and information exchange. Among the cited deficiencies, many are related directly to the complexity of the process, some exist because requisite information is not available to individual managers in a timely fashion, and others exist because procedures have not been established to ensure that managers are aware of all considerations which should be taken into account.

III.D Systems and Data Bases

The PROBE objective of enhancing information flow by drawing together the relevant, diverse systems and data bases into a unified and efficient MIS to support Army decision-makers has been difficult to attain for a number of reasons. Of most significance are those related to the multiplicity of systems and data bases that were created for special purpose applications in support of specific proponents. These multiple systems do not provide adequate support for staff-wide PPBS functions.

IV. PROBLEM RESOLUTION ACTIVITY

IV.A General

The problems described above represent a formidable array of deficiencies, organizational and procedural disconnects, and system/data base redundancies. It should be noted that the cited deficiencies are those which were identified as existent at the conclusion of the GRC Phase 1 research in August of 1975. The Army staff has committed itself on many fronts to resolving these problems and has made great progress.

IV.B DA Staff Activity

A number of in-house task forces and committees have been formed with objectives of solving problems associated with PPBS performance. Efforts in this regard include:

- Force development and manpower management work efforts (notably, the Force Development Integrated Management System (FORDIMS) project and the Management of Change (MOC) Study recently undertaken by CAA).
- DCSLOG initiatives to bring materiel distribution considerations into program development.
- SMD initiatives in the areas of Reserve Component/Active Army integration.
- OCA initiatives in consolidating or eliminating certain command submissions.
- PAE initiatives in improving PPBS regulatory material and developing improved procedures for PARR staffing and program balancing.

In addition to the many efforts undertaken in-house (of which the above are only representative), a number of contractual efforts have been undertaken.

IV.C PROBE-Related Projects

Several PROBE-related contractual projects are addressing specific problem areas that impact the PPBS and directly or indirectly constrain development of the PROBE interface with Army staff systems. They are the:

- Program Element and Unit Identification Code Relationships (PE/UIC) Project,
- Automated Army Management Structure Code (AMSCO) Project,
- Force Structure and Manpower Management (FS/MM) Study, and
- Logistic Resources Data Base Structure (Log Resources) Project.

Section 6 of the report describes each project in terms of its purpose and objectives and provides summaries of results attained to date. For purposes of this summary, only the major contributions and benefits are highlighted here.

The PE/UIC project team has completed and delivered action packages that contain proposals to achieve a single PE/UIC match in ten of eleven homogeneous groupings of units. Adoption of these proposals would resolve approximately 80 percent of the Army's multiple PE/UIC problem and materially assist in improving manpower and other major resource data reporting.

The AMSCO project team has established an automated AMSCO data base and appropriate software for data base maintenance and edit.

The Force Structure and Manpower Management Study team, in addition to influencing the design of FORDIMS, has developed 14 specific recommendations for near-term improvements which, when implemented, will correct or alleviate many of the manpower management problems identified to date.

The Logistic Resources Data Base Structure Project developed a flexible structure for determining and displaying logistics support resources projected for and consumed by units, weapons systems, and logistic functions. Application methodology is currently under development.

IV.D PROBE Interface Study Project

Major GRC and PA&E activity has been concentrated on documenting and improving PPBS processes as a condition precedent to developing the tools within PROBE to support these processes. In this regard, the PROBE Interface Study Group has developed detailed problem definition and specific improvement recommendations. Major products include the detailed management language report submitted in May 1976, functional and data requirements documentation for the BUDGTRACK subsystem, and the PROBE intermediate configuration recommended in Section 5 of this report.

V. CONCLUSIONS AND RECOMMENDATION

The study team believes that it is possible and vitally important that progress be made toward a more systematic, knowledgeable

approach to PPBS functions. As a result of the combined efforts of the DA staff and GRC research teams, considerable progress has been and is being made to resolve the more significant problems impacting PPBS and PROBE development. In many cases, actions that have been recommended to resolve problems have not yet been implemented; in other cases, recommendations have been implemented so recently that their net effects have not yet become visible. Time is required to assess the total impact of changes introduced to the "system." Limited DA resources should not be dissipated in an effort to completely fine-tune all aspects of the PPBS process at one time. Instead, consideration should be given to the following recommended actions which, if taken, would improve the capabilities of PPBS participants and provide significant benefits to the Army:

- Development of program and budget handbooks.
- Improvement of management language structures.
- Establishment of an Army PPBS data base.

PROBE system recommendations in Section 5 call for the Army PPBS Data Base, BUDGTRACK, the PROBE Report Writer, and the PROBE Utilities Module to be the primary vehicles for achieving PROBE objectives.

Other conclusions and recommendations in the main body of this report relate to:

- Reserve component/active Army integration,
- Update of regulations,
- Materiel planning,
- Guidance tracking, and
- Systems planning.

Support for these recommendations is included in the body of this report, and a compendium of specific conclusions and recommendations can be found in Section 7.

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1 INTRODUCTION

1.1 GENERAL

The General Research Corporation (GRC) was awarded a contract by the Army in December 1974 for research, design, and development related to the Program Optimization and Budget Evaluation (PROBE) system. Since PROBE is being designed to support the Army Planning, Programing and Budgeting System (PPBS) [1/], a major thrust of the three phases of the GRC contractual effort completed to date has been to define major problem areas and develop solutions essential to bring discipline to the PPBS process. Research findings of the first two phases of the GRC study effort are documented in a series of reports, flow charts, and matrices listed in Appendix A. This documentation, together with research and analysis conducted during Phase 3, established the basis for the discussion, conclusions, and recommendations included in this report. To promote better understanding of the total research effort, this Phase 3 report also includes a background review of the PROBE system and its objectives, and a summary description of the PPBS process which it is being designed to support. The descriptive material is followed by a summary of research efforts completed to date and the specific tasks accomplished by the GRC PROBE study team. Later sections of the report address accomplishments of other study projects that are concerned with specific problems essential to PROBE development and PPBS performance. Although all of these related studies are not being conducted by GRC, they are described herein so that this report can serve as a single, current source for documentation of PPBS improvement and PROBE development activities.

[1/] Although the term PPBS is used extensively throughout this report, both PROBE and the GRC contractual effort are concerned only peripherally with the planning phase as defined in AR 1-1.

1.2 BACKGROUND

1.2.1 The PROBE System

The PROBE system is conceived as a real-time, interactive system employing computer-assisted operations research techniques to provide resource management tools which interface with the user via cathode ray tube (CRT) devices. The purposes of PROBE are to provide an automated aid to the office of the Chief of Staff for making timely resource decisions relevant to the DOD PPBS and to assist Army staff officers by providing a current, centralized resource information system. The benefits to be derived from PROBE include:

- A positive track for program and budget decisions.
- An integrated decision impact across all programs and appropriations.
- A capability for program managers to interact in the formulation of allocation alternatives.
- A capability to analyze the POM (or FYDP update) and address resource trade-offs prior to submission.
- Instantaneous information on status of POM and budget formulation activities.
- An effective communication capability.
- Standardization of data and costing methodologies.

In sum, PROBE is intended to provide a quantum increase in the PPBS support capability within the Department of the Army, to integrate applicable inputs from currently operating or planned relevant systems and data bases, and to provide a cohesive framework for programing and budget formulation functions.

1.2.2 The Planning, Programing and Budgeting System (PPBS)

The DOD PPBS activity is the major function that PROBE is designed to support. This major activity has evolved as an extremely complex process through which the planning, programing and budgeting

for all defense resources is accomplished. It consists of a continuing series of interrelated, consecutive or overlapping actions. The system requires participation and constant attention by all echelons of the Defense establishment from OSD, through the Military Departments, to commands and agencies. Feedback among separate cycles and phases of a single cycle at all echelons is complex and continuous. The pervasive nature of the PPBS process requires either automated or manual interaction with all Army staff agencies and most of their major data systems. Thus, the interfaces between these agencies, their systems, and the PPBS processes must be well understood and defined in order to determine the functional and systems requirements which should be encompassed within the PROBE concept.

1.3 PROBE INTERFACE STUDY

1.3.1 Initial Study Objectives

The GRC PROBE Interface Study Team was initially tasked to define and document an efficient PROBE interface with Army staff systems and agencies involved in the PPBS, to include design, development, and documentation of the detailed programing specifications.

1.3.2 Revised Study Objectives

In accomplishing the work under this contract, it soon became evident to the study sponsor (Director, Program Analysis and Evaluation (DPAE, OCSA)) and to GRC analysts that PROBE could support only a subset of the major PPBS functions, and that the PPBS functions and responsibilities of the Army staff were not yet sufficiently well defined to permit documentation of the required interfaces. For these reasons, the study was redirected to:

- Define and document Army staff systems, organizational, and functional relationships as they relate to the PPBS process.
- Define information flows to include identification of

source document or automated system, resource management language, and agencies responsible for exchanging the information.

1.3.3 Problems Surfaced

In consonance with the redirected tasking, GRC undertook an extensive analysis and evaluation of the PPBS process and the role which PROBE might fulfill. In its Phase 1 Report [1/], which documents these research findings, GRC identified the multiple internal organizational, procedural, and system deficiencies summarized in the paragraphs which follow. Four broad problem categories were established as a mechanism for promoting organization of the report:

- PPBS Process.
- Management Languages.
- Resource Management.
- Systems and Data Bases.

1.3.3.1 PPBS Process. The PPBS functions within the Army staff are not well understood by many of the principal participants. Decision makers and staff officers are not fully aware of their roles and their contributions relative to the total PPBS process. As a result, serious deficiencies, shortcomings, and management problems militate against effective and knowledgeable Army programing and budgeting. These deficiencies involve the following areas:

- PPBS is not a well-defined, integrated, or easily understood process.
- Events are too numerous and time-constrained.
- FYDP Program Directors have uncertain roles in program and budget formulation activities.
- PROBE subset of the PPBS is not clearly defined.

1/ Draft Phase I Report, "Development of Detailed Specifications for the PROBE System (PROBE Interface Study)," August 1975.

1.3.3.2 Management Languages. The fundamental nature of the management language problem is characterized by a multiplicity of different structures used for similar purposes to address the same or related classes of resources which causes distortion in communication between responsible officials and between the Army, OSD, and OMB. Other general problem areas include:

- Undisciplined management language usage.
- Poor PE/unit relationship for TDA units.
- Ineffectiveness of the PE as an internal Army management tool.
- Current language structures which do not permit integrated resource arrays and analysis by mission or function.

1.3.3.3 Resource Management. Serious problems, caused by the fragmentation and lack of clear responsibilities in PPBS resource management within Department of the Army, exist in the critical area of force structure and manpower management. Among the total range of cited deficiencies, many are directly related to the complexity of the process, some exist because requisite information is not available to individual managers in a timely fashion, and others exist because procedures have not been established and managers are not aware of the considerations and communications which should be taken into account. Resource management problems are:

- Complex and cumbersome force structure and manpower management procedures.
- Unsynchronized procurement and distribution relationships.
- Lack of evaluation and program balancing criteria.
- Intermittent and incomplete information exchange.

1.3.3.4 Systems and Data Bases. Approximately 30 Army staff systems, many with duplicative data elements, are used to extract or record data associated with the PPBS process. For the most part, interfaces

between and among these systems do not exist, causing different action officers to make decisions or manage resources on the basis of different resource data. Problem areas include:

- Lack of integrated plans for PPBS system and data base development.
- Multiple systems/data bases.
- Lack of fully developed guidance tracking capability.
- Force structure data bases which contain inaccuracies, suffer from a lack of timeliness, and are usually not in agreement.

1.3.4 Phase 3 Study Tasks

Action in the form of separate study efforts has been underway for the past several months to address certain of the problem areas identified above. These separate studies are under the general sponsorship of the PROBE Steering Committee with specific monitorship by ad hoc groups chaired by the particular staff agency having primary responsibility for the functional area under review. In this regard, significant effort has been devoted to such areas as improving force structure and manpower management, understanding resource interrelationships and the many languages which provide aggregating and reporting mechanisms, analyzing organizational responsibilities and capabilities relative to performing PPBS tasks, and evaluating the many systems which provide input to the PPBS process. These time-consuming investigations have been absolutely essential to understanding the vital PPBS process and to promoting improvements which will make PROBE a viable and useful tool of these processes.

The primary focus of this Phase 3 report is on tasks performed specifically by the GRC PROBE interface study group. These tasks, in simplest terms, encompass the following areas:

- Preparation of specifications for selected functions of the BUDGTRACK subsystem of PROBE.

- Definition of management language structure problems and potential improvements.
- Definition of the PROBE subset of PPBS.
- Integration of PROBE-related activity to assure that actions associated with PPBS improvements are cohesive and coordinated.

The first two tasks have been completed and results are documented in two reports [1/] delivered earlier in the study phase. The study effort described in later sections of this report, therefore, encompasses the completed and underway research and analysis efforts. These efforts support recommendations for specific PPBS procedural, organizational, and systems improvements and provide a description of a feasible subset of the total process which can be fulfilled by PROBE.

1.4 REPORT CONTENT

Section 2 provides additional background on the complexities of the PPBS in amplification of the descriptive material found in CSR 11-1 and AR 1-1. Section 3 discusses the PROBE concept as envisioned in the original General and Detailed Functional System Requirements (G/DFSR), dated March 1974. The material in those two sections is intended to provide general information for furthering understanding of the problems, conclusions, and recommendations discussed later in the report. Those who are generally familiar with the PPBS process and the basic PROBE concept design can pass quickly over Sections 2 and 3 and move to Section 4 where the specific problems listed above are addressed. An alternative PROBE subset is defined in some detail in Section 5. Section 6 of the report describes other completed and on-going PPBS/PROBE-related studies and links them to specific PPBS/PROBE problems. Conclusions and recommendations are furnished in Section 7.

1/ Draft report, "BUDGTRACK Functional and Data Requirements (PROBE Interface Study)," March 1976.
Draft report, "Army Management Language Structures (PROBE Interface Study)," May 1976.

2 THE PLANNING, PROGRAMING, AND BUDGETING SYSTEM (PPBS)

2.1 GENERAL

This section provides a brief discussion of the PPBS for readers who are unfamiliar with the whole system because they customarily deal with only part of it. It is also intended to bridge the gap between the descriptive presentations contained in AR 1-1 and CSR 11-1 and the detailed analyses conducted by the study team. Thus, it includes observations which go beyond general description and purely graphic analysis. This section is not intended as a detailed analysis of the PPBS in all its dimensions and complexities. It does, however, present important perspectives that will ultimately impact upon the design and implementation of the PROBE system. It notes relationships and functions which provide a framework for establishing the long-range goals of PROBE and suggests areas that can be served in the near term through a developmental approach discussed in more detail in subsequent sections.

2.2 OVERVIEW

Department of Defense (DOD) Directive 7045.7 and Chief of Staff Regulation 11-1 define the Planning, Programing and Budgeting System as "an integrated system for the establishment, maintenance, and revision of the FYDP (Five Year Defense Program) and the DOD budget." These directives present the PPBS as a finite set of interrelated documents and processes which clearly must be supported by a larger and more complex series of procedures, working documents, and interactions involving departmental headquarters and field elements. The PPBS can actually be thought of as the "master plan" for integrating the total DOD resource management process. Figure 2.1, Army Planning, Programing and Budgeting System, is taken from AR 1-1 and depicts traditional milestones of the PPBS; PERT-type analyses developed by

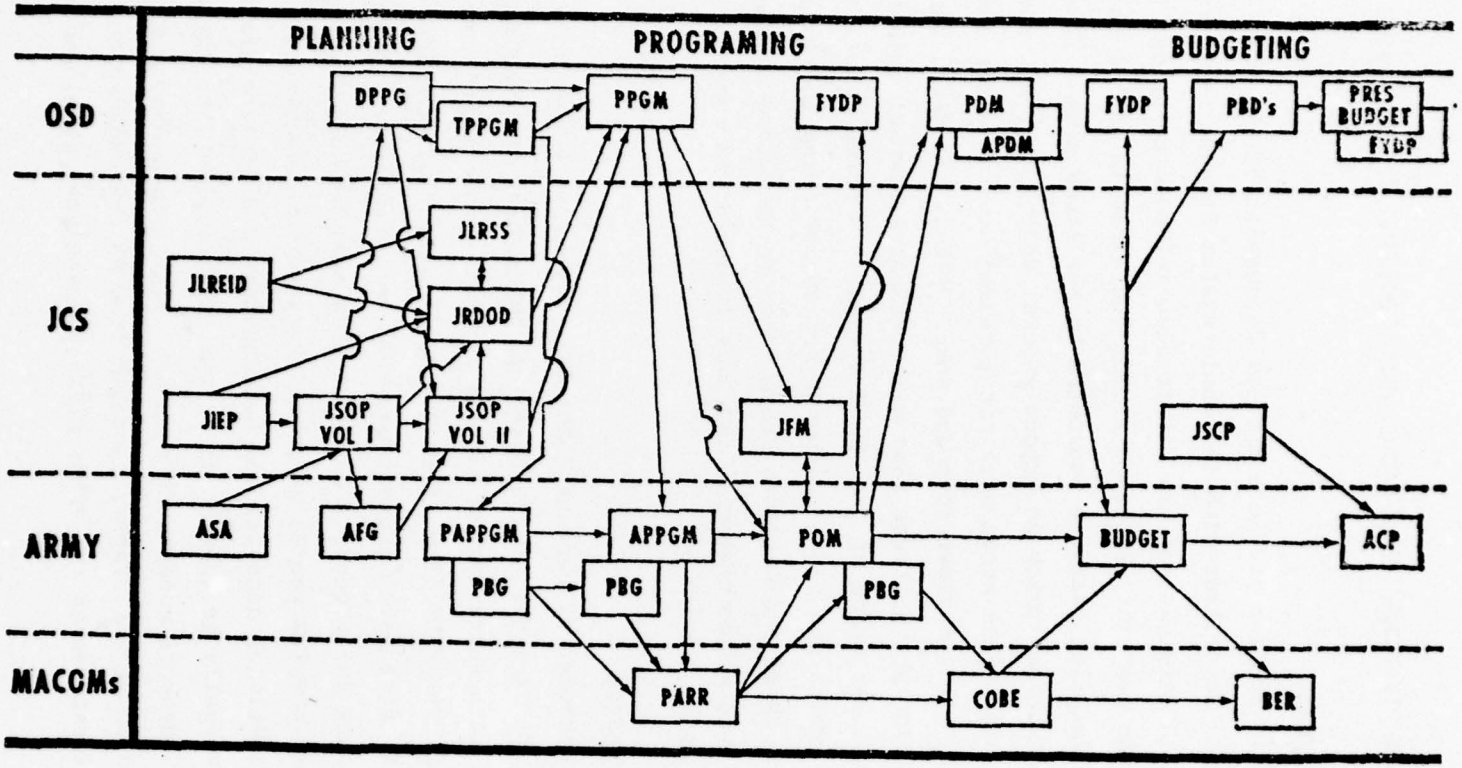


Figure 2.1 - Army Planning, Programing and Budgeting System

the study team [1]/ are more detailed and show activities and interactions actually required within DA in support of PPBS.

The PPBS can be formally defined in different ways to suit the different perspectives from which it is viewed. Basically, the PPBS involves actions and documentation flowing among the Office of the Secretary of Defense (OSD); the Office, Joint Chiefs of Staff (OJCS); the Military Departments (taken as whole entities); and the Defense Agencies. It also serves as the basis for developing resource requirements and justifications for presentation to the Office of Management and Budget (OMB) and to Congress. Through the PPBS the Department of Defense seeks to:

- Devise a coordinated plan and determine the corresponding force structure in response to perceived national security objectives.
- Allocate resources over an extended period of time in order to realize the plan within a prudent risk imposed by scarce resources.
- Prepare a detailed budget in consonance with the plan and the program which permits the realization of defense goals.

In short, the PPBS is a continuum of steps toward the physical achievement of national defense objectives with no one step being intrinsically more important than any other. The detailed actions supporting these steps (e.g., the allocation and funding of manpower of the development of procurement programs) are important in themselves and are vital parts of the major PPBS document actions outlined in flow charts such as Figure 2.1.

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[1]/ Separate charts were prepared to exhibit the interrelationships of critical events in the areas of materiel acquisition, military construction, and force structure and manpower; they are available upon request from the study team or the study sponsor.

2.3 THE PLAN

The planning phase is initiated with the Joint Long-Range Estimative Intelligence Document (JLREID) and the Joint Intelligence Estimate for Planning (JIEP) which are intelligence estimates developed by the Joint Staff that address the long-, mid-, and short-range planning periods. These intelligence estimates serve as source documents for military strategic planning on a worldwide and regional basis as embodied in the Joint Strategic Objectives Plan (JSOP), Vol. I, the Joint Long-Range Strategic Study (JLRSS), and the Army Strategic Appraisal (ASA). Strategic planning focuses on basic military objectives to establish priorities, assess risks, and guide force planning through development, deployment, employment, and support of the required force. Through the force planning process, the Army, in conjunction with OJCS, determines the force necessary to fulfill the strategy and evaluates the capabilities of the currently programed forces to accomplish this end. This planning culminates in the JSOP, Vol. II, and the Army Force Guidance (AFG).

Army participation in PPBS actions extends beyond force planning to include a long-range study (Joint Long-Range Strategic Study) of worldwide and national economic, political, social, technical, and military trends. Together with other actions contributing to the identification of the objective force, the JLRSS influences the formulation of DOD research and development objectives which are responsive to strategy and force recommendations. These objectives are documented in the Joint Research and Development Objectives Document (JRDOD).

2.4 THE PLAN

2.4.1 Program Development Guidance

The transition from planning to programing actions is provided in quantitative terms by the force structure and in qualitative

terms by OSD guidance applicable to both processes. The Defense Policy and Planning Guidance (DPPG) is the principal OSD qualitative guidance document for this purpose. Quantitative program guidance from OSD is contained in both the Tentative Planning and Programing Guidance Memorandum (TPPGM) and the Planning and Programing Guidance Memorandum (PPGM); these documents address funding levels, manpower levels, priorities, and other constraints affecting specific allocations of dollars, manpower, materiel, and, to a lesser extent, forces.

During the formal and informal transmission of this guidance, the Army assumes much of the programing initiative. It anticipates the formal guidance through day-to-day interactions with OSD analysts and thus gathers momentum for the publication of formal Army guidance documents: the Preliminary Army Planning and Programing Guidance Memorandum (PAPPGM) and the Army Planning and Programing Guidance Memorandum (APPGM). These documents are both an Army interpretation of the DOD "game plan" and an expression of program objectives and resource constraints that are left to the discretion of the Army.

The transition from planning to programing actually precedes the issuance of these formal guidance documents. The Force Accounting System (FAS) is an automated system used to assist in establishing and recording HQDA and field input to the manpower program and the force structure. It is maintained and updated frequently throughout each PPBS cycle. Through FAS, ODCSOPS is able to provide the DA staff with the Program Objective Memorandum (POM) force which is the basis for resource allocation during the program development process.

2.4.2 Materiel Planning

One major facet of the PPBS process involves planning for the procurement of materiel. The POM Force, documented in FAS, interfaces with unit authorization details in the Army Authorization Document System (TAADS) data base. This interface takes place through

the Structure and Composition System (SACS) from which the Logistics SACS (LOGSACS) tape is a major output. The LOGSACS contains a line-item-by-line-item record of the equipment requirements of the units in the force and is an essential input to materiel planning activities in the field (i.e., Major Item Data Agency (MIDA) and the Commodity Commands) as well as in HQDA.

A number of these activities precede the publication of the APPGM. As a result, they are primarily based on independent planning considerations and authorization inputs received from the field. Upon receipt of the APPGM, it is necessary to fine-tune and tailor materiel programs to resource allocation and policy constraints that had not previously been known with certainty. A major consideration in these adjustments is trade-offs that must be made among appropriations to meet unfinanced requirements and to assure interappropriation balance.

This discussion suggests that materiel program development requires extensive field participation and is less dependent upon the formal milestones of the PPBS than is commonly portrayed in regulations and directives. In fact, these same generalizations can be extended to the development of manpower and other resource-related programs.

2.4.3 Program Budget Guidance

Program Budget Guidance (PBG) is issued following publication of the PAPPGM to provide guidance with respect to operating funds and manpower. Later the PBG is again issued to seven major commands following submission of the President's Budget in order to provide them with updated resource guidance. The commands use the PBG to develop programs and to assess levels of funding and manpower. They then provide input to program or POM development through the Program Analysis and Resource Analysis and Resource Review (PARR) process.

It is important to note that the PBG and PARR milestones do not impact appropriations for which management is decentralized.

Other appropriations, e.g., procurement and military personnel are centrally managed and are sensitive to still other events in the program development cycle. Thus, a third generalization relating to program development is that management methods which serve some resource allocation needs do not necessarily serve all such needs. As a corollary, it is evident that, to make effective contributions to the PPBS, the design and development of PROBE must recognize the unique characteristics in each area of functional management.

2.4.4 Program Guidance and Review Committee

The Program Guidance and Review Committee (PGRC) meets to review the resource allocations made by appropriation directors and selected program directors in order to insure program balance, to fund unfinanced requirements through reallocating resources, and to distribute any program reserves held in abeyance for this purpose.

The PGRC deliberations serve to bring together the various decision processes relating to resource management and are ideal forums for deliberations and decisions involving resource allocation tradeoffs. It is through informed decision-making that its members exercise their responsibilities to the PRGR. One role of PROBE in the program development process should be to enhance the ability of members of the PGRC to make decisions by consolidating and integrating the information which is the basis for their decisions.

2.4.5 The Issue Paper Cycle

The Issue Paper Cycle is a common name for the series of actions immediately following the submission of the POM and the associated FYDP update. Issue papers are prepared by OSD to document its evaluation of the Army program. The alternatives and rationale presented in the issue papers are subjected to review by the responsible element of the Army staff. Army comments are forwarded to OSD where they are a basis, together with the original issue papers, for SECDEF decisions reflected in the Program Decision Memorandum (PDM).

The Army's review of the PDM results in written and oral reclama actions. Subsequently, the SECDEF publishes the Amended Program Decision Memorandum (APDM) which contains his final program decisions. It connotes approval of the Army POM as changed by SECDEF decisions and terminates the programing phase of the PPBS.

2.5 THE BUDGET

2.5.1 Budget Formulation

The program review process provides input to budget formulation by establishing positions and decisions regarding specific program issues and by providing resource allocation guidance beyond that contained in the original program guidance. Budget formulation, like program development, really begins sooner than traditionally represented in directives and regulations. Many decision processes are repeated to incorporate the decisions of program development and program review as well as to adjust to changes in conditions and priorities since the last cycle.

For example, the PBG issued to the major commands in June permits the decisions of program development to be incorporated into financial and manpower planning. The Command Operating Budget Estimate [1/] (COBE) details this plan, identifies the command's unfunded requirements, and is a basis for apportionment requests. In addition, the COBE is a major input into preparing the overall DA Annual Budget Estimate for the subsequent budget year, since it allows HQDA analysts to formulate their budgets based upon the field's most current statement of actual resource requirements.

Just as the PGRC is a focal point for the Army's internal program review, the Budget Review Committee (BRC) is a forum for an

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1/ The COBE is a consolidation of the Command Operating Budget and the Command Budget Estimate.

internal review of the overall budget. The BRC scrubs the budget estimates of each appropriation, with special attention to near-term trade-offs. Resource Allocation Recommendations (RARs) are prepared for discussion in anticipation of the Office, Secretary of Defense/ Office of Management and Budget review which, unlike the BRC, will not normally result in reallocation of the Army resources stripped from a given area of the budget.

2.5.2 The OSD Budget

The October budget submission, like the POM, embodies extensive numerical and narrative justification material. The budget is more detailed and voluminous than the POM; however, many displays or exhibits do or can apply to both (e.g., the P-1, the FY 19BY Procurement Program, and the reports of the Telecommunication Annex). The FYDP is also updated at the time of this submission to capture budget and program year impacts of decisions made since the POM update. To the extent that documentation requirements common to both the POM and budget submissions can be automated, they are primary candidates for integration within the PROBE concept.

OSD and OMB review the budget on an appropriation by appropriation basis. Because of the appropriation structures, only the operations accounts and RDT&E reviews are conducted by FYDP program. The products of the OSD/OMB review are a series of Program/ Budget Decisions (PBDs) which are issued, reviewed, reclamaed, and only after informal and formal negotiation, reissued to document final OSD decisions on the budget. With each applicable PBD, the Procurement and RDT&E Annexes are updated; however, adjustment to the FYDP is not made until the process is complete.

2.5.3 The President's Budget

The President's Budget is published by OMB and reflects the October submission and all decisions of the OSD/OMB review. The

justification books are also prepared by the appropriation directors to support the President's Budget. Again, the Army provides an update to the FYDP to reflect decisions that have been made since the previous update in October.

2.5.4 Supplemental Submissions

Quite often, there is a need to seek an increase in the appropriations to fund the current year program. This need arises due to various unforeseen contingencies or anticipated requirements such as increased civilian and military pay costs. These requests for supplemental funding are an integral part of the PPBS, even though this requirement is not often depicted in the flow of PPBS events.

2.6 PERSPECTIVES

There are important characteristics of the PPBS that are often absent from various definitions and descriptions of it. These characteristics represent real-life considerations that must come to bear in any definitive discussion of the PPBS process. The study team's research and analysis relative to the PPBS encompasses these characteristics from which it has drawn perspectives which impact upon the design and implementation of the PROBE system. These perspectives are that:

- The field has an active (not just a reactive) role in program and budget development.
- The PPBS is much more complex and independent of major milestones than is commonly depicted in regulations and directives.
- Management methods and tools that serve some resource allocation needs do not necessarily serve all such needs.
- The validity of decision making with respect to inter-program or inter-appropriation balance is dependent on the availability of basic information.

- There are PPBS functions amenable to automation in the PROBE environment that would directly serve internal management needs of the Army as opposed to just reporting needs.
- Information requirements in support of program and budget actions are generally similar since respective decision processes deal with the same classes of resources, address the same or related issues, and involve the same staff elements.

3 PROBE SUPPORT TO THE PPBS

3.1 GENERAL

This section contains a statement of PROBE objectives to support the PPBS processes described in Section 2. It also reviews the system's evolution in terms of configuration and methodology. This discussion provides some background for those unfamiliar with PROBE and thereby provides a transition to a discussion of the problems and solutions that form the basis for recommendations regarding future PROBE development.

3.2 PROBE OBJECTIVES

The following objectives [1/] are the basis for PROBE development efforts as well as the recommendations regarding future PROBE development found in Section 5 and the associated PPBS improvement recommendations found in Section 7.

- Provide automated tools to assist action officers in their analyses of resource allocations required to support the Army portion of the FYDP.
- Develop POM alternatives within guidance and fiscal constraints.
- Maintain status on selected POM alternatives as they are formulated for PGRC evaluation.
- Provide crosswalk capabilities between management languages, primarily FYDP program elements and the budget activities of the Army Management Structure.
- Maintain status of budget formulation and budget review decision processes through Congressional action.
- Process all automated input required by OSD during the PPBS through disciplined procedures and edits of input during update of automated data files.

1/ Paraphrased from the PROBE G/DFSR, March 1974.

- Act as a communications media for the dissemination of resource allocation information throughout the Army staff.

3.3 PAST PROBE DEVELOPMENT

There are two fundamental factors that have complicated PROBE development to date:

- Imprecision in the PPBS itself.
- Not completely valid assumptions which impact adversely upon ideal system implementation plans.

These factors have required that PROBE be reoriented to pursuing the same objectives through a modified developmental approach. The need for change is unfortunate from a systems development point of view; however, recognition and correction of root causes should significantly increase the value PROBE can have when development is complete.

The original PROBE development concept envisioned using state-of-the-art management science tools to permit more rapid and orderly formulation and evaluation of the Army program and budget. The concept has merit, but the scheduled implementation was not realistic. A basic imprecision in the PPBS, compounded by the following not completely valid assumptions, contributed to the need for reorientation in PROBE development.

- PPBS activities are performed systematically by the staff using a finite number of algorithms or SOPs addressing independent decision variables.
- Data to support applications of management science tools are resident in a number of data bases accessible to the Army staff.
- The various management information systems used during the PPBS are mutually supportive and readily amenable to functional interfaces.
- PPBS displays and reporting requirements can readily be used as a basis for allocation of all resources.

- The bulk of alternative resource allocation "issues" are generated as the result of OSD and CSA guidance rather than from Army staff and MACOM prerogatives.

The impact of these assumptions is particularly telling in a system with objectives as comprehensive as those of PROBE. Collectively, they complicate any developmental approach that attempts a one-shot implementation effort. Therefore, alternatives for negotiating these obstacles without diluting the system's effectiveness were formally and informally adopted.

3.4 ALTERNATIVE DEVELOPMENTAL APPROACH

PROBE objectives can be met in an evolutionary developmental process that focuses on discrete and manageable segments of the PPBS. First, many sets of data that are already automated and of value to PPBS processes should be consolidated into a single data base to reduce existing redundancies and to discourage actions that might lead to future system redundancies. Such an approach would be the main vehicle for establishing meaningful interfaces among otherwise unrelated systems. It would also provide a basis for the development of application programs that had not previously been possible.

Complete and meaningful attainment of basic PROBE objectives requires an alternative approach to developing the system. More specific recommendations are identified in Section 5 where the G/DFSR of March 1974 is the primary starting point for a module by module anlysis of the directions and priorities that should govern PROBE development. The basic orientations of each module remain largely the same, although the results of past research dictate certain changes in emphasis and approach. Figure 5.1, Recommended Intermediate PROBE Configuration, displays the perceived structure of PROBE and is supported by a condensed discussion in Appendix C.

4 DEFICIENCIES IMPACTING PPBS

4.1 GENERAL

As indicated in Section 1, research has led to the identification of a number of problems or complexities which adversely impact the content and quality of PPBS actions and PROBE System development efforts. These problems have been grouped into the same four general areas identified in Section 1:

- PPBS Process.
- Management Languages.
- Resource Management.
- Systems and Data Bases.

The following paragraphs offer more specific identification of, and insights into, these problems or complexities. Related conclusions and identification of what is being done and what should be done to make the Army PPBS and PROBE System development more effective are contained in subsequent sections.

4.2 PPBS PROCESS

4.2.1 The PPBS as a System

The PPBS, as it actually operates, is not the well-defined and efficient system described in conceptual documentation. It has characteristics that preclude its reduction to a simple and rigid set of procedures and responsibilities for managing resources. When personalities; changing rules and priorities; program advocacy and competition for resources; strategies for dealing with OSD, OMB, and Congress; and similar dynamic considerations come into play, the resultant complexities defy simplistic approaches to procedural improvements and automated support.

4.2.1.1 Defining Functional Relationships. As a part of its research effort, the GRC study team has attempted to define the PPBS process and functional relationships more clearly. This has been accomplished by developing schematic displays of the Army staff functional and organizational relationships pertaining to programing and budgeting. 1/ These schematics are accompanied by separate data flow matrices which correlate documents and data elements with the originators, users, and contributors, thereby identifying major functional processes by type of function (guidance, coordination, submission), the staff agency and resource involved, and the data elements (and sources) associated with each functional process. They provide considerable insight into the complexities of the PPBS process and present the kinds of detail needed to define requirements for interfacing the PROBE system with appropriate Army staff systems.

4.2.1.2 Defining Events and Milestones. A second, equally important, product of the research effort is the series of PERT-type charts 1/ developed by the study team to trace the timing and interrelationships of major events during the PPBS cycle. These charts lay out the flow of sequentially-related actions/events required at various staff and field levels to produce or provide input to the following key documents:

- Program Objectives Memorandum (POM).
- Five Year Defense Program (FYDP).
- Annexes to the POM/FYDP.
- OSD/OMB Budget.
- President's Budget.
- Apportionment Request.
- Program Budget Guidance (PBG).

1/ Documentation is available for examination upon request to the study team or study sponsor.

Separate charts were prepared to document detailed flows involving:

- Force structure and manpower management.
- Military construction.
- Materiel acquisition.

4.2.2 PPBS Complexity

Analysis of the documentation described above has been a major consideration in development of the conclusions and recommendations in this report. This documentation provides a clear indication that an inordinate level of ambiguity has existed in certain areas of the PPBS (e.g., manpower management, and reserve component/active Army integration). Ambiguities arise from incongruities in the areas of management languages and resource management, incomplete documentation of responsibilities, and the sheer volume of interrelated actions required to satisfy PPBS requirements. A significant fact revealed by the PERT-type charts is that there are at least 295 sequentially-related events required to produce seven key documents during each discrete PPBS cycle. Hence, it is extremely difficult to get from one event to another along activity lines because:

- Calendar time is not available.
- Required information is not available when needed.
- Extensive coordination is demanded to overcome problems caused by complex functional interrelationships and overlapping events. 1/

Major observations drawn from preparation and subsequent analysis of functional flow charts, data matrices, and PERT-type charts follow.

4.2.2.1 PPBS Not Understood. Many of the problems that arise during the PPBS process can be traced directly to the fact that most Army action officers, particularly those in the early stages of their initial

1/ Extensiveness of coordination requirement is illustrated in the Force Structure and Manpower Management Study, Volume I, Phase II Report entitled, "Manpower Management Action Case Studies," March 1976.

Pentagon tours, do not fully understand the PPBS processing steps or the complexity and detail of the actions they are assigned to take. To compound this deficiency, there is a lack of current manuals, checklists, SOPs, and action officer training programs covering PPBS details. As a result, staff officers cannot act with the necessary cognizance of the total process.

4.2.2.2 Time Constraints. The events in the PPBS process are so numerous and time-sensitive that even experienced action officers are unable to develop complete information needed to support decision-making, nor can they devote adequate time to fully coordinate actions. Milestone charts have been very helpful in synthesizing the critical events in various functional areas; however, it has become obvious that there needs to be greater emphasis upon these planning methods.

4.2.3 Appropriation/Program Management of Resources

The PPBS process is characterized by a progression from strategy and force planning in abstract terms to allocations of resources in the framework of a detailed budget. The former can be expressed in terms of forces and force packages but the latter is expressed in terms of appropriations and appropriation substructures. This dichotomy is discussed in greater detail in the management language and resource management portions of this section, but some observations should be made here.

There is currently no straightforward way to evaluate and balance resource allocations in terms of their overall contribution to the total force. As long as resources are allocated and reviewed on an appropriation by appropriation basis, the gap between force planning and budget formulation will be closed after, rather than before, the budget is approved and its constraints become absolute limitations.

The fact that mission-oriented displays are expected to be a part of future budget submissions to Congress makes it all the more

necessary (but not any easier) to close the gap between force and appropriation arrays. The Army needs to anticipate OSD, OMB, and congressional review by conducting internal analyses which focus on the relationship of resource requirements to force readiness levels and mission accomplishment capabilities. To facilitate this, efforts to resolve current management language disconnects between force planning and appropriation structures (i.e., program elements and AMSCOs) should be intensified. 1/

4.2.4 Reserve Component/Active Army Integration

The importance of the reserve forces to the total force is clear, but the process of allocating resources to and within the reserve components is seriously hampered by a lack of clear, documented procedures relating to interface between the active Army and the reserve components.

More effective integration of reserve component and active Army resource management does not require divestiture of the authority of one agency or another. It will require an increase in the level of support provided reserve components by the Army staff and a conscious sharing of responsibilities to insure resources are allocated to support complementary requirements. The solutions to the organizational and procedural problems associated with reserve/active correlation can be and are being found. CSM 76-5-20 provides for the expansion of the Construction Requirements Review Committee (CRRC) to include membership of the NGB and OCAR. It is this type of provision that can contribute to coordinated planning while respecting the resource management authority of the organizations involved. Likewise, the OSD study to improve the DPPC and program element structures to achieve a better reserve/active force match is finding solutions to the problems of

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1/ See draft report entitled, "Army Management Language Structures, (PROBE Interface Study)", May 1976.

comparability of manpower allocations; however, the fundamental comparability between the AMSCO structure of Reserve Component appropriations and the FYDP programs elements remains.

Closer integration of reserve component PPBS actions with active Army actions can be supported by:

- Establishment of a formal milestone schedule which documents Army staff procedures, responsibilities and interfaces relative to planning, programing and budgeting for reserve component resources.
- More formal delineation (directives, regulations, and memoranda of understanding) of respective organizational responsibilities and procedural requirements in specific areas of program and budget management.
- Concentrating on improving the crosswalk capabilities of reserve component AMSCOs to program elements.

4.2.5 Improving Understanding

4.2.5.1 Program and Budget Handbooks. Knowing the broad impacts of PPBS actions and how to do a task right will resolve more problems than massive reorganizations or rescheduling of PPBS events. Imparting this knowledge could be accomplished by preparation of a handbook or a series of handbooks dealing with a particular resource management area. Each handbook should:

- Be assembled in loose-leaf form to facilitate revision as procedures are improved and implemented.
- Be introduced by a comprehensive description of the programing and budgeting processes.
- Outline or describe responsibilities of each staff agency and provide graphic and narrative material identifying and fully defining roles and specific actions in program and budget formulation.

- Contain detailed milestone schedules covering each major event in the PPBS process, pinpointing responsibilities, and establishing interfaces with the various planning, programing and budgeting processes.
- Incorporate detailed references to OSD directives and other regulations and guidelines that control or influence Army procedures.
- Be user-oriented (i.e., prepared in language understandable to all Army staff users and organized to facilitate ready reference).
- Contain "how to" information with examples of tables and formats required for program and budget development accompanied by clear explanatory narrative.
- Include forms necessary to operate the process, with sample displays, explanatory notes, and supporting narrative explaining preparation and use.
- Provide graphic and narrative material showing work flow and depicting sequence of events and interactions among organizational levels.
- Provide checklists applicable to each major stage of program and budget development and execution.
- Be kept current.

4.2.5.2 Update Regulations. The complexity of planning, programing and budgeting processes and the ad hoc procedural changes that frequently occur contribute to a lack of detailed, current directives and regulations. Without definitive guidelines, it is likely that changes will occur in one area without due regard for the extensive impacts they may have in others. Publication of handbooks with the characteristics listed in the preceding paragraph will provide needed guidelines; however, action must also be taken to improve and update existing directives, and the procedures for their continual update must be enforced so that they accurately reflect revised policy and other de facto changes in the PPBS.

Effort towards updating or preparing new regulations is being expended by the Force Structure and Manpower Management Study group. In this regard, a new AR is being drafted to replace the annual letter of instruction on the Army Force Program, and internal SOPs for processing input to the AFP system are being updated. The team is also planning to prepare and submit proposed changes to the several ARs/CSRs that contain conflicting instructions on responsibilities for manpower management. Additional work to update regulatory material could be done concurrently with preparation of the handbooks described above.

4.2.6 Prospects for Improvement

As previously suggested, the inherent complexity and dynamic nature of the PPBS defy simplistic approaches to improvement. There are no simple corrective meansure which can be applied to provide immediate relief from all problem symptoms, such as poorly balanced or indefensible programs, inadequate time to address critical alternatives, and key matters which "fall through the cracks." Nevertheless, study team examination and analysis of the PPBS process suggests that concentration on clarification and documentation of responsibilities (to include reserve component interaction), together with improvement in the understanding of PPBS demands by all participants, are essential first steps. These approaches, combined with appropriate responses to the management language, systems, and resource management needs addressed in subsequent paragraphs offer a realistic prospect for enhancement of both PPBS and PROBE support.

4.3 MANAGEMENT LANGUAGES

The PPBS process relies upon a multiplicity of management languages and data bases to provide for internal and external communications. One of the key problem aspects is the dichotomy between internal management languages and those used to report to OSD,

OMB, and the Congress. During this phase of the PROBE interface study, GRC examined the management language problem in depth to develop and recommend means by which better crosswalks between OSD and DA language structures could be achieved. The May 1976 GRC report entitled, "Army Management Language Structures," contains a comprehensive problem definition and presents alternatives for resolving some of the major language disconnects. The significant findings and problem resolution alternatives documented in the management language report are summarized below to provide perspectives relative to other PROBE-PPBS improvement efforts.

4.3.1 Problem Definition

Management languages, as used throughout the PPBS, are true frameworks for defining and classifying variable resource data; they are crucial determinants of the Army's ability to define, balance, and justify its resource requirements. In the context of this report they are defined as a set of narrative descriptions that have been codified for the purpose of communicating, relating, aggregating, or structuring resource data in planning, programing, budgeting, and administering the Army's forces, funds, manpower, and materiel. Management languages extensively employed by various participants in the PPBS processes include:

- Object Class/Element of Expense.
- Defense Planning and Programing Category.
- Program/Subprogram.
- Program Element.
- Resource Identification Code.
- Appropriation.
- Functional Programs.
- R&D Mission Area Summaries.
- Facility Class and Construction Categories.
- Training Categories.

- Army Management Structure Code/Budget Activity Code.
- Base Operation Function Code.
- Unit Identification Code.
- Troop Program Sequence Number.
- Standard Requirements Code.
- Standardized Functional Categories.
- Procurement Standard Study Number.
- Command Code.

Of the eighteen key management languages identified above, one-half are prescribed by agencies external to the Army, with the remainder being used solely within the Army structure. Analysis suggests that because most of the eighteen principal languages are applied to the PPBS for a variety of purposes, high potential exists for redundancies and disconnects. Only five of the eighteen languages have direct subset relationships, with the remainder being independent of one another despite the fact that all are tools used for Army and OSD resource management or in organizing/aggregating information throughout the PPBS. The language structures themselves are institutionalized by management entities of the OSD and Army staffs and tend to perpetuate management separatism by denying the staff sections the means to communicate with one another in common terms across the full range of their respective management responsibilities. Thus, resource management decisions made in terms of units, commands, procurement line items, research and development projects, and construction projects cannot be articulated with the desired precision in common management language terms throughout the PPBS. The inability to report essential information upward to OSD and the Congress without extensive factoring leads to inevitable inconsistencies and inaccuracies.

4.3.2 Problem Resolution Alternatives

4.3.2.1 PE/AMSCO Realignment. As suggested in the management language report cited earlier, near-term improvements could be attained by taking the following actions:

- Restructure the OMA Reserve and OMA National Guard appropriation AMSCOs to make them subsets to program elements of FYDP Program 5.

- Restructure the MCA, MCA Reserve, and MCA National Guard appropriations and the Army Industrial Fund to conform as closely as possible to the PE structure.

- For the procurement appropriations, develop procedures for associating all distributed items with their procurement year so that data may be collected as the basis for verification and/or update of PE-spread algorithms.

The Army staff has completed a partial restructuring of the OMA Reserve appropriation and a study currently is underway in OCA to improve the accounting methodology in the Army Industrial Fund which could produce closer AIF-AMSCO-PE relationships. These two worthwhile endeavors should be continued as high priority projects, and appropriate elements of the staff should be directed to undertake similar projects on the remaining appropriations discussed above, using the restructuring concepts reflected in the Army management language structures report as a point of departure. All staff-developed restructuring schemes should be thoroughly coordinated to ensure they are compatible with other PPBS/PROBE efforts, possibly the PROBE Working Group.

4.3.2.2 PE/AMSCO Definitions. The alternatives listed above deal primarily with actions to achieve a more direct PE-AMSCO relationship where designed crosswalks do not currently exist. The actions suggested above will not resolve all communication deficiencies unless concurrent action is taken to correct the equally pervasive problem caused by the lack of disciplined control over PE-AMSCO definitions. Even when crosswalks are intended, as in the OMA and RDT&E appropriations, serious definitional problems exist.

Despite their incongruities, PEs and AMSCOs actually fulfill similar roles in their respective management structures. PEs have been established to meet the information needs of the DOD Planning, Programing and Budgeting System, facilitating management and evaluation at the OSD level; AMSCOs fulfill a similar need in Army resource management. Both languages are backed up by definitions which identify resources which would normally be associated with an entity, a group of similar organizational entities, a function, or a project. Although AMS code definitions usually contain more detailed information than that of a typical FYDP PE, in many cases the AMS code definition does not contain enough information to link it precisely with a FYDP PE. Some of the lack of consistency between FYDP and AMS definitions may be attributed to the omission of the FYDP definition from the appropriate narrative sections of AR-37-100-XX. Unable to make a direct comparison between the two levels of detail in the definition, the user of AR 37-100-XX is normally unaware of any problem, and the AMS proponent is not forced to check for consistency.

This situation is discussed in detail in the GRC Phase I draft report entitled, "Study of the Program Element and Unit Identification Code Relationship, PE/UIC Study," December 1975. That study also highlights the fact that TAADS manpower spaces are not in agreement with PE manpower totals for the following reasons:

- Spaces authorized for personnel performing the same job in identical or nearly identical units are carried in different AMSCOs.
- AMSCOs which are defined clearly and reserved for specific units and/or functions are erroneously used in the TAADS documents.
- Spaces are assigned to various AMSCOs based upon the availability of spaces rather than an objective assessment of the work performed.
- The Army has no way of tracking guidance to insure that spaces budgeted and programed in PEs are actually authorized in corresponding AMSCOs in TAADS.

- In several cases, manpower allocated to PEs in the FYDP was found to be substantially different than corresponding AMS-derived manpower in the FAS file.

The potential for achieving improved commonality among the definitions of the PEs and AMSCOs is real because both have cost (dollars) as a common denominator. A logical approach to improving definitions would first involve a review of the OMA and RDT&E appropriations where designed PE-AMSCO relationships are intended to exist followed by a similar review of the remaining appropriations. An undertaking of this sort would require a detailed, coordinated effort that would involve agencies across the entire staff. It could best be accomplished under the direction of one central office that would be required to ensure Program Element Director compliance with CSR 11-5 assigned responsibilities. The ultimate goal of achieving consistency among PE-AMSCO definitions could be accomplished as follows:

- Task PE Directors to:

  - Initiate a coordinated review of all FYDP PEs and associated AMSCO definitions for inclusiveness, clarity, compatibility, and completeness.

  - Prepare coordinated Program Change Requests (PCRs) to seek approval of appropriate changes to PE definitions.

  - Prepare coordinated staff papers to change appropriate AMSCO definitions.

- Designate a focal point on the staff, provide adequate staffing, and assign responsibility for controlling action flow and recording decisions on PE/AMSCO definitions.

- Redefine the PE file requirements as described in paragraph 5.2.5 and link this redefined file with the AMSCO data base so that outputs could be obtained that would relate PEs and AMSCOs for review and reference purposes.

4.3.3 External Pressures

Another key aspect of the Army's PE/AMSCO management language problem is related to Congressional requirements for integrated resource arrays by mission and function. Public Law 93-344 [1/] requires that "each agency furnish information in support of its budget requests in accordance with its assigned missions ... including mission responsibilities of component organizations, and shall relate its programs to agency missions. Such an approach will allow total resources devoted to each major defense mission to be considered in light of foreign policy requirements and defense strategy." The Army Management Structure as currently conceived and promulgated in AR 37-100-XX does not permit this type of formatting of resources.

Several OSD-sponsored studies or committees have been seeking ways to improve the DOD PPBS process and be responsive to the mandates of Congress. These studies, their current status, and implications are discussed in Section 6. Regardless of their final form, the OSD study results will not resolve the pervasive problem caused by internal Army management language disconnects. The GRC study team firmly believes that this internal language problem is a root cause of many of the deficiencies associated with the Army PPBS process and that resolution of the problem is an essential ingredient to improved procedures and a viable PROBE system.

4.4 RESOURCE MANAGEMENT

Resource management is the reason for PPBS, in general, and PROBE, in particular. Various categories of problems impacting resource management (PPBS process, management language, or systems and data base problems) are discussed elsewhere in this report. The discussion

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1/ Congressional Budget and Impoundment Control Act, Sec. 601(i), 88 Stat 324 (1974), July 12, 1974.

that follows pertains to those resource management problems which do not fit neatly into the other categories:

- Force Structure and Manpower Management.
- Materiel Planning.
- Program Balance.
- Information Exchange.

4.4.1 Force Structure and Manpower Management

Some of the most difficult resource management problems that surfaced during earlier research were associated with manpower management in the PPBS. These problems were generally attributable to:

- System and data base redundancies.
- Confusion with regard to functional responsibilities.

4.4.1.1 Systems and Data Bases. As presently conceived, the Force Development Integrated System (FORDIMS) will contain the essential elements of several of the most important systems of the PPBS; among them are the Civilian Budgeting System (CBS), the Army Force Program (AFP), the Army Authorization Documents System (TAADS) and the Force Accounting System (FAS). Each of these systems contains authorization data with respect to civilian personnel; the AFP, TAADS and FAS contain similar military manpower data; AFP and CBS are ultimately used in updating the FYDP. The functional requirements of each system are different, but the similarities are so great that their totally separate existences have contributed to conflicting resource baselines and inefficiencies in program and budget actions.

The USAMSSA FORDIMS Team and the Force Structure and Manpower Management Study (FS/MM) Team are developing technical and functional solutions to the systems and data base problems of manpower management. Upon completion of their efforts, it would be desirable to increase the overall availability of manpower space and cost data to appropriation

and program directors. Through cathode ray tube (CRT) access to this information, program and budget analysts would have essential resource data at their fingertips. Such access would permit program and budget actions to be based on the most current information available by reducing the effects of delays due to other isolated actions and distribution of hard-copy listings.

4.4.1.2 Functional Responsibilities. A second serious problem associated with manpower management has stemmed from confusion and misunderstanding brought about by inconsistent, ambiguous, or incomplete information concerning the assignment of manpower management responsibilities as reflected in current regulations. These regulatory deficiencies can be attributed in part to the 1974 Army staff reorganization and the fact that updates to the regluations have not been carefully coordinated to properly reflect shifts in functional responsibilities. The Force Structure and Manpower Management Study project has addressed this problem in depth by identifying those regulations which must be revised; where appropriate, recommended changes will be prepared and submitted in the near future.

4.4.2 Materiel Planning

PPBS procurement and distribution actions determine the materiel readiness of the Army. Procurement decisions limit distribution planning and execution. Procurement and distribution are complex management and administrative functions that are supported by LOGSACS.

4.4.2.1 Procurement and Distribution Relationships. Procurement and distribution of materiel are critical areas which affect force readiness. They are particularly sensitive to the timing of the related decision processes and are all dependent upon LOGSACS tapes for input. As a result, it is important that plans for each of these areas include input from a common LOGSACS. The Army's development of

the Equipment Distribution Plan has contributed to establishing a common LOGSACS as input to the Army Materiel Plan (AMP) (I & II), Major Item Distribution Plan (MIDP), and procurement actions in support of program development. A similar undertaking with respect to budget formulation will reduce the potential for serious disconnects in materiel planning. These are necessary but not sufficient actions to raise the level of materiel readiness that can be attained within particular materiel acquisition and distribution funding ceilings. To realize the materiel readiness potential, the synchronization in the PPBS process must operate in parallel with mechanisms at the execution level. The actual readiness of forces must be considered in final procurement and distribution execution actions. These readiness factors and execution actions must be synchronized and fedback to the planning, programing and budgeting levels so that both current and projected materiel readiness are given appropriate weight in materiel acquisition PPBS processes.

4.4.2.2 Approaches to Improvement. In the near-term, these efforts can best be supported by:

- Insuring LOGSACS data is timely, accurate and consistent (as discussed in 5.2.4).
- Specifying the particular LOGSACS tapes to be used in each PPBS procurement and distribution process.

Study team analysis of the PPBS procurement and distribution process indicates that longer term approaches which warrant pursuit include:

- Devising means to relate procurement to criteria having more meaning functionally, i.e., force missions, distribution schedules, cost/benefit factors of Reliability, Availability and Maintainability (RAM) specifications relative to readiness and perhaps the differentials experienced over time between what was programed and budgeted and the achieved results in procurement.

- More fully recognizing that the procurement lead time impacts on distribution and readiness and assessing the readiness risks versus the cost of buying additional items with which the Army might offset procurement and production lead time.

- Developing readiness risk/cost estimating relationships and algorithms.

- Costing RAM specifications in terms of expected readiness requirements.

In summary, the synchronization of procurement and distribution is important because of the joint impact on readiness. The synchronization is being improved through the use of a common LOGSACS and can be further improved over time by developing the methodology to measure procurement in terms of readiness. It is essential that these considerations be given increased weight in PPBS.

4.4.3 Program Balance

The idea of program balance pertains to managing total resources with respect to purposes being served rather than according to the nature of consumption. It emphasizes discrete components of the program and seeks relationships between resource allocations and missions supported.

CSR 11-5,"Army Programs, Staff Responsibilities and Relationships of FYDP Major Program/Program Element Directors," assigns responsibility for ensuring program balance to FYDP Program Directors. Balance, quantitatively displayed as resource allocations in the FYDP, is to be achieved through the coordinated activity of programs and appropriation directors and members of the PGRC and BRC. CSR 37-4, "Financial Administration, Army Staff Budget Responsibilities," covers Appropriation Director responsibilities. Together, the two regulations address the interrelated responsibilities for getting the Army's programs together for Congress and OSD. There are five types of directors:

- FYDP Major Program Directors.
- FYDP Program Element Directors.
- Functional Program Directors.
- Appropriation Directors.
- OMA Program/Subprogram Directors.

The study team's research has shown that this concept is not working well, given the fragmentation and the organizational, functional, and procedural features of the Army PPBS. The directors are competing for resources with each other; each is seeking to balance the accounts (i.e., the resources for which he is responsible over a number of years); and the resources of each may or may not be shared in whole or in part with other directors. The following discussion outlines the ingredients of the problem and an alternative course of action to achieve relevant goals in program balance.

4.4.3.1 FYDP Program Directors. FYDP Program Directors are required by regulation to insure that sufficient resources in quantity and type (e.g., men, materiel, facilities, etc.) are dedicated to the missions and functions represented in the program element structure. In general, this cannot be done for the following reasons:

- Most resource allocation authority rests with Appropriation Directors and not Program Directors. 1/

1/ Paragraph 5, CSR 11-5, states that Program Directors are responsible for resolving differences between PE Directors, Appropriations/OMA Program and Subprogram Directors, and Functional Program Directors regarding the validity of resources allocated to program elements. This indicates Program Directors have ultimate decision authority. However, paragraph 8, Concept of Operations, of the same CSR and paragraph 4 of CSR 37-4 make it equally clear that Appropriations Directors play a lead role in the development and reporting of the program and budget and the allocations and conversion of program element structure to budget structure. This indicates that Program Directors who do not also act as Appropriations Directors are responsible for balancing and defending allocations over which they have limited authority.

- Program Directors are primarily staffed and oriented to address only those parts of their program funded through OMA and supported by civilian and military manpower.

- No effective relationships have been established relative to program (mission) performances and resource allocations, especially in the case of procurement, R&D and construction appropriations.

- A general lack of data, aggravated by management language disconnects, impedes those program balance efforts that can and do take place.

4.4.3.2 PGRC and BRC Reviews. PGRC and BRC reviews are established forums for discussion of program balance issues and are generally conducted on an appropriation by appropriation basis. The questions of authority and orientation that compromise the assignments of CSR 11-5 do not have the same significance in these reviews; however, significant factors are:

- Management language disconnects which complicate analysis of appropriations and budgets in terms of their comparability and contribution to individual programs.

- The relatively short time available and the lack of sufficient supporting data for program analyses by appropriation.

Problem Resolution. Measures can be taken to increase the viability of quantitative analysis of the relationships between resource allocations and programs (missions), even though the related problems may never be solved in the purest sense. A broad solution would be to provide Appropriation Directors with better information relating the impact of appropriation decisions to individual programs, missions, or functions.

To improve this information flow requires changes in the management language structures and in the basic decision processes for

allocating resources. The FYDP structure is not currently an effective management language for this purpose; future modifications may improve but not necessarily insure complete satisfaction of management language needs. The alternatives, then, are to:

- Develop structures which address resource relationships, e.g., operating and support costs of weapon systems which can also be used to assess mission-oriented costs, e.g., training.
- Develop structures which increase the comparability of resource allocations in terms of the missions being supported, e.g., OMA, OMAR, OMARNG.
- Establish workload factors and relationships for different programs or missions to be used in gauging the overall impacts of workload changes across a range of resources (appropriations, men, materiel).

In short, no one structure will serve all purposes. Therefore, program balancing and resource/mission analyses must be based on the available data or must drive efforts to collect the required data.

Management languages are useful, though, only if they are used in the decision process. If, for example, the appropriation structures of OMA, OMAR, and OMARNG were identical, PGRC and BRC reviews could focus on operations and maintenance in total rather than on an appropriation by appropriation basis; such reviews might be concluded now within the noted constraints as a first step towards the overall objective.

Although the need to redefine organizational responsibilities may not be as great as the need to improve the availability of the required data for use in established forums, recognition should be given to the real capability of Program Directors to exercise their responsibilities, and consideration should be given to restatement of responsibilities along more pragmatic lines.

4.4.4 Information Exchange

The size and complexity of the Army's unit and mission structure prevents HQDA from precisely allocating the full range of resources to units and missions. Hence, the command structure of the Army is used to delegate authority in performing missions and managing resources. To some extent, decentralization of resource management reduces and simplifies the associated PPBS tasks.

4.4.4.1 Guidance Tracking. With this delegation of authority, some measure of control over where and how resources are being used is lost by HQDA. A system of guidance tracking is needed not only to control internal Army staff actions but also to monitor field implementation of actions directed by HQDA. The requisite guidance tracking capabilities could be implemented through field updates to the FAS and Army Authorization Document System (TAADS) data base and other data base extracts could test independent field updates for conformance to the aggregate requirements of HQDA. Without such measures, there are imbalances between the authorizations in aggregate data bases (FAS, VFAS, FYDP) and the detailed data bases (TAADS/VTAADS). For additional discussion see 5.4.3.

4.4.4.2 Timeliness. Guidance tracking would not solve other important problems relating to the timeliness of field inputs to HQDA. Outputs of the Structure and Composition System (SACS) combine force structuring and detailed authorization (TAADS) inputs to produce listings of specific materiel and manpower requirements, i.e., the LOGSACS and PERSACS tapes, respectively. These tapes serve as a vehicle for providing information essential to programing and budgeting for the procurement, distribution, and maintenance of materiel and the recruiting and training of manpower. If the data they contain are not current, the associated materiel, manpower and financial planning cannot be based on the true requirements of the force.

The volume of changes to authorization documents and the concomitant lack of timeliness are well documented and do not warrant repetition here. The methods of increasing the timeliness would require trade-offs involving:

- Increased effort to educate commanders as to its importance.
- Increased centralization of detailed authorization management.
- Streamlined procedures to eliminate time consuming reviews that impact only marginally upon quality of management.
- Data processing procedures and edits to automatically process authorization inputs.
- Increased resources devoted to the task.

The current effort in support of an automated AMSCO data base with edit capabilities is among the first steps toward the resolution of the overall problem, as are the efforts of the Force Structure and Manpower Management Study. More concentrated work, however, should be done to remove bottlenecks in achieving timely and detailed authorization inputs to programing and budgeting processes.

4.5 SYSTEMS AND DATA BASES

Information systems and data bases are integral to the flow and availability of information in support of PPBS functions. Major objectives of PROBE include:

- Enhancing the information flow of the Army PPBS.
- Drawing together the diverse systems and data bases into a unified and efficient MIS to support Army decision makers.

These objectives have been exceedingly difficult to attain, although progress has been, and is being, made to remove or diminish the impact of existing obstacles.

4.5.1 Proliferation of Systems and Data Bases

Over thirty Army staff systems, involving many common data elements, are used to extract, record, or calculate data associated

with PPBS processes. In addition, a large number of field systems feed or interact in some fashion in these processes. For the most part, interfaces 1/ between and among these systems do not exist. There is also cause to doubt the timeliness and accuracy of data contained in these systems due to the complexity of data relationships, update requirements and procedures.

Many of the PPBS-related systems were created using second generation computer concepts for special purpose applications in support of specific proponents; as a result, interface with other systems to provide information relative to broader PPBS functions usually does not exist. This is especially significant since, when information is available to only the specific proponents, other action personnel for whom such information is necessary are prompted to develop additional, and possibly redundant, systems to fill the perceived void of information.

4.5.2 Data Content

All too frequently, systems and data bases associated with PPBS functions do not represent the same resource positions in time. As a result, affected action officers can talk and make decisions based upon different assumptions and resource data; it is only after unnecessary confusion and wasted efforts that differences are reconciled. The validity and accuracy of data would be enhanced if they were made available through single sources of update input.

A related problem has been that automated support systems do not always contain requisite audit trails which will permit managers to "track" changes in resource allocation activity from various points in time or between major PPBS events. Consequently, action

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1/ Interface in this context is defined as a regular, recurring flow of automated information between and among systems, without manual intervention, in order to achieve data synchronization.

officers are forced to maintain numerous manual records and logs, at significant cost in terms of manhours and efficiency, to meet audit trail requirements relative to resource guidance, decisions, and other actions. Further, there are limited audit trails relative to inter-resource relationships and a general inability of DA systems to accept a resource change input and provide an automatic cross-reference to changes in allocations of other resources.

4.5.3 Systems Planning

Project master plans should be developed to satisfy technical ADP requirements that stem from the problems discussed in this section. They should define a course of action to achieve:

- Systems interfaces through a central data base of PPBS information.
- Consolidation of systems that serve identical or highly related information needs.
- Identification of data proponency and update responsibility.
- Reductions in total systems maintenance and cost requirements.
- Report writing capabilities that are flexible and usable by non-ADP specialists.

The project master plans should also be oriented to satisfying other functional requirements that can be most effectively met in the systems environment. They should primarly address tracking capabilities that link allocations of all resources to specific guidance and decisions. Ideally, this multi-resource tracking would be done in terms of a single management structure such as the FYDP (or other mission-oriented structure). However, until fundamental disconnects relative to management languages are resolved, the master plan should address guidance tracking through functionally appropriate data base update procedures.

Functional personnel, i.e., those with resource management responsibilities, should become involved in the development and implementation of these plans. This could contribute to establishing standard procedures and resource baselines whose current absence is symptomatic of the problem of system proliferation. In short, the PPBS is so complex and the need for integrated systems development is so great that no one agency, functional or technical, can do the job alone.

4.5.4 Integrated Data Base

As noted above, project master plans should address requirements for an integrated, commonly accessible base of relevant PPBS data. An initial approach to this data base is discussed in more detail in the discussion related to PROBE (paragraph 5.2). In general, a focus on an integrated PPBS data base would be supportive of reducing data redundancies and conflicts and would provide a starting point for implementing procedural innovations that will lead to automated and multi-resource-related audit trails. Such an integrated data base would respect the functional integrity of data proponents (organizational) and data sources (systems) but would also discourage data base redundancy to serve divergent requirements for application programs.

4.5.5 Summary

Data base redundancy and system proliferation have adversely impacted upon resource management in the PPBS. The Army staff has made progress in critical areas and should continue to resolve the problems in these areas. Their efforts can be enhanced and maintained by developing and implementing project master plans for integrating PPBS management information systems. An important part of this effort involves a single data base for the information that is essential to knowledgeable decision-making regarding resource management in the PPBS.

5 THE PROBE SYSTEM

5.1 GENERAL

This section provides alternatives regarding future development of the PROBE system. The alternatives are designed to achieve critical PPBS support objectives and to resolve many of the problems associated with past PROBE development. In some respects, specific problems or deficiencies are being (have been) corrected to the point where PROBE is now more able to satisfy many of its near-term objectives while evolving with PPBS improvement actions to attain a more expanded potential. As a framework for presenting feasible PROBE alternatives, the study team has concluded that PROBE development, as a minimum, should entail:

- Establishing a data base of PPBS information.
- Providing for tracking and analyzing guidance and resource-related decisions.
- Disciplining budget and FYDP formulation through streamlining update procedures and automating data edits.
- Developing mechanisms for management language crosswalks to the extent that crosswalks exist.
- Utilizing established factors, rates and methodologies (such as those currently in Civilian Budgeting System (CBS) for costing civilian manpower) for performing PPBS functions.

The alternatives that follow provide a positive first step in meeting these and other system requirements. Figure 5.1, "Recommended PROBE Intermediate Configuration," depicts the modular organization of the PROBE System referenced in this discussion.

5.2 ARMY PPBS DATA BASE

Preceding sections of this report have described how some of the systems employed within HQDA are neither mutually supportive nor complementary. There have been and are some very real problems with

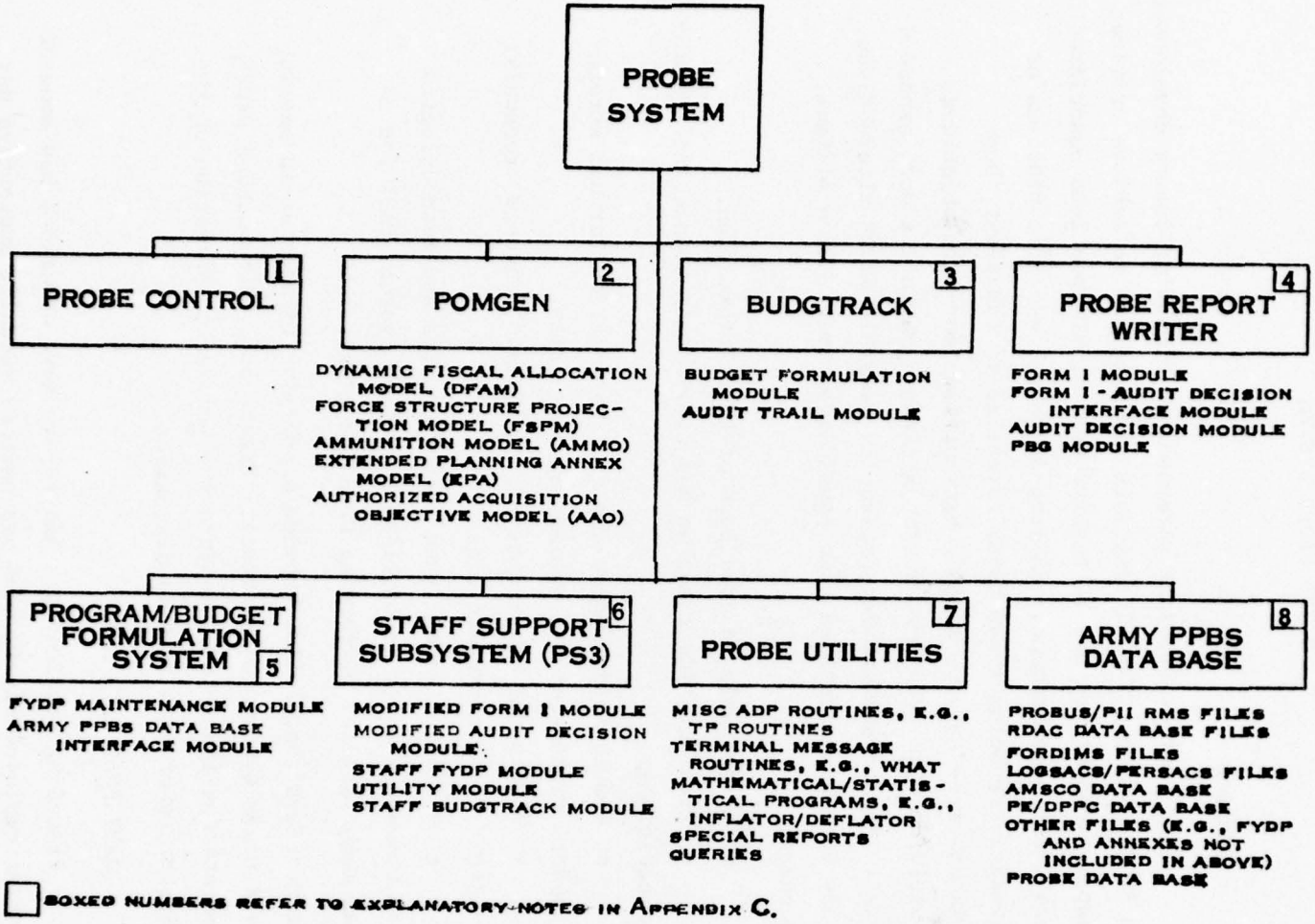


Figure 5.1 - Recommended Intermediate PROBE Configuration

these systems and their effects upon resource management. Many of these systems problems have been the by-products of conscientious efforts to do a specific job well by having all processing and data inputs strictly controlled by the system proponent; too often, the result has been data redundancy and, hence, frequent data conflict.

PROBE can best serve the PPBS by addressing automation in an integrated fashion to promote staff-wide visibility of the data which have been determined by functional managers to be essential to given management processes. For example, certain kinds of data are particularly vital to manpower management and are the unquestionable responsibility of ODCSOPS; at the same time, these data are equally vital to financial management within the responsibility of other agencies. PROBE's role would be to give sufficient visibility to the resource baselines and decisions affecting all applicable areas of responsibility.

A basic goal of PROBE should be the development of an Army PPBS data base and generalized application programs to draw upon those systems and data bases which serve relevant and recognized PPBS functions while respecting the integrity of functional responsibilities and requirements of individual systems. The data base and supporting software should offer all elements of the Army staff the capability to be knowledgeable participants in PGRC, BRC, and RDAC deliberations and should not contribute to unnecessary duplication of data files and application programs.

The Army PPBS Data Base is conceived as the single most important vehicle for achieving the objectives of PROBE. Its development should be governed by the overall master plan addressed earlier and should be an evolutionary process involving incorporation of new sources of data as appropriate (e.g., a logistics resources data base currently being developed by the Logistic Resources Data Base Structure Project).

The study team's two-volume critique of forty data processing systems or data bases (described in paragraph A.2.2) evaluates these systems/data bases in terms of their applicability to PROBE. As a result of subsequent analysis, the thirty systems/data bases considered as principal candidates for contributing to and drawing from an Army PPBS data base are listed, with proponent staff agencies, in Table 5.1, "Systems/Data Bases Serving Relevant or Recognized PPBS Functions." Appendix B contains a table of the major data elements used in one or more of the systems and are therefore candidate data elements for inclusion in the data base. As a starting point, the Army PPBS Data Base should include files from the following systems/data bases for the reasons given in subsequent paragraphs:

- PROBUS/P11 RMS
- FORDIMS
- RDAC Data Base
- LOGSACS/PERSACS
- AMSCO Data Base
- PE/DPPC Data Base
- PROBE Data Base
- FYDP annexes not included in any of the above.

5.2.1 PROBUS/P11 RMS

PROBUS/P11 RMS, for purposes of this discussion, refers to the PROBUS system after it has incorporated the features and capabilities of P11 RMS. Together, these systems can provide substantial audit trailing capabilities pertinent to the programing and budgeting of the OMA appropriation. Apart, they invite the redundancy that so often plagues related but separately used systems. Their inclusion in the recommended PPBS data base would:

- Give visibility to the resource allocations which are the objectives of staff-wide management throughout the PPBS.
- Provide an easily accessed source of data for improved FYDP and PBG updates.

Table 5.1 - Systems/Data Bases Serving Relevant or Recognized PPBS Functions

ODCSOPS

FAS - Force Accounting System
TAADS - The Army Authorization Documents System
SACS - Structure and Composition System
also (LOGSACS/PERSACS)
AFP - The Army Force Program
TOE - Table of Organization and Equipment File System
CSFOR-78 - Automated Manpower Utilization Reporting System
PAAS - Personnel/Authorizations Analysis System
BOIP - Basis of Issue Plans System
SIGMA - SACS Information Gathering and Management Analysis
FDMIS - Force Development Management Information System
RADAR - Rapid Authorization Data Retrieval
FACTS - Force Accounting Terminal System

OCA

ABS - Automated Budget System
OMA - Operations and Maintenance, Army Budget Cost Model
PROBUS - Program Budget System
P11 RMS - Program 11 Resource Management System
CBS - Civilian Budgeting System
AMSIS - Army Management Structure Information System

ODCSRDA

ARDIS - Army Research and Development Information System
MARDIS - Modernized Army Research and Development Information System
CAFAS - Computer Assisted Fund Allocation System
STAR - System Technology for Acquisition Resources
RDAC - RDTE Program Change Proposals and Procurement Worksheets

ODCSPER

ELIM/COMPLIP - Enlisted Inventory Model Computation of Manpower Programs Using Linear Programing
MPA - Military Personnel Army Budget Model
TMMM - Transient Man-Months Model
TARG - Target

ODCSLOG

CBS - Continuing Balance System
SAMS - Standard Army Maintenance System
DMSA - Depot Maintenance Selected Analysis Model

PAED

FYDP - Five Year Defense Program

5.2.2 FORDIMS

The FORDIMS Data Base is a recommended candidate for incorporation into the Army PPBS Data Base for both reasons cited above. Manpower and force management are critical components of the Army PPBS; the former has a major role in force readiness as well as having a similar impact upon financial management. The application programs using this part of the Army PPBS Data Base would, of course, include the individual FORDIMS systems, but could also include programs to allow staff agencies immediate access to their corresponding manpower and manpower cost data. On-line capabilities should be developed to permit program/functional managers to inspect the status and cost of their manpower program on a continuing basis without being required to wait for distribution of hardcopy listings.

A derivative benefit could be the subsequent provision of "what if" capabilities regarding such critical costing variables as manyears. Thus, not only would report generation be simplified and more efficient, but the inclusion of FORDIMS in the Army PPBS Data Base could support formulation of viable alternatives for allocation of funds and manpower.

5.2.3 RDAC Data Base

CSR 15-3 defines twenty elements of the Army staff as being periodic participants in the RDAC deliberations. Most of these participants have a vital interest in the materiel acquisition program. More complete and knowledgeable participation of PGRC, BRC, and RDAC members could be gained by increasing the availability of data. The great volume of data associated with the development of these programs and the relatively small amount of time responsible agencies can divert from their other responsibilities are two reasons why automated access to this data would be highly beneficial to the Army staff. In sum, the RDAC Data Base should be included in the Army PPBS Data Base to promote more effective review of materiel acquisition programs.

5.2.4 LOGSACS/PERSACS

LOGSACS and PERSACS tapes are two FORDIMS outputs that are primary inputs to program and budget development. They reflect the force which has a direct impact upon the allocation of resources during individual PPBS cycles. The LOGSACS is particularly important to the PPBS since it is applicable to the procurement, maintenance, and distribution segments of materiel planning. By including PERSACS and especially LOGSACS data, the Army PPBS Data Base will contain detailed manpower and materiel requirements data pertaining to each element of the force that is the basis for program and budget actions.

It should be noted that the FORDIMS Data Base and the RDAC Data Base contain aggregations of PERSACS/LOGSACS data; however, the aggregate amounts may differ from one to the other in that the FORDIMS and RDAC Data Bases will reflect decisions and updates not reflected in all PERSACS/LOGSACS tapes. Functional definitions of the relationships among this data must be the object of further analysis; yet, the fundamental requirement for aggregate and detailed data remains.

5.2.5 AMSCO and PE/DPPC Data Bases

One of the components in an Army PPBS Data Base should be a PE/DPPC data base file. The present PE file should be redesigned for the TOTAL DBMS into a PE/DPPC data base file with linkage capability to the recently developed AMSCO data base and should include the following data elements as a minimum:

- PE
  - Title
  - Authority (PCD)
  - Effective Date
  - Narrative Descriptions
- PSP (Program/Subprogram)
- DPPC
  - Title
  - Authority

- Effective Date
- Narrative Descriptions

- Audit Trail to Historical PEs and DPPCs

The AMSCO and a PE/DPPC Data Base will be the baseline or control files for these two management languages. The existence of these data bases and the extent of their relationship does not imply a solution to the management language difficulties described elsewhere in this report. It does mean that when an AMSCO/PE relationship exists, the Army PPBS Data Base will contain the fundamental inputs to insure commonality of formal AMSCO/PE definitions. It will also mean that, where such a relationship does not exist, the recorded audit trail of AMSCO/PE changes will facilitate identification of corresponding changes to crosswalk/allocation schemes. Together, these two features will support consistent interpretations and analyses to be drawn from resource displays in each management language.

In short, the key to the inclusion of the AMSCO and PE/DPPC Data Bases lies in quality control of resource allocation displays that are produced from independent sources of data to serve different needs for different people.

5.2.6 PROBE Data Base

The PROBE Data Base merits inclusion in the Army PPBS Data Base for most PROBE capabilities achieved to date have staff-wide applicability throughout the PPBS. This is particularly true of the BUDGTRACK subsystem, the FYDP modules, and the automated FORM 1 with manpower and dollar audit trails contained in the PROBE Report Writer Subsystem. Likewise, future development will be characterized by transfunctional capabilities with predominately PPBS applications. For more detailed discussions of this subject refer to Section 3, PROBE Support to the PPBS, and those parts of Section 5 that follow.

5.2.7 Other Files

The remaining files currently identified for the Army PPBS Data Base include annexes to the FYDP such as the Procurement Annex and RDT&E Annex (to the extent that they are not included in the RDAC Data Base) in addition to any other annexes, e.g., a military construction annex, that may be required as the result of on-going OSD studies. It should be reiterated that the Army PPBS Data Base should not become a static product, but should evolve with the PPBS to provide a central source of data which facilitates program and budget development and review by increasing data availability and eliminating the need for redundant systems and overlapping data files.

5.2.8 Data Base Management System Requirements

The Army PPBS Data Base must be supported by software that has the capability to store data in various formats and volumes and to link data elements or groupings of data elements so as to preclude redundancy to the extent possible. It must also permit simultaneous access to all records by multiple users, except that single records must be locked during update to preclude data integrity problems. The software selected to manage the Army PPBS Data Base must be complemented by appropriate supporting software to perform functions such as:

- Report preparation
- Retrieval
- Updating
- Interactive communications for multi-use of these functions and applications programs.

5.2.8.1 Existing Data Base Management System Capability. Within the past six months a data base management system (TOTAL) has been obtained for use on the USAMSSA computer. Initially, version 4 of TOTAL was installed and, within the last two months, version 5/6 of TOTAL was installed. Version 4 locks files during updates whereas version 5/6

locks the record being updated only, which is a highly desirable feature. TOTAL (Version 5/6) appears to have the DBMS capabilities that are required. It does not, however, have all the complementary software to perform the functions listed in paragraph 5.2.8. It is understood that action has been taken to obtain a software package (identified as ASIST) that will work with TOTAL to provide report preparation, retrieval, and updating capabilities. At this time, no known action has been initiated to obtain software that will function with TOTAL to provide an interactive capability.

5.2.8.2 Existing Data Base Management System Deficiencies. The DBMS, regardless of its name, must encompass the integration of hardware and software comprising that part of the data processing installation that supports the PPBS functions and provides the applications software. The DBMS software, too frequently, is identified as the problem when other contributing factors are as great or greater problems. In this respect, some of the current DBMS problems relevant to the PPBS are:

- No overall responsible Army Data Base Administrator (DBA) and staff to function with USAMSSA and staff agencies.
- Lack of extensive experience with DBMS software.
- Products (hardware and software) from multiple vendors that require interfacing in a single DPI.
- Lack of an overall methodology and plan for systematically implementing DBMS concepts to the applicable files and systems of the entire Army staff.

5.2.8.3 Army PPBS Data Base Administrator. Most of the deficiencies cited above could be corrected by designating an Army Data Base Administrator and assigning him to an organizational entity that has sufficient authority to influence or, when necessary, direct the Army staff and supporting DPI on DBMS and associated software matters.

The functions to be performed by the DBA should include:

- Control and maintenance of the data base.
- Single source data selection.
- Examining all data and processes accessing the data base to preclude duplication.
- Defining data relationships.
- Defining DBMS mapping.
- Interaction with users and responding to their changing needs.
- Auditing the data base to detect missing, suspect and nonstandard data followed with appropriate action to correct or remove such data.
- Communicating data base changes to users (newsletter).
- Data base security to preclude unauthorized access.
- Establishing data base recovery procedures.
- Controlling update procedures and functions.
- Specifying performance measurement.
- Publishing a Data Definition Dictionary.

5.3 POMGEN

5.3.1 Original Design

The Program Objective Memorandum Generator, POMGEN, was originally intended to be used by PAED in the allocation of DOD Fiscal Guidance to the appropriation, fiscal guidance category (DPPC), and program/subprogram level of detail. It was also intended to be used in other program development actions where gross allocations of forces, manpower, materiel, and dollars were at issue. These allocations would be accomplished using computer models that could be exercised independently or in a predetermined sequence in order to address a range of options affecting allocations of all four types of resources.

5.3.2 Current Status

Recent PROBE development has been such that model development is being deferred so that required support could be given to achieve other objectives. Past and present efforts have yielded four models which are being retained for independent use within the POMGEN subsystem. They are:

- Dynamic Fiscal Allocation Model (DFAM)
- Force Structure Projection Model (FSPM)
- Ammunition Model (AMMO)
- Extended Planning Annex Model (EPA)

5.3.3 Future Actions

The study team believes that development of models consistent with the POMGEN concept should continue to be subordinated to the other developmental efforts of PROBE. Development of the full complement of POMGEN models will demand extensive functional and ADP resources and may not yield the immediate pay-off that is possible in other PROBE subsystems. To achieve the benefits sought through POMGEN, the individual models would almost have to be developed simultaneously in order to preclude running the high risk of initial efforts becoming functionally obsolete for technical and/or user reasons by the time the last model in the sequence is developed. Even the initial development would, in many cases, tax the modeling abilities of most analysts who would be justifiably reluctant to rely upon models in which they did not have full confidence; there is no way to be sure that technically sound and sufficiently acceptable models can be developed in all areas. In short, the philosophy of POMGEN has fundamental strengths and is conceptually attractive, but the complexities posed by coordinated model development within the existing state of the art are too great, when measured against other objectives, to warrant development at this time.

Notwithstanding the above, there are areas of the PPBS where models or computational tools can be developed to the satisfaction of the user. One such area concerns materiel acquisition and the computation of the authorized acquisition objective (AAO). The study team suggests that such a model be developed jointly by PAED and DCSRDA for PAED's use. This model would be used independently of other modeling applications since the study team's basic POMGEN recommendation is that independent models be developed to serve action officer needs that arise on an ad hoc or semi-regular basis. It is emphasized that such developments should be subordinated to other PROBE efforts as discussed in the following sections.

5.4 POMTRACK

5.4.1 Original Design

The Program Objective Memorandum Track Subsystem, POMTRACK, concept was originally designed to perform three main functions:

- Generation of POM skeletons.
- Maintenance of POM status.
- Analysis of POM prior to submission.

Resource allocations made in POMGEN were to be refined to the program element level of detail in POMTRACK. Thus, a "POM skeleton" would contain CSA guidance in FYDP terms. The Army staff would "manipulate resources" within this guidance and proceed to update the FYDP on a decision-by-decision basis throughout the program development cycle. POMTRACK was also to provide modeling capabilities to analyze staff submissions in anticipation of similar analysis by OSD.

5.4.2 Current Status

The development of POMTRACK has been suspended since the early stages of the PROBE development project.

5.4.3 Future Action

The comments regarding modeling contained in the preceding paragraph on POMGEN generally apply to POMTRACK, as well. Although POMTRACK would not necessarily contain a "restricted mode" or predetermined sequence and interrelationship among models, the technical and user constraints are equally problematical. There is a difficulty posed by the POMTRACK concept that is more serious than similar characteristics of POMGEN, namely its dependence upon the FYDP program element structure. Computer modeling for purposes of guidance generation and submission analysis has serious complications especially when the results are subject to strict interpretations. These complications are aggravated when the data are as ambiguous or general as is the case for most Army appropriation data reported in the FYDP. At a minimum then, the POMTRACK concept should be changed to accommodate "guidance tracking" in more appropriate and precise management languages. There are other considerations that also come to bear in attempting POMTRACK objectives. OSD and OCSA guidance and decisions have a great impact upon resource allocations, but there are a great many more resource allocation decisions made on the basis of judgmental authority delegated to the Army staff and the field. As a result, some provisions would have to be made for "non-guidance" issues that are visible only to those specialized managers operating at lower levels of detail. Alternative sets of resource allocations can be accomplished by noting OSD/OCSA guidance and soliciting increment and decrement lists within specified levels of funding. This approach would offer more flexibility than most modeling applications and would be sensitive to the expertise of the specialized staff analysts.

In short, the study team recommends that POMTRACK per se be discontinued with certain functions spread among modules of the PROBE Report Writer, BUDGTRACK, and P/BFS; elaboration on this point is contained in subsequent discussions dealing with the modules identified.

5.5 BUDGTRACK

5.5.1 Analysis of Original Design

The Budget Track Subsystem (BUDGTRACK) is described in the G/DFSR as having functions to:

- Transmit by models those PBDs and other data required by the Army staff.

The modeling function assigned to BUDGTRACK has generally referred to an ability to account for decisions in a bookkeeping fashion. This is in contrast to the decision-making support capabilities sought in POMGEN and POMTRACK. Otherwise, comments on this subject applying to POMGEN and POMTRACK would apply to BUDGTRACK.

- Provide crosswalks between program elements and budget activity codes.

Crosswalks between program elements and budget activity codes (i.e., AMSCOs) were to be used in transforming data in BUDGTRACK into forms amenable to Army budget development, maintenance and review by OCSA and the Army staff. This objective indicated early recognition of the management language disconnects discussed elsewhere in this report;[1/] however, past definitions of BUDGTRACK have suggested that the program element could be made to work as the primary programing language in the near-term. In actuality, this is not practical for reasons cited throughout this report. A solution to the crosswalk problem may be found and should be a goal regardless of its overall impact within the PROBE system; however, the crosswalk problem should not be a basis to defer building the BUDGTRACK subsystem of PROBE since there are important functions the subsystem could perform which do not require a PE/AMSCO crosswalk, e.g., provision of machine-readable budget input to OSD per DODI 7110-1-M.

1/ See also the draft report entitled, "Army Management Language Structures" (PROBE Interface Study)," May 1976.

- Provide a track of the Army budget from receipt of the Amended Program Decision Memorandum through final congressional action.

A track of the Army budget from receipt of the Amended Program Decision Memorandum through final congressional action is a function that can be satisfied by PROBE in the near future. This track can be achieved, at least through the President's Budget submission by implementing the BUDGTRACK functional requirements determined and documented in an earlier GRC study team report. That report[1/] defines what can be the nucleus of a comprehensive management information system relating to budget formulation and budget review.

5.5.2 Current BUDGTRACK Requirements

The functional and data requirements specifications for BUDGTRACK were written to meet near-term audit trail needs of PAED and COA, and to meet the OSD requirements for machine-readable budget input specified in the Budget Guidance Manual 7110-1-M.

At this time, the BUDGTRACK functional and data specifications prepared by the GRC study team are being used by USAMSSA personnel in developing design and programing specifications. The minimum functional requirements were extensive enough that USAMSSA perceived the initial implementation target of the CY76 budget cycle was too ambitious especially if the problems that have plagued similar systems, e.g., the Automated Budget System, were to be avoided. The study team perceives a need for constant user-developer interaction to insure that various decisions made during development are not counter-productive and that the complications in system design and implementation are fully taken into account when functional capabilities are pursued.

1/ Draft report, "BUDGTRACK Functional and Data Requirements, PROBE Interface Study)," March 1976.

5.5.3 Future BUDGTRACK Development

BUDGTRACK, as it is currently defined, is capable of expansion paralleling that of PROBE as a whole. The manpower and certain dollar audit trails of BUDGTRACK can both benefit from and complement interface with the proposed Army PPBS Data Base. Expansion of BUDGTRACK will depend to a great extent upon the detailed functional requirements of programs and systems contributing to the Army PPBS Data Base, primarily FORDIMS and PROBUS/P11RMS, but together these systems could contribute enough audit trail data to permit production of alternative resource displays for the entire Program Budget Guidance (PBG). (See also paragraph 5.8.2)

There is also interface potential within the PROBE system itself, e.g., the Audit Decision Module, where audit trail functions could and probably should be melded into one set of software. This software could be used in the PARR process and other program development actions as well as in support of the budget processes to be served by BUDGTRACK. Furthermore, an interface with the OSD Budget Review Record will also contribute to realizing BUDGTRACK's full potential by insuring data integrity vis-a-vis the OSD system and by facilitating certain data entry functions.

5.6 PROBE REPORT WRITER

The PROBE Report Writer (PRW) has existed as more than a classical reports module, i.e., a subsystem for retrieving data that has been entered from another source. In particular, the Audit Decision Module (ADM) has been a tool used by PAED action officers to enter, record, and aggregate resource allocation changes that would ultimately be reflected in a FORM 1. Resource allocation alternatives are designed to be generated through automated inputs from POMGEN and POMTRACK and through manual inputs that would be entered as they are now. The deemphasis of POMGEN and POMTRACK has accounted for the fact

that the PROBE Report Writer has an importance independent of its relationship to other PROBE subsystems. This is especially true in light of the development of the FORM 1 Module whose interface with the Audit Decision Module achieves some of the objectives originally sought through the PRW.

5.6.1 BUDGTRACK/PROBE Report Writer Interface

There will be a measure of commonality in terms of functional capability between the Audit Decision Module and BUDGTRACK, to the extent that the latter also has audit trail functions. The most desirable situation would have one set of software serving the audit trail requirements for program and budget actions of PAED and OCA, respectively. BUDGTRACK, as currently defined, may be that set of software depending, of course, on development in other areas of PROBE.

In any case, the two subsystems will access a common data base where the detail of the BUDGTRACK audit trail can be sorted and aggregated to meet the level of detail used in the Audit Decision Module. This would mean that BUDGTRACK-FORM 1 interface could then be achieved through the FORM 1 - Audit Decision Interface Module currently existing in the PRW (see Figure 5.2).

5.6.2 PBG Module

The Army PPBS Data Base should interface with all systems that are presently used in publication of Program Budget Guidance. BUDGTRACK and other PROBE subsystems should contribute to full automation of resource-related displays thus providing the opportunity to automatically cross-reference and compare different sections of a given PBG. A PBG Module in the PRW would allow quantitative guidance to be sent to the field in alternative forms such as an AMSCO by resource by transaction display as shown in the example at Figure 5.3. Such a display would contain purely financial transactions as well as those involving manpower and dollars. The functional data requirements of a PBG module should be assessed and evaluated in PROBE's Phase III

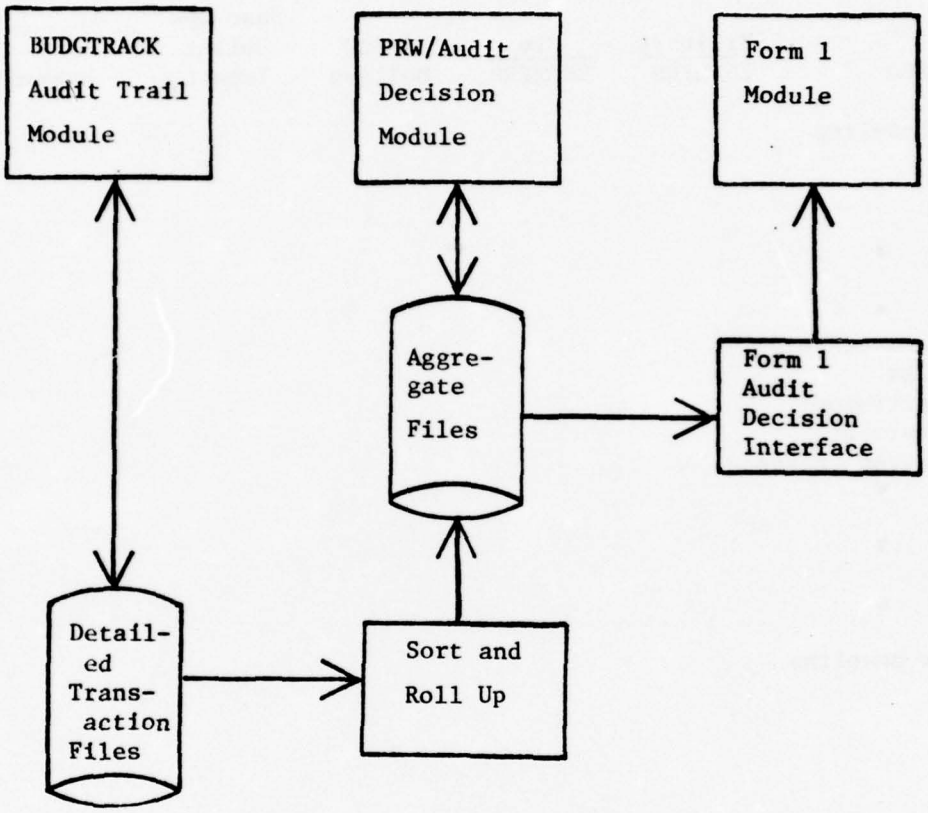


Figure 5.2-BUDGTRACK/PROBE Report Writer Interface

AMSCO	Military ES/MYRS	Civ ES/MYRS	AMSCO Dollars	Base Ops Dollar Impact	Workload
Baseline					
•					
•					
•					
Transaction Stubs Describing Nature of Program Change					
•					
•					
•					
New Baseline					

Figure 5.3-Alternative PBG Display

and implemented in Phase IV as part of the MACOM interface.

5.7 PROGRAM/BUDGET FORMULATION SYSTEM

Most processing related to PROBE interfaces with other systems is to be accomplished in the Program/Budget Formulation System (P/BFS). In the past, P/BFS was configured to support the anticipated interface requirements of POMTRACK and BUDGTRACK to the extent that they were defined. However, in light of the recommendations made with respect to those and other subsystems of PROBE as well as the Army PPBS Data Base, the configuration of P/BFS should be changed; its overall purpose as an interface subsystem should be retained.

5.7.1 FYDP Maintenance Module

An improved FYDP update system is an important part of current PROBE efforts. The FYDP Maintenance Module of P/BFS is essential to insuring that the input received from the Army staff is in the format and within the controls sought by OSD.

5.7.2 Army PPBS Data Base Interface Module

The Army PPBS Data Base Interface Module is envisioned as a generalized software package to facilitate interfacing application programs with the data base. Application programs would indicate requirements for data to be input to the module by means of call parameters for retrieval and update functions. Such a module would ease the conversion process for current systems to use the Army PPBS Data Base. It would also simplify maintenance requirements by limiting the number of programs that would need modification in the event of changes to the data base.

In the case of PROBE, for example, the Army PPBS Data Base Interface Module would serve as the vehicle for contributing PROBE data to the Army PPBS Data Base. It would also provide the means of accessing the data contained in the larger data base and filling the

PROBE work files with the acquired data. These data would then be accessed by application programs discussed in this report and those remaining to be defined. In achieving its purpose of exchanging data between PROBE and the Army PPBS Data Base, the P/BFS module would respect the basic integrity of each contributor. Figure 5.4, "PROBE Interface with the Army Data Bases," depicts the relationships described above.

5.8 PROBE STAFF SUPPORT SUBSYSTEM

5.8.1 Current Content

The PROBE Staff Support Subsystem, PS^3 is a subsystem developed to provide the Army Staff with the capability to access those parts of PROBE which were developed at the initiative of PAED and which do not require an interface with staff systems. The current modules of PS^3 are:

- Modified FORM 1 Module
- Modified Audit Decision Module
- Staff FYDP Module
- Utility Module
- Staff BUDGTRACK Module

The first two modules noted above have the qualifier "modified" because the corresponding modules of the PROBE Report Writer are made available to the Army staff for viewing purposes but not for purposes of changing the data displayed. The staff FYDP Module is being developed to permit on-line FYDP updates for those Appropriation Directors or program managers who may wish to update the FYDP in this manner. The Utility Module contains various technical ADP routines, statistical packages, and flexible retrieval capabilities for reports and queries (see paragraph 5.9). The staff BUDGTRACK Module should have the purposes of receiving Appropriation Director budget inputs and providing access to the data base as defined in the separate study team report.

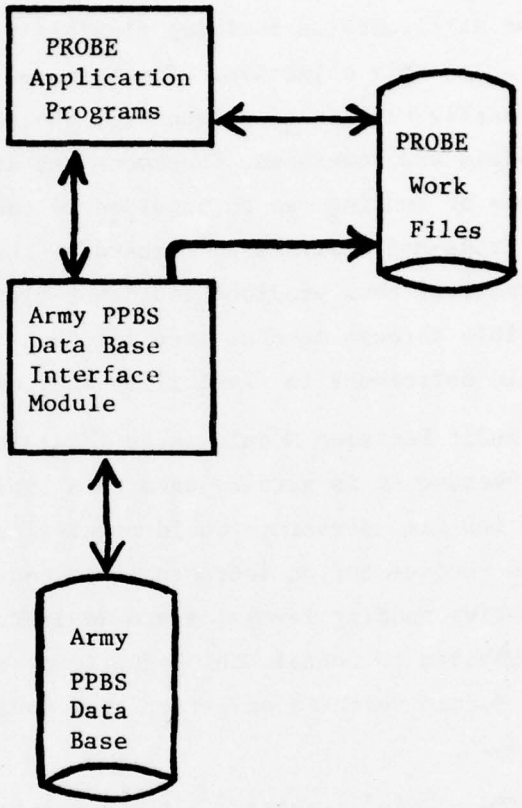


Figure 5.4 - PROBE Interface with the Army Data Bases

5.8.2 Recommended Additions

A basic objective of POMGEN and POMTRACK has been to support decision making through identification of alternatives for allocating resources. The difficulty in building flexible yet effective models need not compromise this objective. Furthermore, alternative generation does not necessarily have to be driven from the top down. Until the appropriate models are developed, increment and decrement lists within specified levels of funding can be provided by the Appropriation Directors for trade-off analyses by members of the PGRC and BRC. The decision alternatives thus provided would not always have the scientific precision possible through careful modeling, but they would more than make up for this deficiency in flexibility and immediacy of pay-off.

The Audit Decision Module is an ideal vehicle for performing this function because it is already used to a limited extent for this purpose. Only its file structure would require more than slight modification to account for an increment list and decrement list for as many alternative funding levels as are desired. The PS^3 would be the logical subsystem to contain this additional modification to the basic Audit Decision Module which is an effort that would be appropriate for Phase III action.

The PBG Module discussed in the context of the Army PPBS Data Base and the PROBE Report Writer should also be a candidate for inclusion in PS^3. Not all elements of the Army staff become involved in publication of the PBG but enough are involved to warrant consideration of standard data access and report-writing capabilities.

5.9 PROBE UTILITIES

The PROBE Utility Module has been developed to house various ADP routines, e.g., teleprocessing routines and error message programs which need not directly concern the functional user. This module also contains mathematical or statistical programs which can also have

diverse applications. A multiple linear regression and an inflator/deflator model are two examples of what this module contains. In general, the study team feels that programs of this type should be developed as they are required to serve semi-regular or ad hoc requirements. Such development could be expected to provide valuable assistance to action officers without requiring commitment of resources.

5.9.1 Data Retrieval

A flexible retrieval capability to produce special reports and to make unstructured queries is a desirable effort within the context of PROBE utilities. As the Army PPBS data base is developed and the availability of data increases, the interest and demand for reports will also expand. A flexible and user-oriented retrieval capability will serve to increase the immediate benefits that can be derived from the overall PROBE effort.

5.9.2 Generalized PROBE Functional Programs

The Dynamic Fiscal Allocation Model (DFAM) and the Audit Decision Module (ADM) are used by PAED to devise and evaluate alternative allocations of Total Obligational Authority (TOA) to appropriations. DFAM is especially useful in allocating resources within TOA and outlay constraints. These utilities could be generalized for the independent use of Army staff agencies who might similarly devise and evaluate alternative allocations of funds on a smaller scale.

5.10 SUMMARY

The redirection of the PROBE developmental effort was necessary to achieve the system's objectives in the most efficient manner. The problem areas that impeded the original developmental approach are being addressed by GRC and in-house study efforts while objectives that are not affected by these problem areas can be achieved through the recommendations contained in this section of the report. Figure 5.1 and Appendix C are graphic and tabular condensations

of these recommendations which should benefit the Army PPBS by providing ways to:

- Develop POM alternatives within guidance and fiscal constraints and in consonance with organizational and functional relationships.
- Maintain status of resource allocation during POM and budget cycles through positive tracks of decisions across programs and appropriations.
- Process automated input required by OSD during the PPBS.
- Act as a communications medium for the consolidation and dissemination of resource allocation information through HQDA and MACOM interfaces.
- Improve PGRC and BRC reviews of POM, FYDP, and budget submissions.
- Improve system and data base development through reduction of redundancies.

The primary vehicles for these benefits would be the Army PPBS Data Base, special report writing and query capabilities, and coordinated use of BUDGTRACK and the Audit Decision Module.

6 IMPLICATIONS OF ONGOING ACTIVITIES

6.1 GENERAL

Specific problems or deficiencies adversely impacting the PPBS process were highlighted in the preceding sections. Possible alternatives that might promote more effective PPBS and PROBE-related systems development also were described. In this section, the several OSD/OJCS and PROBE-related study projects that have common PPBS improvement objectives are discussed. The problems being addressed by each are summarized, objectives listed, and results attained are noted. These summaries, in combination with Section 4 discussions, provide a basis for development of conclusions and recommendations contained in Section 7.

6.2 OSD/OJCS PROJECTS

6.2.1 OSD PPBS Improvement Effort

The most important of the several ongoing OSD/OJCS study projects, insofar as concerns potential impact on internal Army management processes and PROBE development, is the OSD PPBS Improvement Effort, initiated by an ASD(C) memorandum of 11 September 1975. This improvement effort was to focus first on the FYDP structure, then on the methods and processes of the PPBS, with final focus on the FYDP data base. The FYDP structure was selected as the first area for review because of contractual efforts already underway in OASD(I&L) and OASD(M&RA) to improve the structure for logistics support and to satisfy congressional manpower reporting requirements. There was also a need to develop methodologies for OSD to use in supporting the FY 1979 and later budget requests with mission-oriented resource displays. The goals established for this study required the development of a plan with a target date of 1 January 1977 for implementation.

A draft package that the PPBS Working Group planned to present to the Steering Group became available to the Army on 2 June 1976.

The several examples in this package imply OSD management at a lower level of detail than the Army currently maintains and suggest PE restructuring techniques that might assist in capturing and reporting the additional detail. Unfortunately, the path which the OSD study group has chosen to follow may conceivably make the FYDP more responsive to the perceived needs of decision makers in OSD, but it will not appreciably aid the Army in correcting internal deficiencies which impact the PPBS process. On the contrary, it may very well cause crosswalks and translations to be even more complex than they are currently.

Development of mission-oriented arrays responsive to congressional needs is a major segment of the OSD PPBS improvement project. Although the precise direction of this project remains uncertain, current efforts are described in an earlier report. 1/

A beneficial spin-off from the study described above will be realized in reduced workload during the planning phase of the PPBS. An action memorandum currently being staffed proposes consolidation of the essential aspects of JSOP Volume I and the DPPG into a single document to be issued each year in July. Consolidation of three other JCS documents (JSOP Volume II, the Joint Force Memorandum (JFM), and portions of the JRDOD) into a single Joint Forces Document (JFD) for December issue is also proposed.

6.2.2 Other OSD Studies

Other OSD studies that have potential for causing some changes in the way the Army manages its resources are the ASD(M&RA) Manpower Management Information System (MMIS) and the DPPC Improvement studies and the ASD(I&L) Logistic Resource Data Base study. The latter

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1/ Paragraphs 2.5.2 and 3.2 of draft report, "Army Management Language Structures (PROBE Interface Study)," May 1976.

will be addressed in the discussion of the Army's PROBE-related studies in paragraph 6.3.4 below.

The MMIS study was initiated by an ASD(M&RA) memorandum of 1 August 1975 with a specified objective of investigating the desirability of developing an OSD manpower information system. The initial study report, approved in March 1976, calls for development of capabilities on a phased basis through FY 80. Although the direction of the MMIS effort is not entirely clear at this time, it is safe to assume that the final information requirements will involve manpower/personnel file extracts (active and reserve) and, conceivably, data structure, data base, and procedural modifications.

Phase II of the OSD DPPC Improvement study is a major effort to improve the DPPC used to present the DOD manpower authorization request in the Defense Manpower Requirements Report. The study involves analysis of program element/unit relationships and the internal and inter-service consistency of the PE structure. Review areas are periodically specified by a DPPC Improvement Steering Committee. The objectives of this study effort tie it closely to the PROBE-related study on PE-UIC relationships discussed in paragraph 6.3.1 below.

6.3 PROBE-RELATED PROJECTS

Several PROBE-related projects are addressing specific problem areas that impact the PPBS and directly or indirectly constrain development of the PROBE interface with Army staff systems. Several contract efforts are in progress with objectives of coming to grips with many of the problems that were identified during the early stages of the PROBE interface project. Each study project is described below in terms of its purpose, objectives, and summary of results attained to date. Listings are also provided showing specific contributions each study team has made in support of the concerted drive to develop the PROBE system and improve the PPBS process. These lists form the

basis for measuring progress toward resolution of problems discussed elsewhere in this report. Details of each project can be found in one or more of the reports listed in Paragraph A.3 of Appendix A.

6.3.1 Program Element and Unit Identification Code Relationships (PE/UIC)

This project is a two-phase, twelve-month study that was initiated on 1 August 1975 to improve Army resource management. The specific problem to be addressed was the Army's inability to accurately connect unit level manpower and major equipment line items with the FYDP PE structure. The study objective is to develop a technique, or techniques, whereby a single PE-UIC relationship can be established for the approximately 500 multiple-PE TDA units in the Army. Work during the first phase of this study involved problem definition, analysis of characteristics and problem components of eleven homogeneous groupings of units, and identification of possible solutions for achieving a single PE for each unit in each group.

To date, the project team has completed and delivered action packages that contain proposals to achieve a single PE-UIC match in ten of the eleven homogeneous groupings of units. Adoption of these proposals would resolve approximately 80 percent of the Army's multiple-PE/unit problem. Recommendations currently are being developed for the remaining group.

6.3.1.1 Specific Contribution to Problem Resolution

- Developed action packages that will establish a single PE-UIC relationship in approximately 400 of the 500 multiple-PE units in the Army.
- Acted as a conduit between the OSD DPPC study group (involved in OSD-wide PE structure redesign) and Army agencies to insure full consideration of Army interests and positions.
- Identified substantial discrepancies in the documentation of AIF and RDTE manpower authorizations in various reports and systems.

- Assisted the Army staff in the evaluation and implementation of PCDs on:
  - Army Management Headquarters (all Programs)
  - Program 8 Training
  - Program 8 Non-Training
  - Telecommunications (Program 3C)
  - Reserve-Active Forces
  - Program 2 (two separate PCDs)
- Documented PE-related deficiencies in the following categories:
  - Contradictory PE definitions
  - Ambiguous PE definitions
  - Inconsistent PE-AMSCO definitions
  - Erroneous AMSCO assignment
  - Unsupported manpower allocations to FYDP PEs
- Assisted in the resolution of the FAS file PE code errors (erroneous PE coding on as much as 30% of the file) by identifying UICs with erroneous PEs and by assisting in the correction of the FAS file AMSCO-PE conversion tables.

6.3.2 Automated Army Management Structure Code (AMSCO) Project

The need for an AMSCO data base had been known for many years; however, several Army staff efforts to develop such a base were aborted for various reasons. A May 1975 memorandum from the Deputy Assistant Secretary of the Army (M&RA), subject, "Invalid Army Management Systems Codes in the Forces Files," focused attention on the existence of errors and resultant inaccuracies in reports prepared from force files. Similar findings had been reported by the PROBE interface study group which concluded that force file errors must be corrected before the files could interface with the FYDP and PROBE. As a result of the DASA(M&RA) memorandum, the Automated Army Management Structure System

(AMSCO) project was started in October 1975 as a PROBE-related study. The objectives of this two-phase project were to:

- Determine the requirements for an automated AMSCO data base and the feasible alternatives to meet those requirements.
- Implement the approved recommendations for the establishment of the data base.
- Develop the software for data base maintenance and criteria for its use in the edit of FAS and TAADS data.

The AMSCO Data Base and appropriate software for its maintenance have been developed. This software consists of an Edit and Maintenance Subsystem, a Request Report Generator Subsystem, and the Annual Update Program. Additionally, a program has been created to prepare an extract tape so that automated AMSCO data can be mailed to all MACOMs running TAADS. This software is operational, and the FY 77 AMS codes, titles, report indicators and other selected data are available for use by the force structure and manpower management systems and for support to the AMSCO team in OCA. Control and edit capabilities can be provided for all Army systems that use AMSCO, AMSCO-related, or parts of AMSCO data by modifying the appropriate software.

Specific Contributions to Problem Resolution

- Fulfilled all study objectives as listed above including definition of the concept and establishment of an AMSCO Data Base, consisting of four files of codes, titles, report indicators, PEs and DPPCs. The AMSCO Data Base provides to the Army the capability to:
  - Edit AMSCO data.
  - Control AMSCO data.
  - Audit trail AMSCO change data.
  - Automatically change AMSCOs as changes are made.
  - Eliminate manual redundant data reduction operations.

- Identified duplicate AMSCOs for corrective action.
- Defined the AMSCO edit criteria to implement an AMSCO edit in the FAS and TAADS.
- Documented software to provide each MACOM an AMSCO extract tape for use in editing AMSCO data recorded in TAADS.
- Provided the capability to the COA AMSCO Team to extract from the AMSCO data base via a "Request Report Generator Subsystem."
- Identified collating sequence problems and suggested coding changes that will improve the use of the AMSCOs in automated systems.
- Built complete AMSCO records for all coding (explained by footnotes in AR 37-100-77). These are:
  - Program Issue Indicators (PII).
  - Equipment Category Summary Codes (ECSC).
  - Work Accomplished Codes (WAC).
  - Base Operations Accounts (BASOPS).
  - Army Industrial Fund (AIF).
- Established crosswalk coding, where possible, to the PE and DPPC structure.

6.3.3 Force Structure and Manpower Management Study

The PROBE interface study Phase I report, "Development of Detailed Specifications for the PROBE System," documented the existence of numerous deficiencies that impact the PPBS process and PROBE development. Many of these deficiencies were associated with force structure and manpower management processes and problems of disconnects, data redundancies, and data inaccuracies in the systems supporting these two key PPBS processes. Because the force structure drives many aspects of the PPBS process, a separate study was authorized for this critical area. This four-phase study commenced on 3 November 1975 with overall objectives of:

- Recommending and assisting in implementing near-term improvements to the Army manpower management system, and
- Recommending long-term improvements to that system.

The study team has completed analysis of findings recorded during the functional and MIS research phases and has issued its Phase III [1/] report identifying specific problems, providing recommendations for solutions, and presenting a plan for their implementation. Adoption and implementation of the recommendations, in conjunction with the development of a FORDIMS system that will be capable of providing the management reports also developed and recommended by the study team, will resolve many of the current force structure and manpower problems and thereby enhance the PROBE-Army staff interface.

Specific Contributions to Problem Resolution

- Identified and focused attention of management on specific manpower management problems. (Briefed Director, Program Analysis and Evaluation, OCSA; Director, Force Programs and Structure, ODCSOPS; Director of Army Budget, OCA; Director of OMA, OCA; and many other staff officers on organizational, procedural, and MIS redundancies and shortcomings in HQDA management of civilian and military manpower.)
- Developed a Handbook of Regulatory and Directive Authorities Associated with Army Programing and Budgeting of Military and Civilian Manpower which is now being used for orientation of newly assigned manpower managers.
- Traced authorities and responsibilities for military and civilian manpower management and identified errors and inconsistencies in directives.
- Prepared documentation of current functional procedures for manpower management which is now being used to orient newly assigned manpower managers.

1/ Force Structure and Manpower Management Study, Phase III Report, "Near-Term Analysis and Recommendations," May 1976.

- Provided detailed descriptions of eight current MIS used to manage manpower which identified all data elements, common data elements, update sources and frequency, 99 reports, users, data flow, and system strengths and weaknesses for use by manpower managers and MIS designers.

- Identified specific functional requirements for MIS support of manpower managers.

- Evaluated the capabilities of the eight current manpower MIS to meet the specific support requirements of manpower managers.

- Identified specific deficiencies in current MIS support to manpower managers.

- Analyzed and documented three typical HQDA manpower programing and budgeting actions identifying in detail the procedures and staff agencies involved, the sequence of events, MIS reports, and manual accounting operations.

- Procured, indexed by system, described, and provided examples of 99 standard management reports currently available from the eight MIS supporting manpower managers.

- Focused high-level management attention on organizational overlaps and/or duplication in the assignment of staff responsibilities for the function of allocating civilian man years.

- Formulated and presented 14 specific recommendations for near-term improvements of manpower management.

- Influenced the design of FORDIMS to improve support for manpower managers by the following actions:

  - Briefed FORDIMS Study Group on manpower management problems in one of their initial meetings.

  - Designed and provided specific examples of twelve urgently needed manpower management reports which should be produced by FORDIMS.

- Identified specific problems which must be resolved before FORDIMS can provide improved automated support to manpower management.

- Prepared detailed requests for data processing support to serve as a basis for design of FORDIMS to produce reports to improve manpower management.

- Assisted with analysis and resolution of problems related to FORDIMS development by interpreting requirements of functional users for the system designers.

- Contributed to the orientation of the CSA-directed Manpower Study by briefing the study team members on results of the GRC study and providing copies of the GRC Force Structure and Manpower Management Study reports.

- Prepared comprehensive reports on HQDA manpower management which are being used by ODCSPER personnel as references in developing a program of instruction for Army manpower managers.

6.3.4 Logistic Resources Data Base Structure Project

The logistic resources project is a two-phase, 13-month study initiated in October 1975 under sponsorship of DPAE and monitorship of ODCSLOG. Project initiation was responsive to a recognized need and an ASD(PA&E) 20 June 1975 memorandum, subject: "Logistic Resources Visibility in the FYDP." This memorandum established the requirement for each military department to develop a structured approach for examining the costs of logistic resources. The specific study objective is to develop an improved data base structure that will provide a flexible and realistic means of determining and displaying logistics support resources projected for and consumed by units, weapons systems, and logistics functions. Phase I of the study is complete; the report [1/] defines data requirements, suggests potential data sources, and documents each of the 35

1/ "Logistic Resources Data Base Structure, "Draft Phase I Report, April 1976.

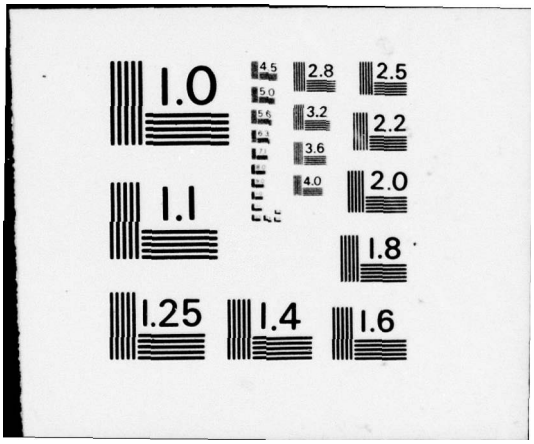
AD-A033 414 GENERAL RESEARCH CORP MCLEAN VA OPERATIONS ANALYSIS DIV F/G 5/1
PROBE SYSTEM DEVELOPMENT-PHASE 3 (PROBE INTERFACE STUDY).(U)
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algorithms developed for logistic resources management. The project team is now concentrating on design of the data base structure itself, the relationship of each of the data base components to the FYDP PEs and the AMSCOs, precise identification of data sources, and development of illustrative displays.

Specific Contributions to Problem Resolution

- Developed algorithms for weapon system, unit and function-related resource computations and aggregations.
- Defined logistic resource cost components and/or relationships.
- Identified and evaluated automated systems that can provide data input to a logistic resource data base structure that will provide a systematic method for computing and displaying logistic resources by weapon system/function/unit/PE.

6.4 PROBE INTERFACE STUDY TEAM

In recognition of the fact that PROBE is not an entity in and of itself but is a vital link in and a subset of the total PPBS process, both GRC and PA&E have devoted major activity to understanding and improving PPBS processes before developing the tools within PROBE to support these processes. In this regard, the more significant contributions of the GRC PROBE Interface Study Group are as follows:

- Provided input to PROBE redirection.
- Developed data requirements and data flow matrices to specify PROBE system requirements.
- Charted and described the Army staff functional relationships to form a basis for PROBE system development.
- Identified and highlighted organizational, procedural, and systems problems and developed alternatives for their resolution.
- Developed functional and data requirements documentation for the BUDGTRACK subsystem of PROBE.

- Defined the Army management language problem to highlight these areas that cause most disconnects and communication problems and adversely impact efforts to interface PROBE with Army staff systems.
- Developed concepts for restructuring the OMA, OMAR, and OMANG appropriations that will achieve crosswalks between AMSCOs and PEs.
- Developed and defined an alternative PROBE subset of the PPBS and devised a PROBE intermediate configuration.

6.5 IMPLICATIONS

Mention has already been made of the primary thrust of the PROBE project and its overall objective of bringing about significant improvement in the PPBS process. Thus far, the Army effort has progressed at an orderly pace resulting in evolutionary improvements that are being implemented sequentially so as to cause the least amount of upheaval in an already complex and cumbersome process. This orderly approach to problem solving is due largely to the fact that the total PROBE study effort has been centrally managed by one responsible proponent (DPAE), and the work of contractual secondary studies has been coordinated by the primary PROBE interface study effort. This is an extremely important facet of the PROBE project since any changes of substantial magnitude carry the potential for serious disruption of the resource management process and should therefore be undertaken only after careful consideration and full coordination.

In addition to the Army PROBE project, there are several major concurrent efforts ongoing within OSD that are aimed at improving the FYDP structure and changing other aspects of the PPBS to better meet internal OSD needs. An underlying objective of many of these studies is the development of mission-oriented resource display presentations that will be responsive to the statutory requirements of the Congressional Budget and Impoundment Control Act of 1974. Unlike

the integrated Army effort, there is some indication that the several OSD efforts are not being fully coordinated among the various proponents. This could result in incremental changes to an outdated system rather than a total systems approach to be implemented over time. Therefore, it appears prudent for the Army to seize the initiative and develop a structure that will meet its internal needs as well as be responsive to OSD requirements.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 GENERAL

The conclusions and recommendations which follow are drawn from the study team's research and findings, as discussed in earlier sections of this report. The primary focus of this section is on major organizational, procedural, and systems deficiencies impacting upon the PPBS; more detailed conclusions and recommendations with regard to the PROBE System can be found in Section 5.

Although there is a broad range of actions which should be initiated and/or continued in order to enhance the management of Army resources through the PPBS, it would be unrealistic to conclude that PPBS processes can ever be ordered so as to be totally responsive to all demands. For this reason, it is considered appropriate to concentrate on three major recommendations which offer promise of yielding the most benefit over a wide range of problem areas. These recommendations pertain to:

- Development of program and budget handbooks.
- Improvements in management language structures.
- Establishment of an Army PPBS data base.

Other conclusions and recommendations following from discussion in the main body of this report are treated more briefly here. The topics in this second category are:

- Reserve component/active Army integration.
- Update of regulations.
- Materiel planning.
- Program balance.
- Guidance tracking.
- Systems planning.

7.2 DEVELOPMENT OF PROGRAM AND BUDGET HANDBOOKS

7.2.1 Conclusions

The PPBS is an exceedingly complex process which does not lend itself to ordering solely through promulgation of broad, general rules and procedures. Because of the continuing turnover of Army staff personnel and the tendency toward functional specialization and compartmentalization, many officers involved in PPBS lack required understanding of processing steps, coordination needs and the effect of their actions on total resource management activity. This, in turn, impacts all aspects of the PPBS and can result in untimely or erroneous inputs, poorly balanced or indefensible programs, and key matters which simply "fall through the cracks."

Increasing the breadth of understanding of newly assigned and presently responsible personnel will do more to solve the problems of the PPBS than will massive reorganizations or rescheduling of PPBS events. Directives and regulations alone are not totally helpful in increasing understanding of the PPBS since they are relatively inflexible and insufficiently detailed for this purpose.

7.2.2 Recommendation

Prepare and maintain a program and budget handbook(s) for use by action personnel in all areas of resource management. This handbook(s) should encompass the features cited in paragraph 4.2.5.

7.3 MANAGEMENT LANGUAGES

7.3.1 Conclusions

The heart of the Army management language problem stems from the dichotomy between internal management languages and those used to report to OSD. This problem manifests itself in disconnects between AMSCO and PE structures which dictate extensive reliance on factoring or arbitrary allocations. This complicates staff communications, makes

data handling difficult, and reduces the accuracy and reliability of analysis and decision making. A solution to this problem is all the more urgent because of impending congressional requirements for information relating budget requests to assigned missions.

7.3.2 Recommendations

- Restructure/redefine AMSCOs to permit direct, unambiguous PE relationships as specified in paragraph 4.3.2 and the May 1976 GRC "Army Management Language Structure" report.
- Develop and implement structure changes which will support congressional mission-oriented budget requirements, as well as internal management, by providing for integrated resource arrays by mission and function.

7.4 ARMY PPBS DATA BASE

7.4.1 Conclusions

Legitimate needs for commonly used resource data have led to development of Army management information systems with redundant or overlapping data requirements. Despite an abundance of data, resource information is often inaccurate, outdated, and/or in conflict with other sources. Thus, PPBS action officers, and the decision makers they support, lack readily available, timely data. A resolution to this problem can be approached through the application of current data processing technology by converting appropriate discrete PPBS data bases to a single data base under management of an overall administrator. Such a data base and supporting software should provide all elements of the Army staff, as well as selected field activities, with up-to-date resource data essential for effective participation in PPBS.

7.4.2 Recommendations

- Develop an Army PPBS data base and generalized application programs as the top priority objective of PROBE system development as detailed in paragraph 5.2.

- Designate an Army PPBS data base administrator with assignment to an organizational entity which has sufficient authority to influence and, when necessary, direct the staff and their supporting DPI on DBMS and associated software matters.

7.5 THE PROBE SYSTEM

7.5.1 Conclusions

PROBE development, as a minimum, should entail:

- Establishing a data base of PPBS information.
- Providing for tracking and analyzing guidance and resource-related decisions.
- Disciplining budget and FYDP formulation through streamlining update procedures and automating data edits.
- Developing mechanisms for management language crosswalks to the extent that crosswalks exist.
- Utilizing established factors, rates and methodologies (such as those currently in the Civilian Budgeting System (CBS) for costing civilian manpower) for performing PPBS functions.

In some respects, specific problems or deficiencies are being (have been) corrected to the point where PROBE is now more able to satisfy many of its near-term objectives while evolving with PPBS improvement actions to attain a more expanded potential.

7.5.2 Recommendation

Establish the Army PPBS Data Base, BUDGTRACK, the PROBE Report Writer, and the PROBE Utilities Module as the primary vehicles for achieving PROBE objectives as detailed in Section 5 and Appendix C of this report.

7.6 OTHER CONCLUSIONS AND RECOMMENDATIONS

7.6.1 Reserve Component/Active Army Integration

Clear, documented procedures to facilitate effective reserve/active Army staff interface in the PPBS do not exist. An increased level of Army staff support and a conscious sharing of responsibilities are essential to insure appropriate balance in the allocation of resources among reserve and active elements. It is recommended that closer integration of reserve component and active Army PPBS actions be brought about through implementation of the procedures outlined in paragraph 4.2.4.

7.6.2 Update of Regulations

Directives controlling PPBS processes are often outdated and/or contain conflicting instructions. Current, definitive authorities are essential to effective management of staff and field actions in support of PPBS. It is recommended that Army directives governing PPBS be reviewed and updated, as required, concurrent with the preparation of program and budget handbook(s) (see paragraphs 4.2.5 and 7.2).

7.6.3 Materiel Planning

The current and projected materiel readiness of Army units needs to be given additional emphasis and consideration in PPBS resource allocation. Increased synchronization of procurement planning and resource distribution is a critical aspect of this need. It is recommended that current efforts to improve the timeliness and effectiveness of materiel planning processes be expanded to emphasize the specific near- and longer-term approaches identified in paragraph 4.4.2.2.

7.6.4 Program Balance

Program Directors, while assigned responsibility for ensuring internal program balance by CSR 11-5, are, in fact, constrained in the literal fulfillment of this responsibility by the factors outlined in

paragraph 4.4.3.1. Management language disconnects and time constraints associated with PPBS events are additional considerations which make it difficult, if not impossible, to approach optimal resource balance in program and budget preparation. It is recommended that:

- Program Director responsibilities be modified in recognition of the factors cited in paragraph 4.4.3.1 and that their roles be recast along more pragmatic lines.
- Measures addressed in paragraph 4.4.3.3 be considered as a starting point for enhancing capability for program balancing and resource/mission analysis.

7.6.5 Guidance Tracking.

Management and control of resources for program/budget development and budget execution can be materially enhanced by the establishment of guidance tracking procedures which provide for uniform identification of resource adjustments. Provision should be made for standardized tracking codes to be used in all PPBS related staff and field systems for all appropriation and resource categories. Before such an integrated scheme can be totally effective, however, fundamental management language disconnects, addressed elsewhere in this report, require resolution. It is recommended that:

- Provision be made for standardized guidance tracking as part of the development/update of all PPBS-related systems (see paragraphs 4.4.4 and 4.5.3).
- Standardized guidance tracking procedures be documented in connection with development of program and budget handbook(s) (paragraph 7.2).

7.6.6 Systems Planning

For the most part, effective automated interfaces between and among PPBS-related Army staff and field systems do not exist. This

condition compounds communication difficulties already aggravated by management language disconnects and other PPBS problems discussed in this report. A major cause of this condition is the independent development of systems to meet functional requirements without benefit of uniform guidelines to insure inter-system compatibility. It is recommended that project master plans developed to satisfy technical ADP requirements discussed in this report incorporate the specific interface requirements outlined in paragraph 4.5.3.

7.7 CONCLUDING NOTE

The Army has made great strides in overcoming many of the deficiencies in its PPBS that were apparent during the course of the study team's research. Complete solutions to other problems may never be attained; however, implementation of actions recommended in this report, together with other PROBE-related study results, should provide for some substantive improvements in the process. The primary areas proposed for concentration in the ensuing months are those which offer the most promise for improving information flow, for facilitating communications in common and meaningful terms, and for guiding PPBS participants in the accomplishment of their interrelated resource management activities.

8 ABBREVIATIONS

AAO	Authorized Acquisition Objective
ADM	Audit Decision Module
AFG	Army Force Guidance
AFP	Army Force Program
AIF	Army Industrial Fund
AMP	Army Materiel Plan
AMS	Army Management System
AMSCO	Army Management Structure Code
APDM	Amended Program Guidance Memorandum
APPGM	Army Planning and Programing Guidance Memorandum
AR	Army Regulation
ASA	Army Strategic Appraisal
ASD(C)	Assistant Secretary of Defense (Comptroller)
ASD(I&L)	Assistant Secretary of Defense (Installation and Logistics)
ASD(M&RA)	Assistant Secretary of Defense (Manpower and Reserve Affairs)
ASD(PA&E)	Assistant Secretary of Defense (Program Analysis and Evaluation)
BASOPS	Base Operations Accounts
BRC	Budget Review Committee
BUDGTRACK	Budget Track
COA	Comptroller of the Army
COBE	Command Operating Budget Estimates
CRRC	Construction Requirements Review Committee
CRT	Cathode Ray Tube
CSA	Chief of Staff, Army
CSR	Chief of Staff Regulation
DA	Department of the Army
DASA(M&RA)	Deputy Assistant Secretary of the Army (Manpower and Reserve Affairs)
DBA	Data Base Administrator
DBMS	Data Base Management System
DCSRDA	Deputy Chief of Staff for Research, Development and Acquisition
DFAM	Dynamic Fiscal Allocation Model
DOD	Department of Defense
DPAE	Director, Program Analysis and Evaluation
DPI	Data Processing Installation
DPPC	Defense Planning and Programing Category
DPPG	Defense Policy and Planning Guidance
ECSC	Equipment Category Summary Codes
EPA	Extended Planning Annex
FAS	Force Accounting System

FORDIMS	Force Development Integrated Management
FS/MM	Force Structure and Manpower Management Study
FSPM	Force Structure Projection Model
FY	Fiscal Year
FYDP	Five Year Defense Program
G/DFSR	General and Detailed Functional System Requirement
GRC	General Research Corporation
HQDA	Headquarters, Department of the Army
JCS	Joint Chiefs of Staff
JFD	Joint Forces Document
JFM	Joint Forces Memorandum
JIEP	Joint Intelligence Estimate for Planning
JLREID	Joint Long-Range Estimative Intelligence Document
JLRSS	Joint Long-Range Strategic Study
JRDOD	Joint Research and Development Objectives Document
JSOP	Joint Strategic Objectives Plan
LOGSACS	Logistics Structure and Composition System
MACOM	Major Command
MCA	Military Construction Appropriation
MIDA	Major Item Data Agency
MIDP	Major Item Distribution Plan
MIS	Management Information System
MMIS	Manpower Management Information System
M&RA	Manpower and Reserve Affairs
NGB	National Guard Bureau
OASD(I&L)	Office of the Assistant Secretary of Defense (Installation and Logistics)
OASD(M&RA)	Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs)
OCA	Office of the Comptroller of the Army
OCAR	Office of the Chief of the Army Reserve
OCSA	Office of the Chief of Staff of the Army
ODCSLOG	Office of the Deputy Chief of Staff for Logistics
ODCSOPS	Office of the Deputy Chief of Staff for Operations
ODCSPER	Office of the Deputy Chief of Staff for Personnel
OJCS	Office of the Joint Chiefs of Staff
OMA	Operations and Maintenance, Army
OMANG	Operations and Maintenance, Army National Guard
OMAR	Operations and Maintenance, Army Reserve
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense
PAED	Program Analysis and Evaluation Directorate, OCSA
PAPPGM	Preliminary Army Planning and Programing Guidance Memorandum
PARR	Program Analysis and Resource Review
PBD	Program Budget Decision

P/BFS	Program/Budget Formulation System
PBG	Program Budget Guidance
PCD	Program Change Decision
PCR	Program Change Request
PDM	Program Decision Memorandum
PE	Program Element
PERSACS	Personnel Structure and Composition System
PERT	Program Evaluation Review Technique
PGRC	Program Guidance and Review Committee
PII	Program Issue Indicators
POM	Program Objective Memorandum
POMGEN	Program Objective Memorandum Generator
POMTRACK	Program Objective Memorandum Track Subsystem
PPBS	Planning, Programing and Budgeting System
PPGM	Planning and Programing Guidance Memorandum
PROBE	Program Optimization and Budget Evaluation
PRW	PROBE Report Writer
PSP	Program/Subprogram
PS3	PROBE Staff Support Subsystem
RAM	Reliability, Availability and Maintainability
RAR	Resource Allocation Recommendation
R&D	Research and Development
RDAC	Research and Development Acquisition Committee
RDT&E	Research Development Test and Evaluation
SACS	Structure and Composition System
SECDEF	Secretary of Defense
SOP	Standard Operating Procedure
TAADS	The Army Authorization Documents System
TDA	Table of Distribution Allowances
TOA	Total Obligational Authority
TPPGM	Tentative Planning and Programing Guidance Memorandum
UIC	Unit Identification Code
USAMSSA	U.S. Army Management Systems Support Agency
VFAS	Vertical Force Accounting System
VTAADS	Vertical Army Authorization Documents System
WAC	Work Accomplished Code

Appendix A

GRC STUDY GROUP PRODUCTS DELIVERED PRIOR TO 30 JUNE 1976

A.1 GENERAL

Consistent with contractual requirements and PROBE Steering Committee guidance, the GRC PROBE interface study group has performed research and prepared reports and appropriate documentation during the first three study phases. A complete chronology of the GRC PROBE interface study effort and research approach is contained in a series of weekly activity reports dating from December 1974 through June 1976. The Phase 3 report contained in this volume is based upon analyses of the weekly reports, of research findings as documented in the reports listed in paragraph A.2 below, and the analyses of findings of PROBE-related research efforts as documented in the reports listed in paragraph A.3, below.

A.2 DESCRIPTION OF PROBE INTERFACE STUDY GROUP PRODUCTS

A.2.1 Schematic displays of the Army staff functional and organizational relationships pertaining to programing and budgeting were delivered on 30 June 1975 and 25 July 1975. The schematics were accompanied by separate data flow matrices which correlate documents and data elements with the originators, users, and contributors. In combination, the flow charts and matrices provide the identification of major functional processes by type of function (guidance, coordination, and submission), the resources involved, and the data elements (with data sources) associated with each functional process.

A.2.2 A two-volume report describing 40 data processing systems or data bases used in the PPBS and evaluating their applicability to PROBE was delivered on 30 June 1975. These descriptions and evaluations document the functions performed by the systems, the major data elements maintained or used by each system, the relationship of the

system functions to the PPBS process and to the PROBE concept. The report also provides a general analysis of the effectiveness and potential applicability of each described system.

A.2.3 Functional charts which document the details of how civilian and military manpower resources are managed were prepared and delivered in June 1975.

A.2.4 A two-volume compendium of budget exhibits which documents the formats and data content of these unstructured requirements was delivered on 30 July 1975. The compendium contains examples of the various exhibits, statements, and selected key documents involved in formulation and submission of the Army budget to OSD and in the Program/ Budget Decision phase of the PPBS. The examples are organized by appropriation, appropriation groupings, or selected non-appropriation groupings, generally in accordance with pertinent budget formulation directives. A short narrative for each example is provided which sets forth general principles for their use.

A.2.5 The final draft of the Phase 1 report, "Development of Detailed Specifications for the PROBE System (PROBE Interface Study)" was delivered during August 1975. This report provides background for the PROBE interface study Phase I research and the initial study objectives. It also provides the reasons the revisions were made to these objectives as research progressed. The report contains summary descriptions of the work accomplished, identifies potential problems, and presents some recommendations as to which problems need to be addressed.

A.2.6 A series of three PERT-type charts was prepared and delivered during Phase 2 of the study project. These charts trace, over time, selected events that occur during one discrete PPBS cycle. Separate charts were prepared for events concerning:

- Force structure and manpower management
- Military construction
- Materiel acquisition

A.2.7 A one-volume report containing descriptions of studies and staff actions that affect the PPBS was delivered on 19 December 1975. The report provides an identification, synopsis, and analysis of studies, major staff actions, or system development efforts associated with PPBS activities and evaluates their impact upon PROBE.

A.2.8 The draft report, "Army Management Language Structures (PROBE Interface Study)," delivered on 27 May 1976, was based on other reports on management languages submitted by GRC letters dated 1 March 1976 and 22 March 1976. The report presents a detailed definition of the management language problem and summarizes the extensive analyses which led to the formulation of recommendations concerning the development of mission-oriented resource displays, improvements of PE-AMSCO linkage, and consolidation of force/unit identifiers.

A.2.9 The draft report, "BUDGTRACK Functional and Data Requirements (PROBE Interface Study)," delivered on 28 May 1976, is a two-part volume based on drafts which were previously reviewed by USAMSSA and OCA and found to be technically acceptable for systems development. Part I provides the system requirements which will serve as a basis for mutual understanding between the user and the developer; information on performance requirements, preliminary design, and user impacts; a basis for the development of system test; and a basis for development of system operating procedures. Part II lists and defines the data elements which the system must process. It also defines data collection requirements.

A.3 GRC PROBE-RELATED PROJECT REPORTS

A.3.1 Draft Phase 1 Report, Study of the Program Element and Unit Identification Code Relationship (PE/UIC Study), December 1975.

A.3.2 Draft Phase I Report, DA Requirements for Automated AMSCO Data (AMSCO Project), December 1975.

A.3.3 Phase II Draft Final Report, The Automated Army Management Structure System (AMSCO Project), May 1976.

A.3.4 Phase I Report, Force Structure and Manpower Management Study, Volume I - Current Functional Procedures for Manpower Management, January 1976.

A.3.5 Phase I Report, Force Structure and Manpower Management Study, Volume II - Handbook of Regulatory and Directive Authorities, January 1976.

A.3.6 Force Structure and Manpower Management Study, Volume II - Appendixes, Appendixes to Handbook of Regulatory and Directive Authorities, January 1976.

A.3.7 Force Structure and Manpower Management Study, Volume I, Manpower Management Action Case Studies, Phase II Report, March 1976.

A.3.8 Force Structure and Manpower Management Study, Volume II, Management Information Systems Support of Manpower Management, March 1976.

A.3.9 Force Structure and Manpower Management Study, Volume III, HQDA Standard Manpower Management Reports, Phase III Report, March 1976.

A.3.10 Force Structure and Manpower Management Study, Near-Term Analysis and Recommendations, Phase III Report, May 1976.

A.3.11 Draft Phase 1 Report, Logistic Resources Data Base Structure, April 1976.

Appendix B

Major Data Elements in MIS Supporting PPBS

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
AAO (Warm and Cold Base)			X				
Accession						X	
Action Code	X						X
Action Date	X						
Active/Inactive						X	
Actual Civilians	X						
Actual Enlisted	X						
Actual Military Aggregate	X						
Actual Officers	X						
Adate Suffix	X						
Add/Delete	X						
Added Item Date					X		
Additional Skill Identifier	X						
Admin Control Code	X						
AFQT Score						X	
Agency/Organization (Operating)	X	X	X				X
Allowance for Quarters						X	
AMSCO	X	X				X	X
Ammunition Factor File			X				
Analyst Initials	X					X	
Appropriation Category	X	X	X				
Area of Foreign Service Tour						X	
Army Materiel Plan File			X				
Assets			X				
Assignment	X					X	
Associated BOIP Number	X						
Associated LIN	X						
Authority	X	X					
Authorized Amount					X		

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
Authorized by BOIP (Pers/Equip)	X						
Authorized by SHN (Pers/Equip)	X						
Authorized by TAADS (Pers/Equip)	X						
Authorized by TOE (Pers/Equip)	X						
Authorized Civilians	X						
Authorized Enlisted Strength	X					X	
Authorized Level of Structure	X						
Authorized Officer Strength	X					X	
Authorized Warrant Officers	X					X	
Availability Date	X						
Average Daily Salary		X					
Average Number Man Months	X						
Average Rates	X						
Average Yearly Salary		X					
Base Command Control Number	X						
Base Date	X						
Base Document Number	X						
Base Operations		X					
Basic Active Service						X	
Basic Compensation		X					
Basic Data			X				
Basic Pay Rates						X	
Basis for Change							X
Benefits - Object Class 17	X						
Benefits - Percentage		X					
Benefits - Percentage 12		X					
BOIP Proponent	X						
BOIP Position	X						
Bonus, Reenlistment						X	
Branch of Service, Unit	X						
Budget Activity		X					
Budget Subactivity		X					
Budget-Year Decrement/Proponent			X				

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
Capability Identifiers			X				
Card Type	X						
Category Code	X						
Cell Title	X						
Change Number for SRC	X						
Civilian Control Number	X						
Civilian Type	X						
Class	X						
Combat Arms Regimental System	X						
Command Assignment Code (FCMD)	X	X					
Command Code	X	X			X		
Command Priority					X		
Commodity Command Control (LIN File)	X						
Completion Cost						X	
Completion Date			X				
Component Code			X				
Composite Master Data			X				
Congressional Code					X		
Construction Category/Sub Number					X		
Construction Standard Code					X		
Construction Requirement Type					X		
Contingency Requirements			X				
Contractors Strength	X						
Controlled Item Code	X						
Controlled MOS ID (Master Only)	X						
Cost Factor (Variable and Static)		X	X				
Conversion MOS (Master Only)	X				X		
County Code					X		
Cross Reference SRC	X						
Current Earnings	X						
Current Working Estimate					X		
Cycle		X					
Cycle Date/Month (Quarterly)	X						

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
DA Guidance	X						
DA Master Priority List	X						
DFE Factors			X				
Date Approval DCSLOG	X						
Date Approval DCSPER	X						
Date Command Tape (TMACS)	X						
Date Final Approval (TMACS)	X						
Date IAR DCSLOG (TMACS)	X						
Date IAR DCSPER (TMACS)	X						
Date Interim Approval (TMACS)	X						
Date of Last Accession						X	
Date of Last Change	X						
Date of Start and Completion			X				
Date Received DMBL (TMACS)	X						
Date Received DMBP (TMACS)	X						
Date Received (TMACS)	X		X				
Date-Time Group	X						
Day	X						
Delay in Separation						X	
Demolition					X		
Deployment Package Assignment	X						
Deployment Designation	X						
Depot Maintenance Data			X				
Design Drawing Number					X		
Design Standard					X		
Design Status					X		
Display/Compute Indicator	X						
Document	X						
DOD Station Code					X		
Dollars			X		X		
Duty Position Title	X						
Economic Rate						X	
Effective Date	X	X					

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
Effective MOS Date (Master Only)	X						
Element Sequence Number	X						
Employee Category/Type	X	X			X		
End Strength		X					
Engineer Division/District					X		
Engineer Release Date					X		
Enlisted Sp Qual Indicator	X						
Entry Code/Graded WB, etc.)	X						
Equipment Level (B 1, 2, 3)	X						
Equipment Nomenclature	X						
Equipment Readiness Command Code	X						
Equipment Remark Number	X						
Equipment Serviceability Code	X						
Estimated Unit Cost	X						
Execution Status Code					X		
Expenditure		X					
Expiration Term of Service						X	
FAS Command		X					
Facility Readiness Data			X				
Figure 500 Log Guidance			X				
File Symbol	X						
Firing Decay Factor		X					
Fiscal Year		X			X		X
Flag Field	X						
Force Computation Code	X						
Force DD Code (and Notes)	X						
Force ID Code	X						
Force Planning Code	X						
Functional Account		X					
Functional Category	X	X	X				
Full Time Permanents		X					
Funding Information			X				
FYDP Project Funding			X				

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
General Support Forces	X						
Grade Code	X					X	
Hiring Decay Factor		X					
Identity (Mil, Civ, M, F, etc.)	X						X
Inactivation Date	X						
Indirect Hire	X						
Inflation Cost			X				
Initial Operational Capability			X				
Initial Process Date	X						
Issue Number		X					
JCS Unit Type Code	X						
Julian Date	X						
Keyrcn (Civ or Mil)	X						
Key Words			X				
Level of Authority		X					
Line Item Description					X		
Line Item Number/Subnumber	X				X		
Line Item Sequence	X				X		
Line Number	X						
Location Code	X					X	
Major Command	X	X					
Man Days		X					
Man Months	X						
Man Years	X	X					
Manufacturing Data			X				
MANX Command	X	X					
Master or Element Indicator	X						
Method Identifiers			X				
Milestone Funding			X				
Military Control Number	X						
Military Occupational Specialty (by Grade and Special Qualification)	X						
Mission Objective/Mission Area			X				

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
Mobilization Command Assignment	X						
Mobilization Location Code	X						
Mobilization Period	X						
Mobilization Station	X						
Month and Action Code	X						
Monthly Loss Data			X				
MTOE Control Number	X						
MTOE MOD Control Number	X						
MTOE Number	X						
Multiplier Level 1/2/3	X						
No Cost						X	
Nomenclature	X						
Nonstandard Equipment Remark	X						
Nonstandard Personnel Remark	X						
Note Change	X						
Note Reference Number	X						
Number of Items					X		
Number of Units Approved					X		
Object Class		X					
Operating Strength	X						
Operational Data	X						
Operational Projects File			X				
Overseas Tour						X	
Overtime		X					
Overtime Percentage		X					
Paragraph Description	X						
Paragraph Number	X						
Paragraph Title Subelement Number	X						
Pay Rates						X	
Peacetime Production			X				
Permanent Station Code					X		
Personnel Strength Levels	X						
Personnel Strength Level Code	X						

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
Personnel Readiness Condition Code	X						
Phase Code	X						
Planning and Programing Category							X
Post D-Day Consumption			X				
Preparation Date	X		X				
Priority			X				
Procurement			X				
Program	X	X					
Program Element Code	X	X	X		X		X
Program Year					X		
Programed Amount					X		
Project Number and Title			X				
Project Status			X				
Proponent Code	X						
Public Law Code					X		
Quantity Average Age	X		X				
Race						X	
Ratio for LIN Conversion	X						
Readiness Objective Code	X						
Recommended Funding			X				
Record Control Number	X						
Record Type							X
Replace Line Item Number	X						
Report Code	X						
Required by BOIP	X						
Required by SHN	X						
Required by TAADS	X						
Required by TOE (Pers or Equip)	X						
Required Strength	X						
Resource Identification Code							X
Responsible Organization			X				
Scientific/Technical Area			X				
Section I Text	X						

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
Security Classification	X						
Separation Allowance						X	
Separation from Overseas						X	
Source of Data	X						
SSN						X	
Split Code	X						
Split Unit Indicator	X						
Standard A-Date	X						
Standard Remarks Personnel	X						
Standard Requirements Code	X						
Standard Study Number			X				
State Code					X		
Static Cost Factor		X					
Station Allowance (En1)						X	
Station Name/Code	X						
Status Code	X						
Straight Line Decay Factor		X					
Structure and Composition System File			X				
Structured Civilian	X						
Structured Enlisted	X						
Structured Officers	X						
Structured Strength Aggregate	X						
Structured Strength Civilian	X						
Structured Strength Enlisted	X						
Structured Strength Officer	X						
Structured Strength Warrant Officer	X						
Structured Warrants	X						
Stub		X					
Sub-Unit Code	X						
Subject	X						
Subprogram	X	X					
Superseded SRC	X						
Task Monitor Identification			X				

MAJOR DATA ELEMENTS	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
Task Numbers			X				
Tasks per Project			X				
TDA	X						
Technical Objective			X				
Temporary Date	X						
Term of Service						X	
Terminal Leave	X						
TOE Category	X						
TOE Detail Remarks Personnel	X						
Total Cost to Date			X				
Total Man Months	X						
Total Overtime	X						
Training						X	
Training Readiness Condition Code	X						
Transaction Date	X	X					
Transaction Number	X	X					
Transaction Purpose	X						
Transfer Codes					X		
Troop Program Sequence Number	X						
Type Document Sent to the Field	X						
Type of Lost Accession						X	
Type MTOE Indicator	X						
Type Processing	X						
Type Strength	X						
Type-Unit Code	X				X		
Type Update	X						
Unit Capability	X						
Unit Classification Code	X						
Unit Cost	X						
Unit Description	X						
Unit Identification Code	X						
Unit Number	X						
Unit of Measure					X		

MAJOR DATA ELEMENT	ODCSOPS	OCA	ODCSRDA	ODCSLOG	OCE	ODCSPER	PAE
Unit Package Identification	X						
Unit Readiness Condition	X						
Urgency of Project/Task (R&D)			X				
Utility	X						
Valid Grades for MOS	X						
Valid Spec Qualification Indicators	X						
Value of Task			X				
Variable Cost Factor		X					
Voucher Number	X						
Wartime Replacement Factors			X				

Appendix C

Recapitulation of PROBE Development and Recommended Intermediate Configuration

PROBE SUBSYSTEMS/MODULES	PURPOSE/FUNCTIONS (G/DFSR, Mar 1974)	RECOMMENDED ACTIONS
[1] PROBE CONTROL	Perform housekeeping functions that provide integrated access to other modules while maintaining the information flow necessary to update automatic system operations (such as audit trail and report generation) consistent with organizational authority.	Development largely dependent upon decisions affecting the remainder of PROBE subsystems; development should be continued during Phase III.
[2] POMGEN SUBSYSTEM	Generate resource allocation alternatives within constraint sets based primarily on the Planning and Programing Guidance Memorandum (PPGM) and CSA guidance. Provide aggregate reports on POM status during the formulation process. Monitor the Program Decision Memorandum (PDM) process and provide aggregate impact reports. Generate the Form 1 and audit trail from the last approved FYDP. Level of detail - data maintained at appropriation, DPPC, and Program/Subprogram levels; audit trail by decision or issue categories sorted under any of the above data levels.	POMGEN should exist as an independent module of resource allocation models that would be developed as resources become available and used to serve periodic action officer needs. Operational models, i.e., Dynamic Fiscal Allocation Model (DFAM), Force Structure Projection Model (FSPM), and the Ammunition Model (AMMO), should be "cleaned up" and retained. Work should continue on the Extended Planning Annex (EPA) model and the audit trail. An Authorized Acquisition Objective (AAO) Model would provide desirable capabilities and is a prime candidate for development in the future. Appropriate PAE action officers should be requested to redefine their functional requirements before work continues on other programs and models.

PROBE SUBSYSTEMS/MODULES	PURPOSE/FUNCTIONS (G/DFSR, Mar 1974)	RECOMMENDED ACTIONS
3 BUDGTRACK	Provide a positive track of the Army budget from BY designation (receipt of OSD Amended PDM) through final congressional action. Provide crosswalk between PEs and BACs. Interface with P/BFS to maintain current status of the budget. Transmit PBDs and other data to the Army staff. Retrieve historical decisions affecting the BY, perform analyses, and compute impacts of budget decisions on the outyears of the current FYDP.	A design concept is under development; current functional definition does not address all purposes and functions possible. Recommend that BUDGTRACK be expanded to improve upon audit trail and report generation functions as currently defined. Crosswalk, PBD transmittal, and retrieval of historical decisions and other computational functions introduce complications that preclude immediate satisfaction through automation.
4 PROBE REPORT WRITER	Provide reports through: Report Writer Control Program (Operational) Form 1 Module (Operational) Audit Decision Module (Operational) Special Reports Module	Continue improvement efforts on existing PRW modules; anticipate functional and design requirements of the BUDGTRACK/PRW interface; begin functional evaluation of introducing a PBG module based on development of the Army PPBS Data Base.

PROBE SUBSYSTEMS/MODULES	PURPOSE/FUNCTIONS (G/DFSR, Mar 1974)	RECOMMENDED ACTIONS
[5] PROGRAM/BUDGET FORMULATION SYSTEM	Pass guidance in the form of POM and budget skeletons from the POMTRACK and BUDGTRACK subsystems. Provide Appropriation Directors with the capability to formulate the POM and budget on-line via CRT. Provide Program Managers the capability to monitor and influence the POM and budget formulation processes. Provide staff access to PROBE files and models to include capability to query either current or historical FYDP data. Provide staff on-line access to Form 1. Generate automated Army input to OSD PPBS.	Continue development of FYDP Maintenance Module; begin preliminary work on development of the interface programs necessary to meet the requirements of the Army PPBS Data Base recommended below.
[6] STAFF SUPPORT SUBSYSTEM (PS3)	Provide minimum staff access to PROBE PPBS-related capabilities. Provide additional capabilities that are not necessarily PPBS-related but support a variety of analytical functions.	Continue current efforts to establish and improve modules already identified; consider further modification to the Audit Decision Module that would permit retention of alternative increment/decrement lists; include the PBG Module recommended for the PRW.
[7] PROBE UTILITIES	Exist as a repository for programs, models and subroutines which have applications in more than one other PROBE subsystem or which have applications too general for assignment to another PROBE subsystem.	Recommend that this module be developed on an as required basis to meet necessary system design features and serve ad hoc needs for analytical tools; develop special report capabilities.

PROBE SUBSYSTEMS/MODULES	PURPOSE/FUNCTIONS (G/DFSR, Mar 1974)	RECOMMENDED ACTIONS
[8] ARMY PPBS DATA BASE	Provide a central, reliable, and timely source of data information to support the PPBS processes.	(Recommendations are in paragraph 5.2 of the report.) The essential components of the data base are: PROBUS/P11 RMS Files RDAC Data Base Files FORDIMS Files LOGSACS/PERSACS Files AMSCO Data Base PE/DPPC Data Base PROBE Data Base Other Files, e.g., new FYDP annexes These files would permit staff-wide visibility of data having applicability throughout the PPBS process while respecting organizational prerogatives.
[9] POMTRACK SUBSYSTEM	Provide PE level "skeletons" of CSA guidance to initiate the POM formulation process. Interface with the P/BFS to maintain current status of every POM case. Generate skeleton POM cases as required. Provide capability to analyze Army POM proposals throughout development process to assure staff adherence to guidance and constraints.	POMTRACK, per se, should be discontinued in favor of the Audit Decision Module (ADM) of the PROBE Report Writer (PRW), BUDGTRACK, and the FYDP subsystem of the P/BFS. If POMTRACK is retained, its functional objectives should be, to the extent possible, first implemented in the manual environment in order to test the efficacy of the concept before diverting ADP resources from other requirements.

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