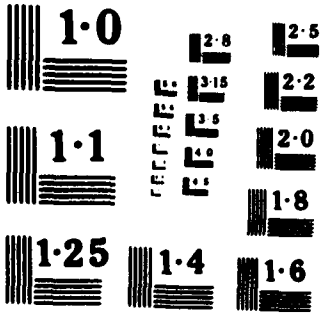
AD-A148 347 MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY 1/3
PHASE I VOL ARMY CONCEPTS ANALYSIS AGENCY BETHESDA MD
F G BARR ET AL. AUG 84 CAA-SR-84-22 MDA903-83-C-0327
UNCLASSIFIED F/G 15/5 NL


1·0
1·1
1·25
1·4
2·8
3·15
3·5
2·5
2·2
2·0
1·8
1·6

(2)

STUDY REPORT
CAA-SR-84-22

AD

MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY PHASES I-V

AUGUST 1984

PREPARED BY
FORCES DIRECTORATE
US ARMY CONCEPTS ANALYSIS AGENCY
8120 WOODMONT AVENUE
BETHESDA, MARYLAND 20814-2797

DISCLAIMER

The findings of this report are not to be construed as an official Department of the Army position, policy, or decision unless so designated by other official documentation. Comments or suggestions should be addressed to:

Director
US Army Concepts Analysis Agency
ATTN: CSCA-FO
8120 Woodmont Avenue
Bethesda, MD 20814-2797

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1 REPORT NUMBER: CAA-SR-84-22	2 GOVT ACCESSION NO / 3 RECIPIENT'S CATALOG NUMBER
4 TITLE (and Subtitle): Mobilization Base Requirements Model (MOBREM) Study,Phases I-V (UNCLASSIFIED)	5 TYPE OF REPORT & PERIOD COVERED: Study Report Nov 79 - Aug 84
	6 PERFORMING ORG REPORT NUMBER: CAA-SR-84-22
7 AUTHOR(s): Mr. F. Gordon Barry, Mr. Stanley Pawlowski, MAJ Walter Alberg, Ms. Rose Brown, MAJ Bill Jeanes	8 CONTRACT OR GRANT NUMBER(s): MDA 903-83-C-0327
9 PERFORMING ORGANIZATION NAME AND ADDRESS: US Army Concepts Analysis Agency, 8120 Woodmont Avenue, Bethesda, Maryland 20814-2797	10 PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS:
11 CONTROLLING OFFICE NAME AND ADDRESS: Office of the Deputy Chief of Staff for Operations and Plans (DAMO-FDP), Department of the Army, Washington, DC 20310	12 REPORT DATE: August 1984 / 13 NUMBER OF PAGES: 185
14 MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	15 SECURITY CLASS (of this report): UNCLASSIFIED / 15a DECLASSIFICATION/DOWNGRADING SCHEDULE

16 DISTRIBUTION STATEMENT (of this Report)

Approved for public release, distribution unlimited

17 DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

As specified in Item 16, above.

18 SUPPLEMENTARY NOTES

19 KEY WORDS (Continue on reverse side if necessary and identify by block number)

Active Army; Reserve Components; Manpower; Policy; Planning; Mobilization; Model Development; MOBTDA; CONUS Base; Workload

20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

MOBREM is a computer-assisted methodology to determine the manpower and equipment required to perform the activities in the CONUS Base necessary to mobilize, train, deploy, and sustain the Total Army during mobilization. MOBREM represents the formulation, integration, and production of ordered data for mobilization planning.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

(NOT USED)

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

STUDY REPORT
CAA-SR-84-22

MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY PHASES I-V

AUGUST 1984

PREPARED BY
FORCES DIRECTORATE
US ARMY CONCEPTS ANALYSIS AGENCY
8120 WOODMONT AVENUE
BETHESDA, MARYLAND 20814-2797

CAA-SR-84-22

DEPARTMENT OF THE ARMY
US ARMY CONCEPTS ANALYSIS AGENCY
8120 WOODMONT AVENUE
BETHESDA, MARYLAND 20814-2797

REPLY TO ATTENTION OF

05 NOV 1984

CSCA-FOB

SUBJECT: Mobilization Base Requirements Model (MOBREM) Study Phases I-V Report

Deputy Chief of Staff for
Operations and Plans
Department of the Army
ATTN: DAMO-FDP
Washington, DC 20310-0500

1. Reference:

a. Memorandum, DAMO-FDP, 12 September 1983, subject: MOBREM Implementation.

b. Letter, DACS, HQDA, 19 October 1983, subject: Responsibility of Study Performing and Study Sponsoring Organizations.

2. Reference 1a requested the US Army Concepts Analysis Agency (CAA) to complete the final segment (Phase V) of the MOBREM development to include all actions required to bring the model to full operational level. The memorandum was an extension of the tasking for model development completed by CAA during Phases I to IV. The tasks required to bring MOBREM to full operational level have been completed and the required output reports were provided on 4 May 1984. The inclosed study report describes the five-phased model development effort. Other documentations produced during the five-phased model development are filed at CAA. These include the MOBREM Functional Design, the MOBREM Operator's Manual, a Manpower Requirements Equation Technical Report, and the Program Maintenance Manual (Volumes 1 to 5).

E. B. Vandiver

1 Incl
as

E. B. VANDIVER III
Director

111/iv

CAA	MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY	STUDY SUMMARY CAA-SR-84-22

THE REASON FOR PERFORMING THE STUDY. The Army required a responsive, consistent, and auditable system for determining the CONUS resources required to support mobilization.

THE PRINCIPAL FINDINGS

(1) MOBREM incorporates a single source automated data base that integrates the essential elements of information for allocating the workloads and assets planned for the CONUS Base during mobilization.

(2) Operation of MOBREM has produced mathematically-derived, workload-based output reports that can support mobilization table of distribution and allowances (MOBTDA) guidance from Headquarters, Department of the Army (HQDA) to the major Army commands (MACOM) and HQDA evaluation of MACOM submissions in response to guidance.

(3) MOBREM provides an automated means for comparing alternative CONUS Base mobilization policies.

(4) Although improved manpower requirements equations were developed during the study, a need remains for new equations and additional field evaluation.

THE MAIN ASSUMPTIONS

(1) The Department of the Army (DA) mobilization planning systems (e.g., MTBSP, TAADS, TAEDP, ATRRS) provide an authoritative source on which to base the requirements computations.

(2) The CONUS installations are organized in conformance with Army management structure code requirements (AR 37-100).

(3) A HQDA mobilization planning system will be established to implement MOBREM.

THE PRINCIPAL LIMITATIONS

(1) MOBREM currently operates in the requirements mode, i.e., it does not constrain requirements by the availability of resources or by facility capabilities.

(2) There is no resources optimization capability. MOBREM will not allocate scarce resources to installations or allocate deploying units to installations in an optimal manner.

V

(3) Current MOBREM inputs do not consider expansion of the force structure or industrial base.

THE SCOPE OF THE STUDY. The MOBREM study effort has been directed toward the analysis of full mobilization planning, i.e., the identification and integration of data in the DA planning systems that allocate mobilization workloads and assets to the CONUS Base installations and the identification and sizing of CONUS Base functions that provide the support for a NATO/ Warsaw Pact scenario requiring full mobilization response.

THE STUDY OBJECTIVES are to:

(1) Provide the Army with a single source automated data base that will identify the time-phased mobilization workloads and assets for the CONUS Base.

(2) Develop a model which will compute mathematically derived, workload-based CONUS Base manpower required to mobilize, train, deploy, and sustain the Army during mobilization.

(3) Provide an automated means for evaluating CONUS Base mobilization policies.

(4) Improve CONUS Base manpower requirements equations.

THE BASIC APPROACH

(1) The approach taken to model development was initially to define the data requirements, the output reports, and the logic necessary to model the MOBTDA development process.

(2) A functional design was developed and approved by the sponsor, after which programs were written and tested using hypothetical test data.

(3) After acceptance by the sponsor of test data results, actual input data were collected from automated and manual sources; and the model operated to produce test reports for field evaluation by potential users.

(4) As a result of field evaluations, data and program modifications were made to bring the model to operational level.

(5) Operational runs of the model were used to verify the functional design, and a complete set of output reports was provided to the study sponsor in May 1984.

THE STUDY SPONSOR is the Force Development Directorate of the Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS).

THE STUDY EFFORT was directed by Mr. F. Gordon Barry, Forces Directorate.

COMMENTS AND QUESTIONS may be directed to US Army Concepts Analysis Agency, ATTN: Assistant Director for Forces, 8120 Woodmont Avenue, Bethesda, MD 20814-2797.

Tear-out copies of this synopsis are at back cover.

CONTENTS

FIGURES

TABLES

MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY

CHAPTER 1

INTRODUCTION

1-1. PURPOSE

a. This study report covers the period from November 1979 through August 1984, during which time a five-phased study to develop the Mobilization Base Requirements Model (MOBREM) was conducted by the US Army Concepts Analysis Agency (CAA) in response to the Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS) taskings. The model will assist the Department of the Army (DA) in manpower and mobilization planning, budgeting, policy development, and in determining the mobilization support requirements of the Continental United States (CONUS) Base. The study report describes the problems leading to the study, a historical summary of the activities and products of each of the five model development phases, and the methodology of the model. It also defines the tasks required to operate the model, reflecting the experience gained by CAA during two data base updates and model runs made during the development effort. The study report concludes with observations regarding model use by the Army.

b. The purpose of Chapter 1 is to identify the problem, the study phases, objectives, scope, and assumptions.

1-2. PROBLEM

a. The problems that led to the study are associated with the Army's Mobilization Table of Distribution and Allowance (MOBTDA) development process and have been a subject of concern by the Army and Office of the Secretary of Defense (OSD) for a number of years. Four related Army Staff (ARSTAF) and OSD actions described below highlight the problems and were the principal stimuli for the MOBREM Study.

(1) In August 1978, Office, Chief of Army Reserve (OCAR), in a memo to the Mobilization Directorate of the Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS) (DAMO-FDP) identified the need for a model to handle the vast amount of data generated by existing doctrine, policies, and allocation rules relative to the mobilization and deployment processes.

(2) The OCAR memo generated discussions which resulted in issuance of Chief of Staff Memorandum (CSM) 79-15-27 dated 3 August 1979. The CSM established an ad hoc study group within DAMO-FDP and a Study Advisory Group (SAG) consisting of representatives of all CONUS Base major Army commands (MACOMs) and selected ARSTAF organizations. The CSM assigned ODCSOPS the responsibility to task CAA to conduct a comprehensive study which would

define the CONUS Base required to mobilize, train, deploy, and sustain the Army during mobilization, and to provide advice on the design of a methodology/model to determine the force structure and manpower requirements for such a mobilization base.

(3) A follow-up memorandum dated 16 November 1979 from the Deputy Assistant Secretary of Defense, Requirements, Resources and Analysis, stated serious reservations about the credibility of the procedures used to estimate wartime manpower requirements for TDA units (see Appendix B). The memo continued stating, "Our informal discussions with the Army Staff indicate that the Army will not be able to provide mathematically-derived, workload-based MOBTDA requirements until MOBREM is operational."

(4) After-action reports from rapid reinforcement exercises, such as Proud Spirit and the mobilization exercises (MOBEX 76 and subsequent exercises), revealed shortcomings in Army mobilization planning for the CONUS Base support of mobilizing units as well as inadequate support resources available during the exercises. The CONUS Base consists of CONUS resources required to mobilize, train, deploy, and sustain the Army during mobilization.

b. Prior to being tasked formally to conduct a study, CAA was requested to analyze the existing MOBTDA process to develop more definitive statements of the problems and a model development plan. First, CAA noted that Headquarters, Department of the Army (HQDA) and the MACOMs and CONUS installations all experienced great difficulties in assimilating the interrelationships and interactions among the various mobilization planning systems which define the mobilization workloads to be placed on the CONUS Base. The planning systems' workloads include supporting TDA units, mobilizing and deploying units, trainees, medical evacuees, CONUS patients, and the US Army Materiel Development and Readiness Command (DARCOM) shipping requirements. Second, the analysis observed that the difficulties were caused primarily by inadequate integration of the aforementioned mobilization planning systems, and the inability of mobilization planners to assess the merits of alternate sets of mobilization policies in an effective response time.

c. The overall result was an undisciplined, incomplete MOBTDA system characterized by complicated and unstructured MOBTDA procedures. Poorly controlled and installation unique standards for defining the CONUS Base manpower requirements further complicated matters and added to the lack of credible assessment criteria for evaluating MOBTDAs.

d. The major problems associated with MOBTDA development are specified below:

(1) There is no single data source that integrates the Army-wide workloads and assets planned for placement on installations during mobilization.

(2) Information presented to the installation on mobilization workloads and support assets is extremely complex.

(3) Manpower standards are not centrally controlled, are not standardized among the installations, and are difficult to relate to mobilization workloads.

(4) No means exist to evaluate mobilization planning policy options in effective response times.

(5) MOBTDA evaluation is not supported by objectively derived standard manpower requirements computations and integrated workload allocation.

1-3. STUDY PHASES

a. Prior to formal tasking, CAA, in November 1979, commenced an analysis of the CONUS Base mobilization processes and problems. This resulted in a proposed model development plan. The plan was accepted, and in August 1980, the first of a series of taskings required CAA to design and develop a model to determine the manpower and equipment required by the CONUS Base to mobilize, deploy, train, and sustain the total Army during mobilization to meet a NATO/Warsaw Pact scenario.

b. Five development phases have been completed over a period of approximately 4 years. Three separate DAMO-FD study directives (see Appendix B) covered Phases II and III, Phase IV, and Phase V. The principal objectives of the study phases follow:

(1) Phase I - problem analysis, design concept, and implementation plan.

(2) Phase II - functional design and documentation.

(3) Phase III - programing, programing test, and documentation.

(4) Phase IV - data collection and evaluation of MOBREM-produced test reports to determine the requirements for the initial operational level of the model for use by the Army for MOBTDA development; improvements and documentation of the manpower standards; documentation of an Operator's Manual.

(5) Phase V - upgrading and verification of the model to initial operational level analysis and turnover of operational reports for use by HQDA in support of MOBTDA guidance; updating of all model documentation and preparation of Phases I-V study report.

1-4. STUDY OBJECTIVES. The MOBREM study objectives are to:

a. Provide the Army with a single source automated data base that will identify time-phased mobilization workloads and assets planned for the CONUS Base.

b. Develop a model which will compute mathematically derived, workload-based CONUS Base manpower required to mobilize, train, deploy, and sustain tne Army during mobilization.

c. Provide an automated means for evaluating CONUS Base mobilization policies.

d. Improve CONUS Base manpower requirements equations.

1-5. SCOPE. The MOBREM study effort has been directed toward the analysis of mobilization planning, i.e., the identification and integration of data in the Army's vertical planning systems (see Chapter 3, Table 3-3) which allocate mobilization workloads and assets to CONUS Base installations, and the identification and sizing of CONUS Base functions that provide the support for a NATO/Warsaw Pact scenario requiring a full mobilization response. Full mobilization covers expansion of the Active Armed Forces resulting from mobilizing all Reserve Component (RC) units in the existing approved force structure, all individual reservists, and the materiel needed for their support. However, the methodology will provide tne capability to analyze selective, partial, or total mobilization scenarios as mobilization policies, assumptions, and guidance are developed and provided as inputs to the model.

1-6. ASSUMPTIONS. The assumptions on which the study was predicated were specified at the first SAG meeting in August 1979 and are listed below.

a. Study and Implementation Resource Support

(1) A clearly defined HQDA Mobilization Planning System will be established witn links to Army vertical planning systems.

(2) The HQDA Mobilization Planning System will make provision for:

(a) Allocation of resources to implement MOBREM.

(b) Control and coordination of Army-wide prioritization of allocation of manpower and facilities, and distribution of supplies.

(c) Full-time mobilization planners at the HQDA, MACOM, and Army installation levels.

(3) Initial mobilization processes will utilize the capabilities and capacities of existing installations and facilities.

b. Model Design

(1) Full mobilization will be considered a prelude to total mobilization. Planning should also assume that contingencies may arise which include partial mobilization to augment the active force capability. (See Glossary at the end of this report for definitions relative to the preceding.)

(2) Mobilization base support requirements will be standardized except for those missions and functions deemed "MACOM or installation unique."

(3) Although the initial output of MOBREM will document manpower requirements only, the model design should be compatible for expansion to use the input data that are not specifically "requirements" data (for example, facility capability or resource availability inputs).

c. Data Support

(1) Unit activations and scheduling will be in consonance with the Forces Command (FORSCOM) Mobilization Troop Basis Stationing Plan (MTBSP).

(2) Input data for MOBREM will be derived from the FORSCOM Reserve Component Mobilization Plan; the FORSCOM MTBSP; the Training and Doctrine Command (TRADOC) Post Mobilization Individual Training and Support Plan; the Army Medical Department Health Services Command Base Mobilization Plan; DARCOM; Army Communications Command (ACC); Military Transportation Management Command (MTMC) mobilization plans; and installation MOBTDA plans.

(3) Automation of the MTBSP and the Partial Mobilization Installation Troop Stationing Plan (PMITSP) processes will provide the capability to model both of these documents for the program years.

(4) Guidance regarding show rates, training loads, and component (COMPO) 4 activations contained in Annex D to the Program Objective Memorandum represent latest Army policy.

CHAPTER 2

APPROACH

2-1. INTRODUCTION. Chapter 2 provides an overview of the technical approach taken during each of the five phases of MOBREM development. The objective of CAA was to take an in-depth approach involving a continuing dialogue throughout the study with the people who would use tne model and provide its inputs. Each phase of the approach was carried out by a systematic, formal acquisition, analysis, and evaluation of information pertaining to the data and processes required in the CONUS Base during mobilization. The development phases were planned in accordance with standard model development practice (i.e., problem definition, proposed solution, functional design, programing, test, and model operation). After each phase was completed, the objectives and tasks for the succeeding phase were reviewed and validated by the sponsor before the next phase was begun. Brief descriptions of the principal activities of each phase are given below. A summary listing of the objectives and products of each phase is shown in Table 2-1 at the end of this chapter.

2-2. PHASE I - PROBLEM DEFINITION AND PROPOSED SOLUTION

a. In August 1979, DAMO-FD requested CAA's participation in tne analysis of tne CONUS Base, the MOBTDA problems, and the formulation of a study plan for MOBREM. This request was made witnout a formal tasking directive witn tne understanding that the results of tne CAA Phase I effort would form the basis of the MOBREM Study and subsequent formal tasking.

b. The initial action requested of CAA was the review of a CSM containing a study plan schedule for developing MOBREM. The plan specified a 6-month Phase I effort consisting of tne following tasks:

(1) Define the scope and nature of the problem.

(2) Describe the activities, functions, and physical cnaracter of tne mobilization base.

(3) Develop assumptions to include the force to be supported and tne resources to be available to support deployment.

(4) Identify tne policy decisions needed to begin the modeling process.

c. The Phase I activities commenced with a series of CAA written questions addressed to DAMO-FDP and to the SAG. These questions were used to initiate meetings and information exchanges with all tne parties to identify the basic requirements for a model which would address the MOBTDA problems tnat had been expressed by OCAR and OSD (see paragraph 1-2). A preliminary set of model requirements was discussed, after which CAA presented to the sponsor a concept for determining and verifying the

information needed for model development. After approval, the preliminary essential elements of information needed for model development were established. These included the mobilization workload categories, the CONUS Base functional codes, the mobilization policies, and the installations to be covered. The organizations responsible for providing input data, for issuing procedures and documents used for planning the CONUS Base mobilization missions, and for developing the MOBTDAs were likewise identified. Listings of the total data requirements were prepared and the source locations for each data element identified. Potential users were consulted to establish trial model output requirements. These results were presented to the SAG in December 1979.

d. The next step was the generation by CAA of an overview of a MOBREM data processing concept outlining the basic inputs, data flow, model operations and outputs. In addition, CAA produced a preliminary estimate of the resources required to develop the model which included a requirement for contract support. In May 1980 the model concept, a phased development plan, and a preliminary contractor statement of work were presented to the sponsor and the SAG by CAA. Guidance to proceed with the plan was given by the study sponsor.

e. The last step in Phase I was the finalization of the contractor statement of work for model design and programing support based on the agreements reached at the May 1980 SAG. However, a major change to the design concept had to be made. The approved concept specified that all mobilization workload inputs to MOBREM would be allocated to installations by the MOBREM input systems. Late in Phase I, during discussions with the DARCOM SAG representatives, it was discovered that an ongoing system development in DARCOM would not be completed to provide the required allocation of the DARCOM workloads to DARCOM installations. As a result, the original MOBREM design concept was modified by CAA to provide a capability within MOBREM to allocate DARCOM workloads to DARCOM installations. The modification represented a major design change and significantly increased the analysis and data collection requirements, including seven additional reports for DARCOM. This resulted in changes to the proposed government and contractor tasks which were approved by DARCOM and the study sponsor at the conclusion of Phase I.

2-3. PHASE II - FUNCTIONAL DESIGN

a. CAA was tasked by ODCSOPS in July 1980 to complete the preaward competitive selection process and to direct the government and contract efforts during Phases II and III (programing and test). The government efforts consisted of finalizing the DARCOM workload allocation design concept and further analyzing and refining the Phase I data and logic as the functional design process evolved.

b. The functional design of MOBREM (Phase II) was based on the results of Phase I. The preliminary essential elements of information and the design concept developed by the CAA, the ODCSOPS ad hoc study team, and the SAG during Phase I were reviewed, verified, or modified by the the same

group. Commencing with Phase II, this same information and design concepts were augmented by the contractor. The data definitions and planned usages were structured into standardized sets of workload categories, mobilization installations, and functional codes and sent to the field via the SAG for verification. The field review verified that all relevant activities that take place during the mobilization process were captured in the design concept. The activities included workload determination and measurement by installation and time period; alignment of workloads to homogeneous support functions (functional codes); and use of conversion algorithms (manpower and equipment) and other distributional or accounting techniques, e.g., medical host/tenant agreements. The reviews were coordinated with the study sponsor, the SAG, and representative field activities. Additionally, the supporting Army vertical planning systems that provide MOBREM management and mobilization inputs were analyzed for incorporation into tne model methodology (e.g., FORSCOM Mobilization Troop Basis Stationing Plan).

c. The Army's mobilization policies were also reviewed with DAMO-ODM and the study sponsor. This resulted in a final analytical overlay of policies and assumptions peculiar to the mobilization environment. The review included an identification of critical variables of analytical utility, which dictated the need for a "parameterization" capability. Thus, certain policy or environmental variables were allowed to vary over a relevant range for analysis of the resource impacts of the alternative (user-set) values.

d. The functional design of MOBREM established a framework for tne model's functional capabilities by identifying modules in a hierarchical manner, each comprised of similar functions. For each module, processes were defined, which, when executed in combination or in sequence, achieved tne requisite functional capabilities. This approach established tne data requirements and output of each module and suggested which model inputs would be parameterized. It also provided a documented source of all assumptions, computational techniques, and module interrelationships in the model and established tne basis for the model's ADP design and programing.

e. Limitations. Included in the functional design was agreement with tne sponsor on the model limitations shown below.

(1) MOBREM inputs do not consider expansion of the current force structure or current industrial base.

(2) MOBREM computes resource requirements only, unconstrained by facility capacities and resource supply or availability considerations. However, features in the model design will allow the user to approximate the effects of supply shortfalls in various resource categories (e.g., prisoners, patients, and DARCOM supply).

(3) Consistent with the "requirements only" objective of the model, there is no resource optimization capability. MOBREM will not allocate scarce resources to installations or allocate deploying units in an optimal manner; but there are minor exceptions to this statement in the medical and

DARCOM areas where workload distribution algorithms are available to the user for analysis purposes. In general, the model assumes the same priorities for resource demands that are established in the input data systems. However, the modular structure of the model will adapt to an optimization technique overlay if resource allocation criteria are provided.

f. A two-volume functional design manual containing a detailed description of the MOBREM functional design specifications was produced during Phase II.

2-4. PHASE III - PROGRAMING AND TEST

a. Program Development. Phase III consisted initially of developing program specifications, program coding, and documentation. The bulk of the program development was accomplished by the contractor. However, CAA prepared the program specifications and coded programs for certain "pre" preprocessing programs. These related to overlaying data from separate large input files onto a single MOBREM file for normal preprocessing program development by the contractor. The principal example of "pre" preprocessing was in connection with the Mobilization Troop Basis Stationing Plan (MTBSP), the Unit Reporting System, and The Army Authorization Document System (TAADS), which, by using the first letter of each system, is called the MUT for short. The MUT file brings together in one file the principal information on units needed by MOBREM. In addition, CAA prepared programs associated with DARCOM inputs.

b. Program Test

(1) The MOBREM Model was designed, using top-down structured concepts which define modules, each comprising a number of programs and performing a certain function or functions. The test proceeded as follows:

(a) The overall model functional objectives were defined.

(b) Each separate and successive function necessary for the accomplishment of the objectives was delineated, and separate modules incorporating these functions were defined.

(c) Each module was further divided, as necessary, to the subfunction level, and a program was written to perform each of these subfunctions.

(d) The overall functions were clustered into discrete statements of functional capabilities. These represented sequential or parallel operations of the subfunctions (Appendix C identifies the functional capabilities used to test the programs).

(e) Test data sets were created to be used as input to each of the subfunction clusters of each module. These test data sets established values for inputs, interim outputs, and final outputs for each functional capability.

(2) Each module was then programed and tested in the following manner:

(a) As each program was written, the programer tested it by running it through its related test data set(s) created to demonstrate all of the possible characteristics of the live data. Valid and invalid data were put through the program to test error detection features, making liberal use of display messages indicating output file record counts and data errors encountered.

(b) The test data sets were applied to each functional capability, and the data manipulations and transformations required were then performed manually by the CAA analyst.

(c) The test data were then put through the programs constituting the module, and the resulting data, whether in report or interim file dump format, were compared with the results produced by the analyst. In the case of inconsistent results, the CAA analyst and programer located the source of the error by following the data step by step through the program and printing the output of each program until the erroneous output was found. The programing errors were then corrected, and the data extract was once again put through the module. Testing proceeded in this manner until each module produced the expected results.

c. Test Evaluation. The test results were evaluated on the basis of the following criteria:

(1) Tolerances: the range over which a data value output by the model was allowed to vary and still be considered acceptable. For outputs that were model "throughputs," test output values had to match exactly with prespecified values. For outputs that were subjected to a series of computational processes, test output values were not allowed to vary by more than one unit of measure (workload or manpower) from the prespecified values (due to rounding conventions).

(2) Samples: the minimum number of combinations or alternatives of input and output conditions that must be exercised to constitute an acceptable test. The programing test plan utilized, as a sample, the required data to test representative combinations of processes and functions in the model (Appendix D).

d. Test Demonstration. Phase III was concluded on 22 March 1982 with a briefing and test demonstration for the Director, CAA, the study sponsor, and a group of general officers, MACOM division chiefs, and their equivalents. The scope of the briefing consisted of a description of the model development background and the programing tests which had just been

completed. The briefing was followed by a demonstration that illustrated the model's capability to vary an input parameter and produce a different and reasonable model-computed manpower support requirement result. The Director, CAA, concluded the briefing by polling the study sponsor and each SAG representative and asking each person if MOBREM was what he wanted. Each answered in the affirmative, and the Director advised the study team to proceed with Phase IV.

e. Documentation. A five-volume Program Maintenance Manual, which documents and organizes, for programer use, the detailed descriptions of MOBREM programs, runstreams, and output files was produced during Phase III.

2-5. PHASE IV - MODEL TEST AND MANPOWER REQUIREMENTS EQUATION (MRE) DEVELOPMENT

a. Tasking. The Phase IV CAA tasking directive from ODCSOPS included the following tasks:

(1) Develop the initial set of MRE for use in MOBREM. (This task was a special add-on requested by the Office of the Deputy Chief of Staff for Personnel (ODCSPER).)

(2) Develop a plan for data collection and field evaluation of MOBREM.

(3) Conduct a field evaluation of MOBREM test reports.

(4) Based on results of evaluation, specify model operational requirements.

(5) Produce a Functional User's Manual. (During Phase IV, this requirement was changed to have CAA produce an Operator's Manual. The Functional User's Manual requirement was delayed to become a Phase V DAMO-FDP responsibility.)

b. MRE Development

(1) The MRE improvement task was accomplished by contractor support and resulted in the initial set of MREs for use in MOBREM. A technical report entitled, "Enhancement of Mobilization Manpower Standards for the Army Mobilization Requirements Model," which was published in February 1983 BY Presearch, Inc., defined an initial set of MREs to be used in MOBREM and the rationale for development. The report identified 280 CONUS Base support functions as candidates for MRE coverage with the actual coverage as follows:

(a) Predetermined Manpower Functions. Of the 280 functions, 105 were considered as not amenable to MRE development and were identified as having to be input into MOBREM as predetermined values for the manpower required for these functions during mobilization.

(b) Installation Unique Functions. Of the 280 functions, 103 were considered installation unique. These relate to central supply and maintenance functions at DARCOM installations. The MRE were developed from analysis of data from the installations which translated tons of supplies and equipment to manpower support requirements.

(c) Noninstallation Unique Functions. MRE for 32 of the 280 functions were developed by statistical techniques and apply to all installations where the functions exist. Data were not available to support statistical correlation of the remaining 40 of the 280 functions. MRE for these 40 functions were specified and were based on existing Army manpower staffing guides.

(2) Phase IV analysis of the use of MOBREM manpower test reports, which were produced using the above MREs and predetermined manpower rules, pointed out the following problems:

(a) Data on installations where commercial support or where host/tenant agreements are present had not been collected (except for host/tenant medical support agreements). Therefore, application of the current MRE produced inaccurate manpower support requirements at these installations.

(b) The TDA functions were not organized at all installations in accordance with approved Army Management Structure Code (AMSCO) guidelines. The MRE functions used in MOBREM, however, are based on these AMSCO guidelines. Consequently, a potential problem exists in applying MOBREM-computed manpower requirements to installation functions.

(c) The procedures and tasking required for updating and maintaining the MRE had not been defined. MOBREM depends on updated values for all of its many inputs which include the MRE.

(d) Some important mobilization workloads (e.g., dependents, prisoners, returning noncombatants, etc.) were not covered by MRE.

(e) The ODCSPER had no plan for maintaining and updating the MRE inputs for MOBREM. NOTE: As a result of discussions regarding the MRE problems pointed out in paragraphs 2-5b(2), ODCSPER requested CAA to manage the conduct of a contract support study to address the problems. The study is entitled the CONUS Base Manpower Requirements Improvement Study (COMARS). Competitive bidding to procure contract support for COMARS is proceeding (July-August 1984).

c. Data Collection and Input Data Base Formation and Analysis

(1) A major effort of Phase IV was the collection and analysis of the data required for MOBREM operation. Procedures were established for collecting the required data from automated sources on a recurring basis. Manual input data procedures were defined, and an input data collection and update plan was initiated. Communication lines with data sources were established for reviewing data anomalies found as the input data were analyzed for use in MOBREM.

(2) The input data tapes were transferred to CAA files (sometimes after much difficulty in reading), and the resulting MOBREM input data were tested in a series of quality assurance preprocessing steps to verify and reorganize the information into forms recognizable by MOBREM. Much of the data analysis was devoted to quality assurance (e.g., to correct field values that were omitted, inaccurate, or unreasonable) and communicating with the data providers for verification or correction.

(3) Both data and preprocessing programs were modified, and after acceptable input data base and preprocessing procedures (programs) were established, the model programs were executed to produce test reports for field evaluation by the MACOMs and installations.

d. Field Test

(1) CAA developed a test plan that required two test runs of MOBREM. Test run one produced the MOBREM workload and asset reports for field evaluation. It was initiated by the development of a test report questionnaire which the study sponsor distributed to the MACOMs and installations. The questionnaire was designed for the following purposes:

(a) To identify user test report requirements.

(b) To obtain field verification of the UICs, by installation, to be covered by the MOBREM report.

(c) To verify the workload definitions.

(d) To obtain field inputs on the uses of MOBREM reports beyond MOBTDA development.

(e) To identify test managers who would be the field principals (action officers) involved in the evaluations.

(2) Following analysis of the questionnaire responses, CAA developed a test package that contained a schedule for individual test manager workshops to review reports and descriptions (tailored to each test manager's organization) of the workload and asset reports,

installation coverage, and workload definitions that had resulted from field responses to the questionnaire. Each test manager was instructed to verify the contents of the test package and come prepared to review reports at the workshops.

(3) The results of the test manager workshops formed the basis for a second round of data and program refinements. The model was rerun to produce a second set (test run two) of updated workloads and asset reports which contained the results of the above refinements. Also included in test run two were the manpower requirements reports. The evaluation of the test run two reports consisted of information exchange, test manager meetings, and evaluations similar to those that took place for test run one.

(4) In addition to the field evaluation of the MOBREM reports which apply to all MACOMs, a separate field evaluation of the MOBREM DARCOM-specific reports was conducted by representatives from the various participating DARCOM agencies (headquarters, the subordinate commands, and depots). Again, CAA and the sponsor reviewed the DARCOM reports' contents and uses with DARCOM representatives and requested evaluation responses which were analyzed and used to either update MOBREM data or programs during Phase IV or to recommend modifications to be made during Phase V to bring the model to an operational level.

e. Test Results. The principal test results were as follows:

(1) Acquisition and integration of the data required to define the CONUS Base mobilization workloads, assets, and manpower support was demonstrated.

(2) MOBREM produces all of the MOBTDA guidance reports and DARCOM reports required by the sponsor and verified by the CONUS MACOMs and installations.

(3) Feedback from the field tests produced a list of model and data modifications recommended to bring MOBREM to a full operational level (i.e., produces outputs that can be used by the Army for MOBTDA guidance and evaluation).

(4) An analysis and prioritization of the above modification list resulted in agreement that 15 specific modifications should be made to bring MOBREM to a full operational level. These 15 modifications served as the basis for the Phase V tasking.

f. Documentation Two manuals were produced during Phase IV. They include an Operator's Manual giving detailed and ordered instructions for operating MOBREM, and an MRE Technical Manual defining the Army's CONUS Base MRE to be used in MOBREM.

2-6. PHASE V - MOBREM IMPLEMENTATION

a. The Phase V tasking directive from ODCSOPS requested CAA to implement improvements/enhancements identified during Phase IV as operationally required and to complete all actions required to bring the model to an operational level. Included among these actions were the following tasks:

(1) Update the MOBREM data base.

(2) Produce and analyze sample production runs to verify the functional design.

(3) Produce a complete set of production reports and provide them to the sponsor.

b. All of the required modifications were made and tested individually using both test and live data applied to each program affected. After test verifications, a model run was executed to produce sample production reports for analysis.

c. A team of analysts from DAMO-FDP and CAA was instructed on how to read and interpret the production reports for accuracy and adherence to the functional design. After instruction was completed, a detailed analysis of each report was conducted. Appendix D contains the guidelines used in the verification process. The report analysis covered all combinations of processes that the functional design requires. The values determined by manual analysis agreed overwhelmingly (99 percent) with those on the production reports. The remaining discrepancies (1 percent) were explainable as analyst misinterpretation or were rectified by minor program adjustments. The cumulative modifications from three separate programing and model tests (i.e., Phases III, IV, and V) had now been applied to the model. The model was now verified as functioning precisely as specified by the approved functional design. The model was declared to be at an operational level and the required output reports were sent to DAMO-FDP in May 1984.

d. All model documentation was updated during Phase V and this study report produced.

2-7. SUMMARY - OBJECTIVES AND PRODUCTS, PHASES I-V. Table 2-1 provides a summary of the principal objectives and products of each MOBREM development phase.

Table 2-1. Development Objectives and Products

Phase	Objectives	Product
I	Problem definition and proposed solutions	MOBREM design concept and development plan
II	Functional design	Functional Design Manual[a]
III	Programing and programing test	Program Maintenance Manual[a]
IV	Data collection of live data	Coordinated list of MOBREM operational requirements
	Model operation to produce test reports	Operator's Manual[a]
	Field evaluation of test reports	Recommendations for model operation
	Analysis, validation, and development of initial manpower standards to be used in MOBREM	Manpower Standards Technical Report[a]
V	Upgrading of model to full operational level	Updated model documentation Functional Design Manual Program Maintenance Manual Operator's Manual
	Production and analysis of output reports to verify updated functional design	Complete set of operational reports dispatched to DAMO-FDP
	Historical summary of model development effort, model methodology descriptions and observations	Phases I-V Study Report

[a]These documents were developed by Presearch, Incorporated under contract to CAA and are maintained at CAA.

CHAPTER 3

MODEL METHODOLOGY

3-1. INTRODUCTION. This chapter provides an overview of the functional design of MOBREM. It describes how the model works from a functional viewpoint. More detailed descriptions of the functional, operational, and software aspects of MOBREM are contained in documents referenced in Table 2-1, Chapter 2. The model methodology description begins in paragraph 3-3; however, in order to introduce the model methodology, brief overviews of CONUS Base organizations and support functions are given below. The intent is to provide the reader an understanding of the size of the organizations and major CONUS Base support functions that the model outputs address. Also included is an overview of the current MOBTDA development process. This is intended to give the reader a better appreciation of how the MOBREM functions described in the methodology can enhance the process.

3-2. CONUS BASE. CONUS Base organizations provide the support that enable units to be deployed, trainees to be trained, and equipment and supplies to be shipped to the theater or within CONUS. They also provide medical support for theater medical evacuees as well as those patient loads generated in CONUS installations.

a. A profile of CONUS Base organizations and peacetime and wartime strengths is shown in Table 3-1.

Table 3-1. CONUS Base Organizations

Units	Peacetime strengths (000)	Wartime strengths (000)
TDA		
OSA and OCSA	3.7	6.8
Joint and DEF ACTV	6.7	7.1
OSA and ARSTAF FOA	46.7	46.0
Commands in CONUS	347.6	658.7
Army Reserves	25.8	0
National Guard	20.4	0
TOE		
Training division	32.0	52.9
Training spt units	4.1	4.5
GSF units	29.8	37.1
Sep inf bde	19.0	20.1
Other	3.9	4.1
Totals	539.7	837.3

b. In the left column the CONUS Base organizations are divided into groupings of TDA units and table of organization and equipment (TOE) units. Included among the TDA units are the Office, Secretary of the Army (OSA) and Office of the Chief of Staff of the Army (OCSA) staffs, and Army elements in joint and defense activities. The latter represent Army representatives in various government defense and nondefense organizations which include attaches and embassies. Both the OSA and Army Staff (ARSTAF) have field operating agencies (FOA) under their jurisdictions; for example, CAA is an FOA under the Chief of Staff.

c. The major commands in CONUS are represented on the next line. FORSCOM, DARCOM, TRADOC, and Health Service Commands are the larger commands. The Chief of Engineers, Army Communication Command, the Intelligence Command, Military Traffic Management Command, Criminal Investigation Command, and the Military District of Washington are the smaller major commands included in the CONUS Base.

d. The Army Reserve and National Guard represent peacetime organizations in the CONUS Base that are absorbed within the other commands after mobilization.

e. TOE units are also included among the CONUS Base organizations. The training divisions are United States Army Reserve (USAR) TOE cadre units whose mission is to set up Army training centers during mobilization. The training support units are functionally organized for signal, engineering, transportation, maintenance, and other specialized combat support and combat service support training. The general support force (GSF) units are nondeployable units supporting the CONUS mobilization mission and deployable units with an initial mission to provide CONUS Base support. The separate infantry brigades represent CONUS defense units such as those in Panama and Alaska or an infantry school support brigade in CONUS. The middle column shows the peacetime authorized strength as specified in The Army Authorization Document System (TAADS). The right column lists the wartime strength projections as specified in the required column of TAADS. Both sets of strengths are as of 1981.

f. Table 3-2 displays a listing of support functions provided by the CONUS Base organizations. The functions represent the principal CONUS Base support needed during peacetime and which undergo change during mobilization. Most expand in size, some reduce in size, and others (recruiting) change purpose upon mobilization. The column on the left represents a sampling of major command and ARSTAF support functions. Also included are staff functions such as studies and analyses. The base operations support functions are common to all installations. Reserve Component (RC) support is represented in Table 3-2 by RC organizations that provide training and mobilization planning support during peacetime, and during mobilization assist in mobilizing the Reserves. The manpower requirements reports produced by MOBREM cover 340 subfunctions of the functions listed in Table 3-2.

Table 3-2. CONUS Base Support Functions

Major command and ARSTAF support	Base operations support	Reserve Component support
Training	Administration	CONUSA
Depot and ammo supply	Finance and accounting	USAR commands
Depot maintenance and quality assurance (QA)	Personnel services	State area commands
Production procurement	Dining facilities	Army readiness and mobilization regions
Medical	Publications	
Communications	Supply	
Security	Training	
Intelligence	Maintenance	
Transportation	Transportation	
Military construction	Family housing	
Reception stations	Facilities engineer	
Detention centers	Management headquarters	
Recruiting and Armed Forces Examining and Entrance Stations (AFEES) support		
Overseas replacement centers		
Combat development		
Doctrine and force development		
Studies and analyses		

g. MOBTDA Development Process

(1) MOBREM development was initiated to improve the current process used to develop MOBTDA. A brief overview of the scope of this process is given to enhance the reader's understanding of the model methodology purposes.

(2) Existing MOBTDA development procedures are set forth in a variety of letters of instruction and guidance distributed to installations by HQDA and the CONUS MACOMs. In general, the instructions and guidance are directed at two major processing steps required for MOBTDA development. First, references to the installation missions and workloads planned for an installation during mobilization are given as guidance for workload determination; second, references to staffing guides for use in translation of the workloads into the MOBTDA required to support the workloads are provided.

(3) In the first step (workload determination), the mobilization mission guidance very broadly specifies the overall mission of an installation (in one or two sentences). This is of little value in the development of a MOBTDA. The workload guidance references the separate Army mobilization planning documents in which the data are not integrated across different workload categories. These planning documents are voluminous, each covering

a specific category of workload (trainee, incoming units, outgoing units, patients, etc.). They are not organized for workload information retrieval by an installation. The workloads must be manually extracted by the installation planner and assimilated for application to the installation. (MOBREM, on the other hand, provides the installation planner with integrated workloads sorted by installation, time period, and size.)

(4) In the second step (MOBTDA development), the Army's staffing guides are used by the installation planner to determine the manpower in each MOBTDA function required to support each of the individual workload categories. Much of the information in the staffing guides allows local interpretation or application of other installation specific rules. In addition, the staffing guides are not updated regularly. Thus, the development of MOBTDAs evolved into more of an exercise in local judgment rather than a standard mathematically-derived objective determination. MOBREM uses newly developed manpower requirements equations to compute the manpower required to support the installation workloads. MOBREM reports, covering both the workloads and manpower requirements, are provided as guidance to the MACOMs for developing more objective installation MOBTDA development instructions.

(5) In summary, both the identification of the workloads and the translation of these workloads into manpower requirements are made difficult by the complexity of the mobilization planning guidance and are susceptible to the subjective individual judgments of installation planners.

3-3. MODEL METHODOLOGY

a. Introduction. This section of the study report provides a description of the principal MOBREM functions (inputs, modules, outputs). A chart listing the MOBREM functions is shown in Figure 3-1 (page 3-15). The figure is inserted in the report at the end of Chapter 3 as a foldout to assist the reader in understanding the descriptions which follow.

b. MOBREM Function 1 (Inputs). MOBREM requires a large volume of input data, most of which is obtained from Army planning sources. The input media include magnetic tapes, cards, microfiche, and manual information that varies from typewritten information to verbal inputs. Table 3-3 lists the principal data inputs, their planning sources, and gives a brief description of the use of each input in MOBREM. In total, these inputs must cover all new workloads, new support assets planned for the CONUS Base during mobilization, and the existing (peacetime) workloads and support currently available to the CONUS Base. Policies affecting mobilization must likewise be input into the model along with many other identifiers such as nomenclature, size, location, type, support sharing agreements, and other environmental information concerning UICs, installations, and equipment. Standards used by the Army which specify the quantity and type of support required per unit of workload are also essential inputs (e.g., the standard for recruit training support is 0.2400 times the quantity of trainees in basic training at the installation). The compilation of these inputs is the first MOBREM function and is depicted on the MOBREM function chart (Figure 3-1, page 3-15) by representative automated and manual input symbols. Most of

the inputs require preprocessing to extract and format the data for MOBREM purposes. As shown on the chart, however, some of the input data is fed directly into the environment/policy (E/P) module without the need for preprocessing.

Table 3-3. Principal Input Data, Planning Source, and Use in MOBREM

Input data	Vertical planning systems		MOBREM use
	System	Organization	
[illegible] mobilization stationing list (deploying and non deploying units)	MTOE	FORSCOM	To identify mobilization locations and UICs to be used by the model
[illegible] CONUS Base support functions	TAADS	[illegible], DAMO-FD	To identify the strengths for functions in the CONUS Base that are based on mission requirements, policy directive, or predistributed mobilization manning levels
MOBREM installation crosswalk	Manual	CAA	To relate MTOE locations to MOBREM installations
MTOE unit military personnel on-hand strengths and mobilization requirements	AMEDREP FMTA	DAMO-OD	To determine mobilization UIC personnel and equipment strengths and full requirements
TDA unit personnel and equipment on-hand strengths and requirements	TAADS	DAMO-FDP	
MTOE unit equipment on-hand strengths and requirements	TAEDP	DARCOM, DESCOM	
Mobilization trainees and students	ATRRS	DAMO-TRI	To identify quantity, type, trainees and students and location of mobilization individuals (current pipeline, mobilization volunteers, draftees, and others)
[illegible] MA Retirees	MOBPERS	RCPAC DAPE-PSM	To identify quantity of other individuals that represent assets and installation workloads
Theater medical evacuees	Patient Flow Model	HSC & TSG	To provide information for application of patient evacuation rate and CONUS rates for use in computing CONUS Base medical workload
[illegible] CONUS	MOBREM computation	CAA	
Depot rebuilding capability	Manual	DARCOM	To develop mobilization allocation distributions by installation and functional category
Major depot assets	CONUS Depot Asset Report	DESCOM	
Theater shipping requirements	TAEDP	DARCOM DESCOM	To specify the net DARCOM shipping requirement
Mobilization policy planning assumptions (MPPA)	AMMP	DAMO-OD	To establish the MPPA and parameters used in MOBREM
Host tenant agreements	Manual	DAMO-FD	To define manpower support transfer agreements between installations to be in effect during mobilization
Manpower requirements equations (MRE)	Manual	DAPE-MBU USAMARDA	To compute manpower required to support workloads by CONUS Base function

c. MOBREM Function 2 (Preprocessing Module). The second function in the MOBREM flow (Figure 3-1) is accomplished in the preprocessing module. The purpose of the MOBREM preprocessing module is to edit and reformat various input data entering the model. Due to the wide variety of input data and input data sources, extensive validation and cross-validation is required to ensure that consistent and usable data are passed through to the succeeding functions. In many cases, input data must be "mapped" to codes or categorizations recognizable by MOBREM. For example, the mobilization stations found in the MTBSP must be mapped to MOBREM installation codes; likewise the line item numbers (LIN) found in the TAEDP must be mapped to MOBREM unit equipment categories. The preprocessing procedures also compress and reformat the input data so that the data is more efficiently accessible by the model software. The following summarizes the major preprocessing procedures performed by this module:

(1) TAEDP Preprocessing. The purposes of the TAEDP Equipment Extract Procedure are: (1) to create an edited crosswalk from LIN to MOBREM equipment categories (unit equipment, base operations equipment, training equipment, and wholesale supply categories), (2) to extract from TAEDP equipment counts by appropriate equipment category (unit or training) for selected unit and nonunit identifiers, and (3) to perform calculations on extracted nonunit data to generate information which will affect the DARCOM shipping requirements generated during model execution.

(2) TAADS Preprocessing. The TAADS preprocessing procedures are used to extract counts of on-hand and required equipment by UIC and base operations equipment categories.

(3) MUT Preprocessing. The purpose of the MUT procedure is to extract and aggregate UIC-related data from the MTBSP, Unit Reporting System (now the Force Mobilization Troop Basis) and TAADS personnel files. The primary product of the procedure is a file containing the mobilization station, unit arrival and departure dates, unit personnel strengths, and various codes relating to the unit (e.g., COMPO Code) for each UIC to be processed by MOBREM.

(4) Unit Data Merge Procedure. The unit data merge procedure aggregates all the UIC level data produced by the TAEDP, TAADS, and MUT procedures. The resulting Units File contains all the information available for each UIC (required, on-hand strengths, location, name, deployment date, station arrival time, station departure time, etc.).

(5) ATRRS Preprocessing. The purpose of this procedure is to compute the number of personnel in Army training courses (trainees) based on data contained on the Army Training Requirements and Resources System (ATRRS) tape received from TRADOC annually.

(6) Theater Patient Preprocessing. The theater patients procedure edits and reformats counts of theater patients arriving from theater, deceased, separating from duty, etc., which are to be input to the model.

(7) Individuals Procedure. The individuals procedure edits and aggregates various input counts of personnel arriving at the installations. These counts include: IRR, IMA, retirees, returning noncombatants (RNC), contractors, and trainee counts produced by the ATRRS procedures.

d. MOBREM Function 3 (Input Data Base). Figure 3-1 identifies the third MOBREM function as the input data base. This consists of the set of edited and reformatted files produced by the preprocessing procedures. These represent the equipment shipping and personnel workload planned for the CONUS Base. The data values are only updated when one or more of the source inputs to MOBREM are updated (generally once or twice a year).

e. MOBREM Function 4 (Environment/Policy (E/P) Module)

(1) The E/P Module (Function 4 in Figure 3-1) establishes the set of policy parameters, and environmental constraints under which the other modules of MOBREM operate. This module will enable MOBREM users to observe differences in workloads and manpower requirements generated as a result of certain policy, environment, or assumption data changes without requiring a reconstruction of the MOBREM input data base. As shown in the figure, three sets of inputs enter the E/P module. One set (shown by the top arrow) contains the parameters which may be used to modify the planned CONUS Base workloads. The second set comes from the input data base and represents the workloads planned for the CONUS Base by the MOBREM inputs (function 1). The third set of E/P inputs (shown by the bottom arrow) is the nonparameterized policy inputs. These represent inputs which cannot be changed by the model parameters. Each of these E/P inputs is described below.

(2) Parameter inputs to the E/P module have been divided into three categories--environment, policy, and input parameters.

(a) Environmental parameters are generally related to current inventory and/or strength counts. Since they are parametric, they may take on different values for different runs of the model. Given the same input data, changes in model output values (workload and/or manpower requirements) represent the impact of changing the parameters. Thus, MOBREM can assist in the analysis of issues which are not specifically CONUS Base mobilization oriented but have an indirect impact on CONUS Base mobilization manpower requirements. These issues include analyses of alternative peacetime manpower ceiling levels for AC and RC units, analyses of alternative peacetime materiel levels, analyses of alternative Selective Service System draftee delivery schedules, and the like. The key aspect of MOBREM environmental parameters is that they can be easily varied to provide additional decision-support information for issues that address changes to the peacetime environment of the Army.

(b) Policy parameters deal with assumptions or policies that have been specified by Army planning systems for mobilization. Like the environmental parameters, policy parameters can take on different values for different model runs. Analysis of the model outputs will allow mobilization policy and resource planners to observe a quantitative statement (in workload and manpower terms) of the effects of changes to mobilization policy

given the same input data. These values may be set to reflect actual policy or exercise experience, or assumptions about how the Army will operate in a mobilization environment. Analyses of the "what if" nature will be in support of decisions to conserve or optimize resources during mobilization. Policy parameter input values may be constrained somewhat by environmental consideration, e.g., policies affecting mobilization fill levels may be set at levels less than 100 percent because of known manpower/equipment shortages. But in general, policy parameters will be set more by doctrinal, legal, or analytical (resource-tradeoff) considerations.

(c) In addition to the policy and environment parameters, a third category of parameters (called input parameters) was added to the module after review of the operational needs of MOBREM. The input parameters deal with rates and percentages, such as a factor which determines the quantity of contract or support that can be applied to a CONUS function. Another input parameter specifies the percentage of beds that will be occupied at a hospital during mobilization. Military/civilian split is also an input parameter which defines in a functional area the numbers of military and civilians who will perform the work. The user may specify the length of the mobilization workweek (by time period) and the annual available workload hours based on mobilization leave policy, holidays, training, etc. Additionally, mobilization productivity factors can be set to account for changes in worker productivity as the length of the workweek increases. The user may also specify the level to which TDA manpower requirements will be filled and the proportion of military and civilians performing a particular function.

(3) The information from the input data base to the E/P module represents the planned CONUS Base mobilization workloads which are specified by the MOBREM input systems and preprocessing by the preprocessing module (functions 1 and 2, respectively).

(4) Nonparameterized policy inputs represents mobilization policies that are not parameterized within the E/P module. Their value changes must be accomplished by changing the input systems policy.

f. MOBREM Function 5 (Direct Inputs). The principal direct inputs to the workload module are identified in the fifth function in Figure 3-1. These inputs are divided into three types: the parameter inputs shown by the top arrow, workload inputs coming from the input data base and the E/P module, and the nonparameterized policy inputs shown by the bottom arrow. The parameter output of the Environment/Policy Module cover the environment, policy, and input values (E, P, and I) which identify the set of parameters that operates on the Workload and Manpower Conversion Module to provide the user the ability to set some basic premises of the model and to quickly see the effects. A complete list of parameters which can be set by the user is contained in Appendix E. The workload direct inputs include theater shipping requirements, medical evacuees, personnel inputs, trainees, IRR, IMA, retirees, and equipment in units. Each workload input is a population of personnel, an equipment density, or a shipping tonnage workload. All workload inputs (except the medical evacuees and theater shipping requirements) are allocated by the input system to specific installations. These two

inputs must be allocated by the medical and DARCOM modules of MOBREM, respectively. The last three inputs listed in Function 5 are representative of policy inputs that are not parameterized, i.e., they are not affected by a MOBREM parameter. Their values are set by the input systems. Predetermined manpower consists of manpower values for CONUS Base functions which are prescribed by mobilization policy. Manpower requirements equations (MRE) are approved by ODCSPER and specify the manpower support required per unit of workload. The host-tenant agreements distribute manpower support from one installation to another and are determined by mobilization policy. As stated, policy inputs must be prescribed by the input system (Function 1).

g. MOBREM Function 6 (Workload Modules)

(1) The four MOBREM workload modules are shown as Function 6 in Figure 3-1. These modules interact with each other and with the Manpower Conversion Module (Function 7) to process the direct inputs. These modules also compute additional workloads that are generated by the manpower needed to support the direct inputs. The DARCOM Module represents a special and separate design. In the normal operational mode, it interacts with the other MOBREM modules to produce MOBTDA guidance reports, but it also has a special mode of operation and a special set of reports. The DARCOM Module special operation is described in Appendix F. In order to describe how the MOBTDA guidance reports are produced by the four MOBREM modules, examples of the principal module interactions are explained below.

(2) Beginning with the Installation Personnel Module, the direct inputs (Function 5), consisting of the populations of personnel in units, the trainees, IRR, IMA, and the retirees, are transferred to the Installation Personnel Module as time-phased populations allocated to installations. The information flow between modules is represented by the intermodule arrows. The three arrows from the Personnel Module represent transfer of the population data to three other modules which perform the following processes:

(a) The Installation Equipment Module computes the training and base operations equipment required to support the personnel population.

(b) The Medical Module computes CONUS patients as a percentage of the CONUS personnel populations.

(c) The DARCOM Module uses the personnel population information to make two computations: first, it computes the consumption of Classes I through IV supplies. These represent CONUS shipping requirements, some of which must be met by DARCOM. Second, ammunition requirements are computed as percentages of the trainee population data received from the Personnel Module.

(3) The arrow from the Installation Equipment Module to the DARCOM Module represents the base operations, training, and unit equipment fills which, in turn, generate intra-CONUS DARCOM shipping requirements. (Unit fill is the difference between on-hand equipment in units and the required mobilization levels of fill which are determined by a given mobilization policy.)

(4) The Medical Module sums the computed CONUS patient workloads with the theater medical evacuee patient workloads received as a direct input and allocates the combined patient workloads to CONUS installations by time period.

(5) Finally the DARCOM Module processes the theater shipping requirements (direct input) to allocate workloads to DARCOM depots. This allocation process uses a special add-on design to MOBREM which includes a capability for distributing both workloads and assets to DARCOM depots by choice of options (timing, size, location). These distribution options enable the planner to use MOBREM in a "what if" mode to evaluate DARCOM shipping alternatives. The description of the added capability is given in Appendix F.

(6) To summarize, the four MOBREM workload modules (Installation Personnel Workload Module, Installation Equipment Workload Module, Medical Module, and DARCOM Module) work together to process the direct workload inputs and to compute and allocate the following additional workloads:

(a) Training and base operations equipment

(b) Unit equipment fills

(c) CONUS patients/medical evacuees

(d) Class I-IV consumption

(e) CONUS ammunition requirements

(f) DARCOM theater shipping requirements by depot

The outputs from the workload modules are used by the Manpower Conversion Module to calculate the manpower required to support the workloads.

h. MOBREM Function 7 (Manpower Conversion Module)

(1) The Manpower Conversion Module (Function 7 in Figure 3-1) is the model component which computes the mobilization TDA manpower required to support the direct inputs and computed workload inputs generated earlier by the workload processing. The manpower requirements are computed by installation, time period (M-day to M+270) and by CONUS Base function code. The manpower requirement computations are made without consideration of constraints such as personnel availability.

(2) Manpower requirement calculations from the Manpower Conversion Module are assumed to be filled and are then fed back to the workload modules and used to increment the TDA military and civilian population workload categories for the succeeding time period. These feedback workloads (which are represented by a feedback arrow from Function 7 to Function 6) ensure that changes in the levels of these workload categories are considered when computing CONUS Base support requirements for subsequent time periods.

(3) The manpower requirements for a particular installation, time period, and functional code are determined by one of three methods: predetermined manpower, position coverage, or manpower requirements equations (MRE). The three methods are described below.

(a) Predetermined manpower requirements are essentially direct inputs to MOBREM of the number of persons required to perform a function at an installation, i.e., MOBREM does not compute predetermined manpower requirements.

(b) Position coverage manpower requirements are requirements which, due to the critical nature of the workload, necessitate having persons available to perform the function regardless of the level of workload (e.g., firefighting). Position coverage manpower requirements are dependent on the interaction of three factors: manpower availability, peacetime position coverage description, and the desired coverage during mobilization.

(c) MREs convert the workload occurring at an installation at a time period into manhours of work required to support the workload. MREs are (generally) linear equations, input by CONUS Base support functional code, which use one or more of the workload values computed by the workload modules as arguments in order to calculate the manhours required to support the workloads. The number of manhours is then converted to persons in order to display the size of manpower requirements in each functional support area.

(4) Regardless of the method of manpower requirement determination, host-tenant agreements may be used to transfer the manpower requirements for a functional code from one installation to another (either entirely or proportionally) in order to reflect inter-installation functional support.

(5) The manpower requirements are calculated daily by MOBREM and are displayed in output reports in 10-day time periods from M-day to M+60 and 30-day time periods from M+90 to M+270. Either average values during a time period or peak values can be reflected in MOBREM reports.

i. MOBREM Function 8 (Output Data Base)

(1) Function 8 of Figure 3-1 shows the MOBREM output data base. It consists of seven separate data files which bring together the principal mobilization planning data of the Army. Two files cover workloads and manpower requirements broken down by installation and time period. A unit's file contains information pertaining to a unit's mobilization schedule, strength, and equipment. The installation dictionary contains information on the installation's name, code, MACOM, ownership, and installation contents (e.g., prison, schools, etc.). Additionally, a noninstallation workload file contains workload which is not related to a particular installation (e.g. total military, total transients). The parameter file contains the MOBREM parameters, and the nomenclature file provides the report labels (nonmenclature) given to each of the 540 workload categories of MOBREM.

(2) At present, these files are used as a basis for the specified MOBTDA guidance assets, workload, and manpower requirements MOBREM reports. The information in these reports, however, only comprises a small portion of the information available from these files. The capability exists to produce further breakdowns or rearrangement of the data presented on existing reports. A discussion of the potential capabilities for using the MOBREM output data base for mobilization planning is given in Chapter 5.

j. MOBREM Function 9 (MOBREM Reports). The final MOBREM function (number 9, is report production. MOBREM reports display the workload and manpower requirement data computed by a particular model run in a variety of formats. Each report is designed to extend and enhance the judgment of the users/decisionmakers. Therefore, the report formats have been tailored to a particular level of detail needed by specific areas of the user community. Reports are broadly divided between installation and MACOM level summaries. The following is a list of MOBREM reports that are available to the user. Unclassified samples of actual reports are presented in Appendix G. The first six reports listed below are MOBTDA guidance reports. The remaining reports are DARCOM special reports.

(1) Installation Asset Report

(2) Installation Workload Report

(3) Installation Manpower Requirements Report

(4) MACOM Workload Report

(5) MACOM Manpower Requirements Report

(6) MACOM Summary Manpower Requirements Report

(7) DARCOM Installation Report

(8) Six additional DARCOM summary reports are as follows:

(a) Report 1 - Initial Assets

(b) Report 2 - Total Assets

(c) Report 3 - Shipping Requirements

(d) Report 4 - Shipping Shortfall

(e) Report 5 - Asset Shortfall

(f) Report 6 - Tons Shipped

3-4. HARDWARE ENVIRONMENT. MOBREM was designed, developed, and implemented on the UNIVAC 1100/32 configuration currently in place at CAA. The following items of equipment are necessary for the operation and support of the MOBREM software.

a. Processor. The central processing unit of the ADP equipment (ADPE) must be compatible with an UNIVAC 1100/82 with a minimum partition requirement of 200K words of memory available to the MOBREM application programs. In addition to the processor unit, the computer must possess the necessary equipment and communications controllers or adaptors to support remote job entry and terminal devices.

b. Storage Media. The host computer requires a minimum of one 9-track multidensity tape unit and one 7-track tape capability to facilitate data transfers between the host and other supporting computer systems. The total amount of direct access storage space for the data supporting MOBREM is approximately 288 megabytes with an additional 50 megabytes of disk storage required for MOBREM software libraries.

c. Output Devices. The principal output device required by MOBREM is an on-site printer to produce hardcopy reports created by MOBREM. The host computer printer must have the capability to produce 800K lines of print per model run. (This assumes all reports are requested in batch.)

Figure 3-

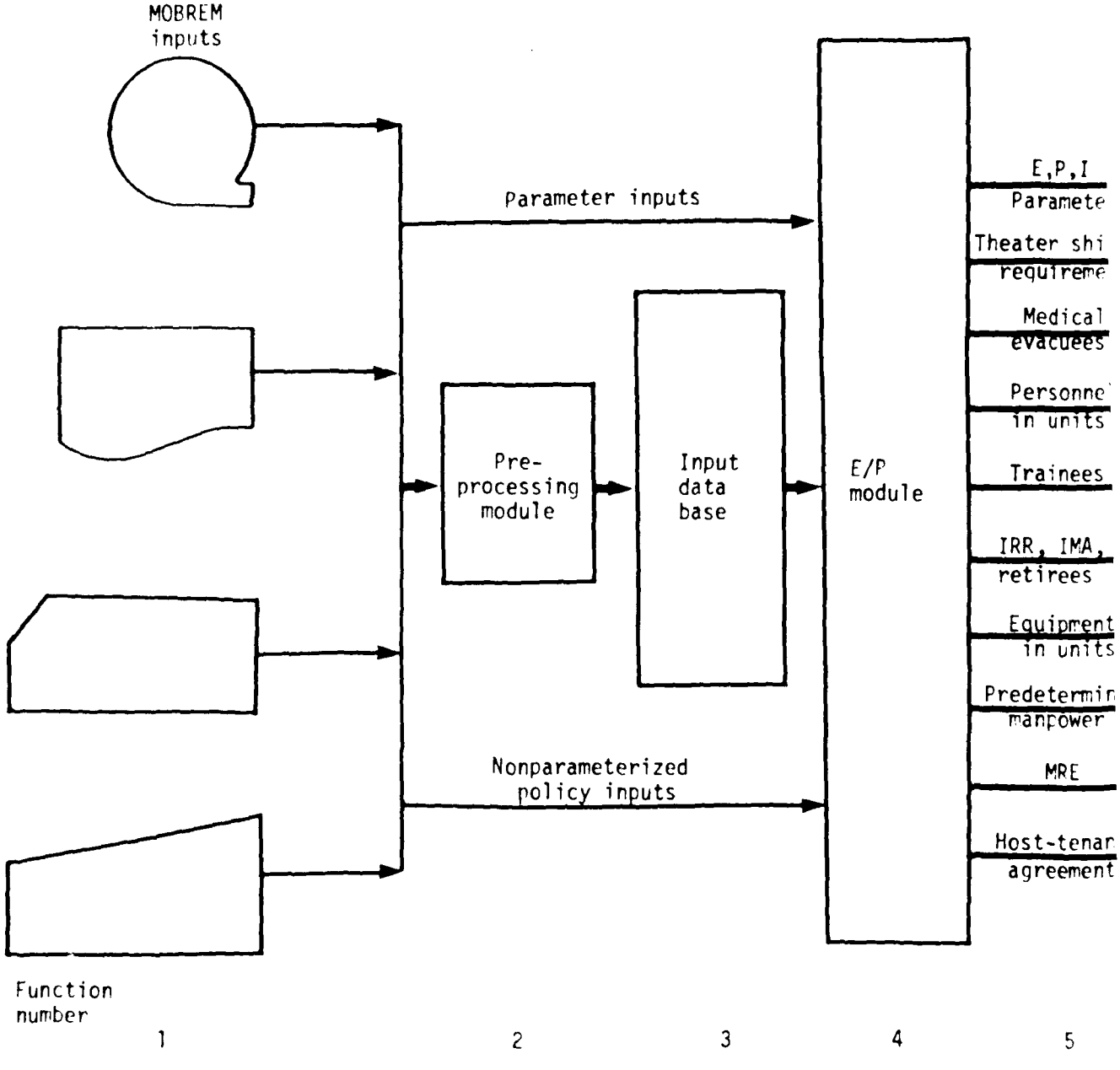
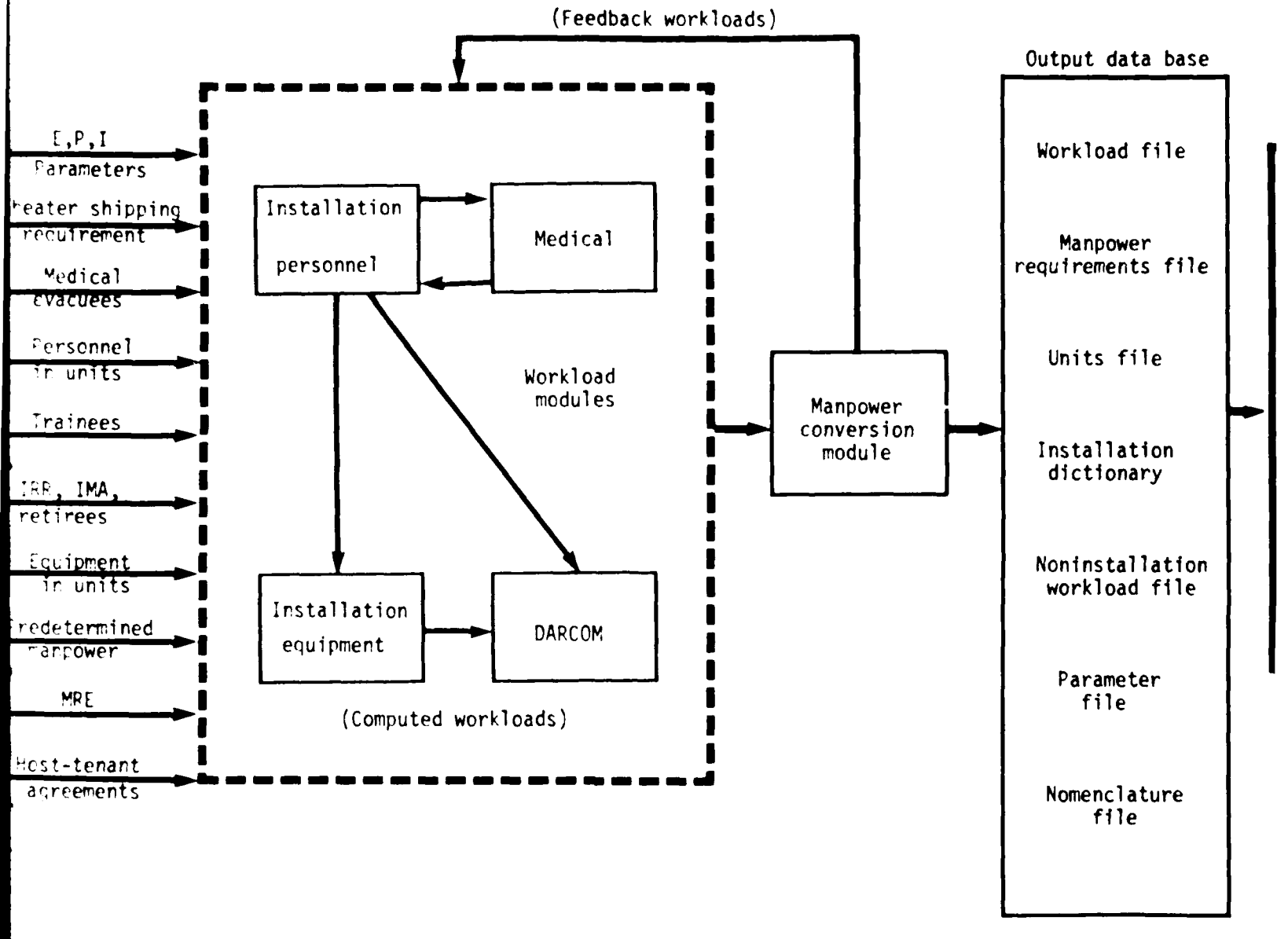
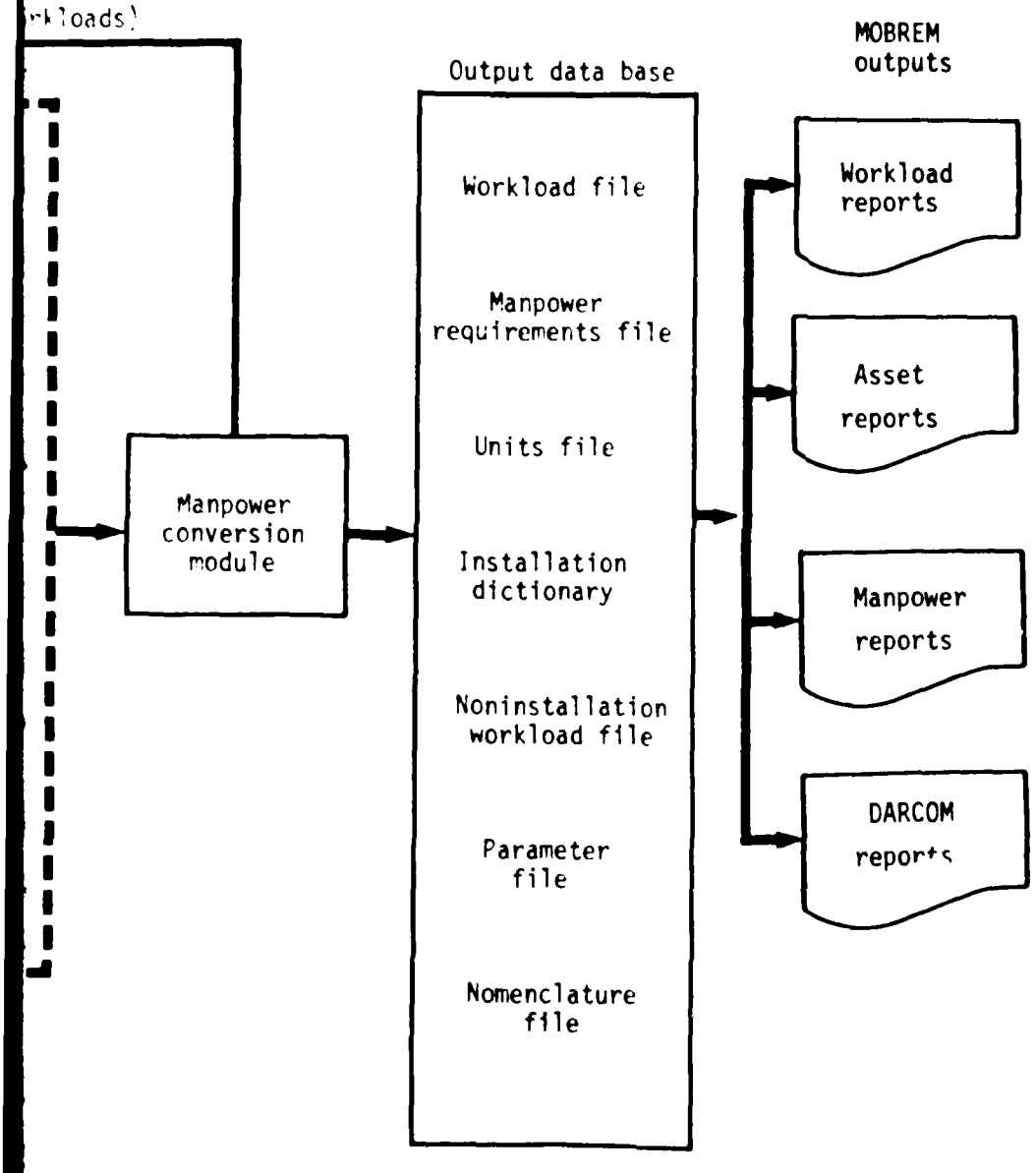

MOBREM inputs
Parameter inputs
Pre-processing module
Input data base
E/P module
Nonparameterized policy inputs
E,P,I
Paramete
Theater shi
requireme
Medical evacuees
Personne
in units
Trainees
IRR, IMA, retirees
Equipment in units
Predetermin manpower
MRE
Host-tenar agreement
Function number
1
2
3
4
5

Figure 3-1. MOBREM Functions




rkloads)
Output data base
MOBREM outputs
Workload file
Manpower requirements file
Units file
Installation dictionary
Noninstallation workload file
Parameter file
Nomenclature file
Manpower conversion module
Workload reports
Asset reports
Manpower reports
DARCOM reports
7
8
9

CHAPTER 4

MODEL OPERATION AND MAINTENANCE TASKS

4-1. INTRODUCTION

a. This chapter identifies the principal tasks that CAA analysts performed to operate and maintain MOBREM. The descriptions of these tasks represent tne experience gained by CAA in building the MOBREM data base, operating the model, then updating the data base and operating the model a second time. The operational tasks that were performed are identified in Figure 4-1 (foldout) at end of chapter. The six numbered tasks depicted are performed sequentially to build and verify the MOBREM data bases, operate the model and provide verified model outputs. A seventh task (data and program modification) is essentially an on-call task which is required when tne analysis performed in any one of the other six tasks produces need for a corrective feedback. Task 7 can result in modification to data or programs relating to any of the previous tasks (1-6).

b. Analysis is an essential part of each task since it minimizes the transfer of errors from one task to another, in this way reducing the effects of cumulative error buildup and increasing the likelinood tnat task 6 can be performed with maximum efficiency and output credibility. Each of the tasks depicted in Figure 4-1 at the end of tnis chapter is described in detail in the succeeding paragraphs.

4-2. TASK 1. ACQUIRE AND REVIEW AUTOMATED INPUT DATA

a. MOBREM requires a large volume of input data from automated source systems. The major source systems and the principal types of data that tney provide to CAA were identified in Table 3-3. These systems are ongoing, establisned Army systems wherein tne data content, tne output formats, tne updating requirements and the operation are controlled by the source organization responsible for tne system. Requests for extracts from tnese systems vary from special tailored outputs to standard products. Whenever possible, MOBREM uses standard data products placing no unusual data demands on the source. MOBREM depends upon its own programs (to be used) to select and sort tne data required from tne standard source tapes.

b. In order for MOBREM to acquire the automated data required for operation, a liaison must be establisned between the model operator organization and the point of contact (POC) for the automated input data source. This is shown as a two-way arrow as part of Task 1 in Figure 4-1 and requires tne following to be accomplished:

(1) To specify and determine that the data required is available.

(2) To identify the source tape(s) required.

(3) To determine the source tape's programing conventions and output formats.

(4) To determine the update frequency of the source tape.

(5) To establish a rapport for dialogue concerning (a) data clarifications, (b) MOBREM requested corrections or (c) data and format changes at the source end.

c. Source system changes can produce major impacts on MOBREM programs; for example, if data which MOBREM extracts from a specified source field is changed to another field. It is generally true, however, that when source systems make internal changes, they will take into account the needs of external users. This was verified during the MOBREM operation; however, it was also noted that unless a dynamic working relationship was maintained, source changes were made without CAA's knowledge, which in turn required additional error detection effort.

d. Also included as part of Task 1 is the receipt and transfer of the source tapes to MOBREM files. A CAA-developed copy program (McPadden Program) copies the source tape, producing a disk file and MOBREM tape (for archive files). Although this task is normally straightforward, the McPadden Program cannot be used when the volume of data exceeds certain limits (the MOBREM Operator's Manual discusses transfer procedures in detail). The TAEDP tapes, for example, fall into the high data volume category and must be copied by tailored extract programs developed by a CAA programer. Transfer programs merely copy the data as it is contained on the source tape; no data selection or error detection is introduced at this point in the operation. The MOBREM operator must be responsible for assuring that the transfer is successful. This may require discussions with source POC (system programers) to verify source tape characteristics.

e. The last part of Task 1 is the review of the automated input information that has been transferred to MOBREM files as indicated in Figure 4-1. Utility programs are used to select data sets representing areas of interest to the analyst. The data are analyzed for completeness, reasonableness and accuracy. This requires a MOBREM analyst who understands the data requirements, the data meanings, and the source systems.

f. As is the case with each task shown in Figure 4-1, two kinds of action can result from the automated input analyses. First, when the analysis reveals a need for corrective feedback to the source, an action is required to either make compensating changes in the source system or to perform MOBREM program modifications (Task 7). This is shown by the dotted arrow going upward from the MOBREM analyst to Task 7. The second action is the verification of correct data. This is shown by the solid downward arrow between the MOBREM analyst and the data files and programs. These data are then stored in MOBREM data files for use later in the operation of the model. Most of the automated inputs required for MOBREM are automatically sent to CAA by the source as frequently as source updates occur (quarterly to annually).

4-3. TASK 2. PREPARE MANUAL PREPROCESSING INPUTS AND ANALYZE

a. As shown in Task 2 in Figure 4-1, additional input data must be prepared and analyzed for preprocessing. These inputs are not available from source tapes but are contained on punched cards, microfiche, or in typewritten documents. They are referred to in the figure as manual preprocessing inputs and include tne counts of various types of workloads (e.g., IRR, Retirees, IMA, patients, equipment, and depot assets). The analyst must transfer these inputs to MOBREM files and during the process assess their validity. In general the analyses focus on the data providers to assure the accuracy and completeness of their inputs. When appopriate, as shown in Task 2, corrective feedbacks noted by the MOBREM analysts are brought to their attention.

b. Also included in the preprocessing of manual inputs are data dictionaries and cross-reference tables developed as part of the MOBREM design. Examples are the Installation Dictionary which defines the MOBREM installations, and the Army Management Structure Codes (AMSCO)/functional code crosswalk which relates MOBREM functional support codes to the Army's AMSCO codes. These inputs must be examined prior to each model run for currency and updated as required. The verified manual preprocessing inputs are stored in interim MOBREM data files for use in later operations.

4-4. TASK 3. EXERCISE PREPROCESSING PROGRAMS AND ANALYZE

a. In Task 3, the MOBREM analyst must exercise the MOBREM preprocessing programs which format, edit and integrate tne data verified during Tasks 1 and 2. Separate preprocessing programs relating to different data inputs are used to produce preprocessed output printouts and error messages which are shown as part of Task 3 in Figure 3-1 must be analyzed. The error messages are designed to alert the analyst to discrepancies between expected data outputs and actual data outputs. In addition to the error messages, printouts of each preprocessed output are produced and must be reviewed for completeness and accuracy.

b. The preprocessing analysis that was performed during the development and testing phases of MOBREM represented a major and time-consuming task during which the bulk of the input data errors were detected and corrected. In fact, significant improvements in source systems were made as a result of tne Task 3 analyses. Two separate updates and analyses of the input data (Tasks 1 through 3) were made during the MOBREM development, and eacn required over 4 montns to complete. The analyses performed during Tasks 1, 2 and 3 resulted in time/efficiency payoffs in later tasks. The product of Tasks 1, 2 an 3 is the MOBREM input data base which contains the verified, processed workload data which are changed when the source input systems are updated.

4-5. TASK 4. PREPARE PARAMETER AND POLICY INPUTS AND ANALYZE

a. MOBREM contains 61 parameters (identified in Appendix E) which can be readily varied by the user to observe changes in the mobilization workloads prescribed by the input system. Each parameter represents a value, such as size, location, timing, for a particular mobilization policy, e.g., the number of days after M-day that D-day occurs is zero; or the fill level of deploying units equals 100 percent of structure strength. A base case set of values for each of the parameters has been developed and a range of values for each parameter that the model user can select has also been established. The base case set of values will be used by the model unless user changes are made. Thus, as shown in Task 3 of Figure 4-1, the MOBREM analyst's role here is to communicate with the user to assure that the base case values for each parameter and ranges for change are understood. When changes to the base case parameters are requested, the MOBREM analyst must be certain that range violations have not occurred. Corrective feedback to the user shown by the dotted line is made if required.

b. A second set of manual inputs must also be analyzed. These are prescribed by mobilization policies and are not affected by the parameters. Three examples of these latter inputs are the manpower requirements equations (MRE) which are used to determine the manpower required to support the mobilization workloads, the host-tenant agreements which distribute support from one installation to another based on mobilization policies, and the predetermined CONUS Base functions which are input into MOBREM as having predetermined mobilization manpower values based on policy requirements.

c. In the CAA preparation and analysis of the manual inputs during the model development, it was pointed out to the study sponsor that the three particular manual inputs given as examples above were not as disciplined, organized or as intensely managed as is the case with the automated inputs of MOBREM. In fact, some of the policy values were obtained only as a result of CAA persistence in repeatedly requesting an estimate from the responsible source. As a direct result of the problems encountered with these inputs, ODCSPER tasked CAA to analyze and improve these inputs via a CONUS Base Manpower Requirements Equations Improvement Study (COMARS) to commence in the summer of 1984.

d. The verified parameters and policy inputs are fed into the Environment Policy Module (solid line) which establishes the basic set of policy guidelines, assumptions and constraints under which the rest of the model must operate. As required, corrective feedback (dotted line) is applied to modify MOBREM or source data, or to make program modifications.

4-6. TASK 5. EXERCISE MODEL PROGRAMS AND ANALYZE

a. In Task 5 the MOBREM model operator exercises programs to produce the model listings which notify the operator of any errors in the input parameters. Also check programs are used to inform the operator that the data files necessary for model operation are in the system or not in the system. The emphasis in this task is to verify that the system is ready for model operation. The corrective feedback shown by the dotted line is most likely to relate to modifications to programs that establish the files or programs that would introduce more efficiency into model runs. Once the checks are made, the model operation is started by the operator and continues automatically until an error is detected or until all required outputs are verified and are produced on MOBREM output files which is the MOBREM output data base.

b. During the two operations of the model which were performed during the MOBREM development, the first required many restarts after errors were detected by the model (most of which pointed to missing files or parameter errors). This resulted in a series of corrective feedbacks, which after analysis, produced the design of the aforementioned check programs. The second operation during the model development period utilized the newly developed check programs, and ran to completion without interruption to create the MOBREM output data files necessary for producing the MOBREM reports. The use of the check programs to identify potential causes of model breakdown provided early warnings and pinpointed data problems or file problems which were corrected. The output of Task 5 is the MOBREM output data base which contains the data needed to print the output reports.

4-7. TASK 6. PRODUCE OUTPUT REPORTS AND ANALYZE

a. Task 6 requires the model operator to use the MOBREM report generator programs designed to print the output report specified as required by the sponsor. Because of the wide range of content and volume of data produced in these reports, analysis is an important part of this task. During the model development, CAA selected samples of the output reports that represented a good cross section of all reports and reviewing report line content. These samples were examined for accuracy. Their values were compared against manually produced values. After corrective feedbacks were made, the output reports were delivered to the sponsor. The page count of the set of MOBREM MOBTDA guidance and DARCOM special reports which were produced are in Table 4-1.

Table 4-1. MOBREM Report Page Counts

Report	Pages
Installation Workload Report	544
TRADOC, FORSCOM, and DARCOM MACOM Workload Report	6636
Installation Manpower Requirements Report	367
TRADOC, FORSCOM, and DARCOM MACOM Manpower Report	1082
TRADOC, FORSCOM, and DARCOM Summary Manpower Requirements Report	84
Installation Asset Report	320
DARCOM special reports (7)	585

b. During Phase V, the aim of CAA was to verify that MOBREM was operating in accordance with the functional design as updated by required modifications to the input data and programs. As stated previously the verification was carried out by an extensive CAA analysis of these reports. (The complete analysis is described in Appendix D.) A normal review of the output reports need not be as extensive as that conducted by CAA during model development, but analysis still should be part of the model operating task. This could generally be accomplished by checks for data omissions and data value reasonableness as related to the changes that were made following the last update of the data base or changes made in model programs.

4-8. TASK 7. MODIFY DATA OR PROGRAMS

a. Task 7 is performed "on call" as a result of corrective feedbacks from the previous operational tasks (1 through 6). Two kinds of modifications are accomplished in Task 7, namely, data modification and program modification. Data modification requires an active two-way communication between the MOBREM operational analysts and the data providers. Based on CAA experience in making data modifications, the communication produces the best results when the MOBREM operational analyst initiating the communication has a knowledge of the data meanings, and the data provider has an understanding of the application of the MOBREM reports which incorporate the data. Since the MOBREM data base integrates the principal data contained in the Army's mobilization planning systems (if MOBREM outputs are to remain credible), it is essential for the MOBREM data base to be maintained current with the updates and changes that occur in these planning systems. Thus data modification task is a continuing operational requirement.

b. The programing modifications require FORTRAN programing skills and knowledge of the MOBREM design and programing processes. A programing modification task was essential during MOBREM development and resulted in important improvements in model operating efficiencies. As the model outputs are used by the Army, programing modification will continue as a requirement because it is in the nature of model use that users will develop model enhancement needs to improve model utilization or enlarge the use of the model to meet new needs of the Army.

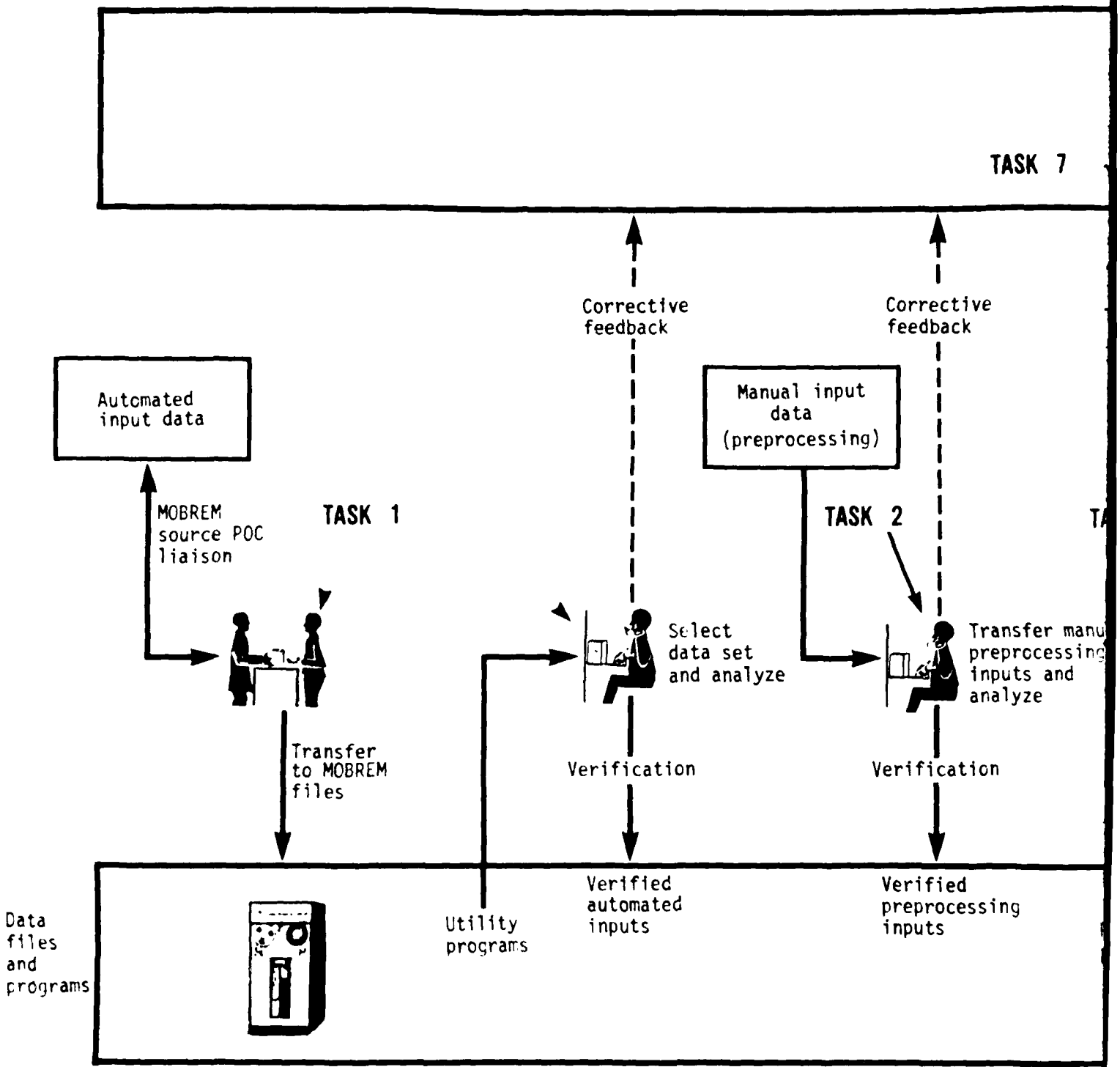
4-9. MOBREM OPERATIONAL RESOURCES REQUIREMENTS. MOBREM operation requires certain personnel skills that must be applied to operate and maintain the data base and model as it is used by the Army. Seven operational tasks were required during the model development. In order to provide an insight into the kinds of resources required to perform the seven tasks, Table 4-2 identifies the areas of knowledge that were needed during model development and relates these areas of knowledge to four notional MOBREM operational positions. The need for these model operational positions during the MOBREM implementation cannot be precisely predicted. More must be known about the Army use of the model. However, as long as the model use requires up-to-date-outputs, the model input data base must be updated and the model rerun to produce new outputs. During the development of MOBREM, the data base updating consumed approximately 80 percent of the operational effort while the remaining tasks consumed 20 percent of the effort. It is believed that this update/model operation task ratio will be approximately true every time new model outputs reflecting updated input data are required. The point is that MOBREM operation requires resources to perform required tasks. The discussions in this chapter describe the CAA experience in performing these tasks. In order to provide some insights into the types of resources and areas of knowledge that may be required for MOBREM operation, Table 4-2 is provided.

Table 4-2. Notional MOBREM Operational Positions[a]

Area of knowledge	Programer	Systems analyst	Data base manager	Model operator
FORTRAN	P	-	-	-
Model program organization	P	-	-	S
Functional design	S	P	-	S
Operator's manual	S	P	S	P
CONUS Base functions	-	P	S	-
Mobilization planning data	-	P	P	S
Systems analyses	S	P	-	-
Input data formats	S	S	P	S
Output reports	S	S	S	P

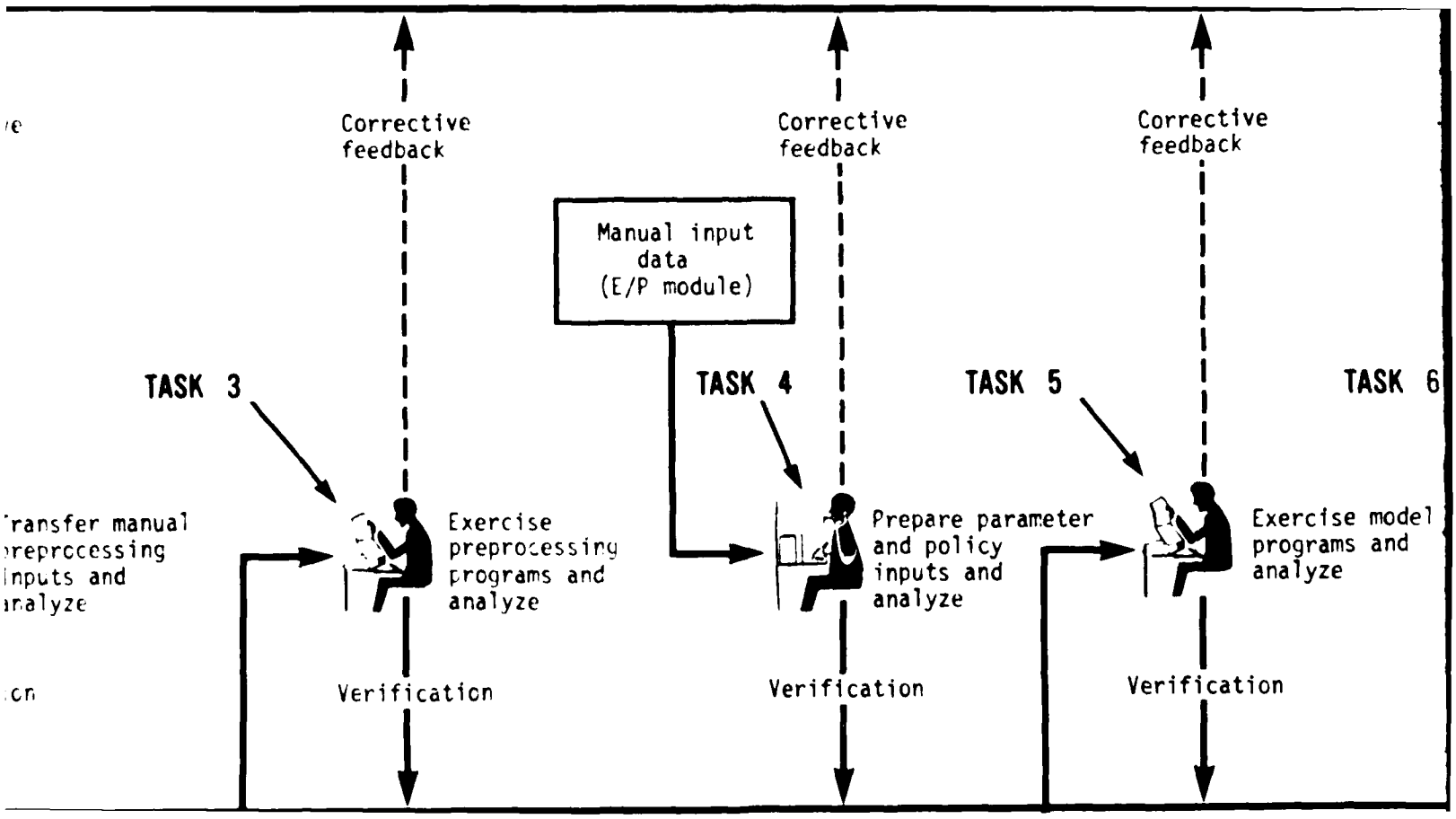
[a] P = Primary area of knowledge
S = Secondary area of knowledge

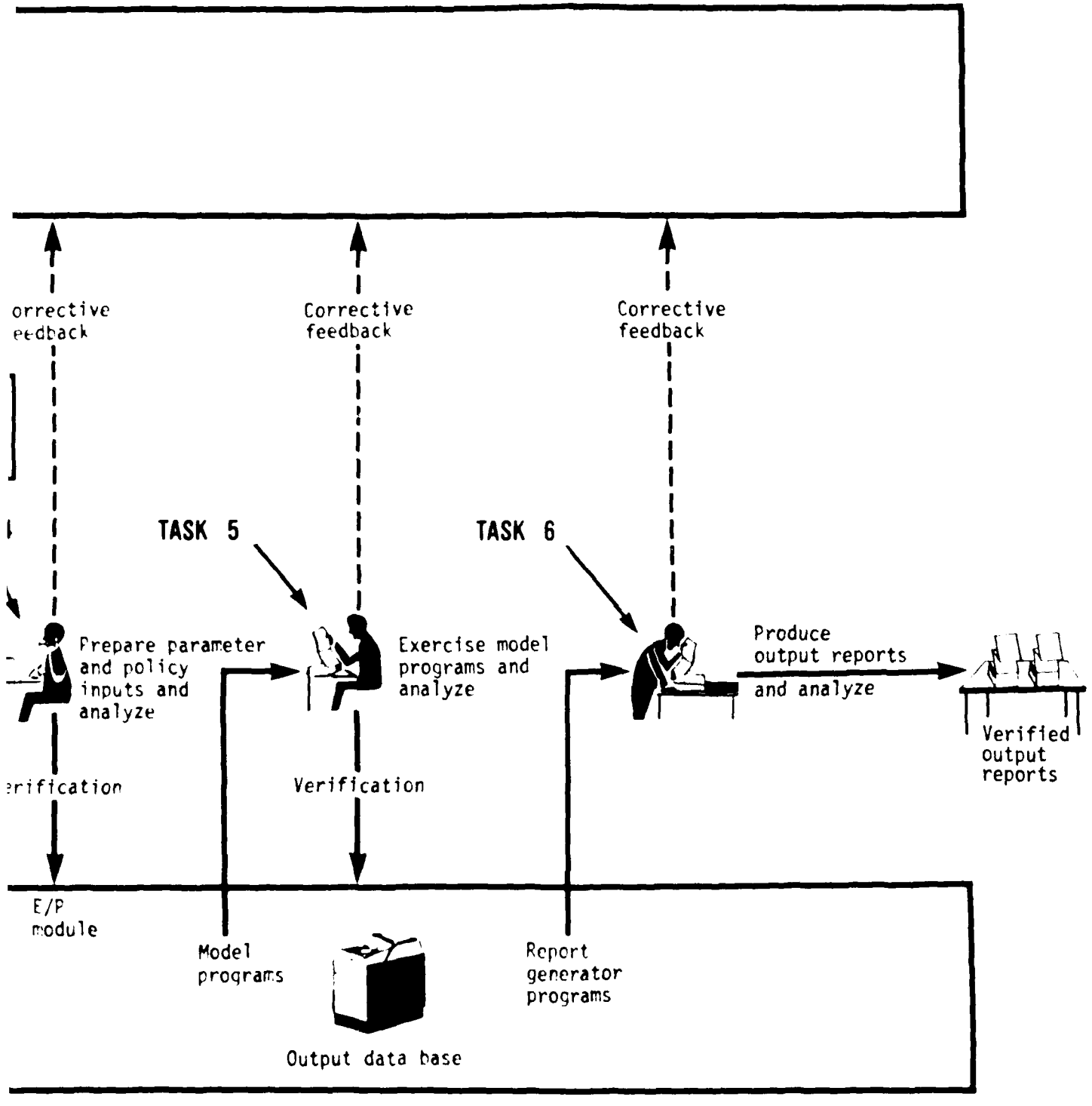
Figure 4-



Operational Tasks

1 Acquire and review automated input data.
2 Prepare manual preprocessing inputs and analyze.
3 Preprocessing program operation and analysis.
4 Manual input data (policy parameters) preparation and analysis.


Corrective feedback
Corrective feedback
Corrective feedback
Manual input data (E/P module)
TASK 3
TASK 4
TASK 5
TASK 6
ransfer manual
reprocessing
nputs and
nalyze
Exercise preprocessing programs and analyze
Prepare parameter and policy inputs and analyze
Exercise model programs and analyze
Verification
Verification
Verification


orrective
eedback
Corrective
feedback
Corrective
feedback
TASK 5
TASK 6
Prepare parameter
and policy
inputs and
analyze
Exercise model
programs and
analyze
Produce
output reports
and analyze
Verified
output
reports
erification
Verification
E/P
module
Model
programs
Report
generator
programs
Output data base

CHAPTER 5

OBSERVATIONS

5-1. INTRODUCTION. This chapter does not rehash the lessons that were learned during each of the five phases of MOBREM development. As described in previous chapters, these lessons were used to build MOBREM and bring it to an operational level. Rather, this chapter presents observations about the current state of the model, its implementation requirements, and its potential uses by the Army.

5-2. CURRENT STATE OF MODEL

a. Design Objective Achievement. The model meets the design objectives specified by the sponsor. Observations concerning the achievement of the objectives are:

(1) The acquisition of the required data and the integration of the data into an automated data base that identifies time-phased full mobilization CONUS Base workloads have been accomplished.

(2) The model provides an automated means for evaluating CONUS Base mobilization policies.

(3) The MOBREM Study has improved many existing manpower requirements equations and developed 32 new equations for use in computing requirements.

(4) MOBREM design has been verified and output reports produced that provide mathematically derived, workload-based MOBTDA guidance which HQDA could send to the MACOMs and a means for HQDA evaluation of the MOBTDA submissions in response to guidance.

b. Model Operational and Maintenance Requirements. The operational and maintenance tasks that were performed during the model development are described in Chapter 4. All of these tasks will be required as the model outputs are utilized by the Army. The full extent of the requirement will not be known until the Army initiates field use of the model outputs and implements the Army system that will manage MOBREM MOBTDA guidance and evaluation.

5-3. IMPLEMENTATION REQUIREMENTS. In order to implement MOBREM for MOBTDA guidance and evaluation, the following items are considered essential.

a. A MOBREM user training plan identifying the trainees, trainers, training locations, and schedules.

b. A structured training course for MOBREM users.

c. An implementation plan outlining required milestones and tasks.

d. A user's manual describing to MACOM and installation users the procedures and instructions for using MOBREM reports in developing MOBTDAs.

e. A regulation or other Army document that assigns organizational responsibilities; establishes uniform policy and criteria for MOBTDA development; specifies the resource requirements; and defines the management network or system for effective use of MOBREM reports at HQDA, the MACOMs, and CONUS installations.

f. A full-time implementing organization capable of producing the above items and implementing MOBREM use in the Army.

5-4. POTENTIAL MODEL USES. The MOBREM data base and model have many potential uses in addition to providing MOBTDA guidance reports. These uses can be divided into two categories: those that can be implemented with minor programing changes and those requiring additional analysis and a more extensive programing effort. The first category provides additional means for analysis of the CONUS Base mobilization requirements. The second category would expand the current model design and would extend the utility of the model to include force capability analysis.

a. Additional Uses with Minor Changes

(1) Delta reports which display differences between two workload data bases of two manpower requirements data bases or different time periods could be produced.

(2) A variety of reports on specific units or groups of individuals could be produced to display time phasing or counts during mobilization.

(3) The MOBREM input and output data bases could be loaded into a data base management system for ad hoc queries by users.

(4) Current MOBREM reports use only the output data base. Many potential reports which combine both input and output data could be produced. For example, a medical report could be produced by an installation which displays the number of hospital beds, total theater patients arriving, CONUS patients, and dispositions (deaths, to civilian hospital, return to duty, etc.).

b. Additional Uses with Major Changes

(1) Algorithms could be developed for breaking down MOBREM functional codes to UIC level or personnel and military classification codes.

(2) Any of the above reports showing trends, or which are used for sensitivity analyses, could be made more useful by utilizing the inputs with CAA graphics programs.

(3) The interfacing of MOBREM data base, outputs, and design with other Army models (e.g., the Total Army Analysis or the OMNIBUS Study) to provide improved CONUS Base requirements information are also areas of potential MOBREM use.

(4) Finally, the whole area of constraints can be introduced into the MOBREM design. These include facility constraints and personnel and equipment availability constraints.

APPENDIX A

STUDY CONTRIBUTORS

1. STUDY TEAM

a. Study Director

Mr. Gordon Barry, Forces Directorate

b. Team Members

LTC Richard Kendrick
LTC Kent Modine
LTC John Watts
MAJ Walter Alberg
MAJ Bill Jeanes, Editor (295-1513)
Ms Rose Brown
Ms Pat Fleming
Mr. Stanley Pawlowski
Ms Sally Van Nostrand

2. PRODUCT REVIEW BOARD

MAJ(P) William Tomlinson (Chairman), Requirements Directorate
Ms Rosie Brown, Analysis Support Directorate
Ms Jeanette Livasy

3. EXTERNAL CONTRIBUTORS

Mr. John Goodman (Contractor), Presearch, Inc., Arlington, VA
Mr. Cris Jones (Contractor), Presearch, Inc., Arlington, VA
Ms Doris Hudnall (Contractor), Presearch, Inc., Arlington, VA

APPENDIX B

STUDY DIRECTIVES

This appendix contains the study directives pertaining to the MOBREM model development. Annex I to Appendix B covers Phases II and III. There was no formal tasking for Phase I. Phase I was done to generate the background data necessary to write the study directive in Phase II. Annexes II and III to Appendix B are the study directives for Phases IV and V, respectively. Annex IV holds the memorandum mentioned in paragraph 1-2a(3).

(NOT USED)

ANNEX I TO APPENDIX B

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS
WASHINGTON D.C. 20310

REPLY TO ATTENTION OF DAMO-FDP

MEMORANDUM FOR COMMANDER, US ARMY CONCEPTS ANALYSIS AGENCY

SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

1. Purpose of Study Directive. This directive specifies the tasks, products, schedule, and organizational responsibilities for completing the Army Mobilization Base Requirements Model (MOBREM) Study.

2. Study Title. The Army Mobilization Requirements Base Model (MOBREM).

3. Background

a. CSM 79-15-27 dated 3 August 1979 (Incl 1) established a MOBREM Study Advisory Group (SAG) and a HQDA Ad Hoc Study Group to commence a comprehensive study to define the CONUS base required to support mobilization, training, deployment and sustainment of the total Army during full mobilization. The CSM designated ODCSOPS as responsible to:

(1) Act as MOBREM study sponsor.

(2) Conduct Phase I of the study. This phase of the study is directed at the analysis and documentation of the mobilization process related to the determination of CONUS base manpower requirements.

(3) Task US Army Concepts Analysis Agency (CAA) and specified MACOMs to participate in Phase I of the study.

(4) Task CAA to proceed with the modeling process, with the Ad Hoc Study Group continuing to work with CAA following Phase I.

b. Phase I of the study has progressed to the point where a preliminary concept of the model design has been developed, a initial list of essential data elements identified, and an estimate been made of the effort and resources required to complete the analyses, the model design, and implementation developed. Based on the estimate, approval has been given for contract support during Phase II (model design) and during III (model implementation).

c. Required analyses by the government to define data, document the mobilization processes, and to develop CONUS base manpower standards will continue during all phases of the study. CAA will complete the pre-award contract procedures during Phase I and direct the government and contract efforts during Phases II and III.

4. Study Sponsor. Deputy Chief of Staff for Operations and Plans (DCSOPS).

DAMO-FDP
SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

5. Study Agencies. US Army Concepts Analysis Agency (CAA).

6. Terms of Reference

a. Problem. The CONUS base force structure and manpower required to support full mobilization is inadequately defined resulting in significant gaps in Army program development and mobilization planning.

b. Objective. The Study objective is to provide a model through which time-phased CONUS base requirements for force structure and manpower can be derived, analyzed and utilized in mobilization planning and programming.

c. Study Products. No study report as such is required; however, both the government and the contractor are required to produce products during the study. The government products are identified in the milestones schedule (para 9b) together with the responsible organizations. Contractor products are covered by the MOBREM work statement (Incl 2).

d. Tasks.

(1) Define MOBREM output requirements, the mobilization policies, the CONUS base mobilization workload generator input data requirements and data sources.

(2) Define the functional code structure to be used for CONUS base mobilization manpower requirement projections.

(3) Develop and document the CONUS base mobilization standards to be used to convert mobilization workload inputs into manpower support requirements.

(4) Review and evaluate contractor progress and products IAW MOBREM work statement (Incl 2).

e. Scope. The analysis will use the NATO/Warsaw Pact scenario requiring full mobilization. The study will be conducted in three phases. Phase I, which is in progress, initiated analysis of the mobilization process and developed a plan for model development, which includes contractor support. Phase I will conclude after competitive contract proposals are solicited and contract award made. Phase II will continue the mobilization process analysis, develop the CONUS base mobilization manpower standard, and review/evaluate the contract model design products and efforts. Phase III will complete the mobilization process analyses, provide the contractor with the data required for model operation, will review contractor efforts and products covering model implementation, test, training and documentation, and will conclude with model operation on the CAA computer.

f. Timeframe. September 1979-Mar 1982.

DAMO-FDP
SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

g. Assumptions. Mobilization assumptions will be based on the lastest Consolidated Guidance, the Army Force Planning Data Assumptions (AFPDA) and DAMO-FD guidance in specif : areas.

7. Responsibilities

a. ODCSOPS Force Management Directorate (DAMO-FD) will be responsible for:

(1) Providing a full-time Ad Hoc Study Group of two or more people to work jointly with CAA on the tasks specified in para 6d.

(2) Coordinating study interfaces and tasking required for the MOBREM SAG, the ARSTAF and the major commands.

(3) Serving as the functional proponent for model use, maintainence and the updating of system files and manpower standards.

b. ODCSPER Survey and Standards Division (DAPE-MBU) will be responsible for providing assistance for the development of CONUS bas mobilization manpower standards.

c. ODCSPER Plans Division (DAPE-MBP) will be responsible for providing mobilization data concerning IRR and retiree preassignment, transients and holdees for the individual's module.

d. ODCSOPS Individual Training Division (DAMO-TRI-MOB) will be responsible for providing mobilization data from ATRRS for the individual's module.

e. ODCSOPS Army Mobilization Planning System Office (DAMO-AMPS) will be responsible for providing assistance for the development of mobilization policies and assumptions to be used in the model test and implementation.

f. ODCSLOG Operations and Plans Division (DALO-PLO) will be responsible for providing assistance in obtaining mobilization data from DARCOM and MTMC for the supplies, equipment and transportation modules.

g. The Office of the Surgeon General Plans and Operations Division will be responsible for providing assistance in obtaining mobilization data for the medical support module.

h. Other Organizations. The MACOM's, the MOBREM SAG and other staff agencies will provide support as designated in CSM 79-15-27 (Incl 1).

8. References

a. Inclosure 1: Chief of Staff Memorandum (CSM) 79-15-27 dated 3 August 1979.

b. Inclosure 2: MOBREM Contract Work Statement.

DAMO-FDP
SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

9. Administration

a. Support

(1) TDY, per diem, overtime are the responsibilities of the agencies providing support.

(2) Administrative support, office space are the responsibilities of the agencies providing support.

(3) Contractual support will be provided in accordance with contract work statement (Incl 2).

(4) ADPE support will be provided by the contractor and CAA in accordance with contract work statement (Incl 2).

b. Milestone Schedules. CAA and DAMO-FDP will work jointly on all tasks. The lead responsibility for each task and its completion due date are shown below.

Milestone	Due Date	Lead Responsibility
Complete actions for contract award	30 Sep 80	CAA
Define model output requirements	30 Sep 80	DAMO-FDP
Define and document mobilization policies, CONUS base workload generator data and sources	30 Sep 80	CAA
Define and document CONUS bas support functional code structure	30 Sep 80	DAMO-FDP
Develop & Document manpower standards	1 May 81	DAMO-FDP
Provide contractor data files and data values for test	1 July 81	CAA
Review and Evaluate contractor progress and products	Throughout period of contract LAW work statement	CAA

DAMO-FDP
SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

c. Control Procedures

(1) The MOBREM Study Advisory Group established by CSM 79-15-27 (Incl 1) will continue to function during the study to review progress.

(2) DD Form 1498 will be prepared by CAA.

(3) Direct contact is authorized between study agency and DA Staff/MACOM points of contact. DAMO-FDP point of contact, LTC James Todd, 695-5123. MOBREM points of contact are listed in Inclosure 3.

(4) This tasking memorandum has been coordinated with CAA in accordance with paragraph 4, AR 10-48.

3 Incl
as

GLENN K. OTIS
Lieutenant General, GS
Deputy Chief of Staff
for Operations and Plans

(NOT USED)

CHIEF OF STAFF

Memorandum

U. S. ARMY

DISTR A EXPIRES

CSM 79-15-27

DATE 3 August 1979

FILE CS 370.01 (3 Aug 79)

ACTION OFFICER/EXT
LTC Todd/71036

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

MEMORANDUM FOR: HEADS OF ARMY STAFF AGENCIES

1. PURPOSE. This memorandum establishes a Study Advisory Group (SAG) and an ad hoc study group to conduct a comprehensive study to define the CONUS base required to mobilize, train, deploy and sustain the total Army during full mobilization and to supervise the design of a methodology/model to determine the force structure and manpower requirements for such a mobilization base.

2. REFERENCES.

a. AR 1-1, Planning, Programing, and Budgeting within the Department of the Army.

b. AR 5-5, The Army Study System.

c. AR 37-100, Account/Code Structure.

d. AR 135-300, Mobilization of Reserve Component Units and Individuals.

e. AR 570-3, Manpower Utilization and Requirements (RC-CSFOR-78).

f. AR 570-4, Manpower Management.

3. BACKGROUND.

a. Studies and exercises such as MOBEX-76 and NIFTY NUGGET have identified significant shortfalls in the CONUS mobilization base. There is currently no process to adequately define these total requirements in a manner similar to the Total Army Analysis (TAA) process.

b. There is a need for a model/methodology that will not only determine the force structure and manpower requirements, but will provide the basis for modeling other resource requirements of the mobilization base.

Inclosure 1

DAG FORM 85 1 MAR 80

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

4. COMPOSITION.

a. Study Advisory Group

(1) Deputy Director, Force Management Directorate, ODCSOPS (chairperson).

(2) ODCSPER, DPAE, ODCSLOG, OACSAC, OCA, OTSG, OCE, OCAR, NGB, FORSCOM, TRADOC, DARCOM and Health Services Command will provide members (O-6 or civilian equivalent).

b. Study Group

(1) Action Officer (O-5) - Force Management Directorate, ODCSOPS (coordinator).

(2) Action Officers (04/05) - NGB and OCAR (members).

(3) Points of contact (POC) from Concepts Analysis Agency (CAA), DA Staff, and MACOM listed at Inclosure 1. POC participation should not exceed two hours per week.

5. RESPONSIBILITIES.

a. The Study Advisory Group will monitor the progress of the MOBREM Study.

b. ODCSOPS will —

(1) Act as the MOBREM study sponsor.

(2) Conduct Phase I of the study with an ad hoc study group.

(3) Task CAA and MACOMs listed at Inclosure 1, by separate correspondence, to participate in Phase I of the study.

(4) Following an analysis of the results of Phase I, task CAA to proceed with the modeling process (Phase II). The ad hoc group will continue to work with CAA during Phase II.

6. TERMS OF REFERENCE.

a. Problem: The force structure and manpower requirement to support a full mobilization in the CONUS base is inadequately defined resulting in significant shortfalls in Army program development and mobilization planning.

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

b. Objective: To provide a model or methodology through which time-phased CONUS base requirements for force structure and manpower can be derived, analyzed, and utilized in mobilization planning and programing.

c. Scope. Analysis will use the NATO/Warsaw Pact scenario requiring full mobilization response. The study will be conducted in two phases. Phase I will define the Army mobilization process through a review of DA policies, regulations, procedures, and automated systems which support mobilization. Based on the analysis of Phase I, Phase II will proceed with the development of the methodology/model. Mobilization of the industrial base will not be considered in the study, however, the methodology developed will provide the capability for analysis of selective, partial, and total mobilization scenarios.

d. Limitations. Existing data and studies will be used where applicable, especially techniques used in the TAA process. Related efforts by other elements of the DA Staff or their delegated agents will be incorporated into Phase I.

e. Time frame. Sept 1979 - Sept 1981 (83-87 POM Force).

f. Essential Elements of Analysis.

(1) Phase I -

a. What are the scope, functions, and organizational aspects of the mobilization base?

b. What common terminology is employed in the mobilization process?

c. What are the current mobilization policies?

d. What policies need to be solidified at HQDA to assist with both mobilization planning and execution?

(2) Phase II - To be determined.

7. LITERATURE SEARCH.

a. Organizations which have responsibility or interest in the study:

DPAE, ODCSPER, ODCSLOG, ODCSOPS, OACSAC, OCAR, NGB, FORSCOM, DARCOM, TRADOC, Health Services Command and CAA.

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

b. Studies or reports relevant to this study --

(1) TAA

(2) OMNIBUS

(3) MOBEX-76

(4) MOBEX-78 NIFTY-NUGGET

(5) ROGAR

(6) ACCS-82

c. The studies above are not sufficiently comprehensive to meet the requirements of either Phase I or Phase II.

8. DIRECTION AND CONTROL.

a. The study coordinator will call meetings of the SAG when necessary.

b. The study coordinator will meet reporting requirements of AR 5-5, The Army Study System.

c. Army Staff agencies will provide POC name and telephone number to ODCSOPS (LTC James P. Todd/697-1036) by 30 August 1979.

d. Study Milestone Schedule is at Inclosure 2.

9. ADMINISTRATIVE SUPPORT.

a. Funds for travel, per diem and overtime, if required, will be provided by the parent organization of the study representatives.

b. Administrative support (space, clerical and equipment) will be provided by ODCSOPS.

BY DIRECTION OF THE CHIEF OF STAFF:

2 Incl
as

JOHN R. McDERMOTT
Lieutenant General, GS
Director of the Army Staff

The Army Mobilization Base Requirements

Model - (MOBREM) Study

Points of Contact

ODCSOPS	POINT OF CONTACT (04/05 - GS-12/13)
DAMO-FD (coordinator)	X
DAMO-OD	X
DAMO-TR	X
DAMO-RQ	X
CNGB	X
OCAR	X
ODCSPER	X
ODCSLOG	X
OACSAC	X
OACSI	X
ODACS	X
OTSG	X
COA	X
COE	X
FORSCOM	X
TRADOC	X
Health Services Command	X
DARCOM	X
Concept Analysis Agency	X

Representation will be provided by DAMO-FDA, DAMO-FDF and DAMO-FDP as required.

Dick /

STUDY SCHEDULE

PHASE I (1 September 1979 - 28 February 1980)

(1) Define the scope and nature of the problem.

(2) Describe the activities, functions, and physical character of the mobilization base.

(3) Develop assumptions to include the force to be supported and the resources available to support deployment.

(4) Identify policy decisions needed to begin the modeling process.

PHASE II (1 March 1980 - 30 June 1981)

(1) Develop a new requirements model or modify an existing program.

(2) Test the model.

(3) Modify as necessary.

(4) Implement for the POM.

(5) Evaluate outputs.

(6) Integrate into other resource management systems.

(7) Develop the final report.

Incl 2

WORK STATEMENT

ARMY MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM)

1. BACKGROUND

a. References

(1) Army Command and Control Study, Nifty Nugget/MOBEX-78 Analysis Report, SDM Corporation, 25 April 1979, (CONFIDENTIAL).

(2) AR 71-11, dated 15 April 1980, Total Army Analysis (TAA).

b. While the references listed above do not pertain exclusively to CONUS mobilization, the first indicates that the CONUS base force structure and manpower requirements necessary to mobilize, train, deploy, and sustain the total Army during full mobilization are inadequately defined and are not included in the Total Army Analysis (TAA) process. To improve the Army's force structuring process, Chief of Staff Memorandum (CSM) 79-15-27 was prepared and forwarded to the ARSTAF on 3 August 1979. The CSM directed the establishment of an ad hoc study group for the purpose of developing a model/methodology that will not only determine the force structure and manpower requirements for a CONUS base supporting mobilization, but also provide the basis for modeling other resource requirements.

c. In response to this requirement, a phased study effort has been defined. During Phase I, a preliminary design concept and an initial definition of data requirements is to be completed by the government. During Phase II, Model Design, and Phase III, Model Implementation, Test, Documentation and Training, are to be completed. Contractual support is planned for Phases II and III and is described below in Scope of Work. A summary of the MOBREM phased development and responsible organizations is contained at Inclosure 1.

d. Preliminary results of the Phase I effort to be considered in any contractual proposal are as follows:

(1) The input workloads that must be supported in the CONUS base during full mobilization have been initially defined (Inclosure 2).

(2) The CONUS base functional codes that support the above workloads have been initially defined (Inclosure 2).

(3) The installations/activities, time periods, to be covered by the CONUS base support requirements have been initially defined (Inclosure 3).

(4) A preliminary data processing concept has been defined, (Inclosure 4).

Inclosure 2

2. OBJECTIVE

a. The objective of this procurement action is to obtain design, implementation, and test of a system (hereafter referred to as "model") to determine the CONUS base requirements for support of the workloads imposed on CONUS activities as a result of full mobilization.

b. Contractor proposals in response to this work statement shall address three separate contract efforts, as follows:

(1) Completion of both the Model Design (Phase II) and the Model Implementation, Test, Documentation, and Training (Phase III), IAW the requirements specified in the work statement. The proposal should assume that the Phase III effort commences without interruption after Phase II approval;

(2) Completion of the Model Design (Phase II) as a separate contract effort;

(3) Completion of the Model Implementation, Testing, Training, and Documentation effort (Phase III) assuming a 45-day time period lapse between the approval of Phase II and the commencement of Phase III.

(4) Contractor responses shall also include the following:

(a) The study approach.

(b) The conceptual structure of the methodology.

(c) The substance of the methodology.

(d) The implementation approach.

(e) Test and validation approaches.

c. The principal functions that the model shall perform are as follows:

(1) Sort workloads into different categories that require discrete kinds or intensities of CONUS base support.

(2) Relate each workload to the CONUS installation/activity, functional support areas, and time periods during which the requirement exists.

(3) Apply computational factors that convert workloads to quantitative support requirements which can be identified with specific Army Management Structure Code (AMSCO) functions.

(4) Calculate the CONUS base support requirements by major command/installation/activity by AMSCO, in terms of manpower and selected items of equipment, in 10-day increments from M to M+60, and in 30-day increments from M+60 to M+270.

d. The model output will provide information to aid three basic objectives: mobilization planning, force programing, and force structure evaluation. More specifically, data generated by the model will:

(1) Provide HQDA the basis for issuing guidance to the major commands (MACOM) for the development and evaluation of workloads and Mobilization Table of Distribution and Allowances (MOBTDA).

(2) Be included as part of the force structure requirements projections covered in the Total Army Analysis process.

3. SCOPE OF WORK. Phase II will commence with the award of contract. The contract tasks to be performed in each phase are as follows:

a. Phase II, Model Design

(1) Task 1. Management Plan. Within ten working days after award of contract, CAA will make available to the contractor a copy of the final data concepts, etc., developed during Phase I. The contractor shall prepare a Management Plan for MOBREM which shall include, as a minimum:

(a) A graphic Program Evaluation and Review Technique (PERT) type chart summarizing the scheduling for at least one major level of effort below the contract tasks.

(b) Projected monthly dollar and manpower and cumulative dollar expenditures.

The Management Plan shall be subject to review and approval by CAA.

(2) Task 2. Model Design. Following CAA approval of the Management Plan, the contractor shall:

(a) Develop the organization structure for MOBREM. The MOBREM organization structure shall address the input data processor and the basic model including the post-processing of data files for output. The Model Design should be in modular form and should be capable of expansion to address total mobilization through input data changes.

(b) Define all required data and their sources necessary for complete model computations.

(c) Identify the model outputs describing variations and options, and demonstrate the utility of the model outputs for:

1. Specifying the CONUS base mobilization requirements;

2. Enabling HQDA to issue CONUS base force structure guidance to MACOM;

3. Use by the MACOM for evaluations of workloads and MOBTDA.

(3) Task 3. Implementation, Test, and Training Plan. Develop an Implementation, Test, and Training Plan which will form the basis for the Phase III effort.

(4) Task 4. Documentation. Document and present the Phase II effort. The MOBREM Phase II design documentation submitted to CAA for approval shall include, as a minimum, a complete description of the model design, including flowcharts and HIPO charts, macro flowcharts, input data requirements, input/output formats, estimates of CPU and input/output times, and the requirements for core storage and peripherals for using the MOBREM on CAA's computer. (CAA's computer will be a UNIVAC 1100/82.)

b. Phase III, Model Implementation, Test, Documentation and Training. Following CAA approval of the model design, and authorization of the Phase III effort, the contractor shall accomplish the following tasks:

(1) Task 1. Model Implementation. Implement the approved MOBREM design using no computer specific subprograms (including machine or assembly language) except by prior explicit approval of CAA.

(2) Task 2. Model Test. Utilizing the contractor's facilities, test the model in accordance with the approved Test Plan developed in Phase II. Data to be generated for test purposes shall be coordinated with and concurred in by CAA. The CAA computer facilities shall not be available to the contractor for programing and testing; however, the contractor shall install and demonstrate at the CAA computer facility that the MOBREM is operable by repeating the approved test. The CAA facilities can be routinely utilized to install and demonstrate the MOBREM only on normal workdays between 0900 and 1500. Though the MOBREM is not expected to be classified, selected input data will be; consequently, the contractor's personnel shall possess a SECRET security clearance to have access to the CAA computer facility and data.

(3) Task 3. Training. Prepare and conduct a training program for the functional proponent and the ADP personnel who will be utilizing the model. Instruction on how to operate the installed and demonstrated model shall be provided to CAA designated personnel by the contractor.

(4) Task 4. Documentation. Documentation will be provided to the US Army Concepts Analysis Agency (CAA) in accordance with the requirements described below and CAA standards at Inclosure 5.

(a) The contractor shall furnish CAA two categories of MOBREM documentation: program reference material and a hierarchy of manuals describing the model. The manuals shall be designed to minimize redundancy among the volumes. All final documentation shall be for the version of the MOBREM which is installed and demonstrated at the CAA computer facility.

(b) Program reference material. The contractor shall furnish CAA with the following program reference material:

1. A complete source program listing which shall include input data, computer control instructions for the CAA computer, and clarifying comments in the program.

2. A 9-track, 800 BPI tape(s) containing the MOBREM source program and test input data. The MOBREM programs shall be the property of the US Government.

(c) Manuals. The contractor shall furnish CAA with the following five levels of documentation in the form of manuals which describe the use and operation of the MOBREM program:

1. Executive Summary. The Executive Summary volume should provide a manager with an overview of MOBREM. As a minimum, it shall outline the structure and capabilities of the model and briefly describe the machine software and hardware environment necessary for operating the program.

2. User Manual. The User Manual volume(s) shall be addressed to military and civilian analysts who have no programing experience but need instructions on how to prepare the input data and analyze output from MOBREM. It shall include, as a minimum, the following:

a. A detailed description of each input parameter. This shall include the methodology for constructing the necessary parametric values, a complete description of the input media and layout formats for all input records, and a listing of a sample set of input data used in a valid run through the complete program.

b. A description of the output media and layout formats for all intermediate and final output records with suggested procedures for interpreting outputs, and output listings of the valid complete run through the program for which the above input data listing is furnished.

c. Suggested procedures for analyzing outputs from the MOBREM.

d. System flow diagrams and associated narrative descriptions listing data flow through major processing blocks and input/output media. Each block of the diagrams shall be keyed by label to the associated statements within the MOBREM source program. A brief narrative description shall be given of the decisions and processing accomplished by each block in the system flow diagrams. Definitions of flowchart symbols shall be included.

e. Additional details regarding documentation of the User Manual are at Inclosure 5.

3. System Manual. The System Manual volume(s) shall be addressed to the systems analyst with some programing experience who needs to know, at a systems level, the capabilities of the MOBREM program and the details of how to run it. It shall include, as a minimum, the following:

a. For all input/output records the storage mode, program mnemonic name, maximum/minimum length, blocking factors, and control words.

b. All input/output storage record formats completely identified, including file layouts and coding/decoding information.

c. A complete and detailed set of operating instructions for computer operations, including program setup, error messages and recovery procedures, control language requirements, memory layout, and computer processing and input/output channel time estimates for each task in the program for a complete run through the program, and for modified versions resulting from suppression of major subprograms. This shall include core and disc storage allocations for each task, and other peripheral equipment requirements.

d. A complete description of the mathematical and logical processes employed. This shall include the deffnitions, the rationale and justification for the derivations, and representative values and sources for variables and constants used.

e. A definition of each program constant and variable used in any program or subprogram, and a specification of its distribution and range of values. All approximations used shall be identified and their rationale described.

f. An alphabetic list of all program constants and variables, including where they can be found in the narrative descriptions, in the flowcharts, and in the source program listing.

g. Flow diagrams and associated narrative description, listing the complete task structure and the sequential logic for calling, operating, and overlaying all subroutines. Each block of the flow diagrams shall be keyed by label to the associated statements within the computer source program. A brief narrative description shall be given of the decisions and processing accomplished by each block in the macro flow diagrams. Definition of flowchart symbols shall be included.

4. Program Maintenance Manual. The Program Maintenance Manual volume(s) shall be addressed to the professional programer who will be responsible for implementing future extensions of the MOBREM program. It shall include, as a minimum, the following:

a. A detailed description of the machine software and hardware environment within which the program operates.

b. Micro flow diagrams showing all major decision points and processing operations within each program and subprogram. Each block of the logic flow diagrams shall be keyed by label to the associated statements within the computer source programs. A brief narrative description shall be given of the decisions and processing accomplished by each block in the logic flow diagrams.

c. Additional details regarding documentation of the Program Maintenance Manual are at Inclosure 5.

5. Test Report. Computer printouts in accordance with the output requirements specified in the test plans will be produced by the MOBREM on the CAA computer.

4. SCHEDULE

a. Reports. The contractor shall tender the following reports to the COTR.

(1) Management Reports. Within five (5) working days of the end of each calendar month, an informal, written, monthly progress letter. The monthly report shall include a statement of actions under way, actions completed, and unresolved problems. Each monthly report shall also contain a statement of the expenditures (dollars and technical manmonths) for the period covered, the total dollar expenditures to date, an indication of the degree/percent of the contract objective completed to date, and the estimated remaining cost to complete. Study progress shall be related to the PERT chart prepared in Task 1.

(2) Management Plan. The contractor shall furnish CAA with a minimum of five (5) copies of the proposed Management Plan prepared in connection with Task 1, Phase II of the work statement within 45 calendar days of contract award. The contractor shall be prepared to brief a Study Advisory Group (SAG) within five (5) working days of submission of the proposed plan. CAA will provide comments and/or approval within ten (10) working days of receipt of the plan from the contractor.

(3) Model Design. The contractor shall furnish CAA with five (5) draft copies of the proposed MOBREM design, developed in Phase II, Task 2, for review and concurrence no later than eight (8) months after contract award. The contractor shall be prepared to brief the SAG within five (5) working days of submission of the proposed MOBREM design. CAA will provide comments and/or approval within twenty (20) working days of delivery of the design. Final documentation of the model design shall be delivered to CAA no later than ten (10) months after contract award.

(4) Implementation, Test and Training Plan. The contractor shall furnish CAA with five (5) copies of the proposed implementation, test, and training plan developed in Task 3 of Phase II, no later than nine (9) months after contract award. CAA will provide comments and/or approval within twenty (20) days after delivery.

(5) Operating Model Documentation. The contractor shall install and successfully demonstrate the MOBREM on the CAA computer beginning four (4) months after start of Phase III, and complete the test within thirty (30) calendar days. Within five (5) working days of model demonstration, the contractor shall turn over to CAA the installed model and the Program Reference Material described in Paragraph 3.b.(4)(b).

(6) Manuals. The contractor shall provide an Executive Summary, User Manual, System Manual, and Programer Manual for the installed and successfully demonstrated MOBREM programs as described in Phase III, in accordance with the following schedule.

(a) Phase III Draft Documentation. The contractor shall furnish CAA with five (5) copies of Phase III Draft Documentation within 30 calendar days of successful model demonstration. Within ten (10) working days following the Documentation Review SAG, CAA will provide the contractor with comments on and requirements for preparing the final documentation. The manuals shall be prepared on standard government size paper and input data forms on standard coding form size (11" x 16") paper.

(b) Phase III Documentation. The contractor shall furnish CAA with final documentation as required by Phase III, Task 4 in the form of camera ready copy plus five (5) reproduced copies by the contract completion date. Input data forms shall be furnished in standard form size (11" x 16") and be suitable for photo reduction for printing in the manuals without loss of clarity.

b. SAG. The contractor shall present the results of each Task to a Study Advisory Group (SAG) as specified in paragraph 4d. In addition, the contractor may be required to brief the SAG or CAA staff at other times.

c. Liaison. The COTR will make informal visits to the contractor at least once prior to each milestone date and not more frequently than weekly/bi-weekly to identify and resolve problems.

d. Major Milestones. The milestones below reflect the desired duration of the contract phases. The contractor may, with specific justification provided, reflect in his proposal an alternate time schedule.

	Event	Time Period
(1)	Management Plan (SAG)	Month 1 1/2 after Phase II begins
(2)	Model Design (SAG) Draft	Month 8 " " " "
(3)	Implementation, Test and Training Plan	Month 9 " " " "
(4)	Model Design Final	Month 10 " " " "
(5)	Model Implementation and Test Progress (SAG)	Month 2 after Phase III begins
(6)	Test on CAA Computer	Month 4 " " " "
(7)	Documentation Review (SAG)	Month 6 " " " "
(8)	Training	Month 7 " " " "
(9)	Final Documentation	Month 8 " " " "

5. CONTROL PROCEDURES. The contract effort and concurrent government effort related to the MOBREM development will be controlled by a contracting officer's technical representative (COTR) from CAA. The COTR will coordinate contractor/government interfaces, review contractor reports, arrange for briefings of the MOBREM Study Advisory Group, resolve and clarify technical issues, evaluate performance and issue oral or written instructions to fill details of this work statement. Such instructions must be within the scope of the work set forth in the contract and may not be of such nature as to affect price and period of performance. The contractor shall designate a representative as project leader who shall be in charge of the contractor personnel while performing the work under the contract. All direction and communication between the COTR and contractor's personnel will be accomplished through the designated project leader.

MOBREM Phased Development

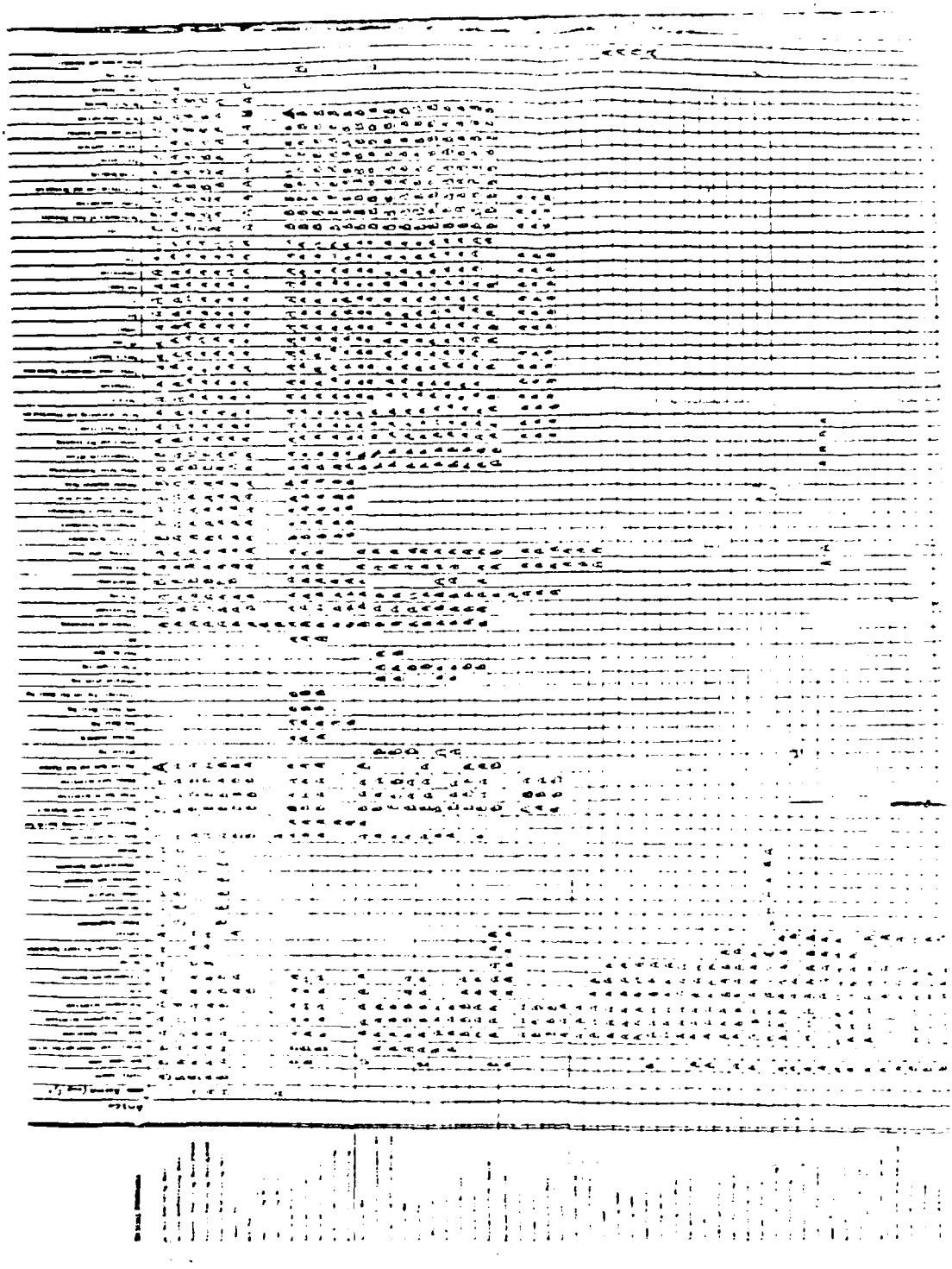
Organization	Phase I Preliminary design concept	Phase II Data collection and model design	Phase III Model implementation, test, documentation, training
DCSOPS-FD (MODA functional proponent)	Document mob processes related to determining CONUS base mobilization manpower requirements. Develop preliminary data processing design concept for capturing, categorizing, and distributing mobilization workloads and converting them into CONUS base manpower requirements. Specify the functional prop, and OPI to be used during development and model operation	Complete development of required manpower standards and consumption factors and input data definitions and acquisition. Participate in design and test plan evaluation.	Participate in and review test. Receive training, if applicable. Prepare organization procedures for model use.
CAA	Monitor ad hoc study group effort. Specify information necessary for model development decision. Determine if contract assistance required. Prepare work statement of tasks required for model design, estimate time and cost. Evaluate contract proposals/ selection.	Review and approve development plan. Monitor data collection and model design efforts. Provide for coordination between data collection and modeling efforts. Evaluate and approve model design and proposed test plan	Monitor model development. Evaluate test results. Provide computer facility for test. Receive training. Review documentation. Operate model at conclusion of Phase III.
Contractor	Submit proposal for model design, implementation, and test.	Submit a development plan. Develop model design, document, and present. Prepare implementation and test plans.	Complete model development. Test and document. Train selected personnel. Install system at CAA.

NOTE: Phase I concludes with award of contract.
Phase II concludes with approved model design and test plan.

On the following page, the workload categories that generate different kinds or intensities of CONUS base support are listed in the vertical column. The functional codes that represent the CONUS base support service consumed by the workload are listed across the top of the table. The intersity of consumption is indicated by an "A" (heavy) or "B" (moderate).

Author's Note: The A's and B's were ODCSOPS' initial estimate to the contractor sizing the support categories to be covered in the MOBREM design. These were refined during Phase I and II to develop the 510 workload categories and 280 function codes used in the current MOBREM design. Actual consumption is determined by the MREs developed during the study (Chapter 3).

Incl 2, pg 1



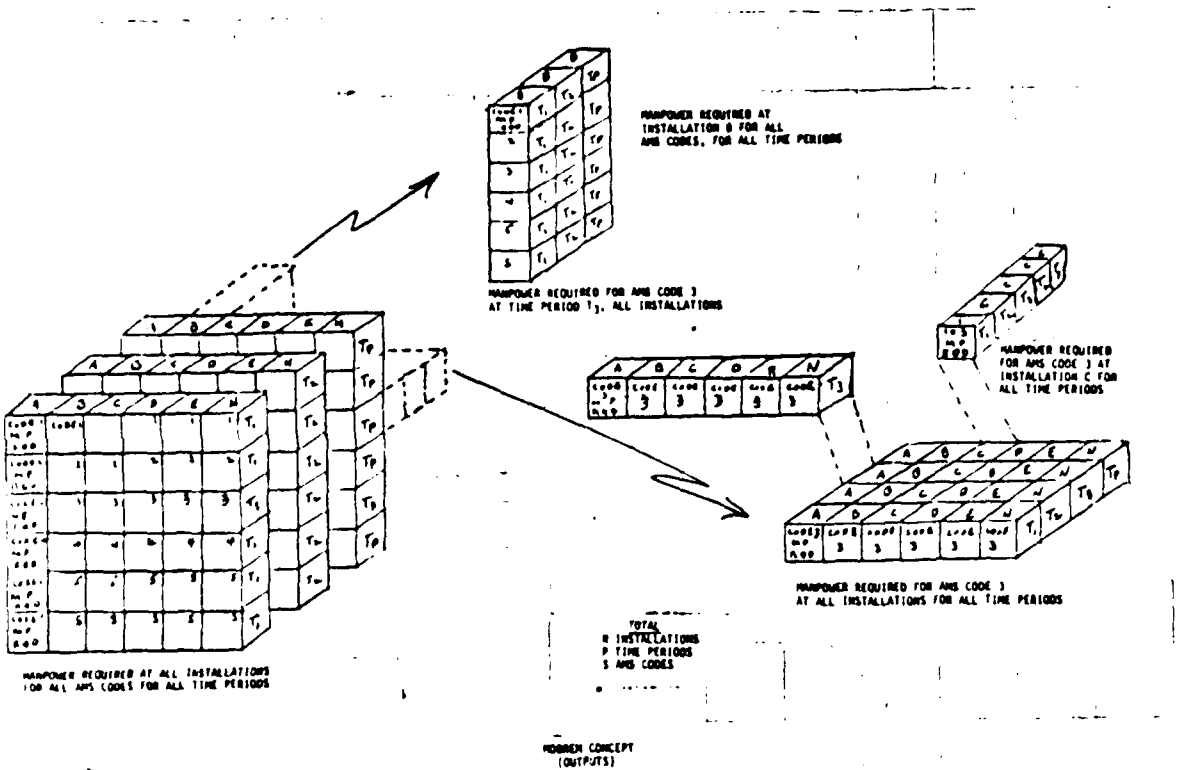
Location--Functional Code Relationship

Command	Installations	Functions applicable	Time periods*
ACC	1	39	14
MTMC	12	4	14
FORSCOM	27	39	14
HSC	2	34	14
TRADOC	20	47	14
DARCOM**			
Arsenals	8	7	14
Ammo plants	24	7	14
Depots	22	7	14

*To be projected in 10-day time periods through M+60 and 30-day time periods through M+270.

**Eleven of the DARCOM facilities also serve as mobilization stations and will perform approximately 25 base operations functions.

Incl 3. Quantity of installations to be included in model requirements projection.



ROBBEN CONCEPT
(OUTPUTS)

Incl 4, pg 1

ANNEX II TO APPENDIX B

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS
WASHINGTON, D.C. 20310

REPLY TO ATTENTION OF DAMO-FD

28 APR 1982

MEMORANDUM FOR DIRECTOR, US ARMY CONCEPTS ANALYSIS AGENCY

SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

1. Purpose of Study Directive. This directive specifies the tasks, products, schedule, and organizational responsibilities for completing Phase IV of the Army's Mobilization Base Requirements Model (MOBREM) Development Study.

2. Study Title. The Army Mobilization Base Requirements Model (MOBREM).

3. Background.

a. DCSM 79-15-27 dated 3 August 1979 (TAB A) established a MOBREM Study Advisory Group (SAG) and a HQDA Ad Hoc Study Group to begin a comprehensive study to define the CONUS base required to support mobilization, training, deployment, and sustainment of the total Army during full mobilization. DCSM 81-15-18 dated 28 July 1981 (TAB B) designated CDCCOPS to:

(1) Act as MOBREM study sponsor.

(2) Conduct Phases I-IV of the study with an ad hoc study group.

b. Phases I and II have been completed in accordance with the phased milestones in DCSM 81-15-18. The Phase III test of the model on CAA computers using test data is scheduled for March, 1982.

c. Phase IV, a field test of the model using live data, is programed during the period April 1982 - March 1983.

d. Contractual support, required for Phase II and Phase III, is also anticipated during Phase IV.

e. Per DF dated 17 February 1982 (TAB C), DCSPER Manpower Policy Standards and Survey Division (DAPE-MPS) requested that the Phase IV tasks include revalidation of standards developed during Phase III and the development, validation and testing of additional standards, as required.

4. Study Sponsor. Deputy Chief of Staff for Operations and Plans (DCSOPS).

5. Study Agency. US Army Concepts Analysis Agency (CAA).

6. Terms of Reference.

DAMO-FD
SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

a. Problem. The CONUS base force structure and manpower required to support full mobilization is inadequately defined resulting in significant gaps in Army program development and mobilization planning.

b. Objective. The study objective is to define, develop, and test a model through which time-phased CONUS base requirements for manpower and equipment can be derived, analyzed, and utilized in mobilization planning and programing.

c. Study Products. Both the government and the contractor are required to produce products during the study. The government products are identified in the milestones schedule (TAB D) together with the responsible organizations. The contractor tasks and products are defined in the statement of work (SOW) (TAB E).

d. Tasks.

(1) Complete the development of class II mobilization standards required for MOBREM operation. This task includes:

(a) Analysis and validation of class II mobilization standards developed during phase III.

(b) Development and validation testing of additional standards, as required.

(c) Complete the MOBREM functional code to AMSCC crosswalk.

(d) Coordination with on going efforts of DA DCSPER and HQ FORSCOM to develop a CONUS base mobilization standards functional dictionary.

(2) Devise a plan for field evaluation of the model test using current data for all required input. This task includes:

(a) Preparation of a draft plan to be sent to SAG members.

(b) Conduct of a SAG meeting at HQDA during which the tasking of all parties involved in the test is defined.

(c) Approval and distribution of the finalized test plan and test tasking.

(3) Conduct a field evaluation test using live data. This task includes:

(a) Acquisition and analysis of MOBREM input data.

(b) Analysis of preprocessing adequacy.

(c) Production and verification of MOBREM data base elements.

DAMO-FD
SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

(d) Selection of test Mobilization Policy and Planning Assumptions (MPPA).

(e) Operation of the model to produce test reports (workload, asset and manpower requirements) in accordance with the test schedule.

(f) Conduct of a SAG workshop at HQDA to review initial test reports.

(g) Distribute output results to the field for review and evaluation.

(h) Analysis of feedback and revision of standards, input data, MPPA, output reports and programs as required.

(4) Based on decisions resulting from the MOBREM test, specify frequency, inputs, outputs, MPPA and processing required for model implementation by the Army in March, 1983. This specification represents the Government Furnished Information (GFI) referred to as "Model Operating Requirements" in the SOW.

(5) Produce a Functional Users Manual describing the model functional logic and flow, input, output and model usage to Army personnel using the model output.

*(6) Conduct a seminar for initial and potential users of MOBREM output. The purpose of this seminar is to introduce users to the new mobilization model. Subjects to be covered include initial capabilities and means of access.

e. Time Frame. April 1982 - March 1983

f. Assumptions. Mobilization assumptions will be based in general on the latest Defense Guidance, and the Army Force Planning Data Assumptions (AFPDA). Specific assumptions will be provided by DAMO-SD.

7. Responsibilities.

a. ODCSOPS Force Management Directorate (DAMO-FD) will be responsible for:

(1) Providing a full-time Ad Hoc Study Group of two or more people to work jointly with CAA on the tasks specified in para 6d.

(2) Coordinating study interfaces and tasking required for the MOBREM [illegible] ARSTAF and MACOM. This includes keeping participants updated on test [illegible], arranging for meetings and preparing minutes; and coordinating all test [illegible] and responses.

*Task was postponed indefinitely as a result of the proponent's need to investigate the possibility of moving the model from CAA to another data processing installation.

DAMO-FD
SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

(3) Serving as the functional proponent for model use, maintenance and the updating of system files and manpower standards.

b. ODCSOPS Unit Training Division (DAMO-TRU) will be responsible for providing updated mobilization data from Army Training Resource Requirements System (ATRRS).

c. ODCSOPS Mobilization and Deployment Division (DAMO-ODM) will be responsible for providing the mobilization policy and planning assumptions (MPPA) used in the model test.

d. ODCSPER Mobilization Division (DAPE-PSM) will be responsible for providing updated mobilization data concerning IRR and retiree pre-assignment, prisoner allocations, and percentages of transients and holdees.

e. ODCSPER Manpower Policy, Standards and Survey Division (DAPE-MBU) will be responsible for reviewing and approving the CONUS base mobilization manpower standards in accordance with the time sensitive requirements for producing test outputs.

f. ODCSLOG will be responsible for identifing logistical information sources, and coordinating the timely submission of input from its staff elements. Data requirements include:

1) Consumption rates at CONUS installations for class I, II, III, IV, and IX for TDA units, students/trainees, and MTOE units including those in the training phase.

2) Prepositioned assets of class I, II, III, IV, V and IX (class VII prepositioned assets and requirements will be obtained from TAEDP).

3) Authoritative source for the distribution of prepositioned assets against various scenarios.

g. OTSG Plans and Operations Division (DASG-HCO) will be responsible for providing health services related mobilization data required for the test.

h. Other organizations. The MOBREM OAG, AROTAP, AND MACOMS will provide [illegible] as designated in ODCSOPS-07.

4. References.

a. TAB A: Chief of Staff Memorandum, ODCSOPS-07.

b. TAB B: Chief of Staff Memorandum, DAMO-ODM-18.

c. TAB C: DF, DAPE-MBU, Subject: Enhancement of MOBREM Manpower Standards.

DAMO-FD
SUBJECT: The Army Mobilization Base Requirements Model (MOBREM)

d. TAB D: Milestone Schedule.

e. TAB E: Statement of Work.

3. Administration.

a. Support.

(1) TDY, per diem, and overtime are the responsibilities of the agencies providing support.

(2) Administrative support, office space and supplies are the responsibilities of the agencies providing support.

b. Phase IV Milestone Schedule. CAA and DAMO-FDP will work jointly on all tasks. The lead responsibility for each task and its completion due date are shown at TAB D. MACOM's and installations will participate in the test in accordance with tasks 2 and 3.

4. Control Procedures.

a. The MOBPEM Study Advisory Group (SAG, established by CDM 79-15-27 will continue to function during the study and participate in the test.

b. DD Form 1498 will be prepared by CAA.

c. Direct contact is authorized between study agency and DA Staff MACOM points of contact.

d. DAMO-FDP point of contact is MAJ David Johnson, AV 227-0614.

e. This tasking memorandum has been coordinated with CAA in accordance with paragraph 4, AR 10-5.

WILLIAM R. RICHARDSON
Lieutenant General, GS
Deputy Chief of Staff
for Operations and Plans

Incl
TAB A-CDM 79-15-27,
[illegible]
TAB B-CDM 81-15-10,
[illegible]
TAB C-DF, DAPE-MPO
[illegible]
TAB D-Milestone Schedule
TAB E-Statement of Work

MAJ Taylor Lynn
ABC Y. Boatwright

(NOT USED)

CHIEF OF STAFF

Memorandum

U. S. ARMY

DISTR A EXPIRES

CSM 79-15-27

DATE 3 August 1979

FILE CS 370.01 (3 Aug 79)

ACTION OFFICER/EXT
LTC Todd/71036

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

MEMORANDUM FOR: HEADS OF ARMY STAFF AGENCIES

1. PURPOSE. This memorandum establishes a Study Advisory Group (SAG) and an ad hoc study group to conduct a comprehensive study to define the CONUS base required to mobilize, train, deploy and sustain the total Army during full mobilization and to supervise the design of a methodology/model to determine the force structure and manpower requirements for such a mobilization base.

2. REFERENCES.

a. AR 1-1, Planning, Programing, and Budgeting within the Department of the Army.

b. AR 5-5, The Army Study System.

c. AR 37-100, Account/Code Structure.

d. AR 135-300, Mobilization of Reserve Component Units and Individuals.

e. AR 570-3, Manpower Utilization and Requirements (AC-CSFOR-78).

f. AR 570-4, Manpower Management.

3. BACKGROUND.

a. Studies and exercises such as MOBEX-76 and NIFTY NUGGET have identified significant shortfalls in the CONUS mobilization base. There is currently no process to adequately define these total requirements in a manner similar to the Total Army Analysis (TAA) process.

b. There is a need for a model/methodology that will not only determine the force structure and manpower requirements, but will provide the basis for modeling other resource requirements of the mobilization base.

DA FORM 1 JAN 64

TAG-A

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

4. COMPOSITION.

a. Study Advisory Group

(1) Deputy Director, Force Management Directorate, ODCSOPS (chairperson).

(2) ODCSPER, DPAE, ODCSLOG, OACSAC, OCA, OTSG, OCE, OCAR, NGB, FORSCOM, TRADOC, DARCOM and Health Services Command will provide members (O-6 or civilian equivalent).

b. Study Group

(1) Action Officer (O-5) - Force Management Directorate, ODCSOPS (coordinator).

(2) Action Officers (04/05) - NGB and OCAR (members).

(3) Points of contact (POC) from Concepts Analysis Agency (CAA), DA Staff, and MACOM listed at Inclosure 1. POC participation should not exceed two hours per week.

5. RESPONSIBILITIES.

a. The Study Advisory Group will monitor the progress of the MOBREM Study.

b. ODCSOPS will —

(1) Act as the MOBREM study sponsor.

(2) Conduct Phase I of the study with an ad hoc study group.

(3) Task CAA and MACOMs listed at Inclosure 1, by separate correspondence, to participate in Phase I of the study.

(4) Following an analysis of the results of Phase I, task CAA to proceed with the modeling process (Phase II). The ad hoc group will continue to work with CAA during Phase II.

6. [illegible]

a. [illegible] The force structure and manpower requirement to support a [illegible] in the [illegible] base is inadequately defined resulting in [illegible] in key program development and mobilization [illegible].

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

b. Objective: To provide a model or methodology through which time-phased CONUS base requirements for force structure and manpower can be derived, analyzed, and utilized in mobilization planning and programing.

c. Scope. Analysis will use the NATO/Warsaw Pact scenario requiring full mobilization response. The study will be conducted in two phases. Phase I will define the Army mobilization process through a review of DA policies, regulations, procedures, and automated systems which support mobilization. Based on the analysis of Phase I, Phase II will proceed with the development of the methodology/model. Mobilization of the industrial base will not be considered in the study, however, the methodology developed will provide the capability for analysis of selective, partial, and total mobilization scenarios.

d. Limitations. Existing data and studies will be used where applicable, especially techniques used in the TAA process. Related efforts by other elements of the DA Staff or their delegated agents will be incorporated into Phase I.

e. Time frame. Sept 1979 - Sept 1981 (83-87 POM Force).

f. Essential Elements of Analysis.

(1) Phase I -

a. What are the scope, functions, and organizational aspects of the mobilization base?

b. *What common terminology is employed in the mobilization process?*

c. What are the current mobilization policies?

d. What policies need to be solidified at HQDA to assist with with mobilization planning and execution?

(2) Phase II - To be determined.

7. [illegible].

a. Organizations which have responsibility or interest in the study: [illegible], [illegible], [illegible], [illegible], [illegible], [illegible], [illegible], [illegible], [illegible], [illegible], [illegible] Health Services Command and CAA.

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

b. Studies or reports relevant to this study --

(1) TAA

(2) OMNIBUS

(3) MOBEX-76

(4) MOBEX-78 NIFTY-NUGGET

(5) ROGAR

(6) [illegible]CCS-82

c. The studies above are not sufficiently comprehensive to meet the requirements of either Phase I or Phase II.

8. DIRECTION AND CONTROL.

a. The study coordinator will call meetings of the SAG when necessary.

b. The study coordinator will meet reporting requirements of AR 5-5, The Army Study System.

c. Army Staff agencies will provide POC name and telephone number to [illegible] (LTC James P. Todd/[illegible]) by 30 August 1979.

d. Study Milestone Schedule is at Inclosure 2.

9. ADMINISTRATIVE SUPPORT.

a. Funds for travel, per diem and overtime, if required, will be provided by the parent organization of the study representatives.

b. Administrative support (space, clerical and equipment) will be provided by [illegible].

BY [illegible] OF THE [illegible]:

2 Incl
as

[illegible]
Lieutenant General, GS
Director of the Army Staff

The Army Mobilization Base Requirements

Model - [illegible] Study

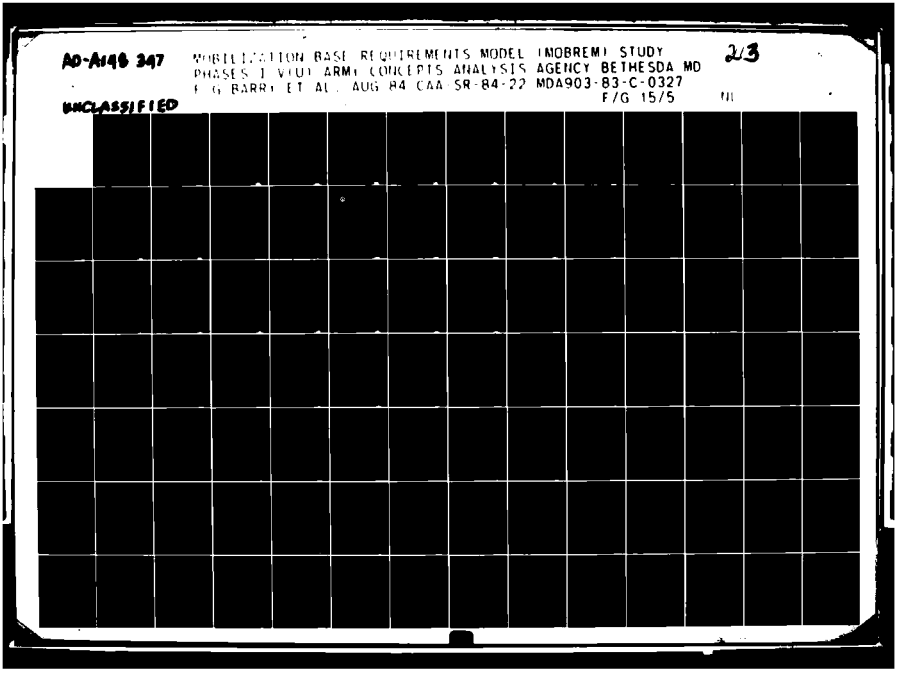
Points of Contact

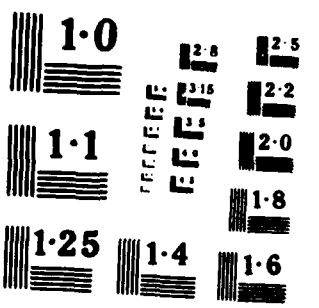
[illegible]	POINT OF CONTACT (O[illegible] - GS-1[illegible])
DAMO-FD (coordinator)	X
DAMO-OD	X
DAMO-TR	X
DAMO-RQ	X
CN[illegible]	X
O[illegible]R	X
OD[illegible]R	X
[illegible]	X
CA[illegible]	X
[illegible]	X
C[illegible]A[illegible]	X
O[illegible]	X
O[illegible]	X
C[illegible]E	X
[illegible]	X
TRA[illegible]	[illegible]
[illegible]	X
[illegible] M	X
[illegible] Agency	X

[illegible] will be provided by [illegible]

AD-A148 347 MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY PHASES I VOLUME ARMY CONCEPTS ANALYSIS AGENCY BETHESDA MD F G BARRY ET AL. AUG 84 CAA SR-84-22 MDA903-83-C-0327 2/3

UNCLASSIFIED F/G 15/5 NL





STUDY SCHEDULE

PHASE I (1 September 1979 - 28 February 1980)

(1) Define the scope and nature of the problem.

(2) Describe the activities, functions, and physical character of the mobilization base.

(3) Develop assumptions to include the force to be supported and the resources available to support deployment.

(4) Identify policy decisions needed to begin the modeling process.

PHASE II (1 March 1980 - 30 June 1981)

(1) Develop a new requirements model or modify an existing program.

(2) Test the model.

(3) Modify as necessary.

(4) Implement for the PCM.

(5) Evaluate outputs.

(6) Integrate into other resource management systems.

(7) Develop the final report.

Incl 2

CHIEF OF STAFF

Memorandum

U. S. ARMY

DISTR A EXPIRES 31 July 1982

CSM 81-15-18

DATE 28 July 1981

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

FILE CS 370.01 (28 Jul 81)

ACTION OFFICER/EXT
LTC Hall/71036

MEMORANDUM FOR: HEADS OF ARMY STAFF AGENCIES

CSM 79-15-27, dated 3 August 1979, subject as above, is changed as follows:

1. Paragraph 5. RESPONSIBILITIES.

b. ODCSOPS will —

(1) Act as MOBREM study sponsor.

(2) Conduct Phases I-IV of the study with an ad hoc study group.

(3) Task CAA and MACOMs listed at inclosure 1, by separate correspondence, to participate in all phases of the study.

2. Paragraph b. TERMS OF REFERENCE.

e. Time frame. September 1979 - February 1983.

3. Attached study schedule, dated 7 July 1981, supersedes original milestone schedule at Inclosure 2.

1 Incl
as

JAMES M. LEE
Lieutenant General, GS
Director of the Army Staff

DAS FORM 61, 1 MAR 80

TAB-B

ARMY MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM)

Revised 7 July 1981

STUDY SCHEDULE

PHASE I (1 September 1979 - 31 August 1980)

(1) Define the scope and nature of the problem.

(2) Describe the activities, functions, anad physical character of the mobilization base.

(3) Develop assumptions to include the force to be supported and the resources available to support deployment.

(4) Identify policy decisions needed to begin the modeling process.

(5) Develop a preliminary concept of the model design.

(6) Task US Army Concepts Analysis Agency (CAA) to proceed with the modeling process.

(7) Assist CAA in the completion of pre-award contract procedures, contract negotiation and administration.

PHASE II (1 September 1980 - 30 June 1981)

(1) Complete action for contract award.

(2) Define model output requirements.

(3) Define and document mobilization policies, CONUS base workload generator data and sources.

(4) Define and document CONUS base support functional code structure, and installations to be covered.

(5) Develop and document MOBREM manpower staffing coefficients.

(6) Develop allocation rules for installation equipment, and organization/support maintenance factors.

(7) Provide CAA with data files needed to identify CONUS base mobilization workloads, functional codes, and installations.

(8) Assist CAA in the technical review and evaluation of contractor progress annd products.

(9) Assist CAA in approving the completion of model design as a separate contractural efforts.

PHASE III (1 July 1981 - 28 February 1982).

(1) Establish a planning schedule to utilize MOBREM in the PPBS cycle.

(2) Complete TRADOC installation/functional code crosswalk.

(3) Participate in the FORSCOM Mobilization Plan Review and TDA validation seminar.

(4) Acquire and verify updated data tapes.

(5) Develop functional code crosswalk for predetermined UICs.

(6) Develop ammunition consumption rates for individual and unit training.

(7) Obtain SAG approval of MPPA, manpower coefficients arguments, workload catagories, and functional codes.

(8) Determine base operations functions to be discontinued upon mobilization.

(9) Determine base operations type functions that are performed by tenant Divisions/Separate Brigades.

(10) Initiate and staff draft AR governing MOBREM.

(11) Coordinate study interface and tasking required for the MOBREM SAG, ARSTAF, and MACOMs.

(12) Develop and staff Phase IV tasker for CAA.

(13) Monitor the FORSCOM on-site validation effort; upgrade manpower coefficients and equipment allocation rules.

(14) Develop a test plan for distribution of model outputs for evaluation and feedback.

(15) Participate in contractor prepared ADP plan and functional drawings for users.

(16) Test the model on CAA computer using test data.

PHASE IV (1 MARCH 1982 - 28 FEBRUARY 1983)

(1) Participate in the review of test results.

(2) Brief SAG, ARSTAF and MACCMS on the results of inital test.

(3) Update and improve manpower coefficients.

(4) Modify the model as necessary.

(5) Initate shakedown test.

(6) Collect required and load into model.

(7) Run model using live data.

(8) Send output results to the field for review and evaluation.

(9) Obtain feedback; retest as necessary.

(10) Evaluate test results.

(11) Develop the final report; brief SAG.

(12) Implement AR governing MOBREM.

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO

REFERENCE OR OFFICE SYMBOL	SUBJECT
DAPE-MBU	Enhancement of MOBREM Manpower Standards

TO	FROM	DATE	CMT 1
DAMO-FDP	DAPE-MBU	17 Feb 82 Mr. McKenzie/alb/59532	

1. Request a provision for improving existing MOBREM standards and for developing additional standards in areas where standards do not exist be included in the next phase of the MOBREM Project Development.

2. Specifically the following is requested:

a. Work be accomplished to apply existing standards to estimate mobilization manpower requirements.

b. Compare results with existing mobilization requirements to validate or modify these standards.

c. Develop and refine a MOBREM MACRO functional code/AMSCO crosswalk in order to increase the number of workloads aligned to MOBREM MACRO functional codes.

d. Develop and validate additional standards as required to insure a complete set of validated standards for use in the MOBREM manpower report field test and for use in the model in FY-83.

3. POC is Mr. McKenzie or Mr. Klemmer, Ext 59532.

FOR THE DEPUTY CHIEF OF STAFF FOR PERSONNEL:

H. M. WEST III
Deputy Director
Manpower, Programs and Budget

CF:
CDR, USACAA

TAB-C

DA FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED

(NOT USED)

MOBREM Phase IV Milestone Schedule

Milestone		Due Date	Lead Responsibility
1.	Provide AMSCO crosswalk for all MOBREM functions.	Apr 82	DAMO-FDP
2.	Develop field evaluation plan.	May 82	CAA
3.	Develop detailed tasking for test.	Jun 82	DAMO-FDP
4.	Acquire and analyze data and produce mobilization workload and asset reports.	Aug 82	CAA
5.	Conduct SAG worksnop to preview initial test results.	Sep 82	DAMO-FDP
6.	Complete HQDA, MACOM and installation review of responses to workload and asset reports.	Oct 82	DAMO-FDP
7.	Define model/data changes required by results of workload/asset field review.	Nov 82	CAA
8.	Review and approve updated mobilization Standards and AMSCO/functional code crosswalk.	Nov 82	DAPE-MBO
9.	Produce mobilization manpower reports using approved updated mobilization standards.	Dec 82	CAA
10.	Complete HQDA, MACOM and installation review of mobilization manpower reports.	Jan 83	DAMO-FDP
11.	Provide contractor with statement of model operating requirements.	Jan 83	DAMO-FDP
12.	Define final model/data changes required by results of manpower requirements field review.	Feb 83	CAA
13.	Prepare CAA Tasker for model implementation.	Feb 83	DAMO-FDP
14.	Draft MOBREM Users' Manual and conduct model users' seminar.	Mar 83	CAA
15.	Revise and publish MOBREM Users' Manual.	Apr 83	CAA

TAB D

16.	Review and evaluate contractor progress and products.	Throughout period of contract IAW work statement.	CAA

MAJ TAYLOR/70614

0 4 MAR 1982

STATEMENT OF WORK

MOBREM PHASE IV FIELD EVALUATION

1. INTRODUCTION

a. Objective. The objective of Phase IV of the Mobilization Base Requirements Model (MOBREM) development is to support a field evaluation and to prepare MOBREM for recurring Army use. On a continuing basis, MOBREM will support the Office of the Deputy Chief of Staff for Operations and Plans' (ODSCOPS) regulatory responsibility for the force development process. Specifically, by March 1983, MOBREM must be ready for use by the Army to compute time-phased mobilization manpower requirements which are based on valid workload and asset allocations and staffing relationships. The model outputs must be identified in terms which are usable by major commands (MACOMs) and installation commanders in developing Mobilization Tables of Distribution and Allowances (MOB TDA) and usable by the Army Staff in the budget formulation process.

b. Field Evaluation. The field evaluation will be conducted jointly by CAA, the MOBREM Ad Hoc Study Group, and the MACOM Study Advisory Group established by CSM 81-15-18 (Inclosure 1). Contract support as specified in paragraph 3, "Contract Tasks," will also be provided. The field evaluation will include:

(1) Acquisition of a complete set of input data required by MOBREM and creation of a CONUS base mobilization workload data base.

(2) Validation of the partial set of manpower standards developed during Phase III, and development and validation of additional standards required to cover all CONUS base mobilization workloads and functional support areas of MOBREM.

(3) Running of the model to produce test outputs for field evaluation and feedback.

(4) Modification of the input data, manpower standards, programs, and reports resulting from review and analysis of feedbacks.

(5) Reruns of the model to produce updated test outputs for field evaluation and feedback. Two series of model iterations are planned.

(6) Establishment and training of the functional proponent organization responsible for model use.

(7) Definition and approval of the initial recurring use requirements of the model, and preparation of the model to meet these requirements by March, 1983.

TAB-E

2. DISCUSSION

a. The purpose of the MOBREM Study is to provide a model through which time-phased CONUS base mobilization requirements for manpower and equipment can be derived, analyzed, and utilized in mobilization planning and programing.

b. The approach to developing MOBREM has been to build an initial, deterministic, data base model that will size, by location and time period, all workload demands placed on the CONUS base during mobilization. The model will relate these workloads to the installation functional areas required to support the demands, and the support will be defined by codes that crosswalk to the TDA structure and Army management structure code (AMSCO). New manpower staffing relationships developed during the study will be used to size the manpower required in the CONUS base functional support areas.

c. The study has been divided into four phases. The tasks associated with these phases are specified in CSM 81-15-18 dated 28 July 1981. Identification of the phases is as follows.

PHASE I. Define problem, mobilization processes, and model concept.

PHASE II. Define model inputs, processing, outputs, and write design specifications.

PHASE III. Define calculations needed for all input data, write program specifications, write computer programs, and perform initial testing.

PHASE IV. Acquire live data, develop additional standards, field test model and standards, and prepare for recurring Army use.

ODCSOPS (DAMO-FD) is the functional proponent for the MOBREM Study, and the US Army Concepts Analysis Agency directs the study. A two-to five-person full-time government resource team and a Study Advisory Group consisting of representatives from the ARSTAF and MACOMs have been operational during the first three phases of the study. During Phases II and III, contract assistance has been provided to accomplish the detailed design, program writing, and testing, using dummy data. The existing contract concludes on 15 March 1982.

d. In December 1981, a preliminary Phase IV implementation plan was developed and approved by the SAG and the functional proponent. It included the tasks specified in CSM 81-15-81, plus an additional task, requested by ODCSPER (DAPE-MBU), to expand the analysis and coverage of the mobilization manpower standards developed during Phase III. Phase IV is planned to begin immediately following the successful completion of the programing tests and evaluations on the CAA computer and the delivery of the required documentation--both scheduled for March 1982. All contractor tasks and deliverables to date have been completed on schedule and within the contract cost estimate.

e. Analysis of the tasks required to complete Phase IV indicates (1) insufficient quantity of government resources can be made available to fully cover the Phase IV effort, (2) all Phase IV tasks will result in use of and/or modification of programs developed by the contractor personnel. Consequently, in order to assure the government an uninterrupted continuation of presently assigned key contractor personnel to the project, and to maximize an efficient transition into Phase IV, paragraph 3 specifies a task modification to the existing contract with Presearch, Inc. to cover the Phase IV contract support requirement.

3. TASKS

a. Task 1: Modification to Phase III Design. Since some of the required information was unavailable during the design portion of Phase III, some of the necessary submodules are either incorrect or missing. The objective of this subtask is to update MOBREM to the present level of knowledge. All subtasks must be completed prior to final loading of live data for the workload field test. Model documentation will be revised as necessary to reflect the modifications.

(1) Subtask 1 - Fix Prisoner Distribution Problem. The present design allocates all prisoners in excess of total capacity to secondary prisons; all excess prisoners should be distributed to all prisons on a pro rata basis.

(2) Subtask 2 - Class I, II, III, IV, VIII, IX Requirements Computations for Both Theater and CONUS. Program which, in addition to the option for reading specific, time-phased theater required amounts, the option to compute theater required amounts (probably based on number of theater personnel).

(3) Subtask 3 - Compute Ammunition Requirements. Provide program which:

(a) Reads specific required amounts for theater.

(b) Computes theater requirement amount (probably based on number of theater personnel, possibly based on some other numbers such as an input of amounts of Class VII categories in the theater).

(c) Computes installations' required amount for unit training.

(d) Computes installations' required amount for individual training.

(4) Subtask 4 - Parameterized Computation of On-hand Equipment and Personnel. The parameterized percentage should be obtained by dividing against "required," not "on-hand."

(5) Subtask 5 - Provides a Method for Treating TOA Units as Deployable TOE Units and for Accounting for Civilians in Some TOE Units. If TOA units are given deployment dates they should be treated the same

as TOE units; it is valid for both TDA and MTOE units to have civilians assigned when they have no deployment dates. The model must be changed to accommodate these situations.

(6) Subtask 6 - Compute Trainee Equipment Requirements (for Individual Training). Create an automated method for computing amount of training equipment. Probable available variables are: number of days needed per course type; whether course type is OSUT, BT, etc.; course MOS; number of trainees per course; number of shifts to schedule per day (1, 2, or 3), and scheduling efficiency factor.

(7) Subtask 7 - Inputs Changed to Parameters. Presently, a large number of inputs are defined as environmental or policy parameters; another set of data is called "input." Since, in many cases, there is essentially no difference between inputs and parameters, the model should be changed to treat all run-time inputs as parameters - printed on the environmental/policy module report and treated as parameters in all other respects.

(8) Subtask 8 - Add Workload Generators. Two additional workload generators have been identified as necessary for applying depot staffing relationships. Final development of other staffing relationsips and computation of training equipment may define the need for others. The purpose of this subtask is to add the necessary programing for new workloads up to a maximum of 10.

b. Task 2: Preprocessor Modifications. As a result of input data analysis (performed by the government) and actual use of live data, it is anticipated that changes to the preprocessor will be required. The objective of this task is to modify the preprocessing programs, as necessary, to conform to the requirements of the live data. These programs will range from insertion of additional edit checks to recoding during data read. Estimation of number and complexity is a maximum of 10 which require a professional week or less, and a maximum of 3 slightly more complicated modifications.

c. Task 3: Fine Tune Model

(1) Subtask 1. The objective of this task is to modify the MOBREM to meet requirements defined during Tasks 1 and 2 and by the field evaluation of test outputs. These modifications can include:

(a) Additional computations which were undefined by the government during Phase III.

(b) Input and use of data in addition to that defined during Phase III.

(c) Correction of computation and/or preprocessing errors resulting from new assumptions, updated information, changed manpower standards, input data change, or model evolution.

(d) Additional MOBREM reports.

(2) Subtask 2. The modifications and/or additions of reports described in this task will be an iterative process; any modifications or additions required by one level of review must be made and corrected output provided for use at the next review level. The review level and general review sequence are shown below. Reviews (a) through (c) apply to Model Test Run No. 1; reviews (d) through (f) apply to Model Test Run No. 2.

(a) MOBREM team--workload/asset reports review.

(b) Headquarters Army--workload/asset reports review.

(c) MACOM/installation--workload/asset reports review.

(d) MOBREM team--staffing requirements reports review.

(e) Headquarters Army--staffing requirements reports review.

(f) MACOM/installation--staffing requirements report review.

(3) Subtask 3. The principal responsibilities of the contractor in this task area will be program change analysis and program changes resulting from the test evaluation feedbacks and which are necessary to prepare the model for operation in March 1983 in accordance with "Model Operating Requirements" which will be furnished by the government.

d. Task 4: Enhancement of Mobilization Manpower Standards. By necessity, the development of mobilization manpower standards has proceeded concurrently with the development of the main framework of the model. Since these two activities must share a common definition of installation and support function, the standards development during Phase III of the study was subjected to, and attempted to accommodate, significant variations in these definitions. This resulted in the production of a partial set of manpower standards that are not sensitive to many individual CONUS base workloads that have been identified as valid. Consequently, there is a need to revalidate existing standards, and to develop and validate additional standards. The subtasks specified below define the specific requirements:

(1) Subtask 1. Apply existing standards to estimate mobilization manpower requirements.

(2) Subtask 2. Assess the sufficiency of functional code/AMSCO crosswalk (a) for use in MOBREM (b) for use in DAPE-MBU functional dictionary.

(3) Subtask 3. Based on results of Subtask 2, compare manpower estimates with on-hand and structured manpower by updated MOBREM installation, functional code, and AMSCO crosswalk.

(4) Subtask 4. Validate or modify existing standards.

(5) Subtask 5. Develop and validate additional Class II standards to assure a complete set of validated manpower requirements equations (MREs) for use in the MOBREM staffing requirements report field tests.

(6) Subtask 6. As a result of field evaluations, modify MREs as required.

(7) Subtask 7. Prepare modified MREs and AMSCO crosswalk for model use in consonance with model preparation tasking (para 3c, Subtask 3).

(8) Subtask 8. Prepare functional dictionary, defining all functions and workloads used in MREs.

4. CONTRACTOR RESPONSE TO RFP

a. The contractor response to the work statement must include a technical approach and cost estimate covering each task and subtask specified in paragraph 3. In addition, the response requires a milestone schedule and management plan showing project staffing levels and task start and completion times. Further, the response should define any government furnished data, research, or other information requirements, specifying due dates. The evaluation of the technical response will take into account the objective stated in paragraph 1 and the field test plan shown in Inclosure 2 and the milestone schedule specified in para 6.

b. Each of the tasks/subtasks described in this statement of work (SOW) should be costed separately. It should be understood that the exact number of each subtask required in each task cannot be known at the time of writing of this SOW and will not be completely known until the second field review has been evaluated. Therefore, the government will fund the number of subtasks that are expected to be required at the time of submission of cost estimates. The government reserves the right to delete or exchange tasks or subtasks during the contact period to accommodate the dynamic nature of two-phase, three-level field evaluations.

5. DOCUMENTATION

a. New programs and program changes must be provided to the government in draft form in a timely manner to accommodate the milestones specified in paragraph 6.

b. The validated and tested manpower standards and backup validation and analyses data must be provided to the government in draft form in a timely manner to accommodate the milestones specified in paragraph 6.

c. Final documentation to include updates of all Phase III documents and Phase IV program additions must be provided to the government by 31 March 1983.

d. Monthly progress reports are required showing progress against both tasks and cost schedules. Remaining contract funds and problems also should be identified.

6. MILESTONE SCHEDULE. (See Inclosure 1.)

	Task Milestone	Required completion date
Task 1	Modification of Phase III Design	1 Jul 1982
Task 2	Preprocessor modifications	1 Aug 1982
Task 3	Fine Tune Model Milestones: Module programs and modifications (1.0, 2.0, 3.0) identified by subtasks 1 and 2	1 Sep 1982
	Program change analyses and program changes resulting from Model Test Run No 1 evaluations	1 Dec 1982
	Program change analyses and program changes resulting from Model Test Run No 2 evaluations	1 Mar 1983
	Completion of all MOBREM programs necessary for recurring model operation	15 Mar 1983
Task 4	Enhancement of mobilization manpower standards Milestones: Validation of Phase III and Phase IV standards, AMSCO/functional code crosswalk, coordination with ongoing standard development studies and integration into MOBREM MRES for Test Run No 2	1 Dec 1982
	Modification of standards resulting from Model Test Run No 2 evaluations and incorporation into MOBREM MREs	1 Mar 1983

Documentation	All draft documentation	In timely manner in accordance with para 5
	Final documentation	15 March 1983
SAG presentations	The contractor should prepare two presentations for the SAG (1) To review the test reports to be sent to field during Test Run No 1; (2) To review model changes resulting from Test Run No 1 and to review the standards to be used in Test Run No 2	1. Aug-Sep 1982 timeframe 2. December 1982 timeframe

ANNEX III TO APPENDIX B

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS
WASHINGTON, DC 20310

REPLY TO ATTENTION OF DAMO-FDP

12 SEP 1983

MEMORANDUM FOR DIRECTOR, US ARMY CONCEPTS ANALYSIS AGENCY

SUBJECT: MOBREM Implementation

1. PURPOSE OF STUDY DIRECTIVE. This directive specifies the tasks, products, schedules and organizational responsibilitites for the final segment of the System Development Phase (formerly Phase V, Production) of the Army's Mobilization Base Requirements Model.

2. STUDY TITLE. MOBREM Implementation.

3. BACKGROUND:

a. CSM 79-15-27 dated 3 August 1979 (TAB A) established a MOBREM Study Advisory Group (SAG) and a HQDA Ad Hoc Study Group to initiate a comprehensive study to determine the size of the CONUS base resources required to support mobilization, training, deployment and sustainment of the total Army during full mobilization. CSM 81-15-18 dated 28 July 1981 (TAB B) designated ODCSOPS to task CAA to proceed with the modeling process in a phased development.

b. Phase I (Problem Definition), Phase II (Functional Design), Phase III (Programming & Programming Test), and Phase IV (Field Test and Evaluation) have all been completed.

c. During the Phase IV (Field Test and Evaluation), it was determined that several refinements were required and the initial study directive only covered those tasks through Phase IV. This directive is an extension of those tasks and includes those tasks and functions required to produce the initial manpower and equipment requirements to support installation level mobilization TDA's.

d. The completion of the final segment of the System Development Phase (test and evaluation) includes all actions required to bring the model to a full operational level (MOBREM I).

e. The completion of MOBREM I will initiate the Mobilization Base Resource Planning System (MOBREPS). This is the overall Management Information System that will utilize the MOBREM computer processing and output as the nuclei of the system.

4. STUDY PROPONENT. Deputy Chief of Staff for Operations and Plans (DCSOPS).

5. STUDY AGENCY. US Army Concepts Analysis Agency (CAA).

DAMO-FDP
SUBJECT: MOBREM Implementation

6. TERMS OF REFERENCE.

a. Problem. The CONUS base force structure and manpower required to support full mobilization is inadequately defined resulting in significant gaps in Army program development and mobilization planning.

b. Objective. The study objective is to define, develop and implement a model through which time-phased CONUS base requirements for manpower and equipment can be derived, analyzed and utilized in mobilization planning and programing.

c. Study Products. Both the study agency and the study sponsor are required to produce products during the study. These products are identified in the milestone schedule.

7. SYSTEM DEVELOPMENT PHASE TASKS (FORMERLY PHASE V).

a. Modify the model and data base by applying those improvements/enchancements identified during Phase IV that have been evaluated as operationally required to bring the model to the MOBREM I level.

(1) Modify model to accept and process time-phased theater shipping requirements.

(2) Modify model to accept time-phased depot outloading capability.

(3) Modify model to accept time-phased data for hospital and barracks beds.

(4) Modify model procedure for identifying POMCUS units.

(5) Modify model to accept mobilization station arrival and departure dates which occur before M-Day.

(6) Modify the Asset Report to include TDA units and strengths of MTOE units.

(7) Modify the "Pure Maintenance Period" parameter to accept, by unit equipment category, a percentage of PURE which is unrepairable and the number of days of maintenance required to prepare repairable PURE for issue.

(8) Modify model to calculate and report amount of PURE remaining in maintenance by equipment category for each time period.

(9) Modify model host tenant agreement procedure to provide a

capability to transfer a percentage of a function rather than always 100 percent.

(10) Change parameter file and model logic to accept modified procedures for dealing with the percent of requirements for wholesale supplies not managed by DARCOM but shipped through DARCOM depots.

(11) Modify the model and parameter file to accept the percentage of shortage (fill requirement) for each base operations equipment category that will be supplied by DARCOM depots.

(12) Add three workload categories (total military, total trainees and MTOE TPSN ≠ 20) to the files and modify model to calculate these workload requirements.

(13) Develop new training equipment requirement equations based on redefined training equipment categories.

(14) Develop preprocessing programs to read and process selected DARCOM data for use as model inputs.

(15) Modify model to permit the analyst to 'create' and 'station' new TDA subunits.

b. Update all input tables, parameters, data dictionaries and manpower requirements equations.

c. Operate model to produce MOBTDA guidance reports for selected installations for test purposes.

d. Update model documentation which results from programing changes and prepare for evaluation and milestone III review.

e. Provide administrative, analytical, and ADP support during application evaluation.

f. Upon successful completion of above, produce complete production cycle of MOBREM.

8. TIME FRAME. May 1983 - April 1984.

9. ASSUMPTIONS. Mobilization assumptions will be based on the latest Defense Guidance and the Army Force Planning Data Assumptions (AFPDA). Specific assumptions and exceptions will be provided by DAMO-OD.

DAMO-FDP
SUBJECT: MOBREM Implementation

10. RESPONSIBILITIES.

a. ODCSOPS Force Management Directorate (DAMO-FD) will be responsible for:

(1) Providing a full-time representative to work jointly with CAA on the tasks specified in paragraph 7.

(2) Coordinating study interfaces and tasking required for the MOBREM SAG, ARSTAF and MACOMs. This includes keeping participants updated on MOBTDA guidance implementation issues; arranging for meetings and preparing minutes; and coordinating all report distribution and responses.

(3) Developing a formal procedure for utilizing MOBREM outputs as guidance in Army's MOBTDA development process.

(4) Serving as the functional proponent for model use, model maintenance, model implementation and the updating of system files, manpower standards and acquisition of all input data.

(5) The study proponent will prepare an evaluation of study results IAW AR 5-5.

b. ODCSOPS Institutional Training Division (DAMO-TRI) will be responsible for providing updated mobilization data from Army Training Resource Requirements System (ATRRS).

c. ODCSOPS Mobilization Division (DAMO-ODM) will be responsible for providing the mobilization policy and planning assumptions (MPPA) used in the model.

d. ODCSPER Mobilization Division (DAPE-PSM) will be responsible for providing updated mobilization data concerning IRR and retiree pre-assignment, prisoner allocations and percentages of transients and holdees.

e. ODCSPER Manpower Policy, Standards and Survey Division (DAPE-MBU) will be responsible for reviewing and approving the CONUS base mobilization manpower standards in accordance with the time sensitive requirements for producing test output.

f. ODCSLOG will be responsible for identifying logistical information sources and coordinating the timely submission of input from its staff elements. Data requirements include:

(1) Prepositioned assets of Class I, II, III, IV and IX (Class VII prepositioned assets and requirements will be obtained from TAEDP).

(2) Authoritative source for the distribution of prepositioned

assets against various scenarios.

g. OTSG Plans and Operations Division (DASG-HCO) will be responsible for providing health services related mobilization data required to include host tenant agreements, CONUS Base decreased rates, time-phased bed capabilities and other information concerning medical evacuee disposition in CONUS.

h. Other organizations. The MOBREM SAG, ARSTAF, and MACOMs will provide support as designated in CSM 79-15-27.

11. REFERENCES.

a. TAB A: Chief of Staff Memorandum (CSM) 79-15-27.

b. TAB B: Chief of Staff Memorandum (CSM) 81-15-18.

c. TAB C: Milestone Schedule.

12. ADMINISTRATION.

a. Support.

(1) TDY, per diem, and overtime related costs are the responsibilities of the agencies providing support.

(2) Administrative support, office space and supplies are the responsibilities of the agencies providing support.

b. Phase V Milestone Schedule. CAA and DAMO-FDP will work jointly on all tasks. MACOM's and installations will participate in evaluating the production runs as indicated on milestone schedule, shown at TAB C.

14. CONTROL PROCEDURES.

a. The MOBREM Study Advisory Group (SAG) established by CSM 79-15-27 will continue to function during Phase V.

b. DD Form 1498 will be prepared by CAA.

c. Direct contact is authorized between study agency and DA Staff/MACOM points of contact.

DAMO-FDP
SUBJECT: MOBREM Implementation

d. DAMO-FDP point of contact is LTC Jack Curiel, AUTOVON 227-1036.

e. This tasking memorandum has been coordinated with CAA in accordance with paragrpah 4, AR 10-48.

FRED K. MAHAFFEY
Lieutenant General, GS
Deputy Chief of Staff for
Operations and Plans

3 Incl
TAB A - CSM 79-15-27, 3 Aug 79
TAB B - CSM 81-15-18, 28 Jul 81
TAB C - Milestone Schedule

CHIEF OF STAFF

Memorandum

U. S. ARMY

DISTR 1 EXPIRES

CSM 79-15-27

DATE 3 August 1979

FILE CS 370.01 (3 Aug 79)

ACTION OFFICER/EXT
LTC Todd/71036

SUBJECT: The Army Mobilization Base Requirements Model - (AMBRM) Study

MEMORANDUM FOR: HEADS OF ARMY STAFF AGENCIES

1. PURPOSE. This memorandum establishes a Study Advisory Group (SAG) and an ad hoc study group to conduct a comprehensive study to define the CONUS base required to mobilize, train, deploy and sustain the total Army during full mobilization and to supervise the design of a methodology/model to determine the force structure and manpower requirements for such a mobilization base.

2. REFERENCES.

a. AR 1-1, Planning, Programing, and Budgeting within the Department of the Army.

b. AR 5-5, The Army Study System.

c. AR 37-100, Account/Code Structure.

d. AR 135-300, Mobilization of Reserve Component Units and Individuals.

e. AR 570-2, Manpower Utilization and Requirements (RCS-CSCOR-73).

f. AR 570-4, Manpower Management.

3. BACKGROUND.

a. Studies and exercises such as [illegible] and [illegible] have [illegible] significant shortfalls in the CONUS mobilization base. There is [illegible] process to adequately define these total requirements [illegible] similar to the Total Army Analysis (TAA) process.

b. There is a need for a model/methodology that will not only determine the force structure and manpower requirements, but will provide the basis for [illegible] other resource requirements of the mobilization base.

DA FORM 65 [illegible]

TAB B

[illegible]: The Army [illegible] Time [illegible] Model - [illegible] Study

4. CONSTITUTION.

a. [illegible] Group

(1) Deputy Director, Force Management Directorate, [illegible] (Chairperson).

(2) [illegible], DPAE, [illegible], [illegible], [illegible], [illegible], [illegible], [illegible], FORSCOM, TRADOC, DARCOM and Health Services Command will provide members (O-6 or civilian equivalent).

b. Study Group

(1) Action Officer (O-5) - Force Management Directorate, [illegible] (Coordinator).

(2) Action Officers (O4/O5) - NGB and OCAR (members).

(3) Points of contact (POC) from Concepts Analysis Agency (CAA), DA Staff, and MACOM listed at Inclosure 1. POC participation should not exceed two hours per week.

5. RESPONSIBILITIES.

a. The Study Advisory Group will monitor the progress of the MOBREM Study.

b. [illegible] will --

(1) Act as the MOBREM study sponsor.

(2) Conduct Phase I of the study with an ad hoc study group.

(3) Task CAA and MACOMs listed at Inclosure 1, by separate correspondence, to participate in Phase I of the study.

(4) Following an analysis of the results of Phase I, [illegible] CAA [illegible] the [illegible] process (Phase II). The ad hoc group will [illegible] with CAA during Phase II.

6. [illegible].

a. [illegible]. The [illegible] and [illegible] to support [illegible] in the [illegible] is [illegible] in Army program [illegible] and mobilization [illegible].

[illegible]: The Army Mobilization Base Requirements Model - ([illegible]) Study

b. Objective: To provide a model or methodology through which the [illegible] base requirements for force structure and manpower can be [illegible], analyzed, and utilized in mobilization planning and programing.

c. Scope. Analysis will use the NATO/Warsaw Pact scenario requiring full mobilization response. The study will be conducted in two phases. Phase I will define the Army mobilization process through a review of DA policies, regulations, procedures, and automated systems which support mobilization. Based on the analysis of Phase I, Phase II will proceed with the development of the methodology/model. Mobilization of the industrial base will not be considered in the study, however, the methodology developed will provide the capability for analysis of selective, partial, and total mobilization scenarios.

d. Limitations. Existing data and studies will be used where applicable, and [illegible] techniques used in the TAA process. Related efforts [illegible] elements of the DA Staff or their delegated agents will be incorporated into Phase I.

e. Time frame. Sept 1979 - Sept 1981 ([illegible] POM Force).

f. Essential Elements of Analysis.

(1) Phase I -

a. What are the scope, functions, and organizational aspects of the mobilization base?

b. What current terminology is employed in the mobilization process?

c. What are the current mobilization policies?

d. What policies need to be solidified at HQDA to assist with both mobilization planning and execution?

(2) Phase II - To be Determined.

[illegible]

[illegible]

[illegible]

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

b. Studies or reports relevant to this study --

(1) TAA

(2) [illegible]

(3) MOBLEX-76

(4) MODEX-78 NIFTY-NUGGET

(5) [illegible]

(6) ACCS-82

c. The studies above are not sufficiently comprehensive to meet the requirements of either Phase I or Phase II.

8. DIRECTION AND CONTROL.

a. The study coordinator will call meetings of the SAG when necessary.

b. The study coordinator will meet reporting requirements of AR 5-5, The Army Study System.

c. Army Staff agencies will provide POC name and telephone number to ODCSOPS (LTC James P. Todd, [illegible]7-1036) by 30 August 1979.

d. Study Milestone Schedule is at Inclosure 2.

9. ADMINISTRATIVE SUPPORT.

a. Funds for travel, per diem and overtime, if required, will be provided by the parent organization of the study representatives.

b. Administrative support (space, clerical and equipment) will be provided by ODCSOPS.

BY DIRECTION OF THE CHIEF OF STAFF:

[illegible]

JOHN R. McGIFFERT
Lieutenant General, GS
Director of the Army Staff

The Army Mobilization Base Requirements

Model - (MOBREM) Study

Points of Contact

OFFICES	POINT OF CONTACT (O4/O5 - GS-12/13)
DAMO-FD (coordinator)	X
DAMO-OD	X
DAMO-TR	X
DAMO-RQ	X
CNGB	X
OCAR	X
ODCSPER	X
ODCSLOG	X
OACSAC	X
OACSI	X
[illegible]	X
OTSG	X
COA	X
COE	X
FORSCOM	X
TRADOC	X
Health Services Command	X
DARCOM	X
Concept Analysis Agency	X

Representation will be provided by DAMO-FDA, DAMO-FDP and DAMO-FDP as required.

Encl 1

STUDY SCHEDULE

PHASE I (1 September 1979 - 28 February 1980)

(1) Define the scope and nature of the problem.

(2) Describe the activities, functions, and physical character of the mobilization base.

(3) Develop assumptions to include the force to be supported and the resources available to support deployment.

(4) Identify policy decisions needed to begin the modeling process.

PHASE II (1 March 1980 - 30 June 1981)

(1) Develop a new requirements model or modify an existing program.

(2) Test the model.

(3) Modify as necessary.

(4) Implement for the POM.

(5) Evaluate outputs.

(6) Integrate into other resource management systems.

(7) Develop the final report.

CHIEF OF STAFF

Memorandum

U. S. ARMY

DISTR A EXPIRES 31 July 1982

CSM 81-15-13

DATE 28 July 1981

SUBJECT: The Army Mobilization Base Requirements Model - (MOBREM) Study

FILE CS 370.01 (28 Jul 81)

ACTION OFFICER/EXT
LTC Hall/71056

MEMORANDUM FOR: HEADS OF ARMY STAFF AGENCIES

CSM 79-15-27, dated 3 August 1979, subject as above, is changed as follows:

1. Paragraph 5. RESPONSIBILITIES.

b. ODCSOPS will --

(1) Act as MOBREM study sponsor.

(2) Conduct Phases I-IV of the study with an ad hoc study group.

(3) Task CAA and MACOMs listed at inclosure 1, by separate correspondence, to participate in all phases of the study.

2. Paragraph b. TERMS OF REFERENCE.

e. Time frame. September 1979 - February 1983.

3. Attached study schedule, dated 7 July 1981, supersedes original milestone schedule at Inclosure 2.

1 Incl
as

JAMES M. LEE
Lieutenant General, GS
Director of the Army Staff

DAS FORM 81 1 MAR 81

TAB C

ARMY MOBILIZATION BASE
REQUIREMENTS MODEL
(MOBREM)

Revised 7 July 1981

STUDY SCHEDULE

PHASE I (1 September 1979 - 31 August 1980)

(1) Define the scope and nature of the problem.

(2) Describe the activities, functions, anad physical character of the mobilization base.

(3) Develop assumptions to include the force to be supported and the resources available to support deployment.

(4) Identify policy decisions needed to begin the modeling process.

(5) Develop a preliminary concept of the model design.

(6) Task US Army Concepts Analysis Agency (CAA) to proceed with the modeling process.

(7) Assist CAA in the completion of pre-award contract procedures, contract negotiation and administration.

PHASE II (1 September 1980 - 30 June 1981)

(1) Complete action for contract award.

(2) Define model output requirements.

(3) Define and document mobilization policies, CONUS base workload generator data and sources.

(4) Define and document CONUS base support functional area structure, and installations to be covered.

(5) Develop and document MOBREM manpower staffing conflict rule.

(6) Develop allocation rules for installation equipment, and organizational/support maintenance factors.

(7) Provide CAA with data files needed to identify CONUS base mobilization workloads, functional codes, and installations.

(8) Assist CAA in the technical review and evaluation of contractor progress and products.

(9) Assist CAA in approving the completion of model design as a separate contractual efforts.

PHASE III (1 July 1981 - 28 February 1982).

(1) Establish a planning schedule to utilize MOBREM in the PPBS cycle.

(2) Complete TRADOC installation/functional code crosswalk.

(3) Participate in the FORSCOM Mobilization Plan Review and TDA validation seminar.

(4) Acquire and verify updated data tapes.

(5) Develop functional code crosswalk for predetermined UICs.

(6) Develop ammunition consumption rates for individual and unit training.

(7) Obtain SAG approval of MPPA, manpower coefficients arguments, workload categories, and functional codes.

(8) Determine base operations functions to be discontinued upon mobilization.

(9) Determine base operations type functions that are performed by tenant Divisions/Separate Brigades.

(10) Initiate and staff draft AR governing MOBREM.

(11) Coordinate study interface and tasking required for the MOBREM SAG, ARSTAF, and MACOMs.

(12) Develop and staff Phase IV tasker for CAA.

(13) Monitor the FORSCOM on-site validation effort; upgrade manpower coefficients and equipment allocation rules.

(14) Develop a test plan for distribution of model outputs for evaluation and [illegible].

(15) Participate in contractor prepared [illegible] plan and functional [illegible] for [illegible].

(16) Test the model on CAA computer using test data.

PHASE IV (1 MARCH 1982 - 28 FEBRUARY 1983)

(1) Participate in the review of test results.

(2) Brief SAG, ARSTAF and MACOMS on the results of inital test.

(3) Update and improve manpower coefficients.

(4) Modify the model as necessary.

(5) Initate shakedown test.

(6) Collect required and load into model.

(7) Run model using live data.

(8) Send output results to the field for review and evaluation.

(9) Obtain feedback; retest as necessary.

(10) Evaluate test results.

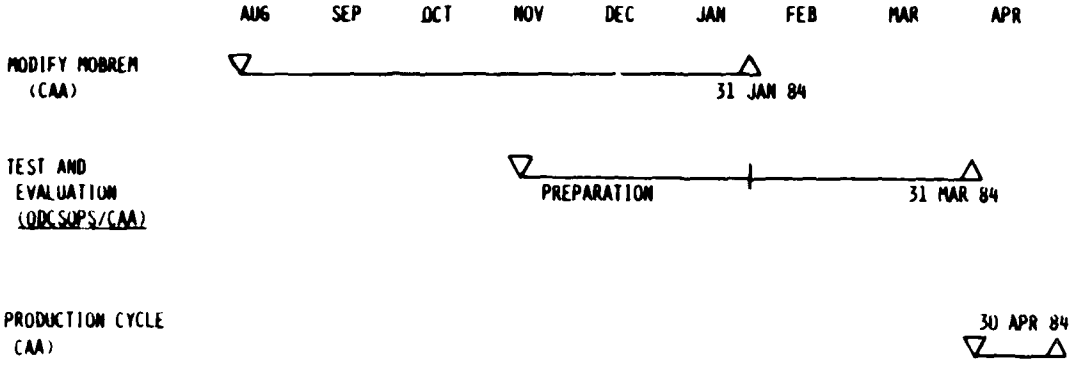
(11) Develop the final report; brief SAG.

(12) Implement AR governing MOBREM.

MILESTONE SCHEDULE

SYSTEM DEVELOPMENT PHASE

(TEST AND EVALUATION)



(NOT USED)

ANNEX IV TO APPENDIX B

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C 20301

MANPOWER
RESERVE AFFAIRS
AND LOGISTICS

16 NOV 1979

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (MANPOWER AND RESERVE AFFAIRS)

SUBJECT: Mob TDA Manpower

The APDM-approved, time-phased wartime military manpower demand explicitly excluded those mobilization manpower requirements for TDA units submitted in the Army's FY 81-85 POM. While OSD agrees philosophically that TDA units will experience dramatic changes in workload upon mobilization, we have serious reservations about the credibility of the procedures now used to estimate those wartime manpower requirements.

The APDM directs the Army and OASD(MRA&L) to reach agreement on Mob TDA manpower requirements prior to the FY 82-86 POM submission. Our current thinking is that the following guidelines should be followed:

First, we believe that Mob TDA requirements should be based on:

- projected, time-phased workloads explicitly linked to the CG-postulated conflict, where feasible;

- explicit policy assumptions, where workload projection is not feasible;

- explicit (preferably empirically-based) non-availability factors and workweek assumptions;

- explicit assumptions about time lags and other constraints, where applicable, associated with expanding the civilian workforce;

- guidance for wartime reliance on military retirees and civilian personnel in lieu of military manpower, as spelled out in Robin Pirie's March 15, 1979, memo "Wartime Manpower Planning Guidance," subject to any revisions in the upcoming CG;

- utilization of personnel (both military and civilian) made available by inactivation of units or reduced workload in units; and

- utilization of late-deploying TOE units to accomplish workload in TDA units (where the work is consistent with the unit's mission, e.g., supply companies assisting at depots) during the early phases of mobilization.

Second, it would be helpful if Mob TDA requirements data were separately portrayed for military and civilian personnel, and each of the following separately identified: units with increased workload, units with decreased

workload, units activated upon mobilization, units inactivated on or after mobilization. The application of "borrowed" late-deploying TOE unit manpower should also be portrayed.

Third, we need the data presented by time period, beginning with M-Day. Thirty-day periods would be acceptable; however, 10-day periods for at least the first three months would be preferable.

Finally, data should be displayed by homogeneous groupings corresponding to the Troop Program Sequence Number (TPSN) activity codes (as defined in AR 18-19). Within these groupings, Major Commands should be identified separately whenever there are significant populations in more than one command.

Our informal discussions with the Army Staff indicate that the Army will not be able to provide a mathematically-derived, workload-based Mob TDA requirement until the mobilization requirements model (MOBREM) is operational. In the interim, the Army should ensure that it can present an intuitively convincing time-phased relationship between stated Mob TDA requirements and the independent variables that drive those requirements (e.g., training load or population of units preparing for deployment), wherever appropriate.

Please let me know if you have any differing views on the guidelines appropriate for estimating this component of wartime Army manpower requirements. We look forward to continuing to work with the Army to improve the credibility of DoD's wartime manpower requirements projections. My action officer for this effort is James Willoughby, x44175.

Charles W. Groover
Deputy Assistant Secretary of Defense
(Requirements, Resources and Analysis)

APPENDIX C

MOBREM FUNCTIONAL CAPABILITIES

C-1. PURPOSE. The purpose of this appendix is to outline the functional capabilities of the model tested and exercised during the Phase III Test, August 1981.

C-2. GENERAL. The test demonstrated that each module executed as designed and also, when integrated, that the modules executed to produce accurate model outputs. An illustrative set of test data was developed and used. The rationale was that like items share common program logic, therefore, only the logic need be tested. Listed below are the 25 functional capabilities tested during Phase III.

a. Invoke the default value for a parameter when no user-set value is input.

b. Adjust the unit departure date based on the M-day to D-day parameter value.

c. Compute the unit schedule (fill/train/prepare for overseas movement).

d. Compute installation-level unit strengths (personnel and equipment).

(1) Exercise fill start/stop dates, fill levels, fill rates.

(2) Multiple units on an installation.

(3) Different deployment dates.

(4) Unit parameterization from unit category parameter.

e. Exercise prisoner distribution technique. If primary prison overflow; fill secondary prison.

f. Compute total installation population (military and civilian components).

(1) Military component: unit strengths, TDA strengths, IRR, retired, IMA, POW, patients, prisoners, students and trainees, personnel in PCFs less transients).

(2) Civilian component: TDA strengths (feedback technique), contractor.

(3) Other: dependent (drawdown, stop-date), returning noncombatants.

g. Compute installation workloads (all modules)--average and peak.

h. Transfer medical workload from an installation without a hospital to the designated installation with a hospital (medical support agreements).

i. Exercise patient workload computation technique.

(1) Existing, theater, new CONUS patients.

(2) M-day to D-day relationship.

(3) Dependent cutoff.

(4) Deceased, separations, return to duty holders.

j. Exercise patient workload to bed distribution technique (distribution rules).

k. Exercise equipment requirements equations (ERE) for both training (TERE) and base operation equipment (BERE).

l. Compute supply receiving workload.

m. Exercise POMCUS unit residual equipment (PURE) technique.

n. Compute total DARCOM requirement.

(1) Base operations-wholesale supply category (WSC).

(2) Unit fill requirements-WSC.

(3) Population-based requirements.

(4) POMCUS shortfall requirement.

o. Calculate DARCOM assets and shipping limits.

(1) DARCOM M-day asset parameter.

(2) Outloading capability/assets.

(3) Pipelines.

p. Exercise DARCOM requirements distribution technique.

(1) Total outloading capability.

(2) Blocked installations.

(3) Shipping hierarchy.

(4) DARCOM shortfall option/shortfall-type option.

q. Exercise manpower conversion techniques.

(1) Predetermined manpower requirements.

(2) Position coverage.

(3) Manpower requirements equations (workweek length/productivity).

r. Exercise host-tenant support agreements.

s. Compute manpower requirements for outputs (installation/MACOM).

t. Demonstrate extraction programs for UICs, personnel strengths, and other key data elements.

u. Compute average weights for equipment categories.

v. Demonstrate extraction/categorization programs for equipment data.

(1) Theater war reserve shortfall.

(2) Theater assets.

(3) POMCUS shortfall.

(4) POMCUS assets.

(5) POMCUS war reserves.

(6) Units (training, base operations, unit equipment).

w. Demonstrate extraction/categorization programs for students/trainees.

x. Demonstrate edit programs for parameter default values.

y. Demonstrate manually-prepared data input programs.

APPENDIX D

FINAL MOBREM FUNCTIONAL DESIGN VERIFICATION

D-1. PURPOSE. This appendix outlines the processes used during Phase V to make the final verification of the MOBREM functional design and programs as updated to reflect the initial operational level of MOBREM (MOBREM LEVEL I).

D-2. GENERAL. It was appropriate at the end of Phase V to reverify that MOBREM, after being upgraded to operational level, was operating in accordance with the functional design. This was accomplished by manually tracking the data flow through the model and verifying that outputs were in line with what was predicted, i.e., the outputs of the report module were compared manually with the corresponding results based on the functional design specifications. Analysts were instructed on the functional design and became familiar with intermediate files found in the MOBREM process. Each analyst was given 10 installation reports by MACOM or a MACOM mix covering eight MACOMs. Paragraph D-3 discusses algorithms utilized for the specified report.

D-3. INSTALLATION ASSET REPORT

a. TDA Unit Section

(1) On the TDA section of the Asset Report, verify that the units shown are the same units as per the source document (primarily the MTBSP).

(2) Compare the strengths of units shown to values in the source document.

b. TDA Personnel Summary Section

(1) Does the strength for the rows entitled "Military" and "Civilian" equal the strengths in the source documents (M-day)? Do they equate to the total for each time period that a UIC arrives?

(2) Does the row entitled "Other" equal unit military strengths' average during like time periods minus the rows entitled "Retirees" and "IMA"?

(3) Do the rows entitled "Retirees" and "IMA" equal the average strengths found on the Individuals File and (as per) the parameter show rate (E4)?

(4) The "Military" row should equal the sum of "Retirees," "IMA," and "Other" for each time period.

(5) The row called "Total" should equal "Military" plus "Civilian" rows for each time period.

c. **MTOE Units Section**

(1) Are the unit identification codes (UIC) listed on the "MTOE Units" portion of the report (as per) source documents (primarily the MTBSP)?

(2) Match the deploying and POMCUS unit indicators (Y = Yes and N = No) against the source documents.

(3) Do the listed Mobilization Station Arrival Date (MBSAD) and the Air Date-Ready Load (ADRL) match with the MTBSP (allowing for D-day adjustment)?

(4) Does the Fill Start Date (FSD), Fill End Date (FED), and Preparation for Overseas Movement (POM) End Date (PED) seem to be reasonable based on the MBSAD mentioned above?

(5) Check the values under the "Strength Before Fill" (BEF) and "Strength After Fill" (AFT) based on the unit's file and the following rules:

(a) If the "Fill End Date" value minus the "Fill Start Date" value equals zero (i.e., no fill time), then the values of AFT and BEF should be equal.

(b) If the value of AFT is less than the value of BEF, then AFT should equal BEF on the Asset Report.

(6) If a unit is a nondeployer, check that "NA" is printed under "POM End Date" and "Personnel Depart Date."

d. **MTOE Unit Availability**

(1) Check that MTOE units displayed on top of the Asset Report also appear on the bottom portion of the report.

(2) Check for the accuracy of asterisks for deploying and nondeploying units in accordance with the following rules:

(a) For nondeploying, find asterisks for the time period after the "Fill End Date" until M+270.

(b) For deploying units, find asterisks between the "Mobilization Station Arrival (O-270) Date" and the "Fill Start Date" and between the "POM End Date" and the "Personnel Depart Date."

D-4. INSTALLATION WORKLOAD REPORT. There are 540 candidate (possible) workloads considered by MOBREM. As the model processes the data, these workloads are accumulated for each installation and each time period for the following categories: personnel, medical, equipment, and DARCOM. The analyst evaluated those workloads (wkld) present on their reports as

follows. It is noted that all workloads currently used by MOBREM were evaluated by at least one analyst.

a. Personnel Workload

Workload (wkld) and (number)	**Check**
AC MTOE Pers In Fill(1)	Check for absence of wkld 1-8, and 10 for M-day.
RC MTOE Pers In Fill(2)	Sum of wkld 9 = MTOE personnel on M-day asset report.
AVN Training (TRNG), Army(3) Unit TRNG-FLGHT Unit(3) Unit TRNG-HV Unit(4) Unit TRNG-CS,CSS Unit(5) Unit TRNG-Light Unit(6) MTOE In POM(7) RC MTOE Pers Inproc(8) AC MTOE Not In F/T/P(9) Note: F/T/P = Fill/Train/POM RC MTOE Not In F/T/P(10)	Beyond M-day, does the count seem reasonable based on assets?
TDA Military Pers(11) TDA Civilian Pers(12) Total TDA Pers(13)	Wkld 11 + wkld 12 = wkld 13 for all M periods. Check that M-day - "Other" on Asset Report = wkld 11. Check that M-day "Civilian" on Asset Report = wkld 12.
IMA Inprocessing(14) IRR Inprocessing(15) Retirees Inprocessing(16)	Check that IMA and Retirees = values on Individuals File and Asset Report. IRR = the input from Individuals File multiplied by a user defined show rate (parameter E4).
Trainee/Student Categories Wkld(17-57)	Check for accuracy against the Individuals File. (For specific categories see the section in ATRRS.)
Dependents(58)	M-day "dependents" = dependents percent (DSPCT) times wkld 9 + wkld 11 (Parameter 03). Note: For this model run, no dependent drawdown was assumed. Therefore, strength shown for dependents at M-day will stay the same throughout all MOBREM time periods.

Personnel in PCF(59)	Check PCF computation. Ensure the installation gets PCF personnel by checking the installation crosswalk. Then, PCF should equal total PCF for the Army times the installation PCF share.
Prisoners on Post(60)	Check that prisoners only show up where there is a prison (use the Installation Dictionary).
Inst Military Pop(61)	Check wkld 61 by adding wkld 1 - wkld 11 then subtract wkld 60 from post, add installation share of prisoners and then add the PCF on the installation. Then subtract transients, and then add theater patients.
Wkld 61 - PRIS-PCF-THTR Pat(62)	Check wkld 62 by taking wkld 61 minus "prisoners" minus "PCF" minus "theater patients."
Prisoners of War(63)	Check for accuracy against the Individuals File.
RTNG Noncombatants(64)	No data available.
Contractor Personnel(65)	No data available.
MTOE Pers (TPSN 20)(66) MTOE Pers (TPSN 19)(67)	Check for accuracy using the Units File.

b. Medical Workloads

New Theater Patients(68)	An installation which has a hospital and gets patients should never have more patients than bed capacity. An installation with no hospital never gets patients.
THETR Pat-Army Hosp(69) CONUS Pat-Army Hosp(70) CONUS Pat-Other Beds(71)	The only M-day medical workload should be "OCONUS Patients-Army Hospital". M-day CONUS patients is a percentage of M-day hospital beds.
Patients-Civ Hosp(72) Deceased Personnel(73) Patients Separated(74) Medical Holdees(75)	Verify the values as per parameter sets.

Check that installations which start out with no hospital, then get a hospital, have zero medical workloads until hospital space appears.

c. Equipment Workloads

(1) The M-day training equipment required and on hand should equal the sum of values on the Units File for required and on hand for those units present on M-day.

(2) Verify the training equipment requirements equation derived values for three time periods.

(3) Check that training equipment on hand is greater or equal to the required value.

(4) Check the values on hand for training equipment for negative trends.

(5) Check that the values of training equipment received approximates the difference between equipment required and on hand. Consider late arriving equipment as appropriate.

(6) Check for general trends and sizing of categories.

(7) Verify that unit equipment on hand and required relates to the respective units on the installation for that time period using the asset report.

(8) Unit equipment on hand with troop sequence number (TPSN) less than 20 plus unit equipment on hand with TPSN greater than 19 should equal total unit equipment on hand.

(9) Unit equipment with TPSN greater than 19 should generally level out over time (generally nondeploying units).

(10) Unit equipment on hand should be less than or equal to unit equipment required.

(11) Check for sizing and consistency of categories.

(12) Check the general appearance of unit equipment received. Count should generally appear only in the earlier time periods when units are filling. A large received value should correspond to a large required minus on hand.

(13) Unit equipment in POM should generally correspond to the deployment of units. Check against the asset report.

(14) Observe the correlation of PURE equipment and deploying POMCUS units.

(15) M-day values for base operations equipment should equal values in the Units File. Verify M+day values by the appropriate base equipment requirements equations (BERE).

(16) For base operations, equipment received equals equipment required minus the on-hand equipment. Check for presence or absence of values for "received" as appropriate.

(17) Check for presence of some base operations equipment at all installations.

(18) Compare total administrative vehicle value to base operations equipment on hand for parity.

(19) Verify the values of wholesale supply categories (WSC) using the parameter file and the formulation, required minus shipped = remaining asset, for three time periods.

(a) For WSC 1-4, 27, and 28, tons = military population times parameter set.

(b) For WSC 11-24 and 26, tons = unit equipment received times weight of unit equipment plus training equipment received (by unit category) times weight of unit equipment.

(c) For WSC 25, tons = sum of base operations equipment received times weight of base operations equipment.

(d) For WSC 5-10, value should be blank.

d. **DARCOM Workload**

(1) Depot Assets After Shipment. Take the value of the previous period's assets after shipment and add maintenance pipeline assets parameter (E 21) and production pipeline parameter (E 19) to that value; subtract the tons shipped for the new time period; and compare this value to the new value of depot assets after shipment.

(2) Depot Shipping Limit. With the assets after shipment for the previous time period, add maintenance pipeline and production pipeline arriving for the new time period. Consider this value with the depot outload capability for that period and check for the minimum value of these numbers.

(3) Depot Outloading Capability. First, check that the outloading capability equals the values specified by the parameter file for M-day multiplied by 10. Now, for the total outload capability specified, aggregate by WSC hierarchy each value by WSC minus the amount of like WSC shipped for that time period. As a verification check, add all WSCs shipped for that time period, then subtract that from the outload capability specified on the parameter report. This value should equal the smallest outload capability for that time period.

D-5. MOBREM MANPOWER REQUIREMENTS REPORT

a. Check that M-day totals equal the value for total TDA on workload report.

b. Verify that total columns are added correctly.

c. Check the applicability of function codes displayed and for the presence or absence of function codes.

d. Ensure the predetermined requirements for each installation appear, keeping in mind host/tenant agreements.

e. Verify that the total MOBTDA values are computed correctly.

f. Check the time period values--total equal TDA totals on the workload report for the next time period.

g. Check that the military/civilian split was computed correctly and that those values are passed on the workload report for the next time period.

h. Choose a sample number of requirement values and verify their accuracy.

i. Verify report values against actual MOBTDA guidance.

D-6. OTHER REPORTS

a. MACOM Manpower Requirements Report.

b. MACOM Summary Manpower Requirements Report.

c. DARCOM Installation Report.

d. DARCOM Summary Installation Report.

e. Check the above reports for correct summation of installation values by MACOM code.

f. Look for outlying values and reasonableness.

APPENDIX E

ENVIROMENTAL/POLICY MODULE PARAMETER DESCRIPTIONS

E-1. INTRODUCTION. As described in Chapter 3 of this study report, MOBREM utilizes three types of parameters: policy (P), environment (E), and input (I). Each parameter has been amplified as required with a definition and short narrative. The model user should be familiar with these parameter sets before executing the model.

E-2. PARAMETERS. The following parameters are used with the model.

Parameter (P-1) - D-day in Relation to M-day.

Definition: The number of days after M-day that D-day occurs.

Narrative: This parameter allows the user to offset from the M-day date those activities and events in mobilization that occur relative to D-day.

Parameter (P-2) - Personnel Inprocessing.

Definition: Proportion of Reserve Component (RC) MTOE personnel inprocessing on post.

Narrative: This parameter allows the user to specify the location where RC MTOE personnel inprocessing workload will be located.

Parameter (P-3) - Dependent Drawdown Period.

Definition: Number of days of dependent drawdown.

Narrative: This parameter allows the user to specify the number of days during which dependents will be relocated from Army posts used in conjunction with two other parameters (P-4 and E-3).

Parameter (P-4) - Mobilization Dependents on Post After Drawdown Per M-day AC Person on Post.

Definition: Number of dependents on post at end of drawdown period.

Narrative: This parameter allows the user to set the ending number of dependents. P4 is specified as a function of the number of AC persons on post, in both AC MTOE and TDA Units.

Parameter (P-5) - Deploying MTOE Units - Days of Fill/Train/POM Table.

Definition: The length (in days) of the fill, train, and preparation for overseas movement (POM) periods for deploying MTOE units, as a function of the component and the time of deployment of the unit.

Narrative: This table allows the user to specify the number of days of fill, train, and POM for deploying MTOE units. A fill time of zero will cause P7 and P12 to be overridden.

Parameter (P-6) - Nondeploying MTOE Units - Days of Fill Table.

Definition: The length (in days) of the fill period for nondeploying MTOE units, as a function of the component of the unit.

Narrative: This table allows the user to specify the number of days of fill for nondeploying MTOE units. A fill time of zero will cause P-8 and P-13 to be overridden.

Parameter (P-7) - Deploying MTOE Units - Personnel Fill Level.

Definition: The proportion of personnel structure strength to which deploying MTOE units will be filled.

Narrative: This table allows the user to set the personnel strength for deploying MTOE units on the deployment date, i.e. deployment personnel authorized level of organization (ALO) strength. This parameter is set in conjunction with P-5 and P-6.

Parameter (P-8) - Nondeploying MTOE Units - Personnel Fill Level.

Definition: The proportion of personnel structure strength to which non-deploying MTOE units are to be filled.

Narrative: This table allows the user to set the level to which nondeploying MTOE units will fill with personnel by the completion of the unit fill period. Set in conjunction with P-6 and E-7.

Parameter (P-9) - TDA Fill Level.

Definition: The proportion of model-computed TDA manpower requirements to which installation personnel levels are to be filled.

Narrative: This parameter allows the user to specify the proportion of model-computed TDA manpower requirements that will be filled with personnel during mobilization.

Parameter (P-10) - Dependent Patient End Date.

Definition: The day after mobilization, when dependents will no longer be considered a medical workload.

Narrative: This parameter allows the user to establish whether dependents will continue to receive medical care from the Army medical facilities, and, if so, for how long (in days) after mobilization occurs. If P-10 is set to 271, dependent medical services will be provided throughout the mobilization period covered by the model.

Parameter (P-11) - Training Equipment Fill Level - Proportion of Requirement.

Definition: The proportion of training equipment requirements which will be filled, for each training equipment category.

Narrative: This table allows the user to set the level to which training equipment requirements will be filled. Set in conjunction with P6 and E10.

Parameter (P-12) - Deploying MTOE Units - Equipment Fill Level by Category.

Definition: The proportion of equipment requirement to which deploying MTOE units will be filled, for each unit category, for each unit equipment category.

Narrative: If all units are to deploy at ALO 1, this parameter should be set to 1.0 for all equipment with categories within every unit category; set to .9 or less for ALO 2 unit. Set in conjunction with P-5 and E-9.

Parameter (P-13) - Nondeploying MTOE Units - Equipment Fill Level of Category.

Definition: The proportion of equipment requirement to which nondeploying MTOE units will be filled for each component, for each unit equipment category.

Narrative: If all units are to be filled to ALO 1, this parameter would be set to 1.00 for all equipment categories within every unit category (component and days of deployment after D-day); set to .9 or less for ALO 2 units. Set in conjunction with P-6 and E-10.

Parameter (P-14) - Base Operations Equipment Fill Level by Category.

Definition: The proportion of base operations equipment requirements to which TDA units will be filled, for each base operations equipment category.

Narrative: If this parameter is set to 1.00, all computed base operations equipment requirements will be assumed to have been filled and will be shown as an on-hand workload. Set with E-11.

Parameter (P-15) - Pure Equipment - Maintenance Period and Percent Unrepairable by Category.

Definition: PURE is POMCUS unit residual equipment.

Narrative: The model provides the user the opportunity to define a maintenance period for equipment left behind by a deploying unit.

Parameter (P-16) - DARCOM Shortfall Distribution Option.

Definition: Method for distributing the DARCOM shortfall.

Narrative: This parameter allows the user to specify the disposition of a shipping shortfall. There are 3 available options by the user to tailor the shortfall: reported then dropped, carried forward to the next time period, or treated as tons shipped from a notional DARCOM installation.

Parameter (P-17) - DARCOM Shortfall - Type Option.

Definition: The user-specified technique for computing the DARCOM shortfall.

Narrative: This parameter allows the user to specify the type of shortfall to be distributed as specified in parameter P-16. The 3 types are: asset shortfall, capability shortfall, or shipping shortfall.

Parameter (P-18) - DARCOM Installation Unblocking Indicator and Hierarchy Number.

Definition: The unblocking indicator and hierarchy of accessing for each wholesale supply category and DARCOM installation.

Narrative: This parameter allows the user to specify which DARCOM installations (and wholesale supply categories (WSC)) are blocked.

Parameter (P-19) - Wholesale Supply Category Hierarchy.

Definition: The shipping hierarchical number, for each wholesale supply category (lower numbers have first shipping priority).

Narrative: This parameter is required when outloading capability has been entered as an installation total (E-17) rather than by ESC (E-18).

Parameter (E-1) - Workweek by Time Period and Mannour Availability.

Definition: Table of workweek length by mobilization time period and the annual available hours.

Narrative: This parameter allows the user to specify the length of the mobilization workweek and the corresponding number of annual available work hours.

Parameter (E-2) - Training Load Adjustment Factor.

Definition: Training load expressed as a proportion of the Army Training Resource Requirements System (ATRRS) mobilization input.

Narrative: This parameter allows the user to make macro adjustments to the ATRRS-produced mobilization training input, rather than changing the ATRRS data.

Parameter (E-3) - M-day Dependents on Post.

Definition: Number of M-day dependents on post per AC person on post.

Narrative: This parameter allows the user to specify the M-day dependent population on post.

Parameter (E-4) - IRR, IMA, Retiree Show Rates.

Definition: The proportion of Individual Ready Reserve (IRR), individual mobilization augmentee (IMA) and retirees who are preassigned to mobilization billets that will actually show up at the scheduled time.

Narrative: This parameter allows the user to specify the snow rates for three categories of inactive Army personnel.

Parameter (E-5) - Unit Dates.

Definition: Dates (days after M-day) relating to the mobilization station arrival, air date ready to load, and sea date ready to load for Army units.

Narrative: These parameters allow the user to selectively change the mobilization station arrival date (MBSAD), air date required to load (ADRL), and sea date required to load (SDRL) for Army units. This input will not be applied to PI.

Parameter (E-6) - Deploying MTOE Units - Personnel On Hand on M-day.

Definition: Proportion of personnel structure strength on hand on M-day for deploying MTOE units, by unit category.

Narrative: This parameter allows the user to selectively change the M-day personnel operating strength levels (as a proportion of requirements) for deploying MTOE units, by unit category (component and deployment date couplets).

Parameter (E-7) - Nondeploying MTOE Units - Personnel On Hand on M-day.

Definition: Proportion of personnel structure strength on hand on M-day for nondeploying units, by component.

Narrative: This parameter allows the user to change selectively (by component) the M-day personnel operating strength levels for nondeploying MTOE units, using two options: having all nondeploying MTOE unit personnel strength levels equal the current on-hand level, or set personnel strengths to a proportion of structure strength.

Parameter (E-8) - Training Equipment On Hand on M-day.

Definition: M-day training equipment strength parameter, for each training equipment category.

Narrative: This parameter allows the user to specify the M-day on-hand training equipment levels by training equipment category.

Parameter (E-9) - Deploying MTOE Units - Equipment On Hand on M-day by Category.

Definition: M-day deploying unit equipment strength parameter, for each unit category (deployment date by component), for each unit equipment category.

Narrative: This parameter allows the user to specify the M-day deploying unit on-hand equipment levels (as a proportion of the structure level), by unit category and unit equipment category couplets.

Parameter (E-10) - Nondeploying MTOE Units - Equipment On Hand on M-day by Category.

Definition: M-day nondeploying unit equipment strength for each unit equipment category.

Narrative: This parameter allows the user to specify the M-day nondeploying unit on-hand equipment levels (as a proportion of M-day actual input data), by unit equipment category and component couplets.

Parameter (E-11) - Base Operations, Equipment On Hand on M-day by Category.

Definition: M-day base operations equipment strength for each base operations equipment category.

Narrative: This parameter allows the user to specify the M-day on-hand base operations equipment levels (as a proportion of actual input data), by base operations equipment category.

Parameter (E-12) - POMCUS Shortfall Factor.

Definition: POMCUS shortfall parameter, for each unit equipment category.

Narrative: This parameter allows the user to override model input data relating to the POMCUS shortfall in theater that exists on M-day.

Parameter (E-13) - DARCOM M-day Asset Option.

Definition: Defines the technique for establishing the initial time input for DARCOM assets by wholesale supply category and DARCOM installation.

Narrative: This parameter allows the user to specify the technique for establishing initial DARCOM asset distributions. This may be done by either directing input of M-day assets by WSC for each installation (I-10), or spreading all DARCOM assets for each WSC to installations using E-15.

Parameter (E-14) - DARCOM M-day Total Assets by Wholesale Supply Category.

Definition: Total tons of supply or equipment at DARCOM installations on M-day, for each wholesale supply category.

Narrative: If the DARCOM M-day asset option parameter (E-13) value is set to 2, then the user must specify values for this parameter.

Parameter (E-15) - DARCOM Installation Share of Total M-day Assets:

Definition: Share of M-day DARCOM assets, for each wholesale supply category, for each DARCOM installation.

Narrative: If the DARCOM M-day asset option parameter (E-13) value is set to 2, then the user must specify values for this parameter, which is used in conjunction with the DARCOM M-day total assets by WSC parameter (E-14). Set this parameter in conjunction with E-13 and E-14.

Parameter (E-16) - DARCOM Installation total Outloading Capability Indicator.

Definition: Installations with total outloading capability (not by WSC).

Narrative: In this parameter the user specifies the installations for which only the total outloading capability is known. Installations listed here must have the total outloading capability entered in E-17 and the ESC priority entered in P-19. If the outloading capability can be input by WSC (E-18), do not list the installation code here. This parameter should be set in conjunction with P-19, E-17, and E-18.

Parameter (E-17) - DARCOM Installation Daily Total Outloading Capability Limits.

Definition: Daily total shipping capability limits, for each DARCOM installation without wholesale supply category specified limits.

Narrative: This parameter allows the user to specify the total outloading capability limits for each DARCOM installation flagged in the DARCOM installation total outloading capability indicator parameter (E-16).

Parameter (E-18) - DARCOM Installation Outloading Capability Limits by Wholesale Supply Category.

Definition: Outloading capability limits, for each wholesale supply category, (for each DARCOM installation with WSC-specific capacity limits.

Narrative: This parameter allows the user to specify the WSC outloading capability limits for each DARCOM installation not flagged in the DARCOM installation total outloading capability indicator parameter (E-16). Set with E-16 and E-17.

Parameter (E-19) - DARCOM Production Pipeline by Installation, Wholesale Supply Category, and Time Period.

Definition: Tons of supply or equipment to become available to DARCOM through the depot production pipeline, for each DARCOM installation, for each wholesale supply category, for each time period.

Narrative: This parameter allows the user to specify the output of the depot production pipeline for each WSC and DARCOM installation over time.

Parameter (E-20) - Production Pipeline Shipped Direct (not thru DARCOM) by Wholesale Supply Category and Time Period.

Definition: Tons of supply or equipment to be shipped, but not thru DARCOM (shipped directly from production source) for each wholesale supply category, for each time period.

Narrative: This parameter allows the user to specify the direct shipment output of the production pipeline for each WSC over time.

Parameter (E-21) - DARCOM Maintenance Pipeline by Installation, Wholesale Supply Category, and Time Period.

Definition: Tons of supply or equipment to become available to DARCOM through the maintenance pipeline, for each DARCOM installation, for each wholesale supply category, for each time period.

Narrative: This parameter allows the user to specify the output of the maintenance pipeline for each WSC and DARCOM installation over time.

Parameter (E-22) - Productivity Adjustment Factor.

Definition: Productivity adjustment factors that account for changes in worker productivity as the length of the workweek increases during mobilization. For instance, as the length of the work-week increases 50 percent moving from a 40-hour to a 60-hour workweek, worker productivity (output per week) may increase at a lower percentage. This occurs because of worker fatigue, increased absenteeism, etc.

Narrative: This parameter allows the user to specify the productivity adjustment factor (PAF) as the length of the workweek varies.

Parameter (I-1) - Prisoner Proportion

Definition: The proportion of the military population which is in prison.

Narrative: The prisoner proportion is based on historical data and is a flat rate of the military population.

Parameter (I-2) - TDA Military and Civilian M-day Manning Levels.

Definition: The proportion of the actual on-hand levels which will be used.

Narrative: This user input is most useful in sensitivity analysis.

Parameter (I-3) - Transient Proportion.

Definition: The percentage of the Army that is in transient status.

Narrative: None.

Parameter (I-4) - Contractor Conversion Factor.

Definition: A factor for converting number of TDA spaces to number of contractor personnel required.

Narrative: None.

Parameter(I-5) - PCF Individuals Proportion.

Definition: The percentage of the Army that is being held in personnel control facility.

Narrative: Same metnod as I-1.

Parameter (I-6) - Total Strength of the Army by Day.

Parameter (I-7) - OCONUS Strength of the Army by Day.

Parameter (I-8) - Hospital Percent Full (PCTFUL) and Percent Military Mobilization.

Definition: Factors used to replicate patient workload impact.

Narrative: PCTFUL is tne proportion of tne maximum possible number of filled beds which are filled on M-day. PCTMIL is the percentage of military hospital patients on M-day.

Parameter (I-9) - CONUS Patient Rates.

Definition: Tne Office of Tne Surgeon General and Healtn Services Command furnisned medical rates which were in terms of rates per tnousand for any one day.

Narrative: Since MOBREM computes tne medical workloads once in eacn 10-day time period, the rates were multiplied by 10. It was also necessary to convert tne rates from a rate per tnousand by dividing by 1,000. Finally, all rates were converted to percentages.

Parameter (I-10) - DARCOM Installation M-day Assets by Wholesale Supply Category.

Definition: None.

Narrative: Tne default value is zero for each DARCOM installation/WSC combination. Hence, the user must address each combination unless zero is desired.

Parameter (I-11) - Inter-Service Supply Requirements by Wholesale Supply Category and Time Period.

Definition: None.

Narrative: User specification for real time interservice requirements.

Parameter (I-12) - Population-Based Supply Requirements and Proportion of Supply Shipped from DARCOM Before and After Exnaustion of Initial Stocks On Hand.

Definition: None.

Narrative: Default value is zero.

Parameter (I-13) - Position Coverage Manpower Factors.

Definition: None.

Narrative: Values which represent current (1981) mobilization guidance regarding leave/holiday, training time, etc., have been chosen.

Parameter (I-14) - Proportion of Base Operations Equipment Fill Requirement Met by Local Procurement (not by DARCOM).

Definition: None.

Narrative: The model can account for local economy purchase of base operation equipment.

Parameter (I-15) - Military/Civilian Split by Functional Code.

Definition: None.

Narrative: A percentage based on the current military/civilian split by function code will be used.

Parameter (I-16) - Theater Requirements of Classes I-IV, VIII, and IX in Tons and Wholesale Supply Category by Time Period.

Definition: None.

Narrative: Default value is zero.

Parameter (I-17) - Theater Ammunition Requirements Option (THAMOP).

Definition: None.

Narrative: Two options are available to the user. Set the value of THAMOP to the option number desired: Option 1--directs MOBREM to read specific, time-phased theater ammunition requirements from input Table I-18.

Option 2--directs MOBREM to compute theater ammo requirements from input Table I-19 (theater ammo requirements per person per day by ammo category) and input Table I-7 (OCONUS strength of the Army by day).

Parameter (I-18) - Theater Ammunition Requirements in Tons by Ammunition Category and Time Period.

Parameter (I-19) - Theater Ammunition Requirements Rate (Daily, Per Capita, in Pounds).

Parameter (I-20) - Ammunition Average Item Weight.

Definition: Average item weight of each ammunition category.

Narrative: This parameter allows the user to update high density weights to reflect current requirements.

APPENDIX F

DARCOM WORKLOAD PROCESSING

F-1. DARCOM WORKLOAD MODULE. The DARCOM workload module aggregates supply and equipment requirements from MOBREM installations and theater, computes assets and shipping capabilities of DARCOM installations, and distributes aggregated requirements to DARCOM installations for shipping. Chapter 3 of the study report provides a functional description of MOBREM inputs, modules and outputs. The principal functions of MOBREM were numbered in sequential order and illustrated in Figure 3-1. In the discussion of the direct inputs (function 5) needed by MOBREM it was noted that the "Theater Shipping Requirements" define the DARCOM workloads for overseas shipments but do not allocate the workloads to a DARCOM depot or plant. The methodology for allocating the DARCOM mobilization shipping requirement workloads was accomplished as a separate MOBREM design. In addition to producing the necessary workload allocation data, the design provides for special processing steps to aid the logistics planner in developing and evaluating alternative workload and asset allocations for DARCOM installations. Of course, in addition to providing these special capabilities, the selection of any one set of workload and asset allocations will produce a DARCOM workload/asset installation distribution by time period for use with the other workload modules and the manpower conversion module for the production of the MOBTDA guidance reports. In order to obtain an understanding of how the DARCOM module design works, a description of the special processing steps is given in this appendix.

F-2. SHIPPING ALLOCATION. The DARCOM module enables the user to employ logic of the model to simulate shipping requirement allocations with varying assumptions and constraints independent of the input data. A different set of allocations is possible for each combination of alternative input parameters chosen by the user. The DARCOM module processing steps to be followed in arriving at a shipping allocation output are identified in Table F-1. Each step is described in the following paragraphs.

F-3. ASSET AVAILABILITY AND SHIPPING LIMIT PROCESS

a. Step 1. In the first step of the process, the total depot assets for a specific time period are determined by adding the assets remaining from the prior time period to the depot and maintenance production line data specified for the time period in question. The first time period that MOBREM considers is M-day. The assets for M-day are determined by input data that specify the assets currently at each depot. The asset information can be totaled for all of DARCOM or by depot, as specified by inputs, or can be distributed to depots individually by the model user.

b. Step 2. Determination of depot outloading capabilities by time period is the second step. The depot outloading capability is a model input from DARCOM which specifies the ton shipping limits by wholesale

supply category (WSC), by depot, and by time period. Model options, however, permit the user to specify the outloading capability by WSC for each depot by time period. Thus both the outloading capability information and asset availability information can be specified either by field input data or by the model user.

Table F-1. DARCOM Module Processing Steps

Step	
1	Compute depot assets by time period a. Assets remaining from prior time period b. Production line c. Maintenance line
2	Compute depot outloading capability by time period
3	Compute depot shipping limit for the initial time period (shipping limit is minimum of assets available) and outloading capability
4	Block and unblock depots (user input blocking options)
5	Sum assets, shipping limits for blocked and unblocked depots
6	Compute total depot shipping requirements by time period a. Shortfall from prior time period b. Computed CONUS Base mobilization equipment requirements (training, base ops, unit equipment) c. Population based CONUS consumption requirements (all classes except Class VII) d. Theater shipping requirements (1) Theater war reserves (required - on hand) (+) (2) Population based overseas consumption requirements (+) (3) Selected operations plans reservations (-) e. Direct shipment from production pipeline

c. Step 3. The model is used in Step 3 to compute the depot shipping limit by WSC for the initial time period. This is determined as the lesser of the outloading capability and the assets available as they were determined in Steps 1 and 2.

d. Step 4. In the fourth processing step listed in Table F-1, the user applies rules for blocking depots. These rules delay the model from shipping assets from blocked depots until assets from unblocked depots have been shipped. The rules also specify the model priority order rules for using blocked depots and for shipping the wholesale supply categories.

e. Step 5. In Step 5, the model sums the assets and shipping limits for blocked and unblocked depots for each time period and WSC and stores the information for use later to compare against the shipping requirements. Steps 1 through 5 establish the asset availability, shipping limit and use rules for the depots.

F-4. SHIPPING REQUIREMENT PROCESS. The elements making up the shipping requirements are shown under Step 6 of Table F-1 and are described below.

a. The total shipping requirements for all depots for each WSC for each time period are determined by subtotaling the first four items listed in Step 6, Table F-1, as follows:

(1) The shortfall from the previous time period can be carried over or not as a user option. Shortfall refers to WSC required to be shipped but not shipped. There is no M-day shortfall.

(2) The intra-CONUS DARCOM shipping requirements include: (1) the training, base ops, and unit equipment which are computed by the MOBREM installation equipment module, and (2) the non-Class VII CONUS consumption requirements which are computed by the installation personnel module. These are listed as Steps 6b and 6c of Table F-1 and part of the total depot shipping requirements.

(3) The theater shipping requirements (Step 6d) are added next. These are direct inputs from automated MOBREM sources which take into account:

(a) The time-phased differences between required and on hand in the theater war reserve Class V and Class VII projections. (These differences are added to the depot shipping requirements.)

(b) Population-based overseas consumption requirements which are computed using overseas population data. (These differences are added to the depot shipping requirements.)

(c) Certain stocks that are reserved by operation plans for other theaters (these stocks are subtracted from the total depot shipping requirements).

(3) Finally, in Step 6e, new procurement shipping policies call for selected shipments directly from production lines. These also must be subtracted from the DARCOM shipping requirement computation.

b. Shipping Requirement. The result of the Step 6 process is a total depot shipping requirement by time period and WSC.

F-5. ALLOCATION PROCESS. The asset availability, shipping limit, and depot use rules developed initially are used in conjuction with the total shipping requirements, to allocate the total to individual depots. Figure F-1 (appearing at the end of this appendix) illustrates the steps of the allocation process for one wholesale supply category for one time period. Description of the process follows.

a. First (referring to Figure F-1), the total shipping requirement is compared against the total shipping limit of the unblocked depots. If the total shipping requirements are less than the shipping limits of the unblocked depots, the requirements are allocated on a fair share basis to each of the unblocked depots as is depicted in Step 3 of the figure. (Fair share means allocation to a depot based on its percentage or share of the total assets available in unblocked depots.) (Note in Step 8 that the model carries over all unshipped assets as available in the next time period and that a depot can ship to its shipping limit and still have assets remaining to be carried over to the next time period.)

b. The "YES" path from the top decision block in Figure F-1 means that the total shipping requirements are greater than the total shipping limits of the unblocked depots. In this case the model will allocate the shipping requirements to the shipping limit of all unblocked depots (Step 4) and attempt to allocate the remaining unshipped requirements to blocked depots (Step 5).

c. These allocations will be made to the shipping limit of the blocked and unblocked depots as constrained by priority of selection rules established by the model user (see paragraph F-3d).

d. If, after attempting to allocate the shipping requirements to the blocked depots, all shipping requirements for that time period are met, the model follows the "NO" path from the lower decision block and carries over the unshipped assets to the next time period (Step 8).

e. If, however, there are still unmet requirements, the model will follow the "YES" path from the lower decision block and compute the shortfall (Step 6).

f. Then, the model user determines the shortfall option that he wants the model to process. These options are identified in Figure F-1 at Step 7.

(1) First, the shortfall car be carried over (along with the unshipped assets) to the next time period for determination of a new shipping requirement and shipping limit.

(2) The second option will allocate the unmet shipping requirement to a notional depot. In this option, all shortfalls are recognized as unmet DARCOM shipping requirements in the time period in which the shortfall is needed.

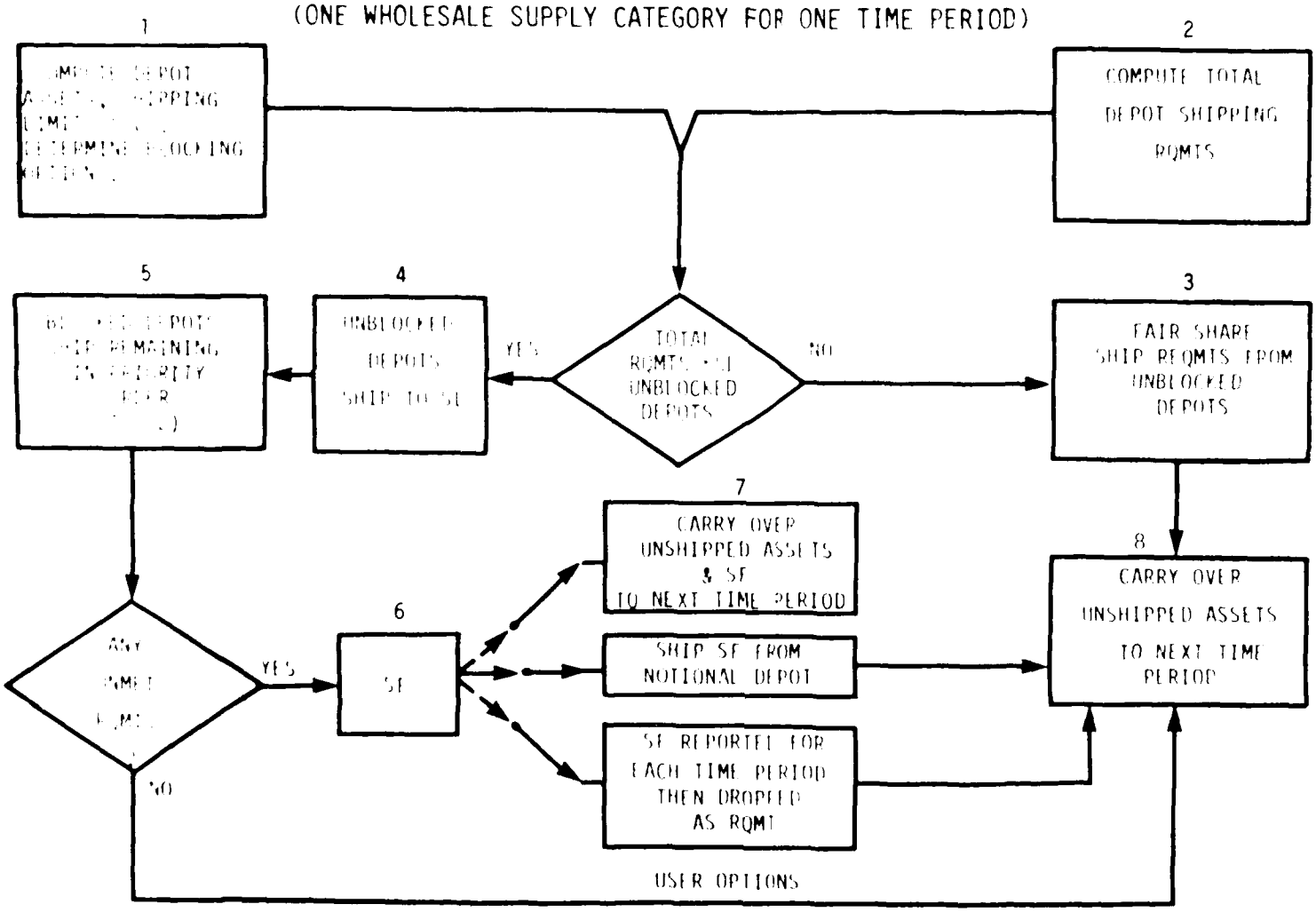
(3) In the third option, the shortfalls are dropped as a requirement.

g. The process continues for all time periods for each set of input assumptions and constraints chosen by the model user.

h. As is the case with the mobilization workloads generated by the other modules of MOBREM, the DARCOM workloads are used as arguments (variables) in manpower equations to produce reports showing the DARCOM manpower required to support the workloads by time period and location.

F-6. DARCOM REPORTS. The same set of MOBREM workload, asset, and manpower requirements reports that are provided for all other MACOMs are also provided for DARCOM. These are intended for use by installations, major commands and HQDA as guidance in developing MOBTDA. However, because the DARCOM module provides the user a shipping allocation logic and a variety of user adjustable shipping assumptions, seven additional DARCOM specific reports are produced by the model. Samples of these reports are shown in Appendix G.

Figure F-1. DARCOM Allocation Process



APPENDIX G

MOBREM REPORT FORMATS

INTRODUCTION. Chapter 3 discussed the last process of MOBREM, i.e., report production. This appendix shows report extracts that are currently considered standard output formats. Certain reports, i.e., installation asset and the workload series have had items masked to declassify the report. However, the reader will be able to see the general form and divisions of each report.

TDA UNITS	MIL (STRENGTHS)	CIV (STRENGTHS)	MOB STA ARRIVAL (0-270)
* AA-SA SEPT A	68	4733	0
* AA-STACC-A	0	20	0

TDA PERSONNEL SUMMARY	M	M+10	M+20	M+30	M+40	M+50	M+60	M+90	M+120	M+150	M+180	M+210	M+240	M+270
MILITARY	68	68	68	68	68	68	68	68	68	68	68	68	68	68
RETIREES	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IRR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	68	68	68	68	68	68	68	68	68	68	68	68	68	68
CIVILIANS	4753	4753	4753	4753	4753	4753	4753	4753	4753	4753	4753	4753	4753	4753
TOTAL	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821	4821

MTOE UNITS	DEPLOYING UNIT	POMCUS UNIT	MOB STA ARRIVAL DATE (0-270)	FILL START DATE (0-270)	FILL END DATE (0-270)	POM END DATE (0-270)	PERSNL DEPART DATE (0-270)	STRENGTH BEFORE FILL	STRENGTH AFTER FILL
* AA-MAINT FWD DT	Y	N	5	44	50	71	71	197	221
* AA-	Y	N	3	44	50	71	71	162	177
* AA-HHC MNT CS/GS	Y	N	5	28	36	55	55	57	57
* AA-MNT HV EQ GT	Y	N	5	44	50	71	71	135	135
* AA-HHC AMMO	Y	N	7	15	21	42	42	82	88
* AA-AMMO DS-GS	Y	N	6	6	12	22	22	233	274
* AA-AMMO DS-GS	Y	N	7	20	26	47	47	230	274
* AA-AMMO DS-GS	Y	N	6	6	12	22	22	236	274

NOTE: NON-DEPLOYING MTOE UNITS ARE CONSIDERED TO BE AN ASSET ON DAYS FOLLOWING THE FILL END DATE; DEPLOYING MTOE UNITS ARE CONSIDERED TO BE AN ASSET ON DAYS BETWEEN THE MOB STATION ARRIVAL DATE AND THE FILL START DATE, AND ON DAYS BETWEEN THE POM END DATE AND THE PERSONNEL DEPARTURE DATE. THE FOLLOWING TABLE DISPLAYS AN ASTERISK UNDER EACH MOBILIZATION TIME PERIOD IN WHICH THE MTOE UNIT IS CONSIDERED TO BE AN ASSET FOR AT LEAST ONE DAY OF THE TIME PERIOD.

MTOE UNITS	M	M+10	M+20	M+30	M+40	M+50	M+60	M+90	M+120	M+150	M+180	M+210	M+240	M+270
* AA-MAINT FWD GS		*	*	*	*	*								
* AA-		*	*											
* AA-HHC MNT CS/GS		*	*	*										
* AA-MNT HV EQ GT		*	*	*	*	*								
* AA-HHC AMMO		*	*											
* AA-AMMO DS-GS		*												
* AA-AMMO DS-GS		*	*											
* AA-AMMO DS-GS		*												

Figure G-1. Installation Asset Report

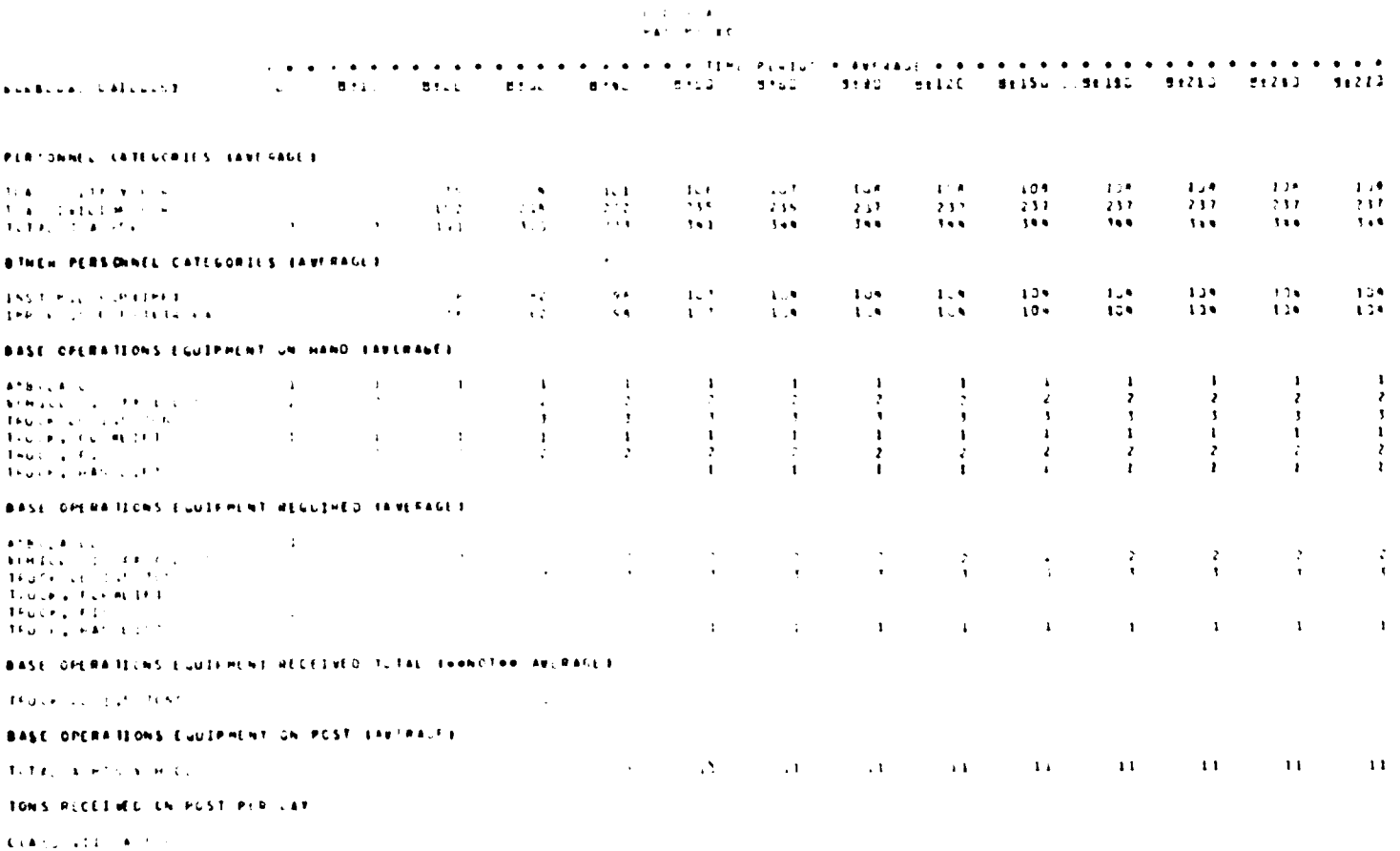


Figure G-2. Installation Workload Report

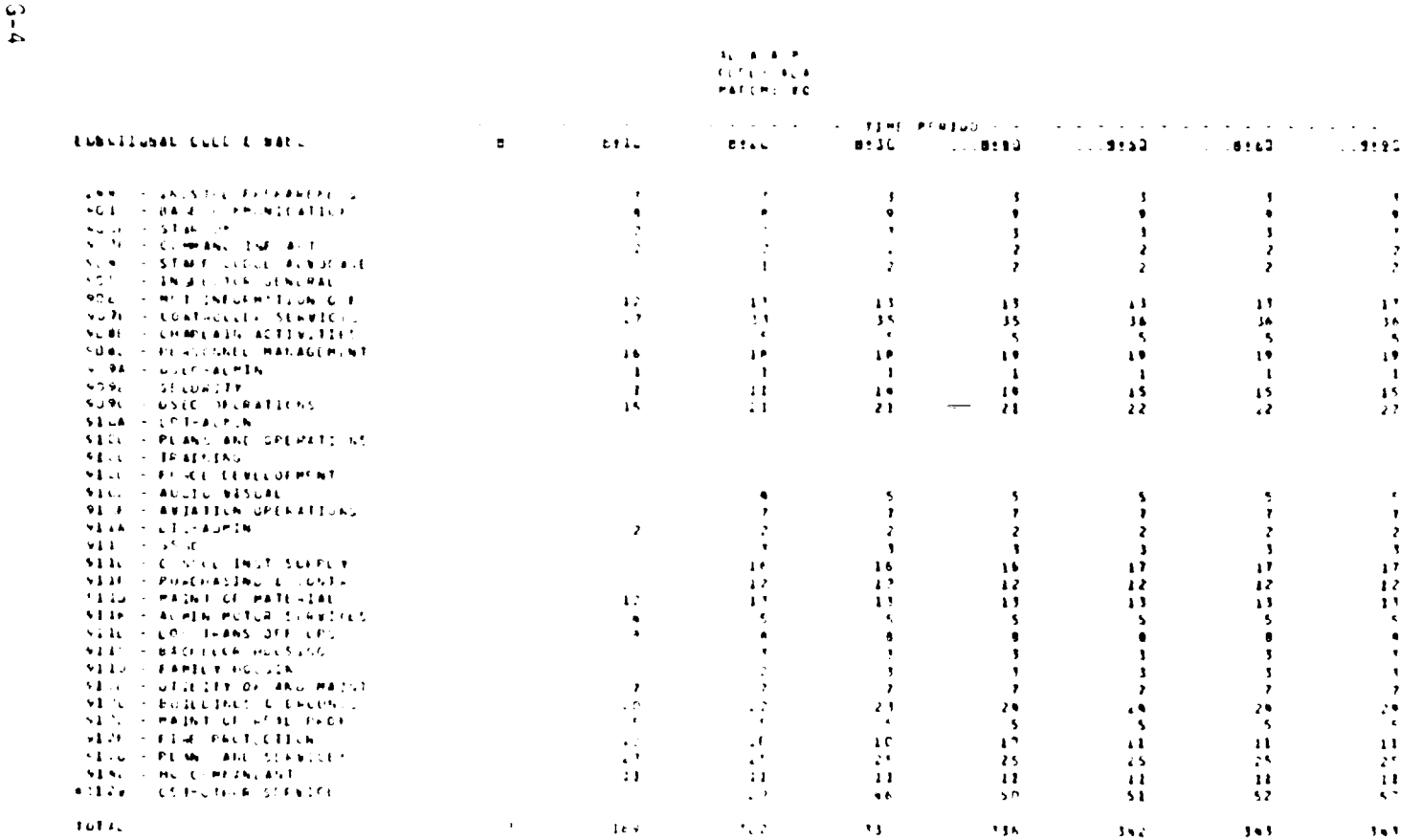


Figure G-3. Installation Manpower Requirements Report

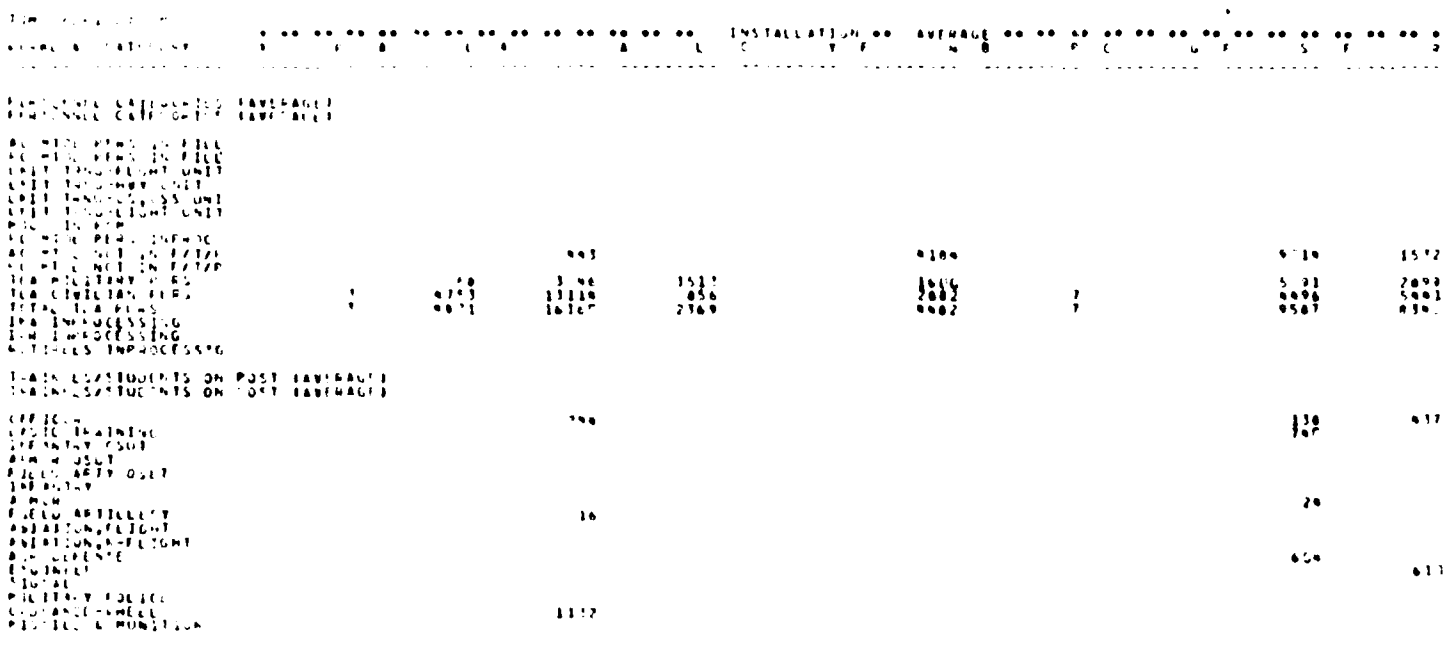


Figure G-4. MACOM Workload Report

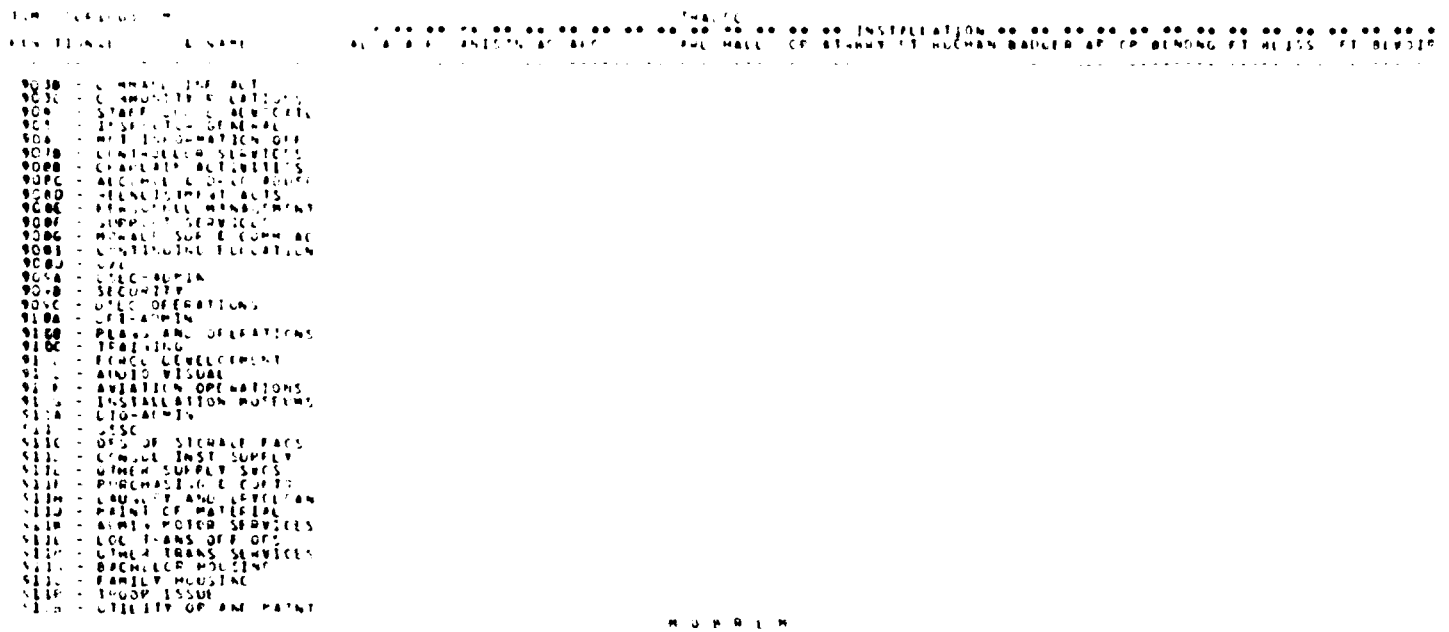


Figure G-5. MACOM Manpower Requirements Report

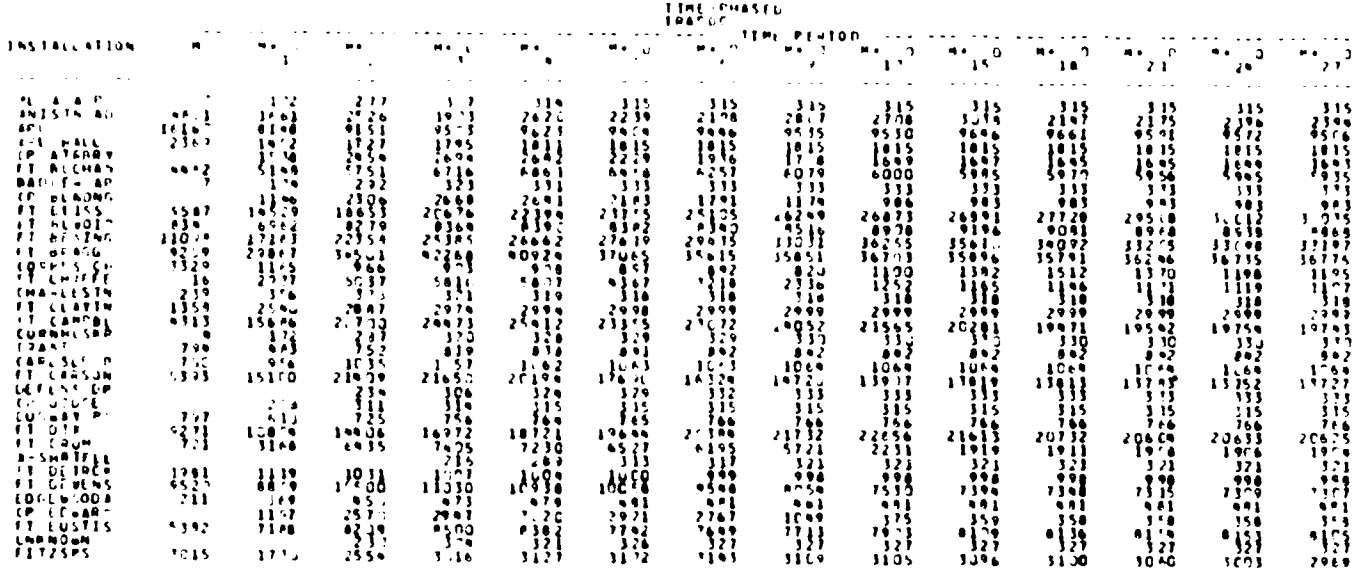


Figure G-6. MACOM Summary Manpower Requirements Report

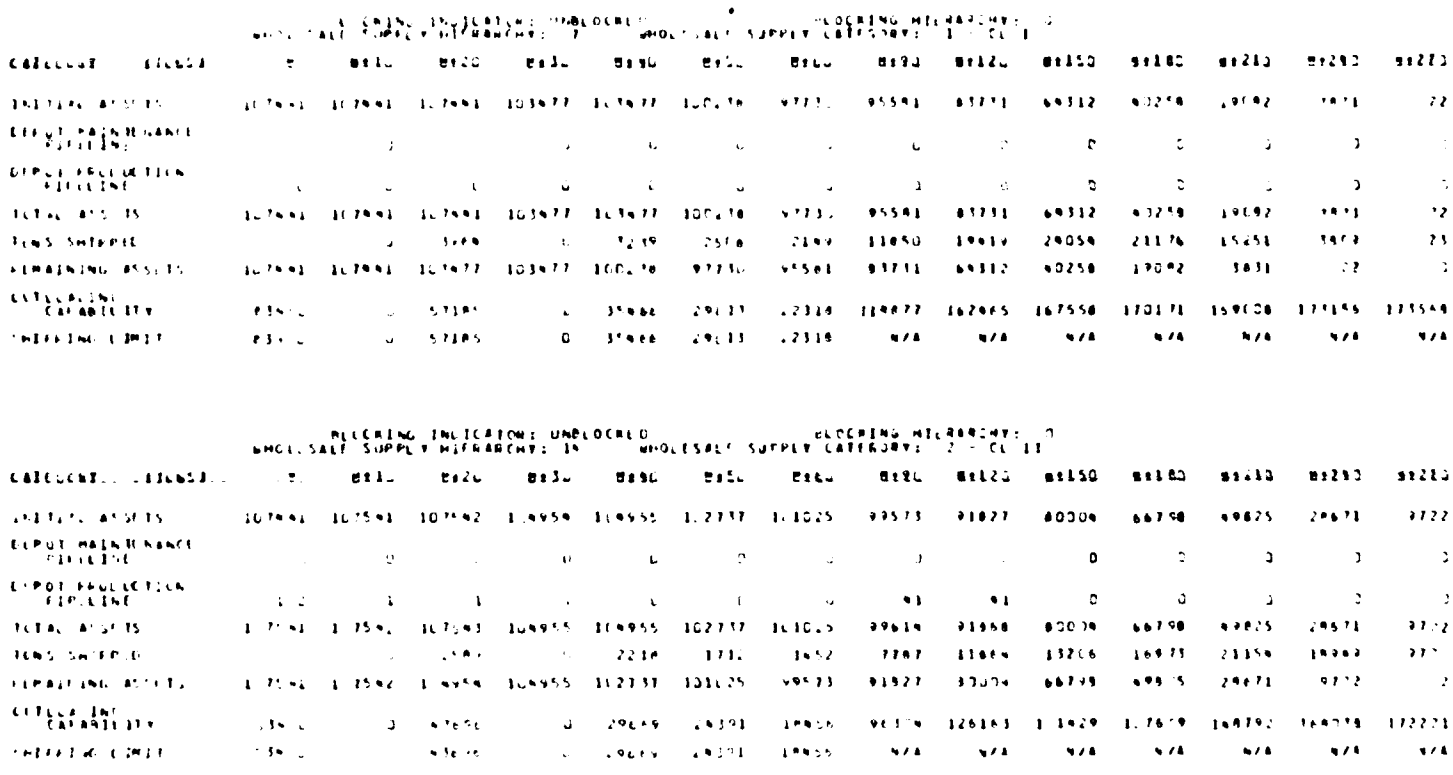


Figure G-7. DARCOM Installation Report

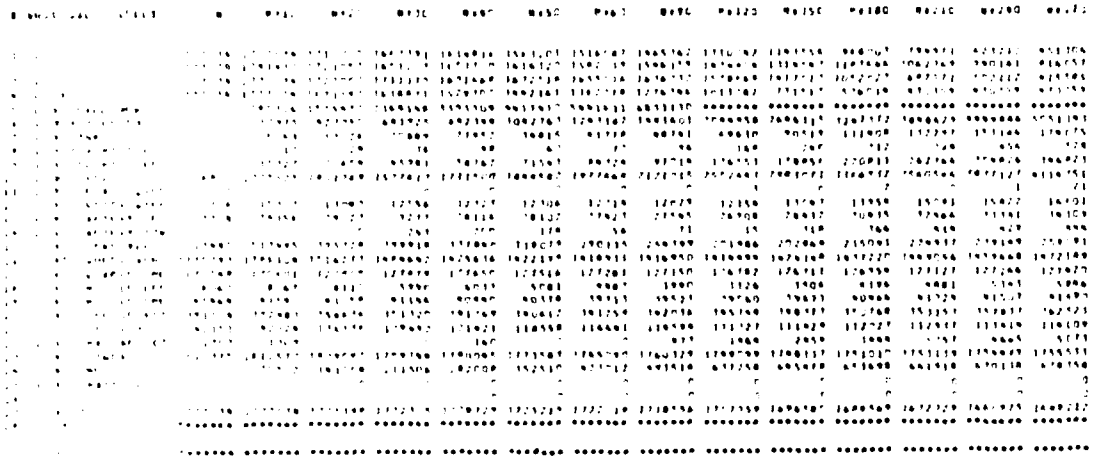


Figure G-8. Initial Assets

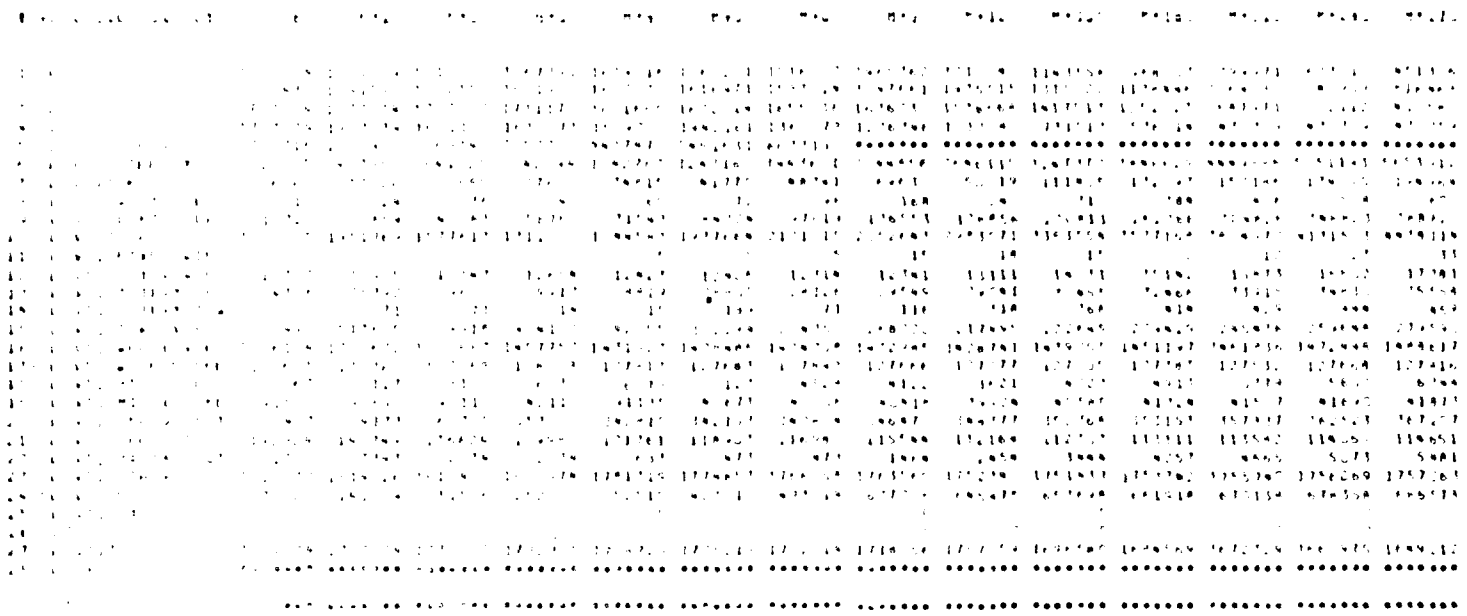


Figure G-9. Total Assets

Figure G-10. Shipping Requirements

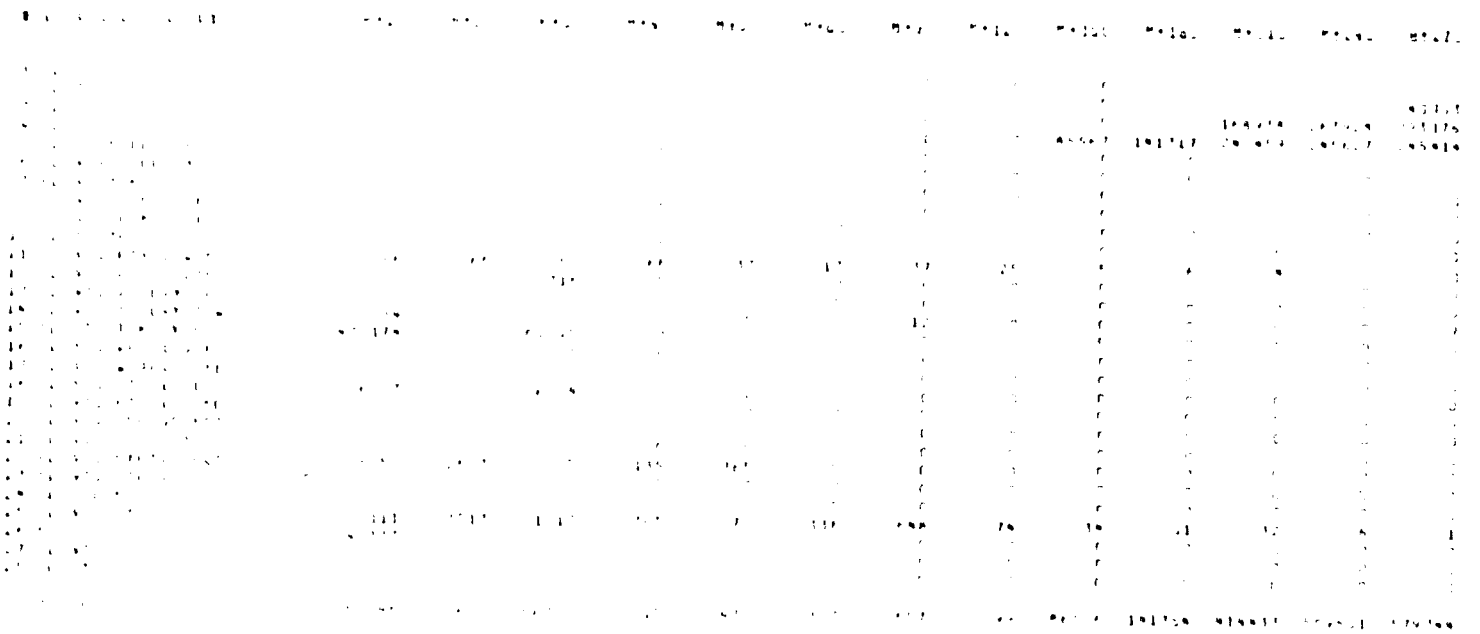


Figure G-11. Shipping Shortfall

Figure G-12. Asset Shortfall

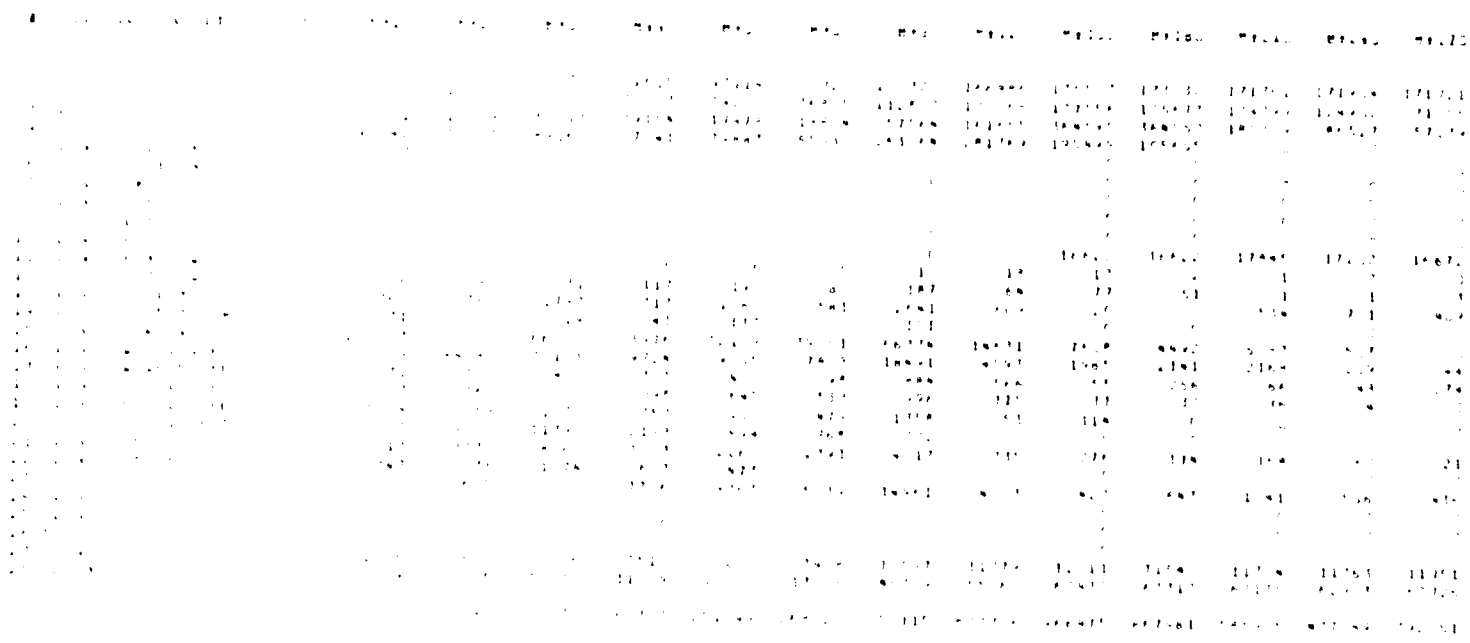


Figure G-13. Tons Shipped

APPENDIX H

DISTRIBUTION

Addressee	No of copies
Deputy Chief of Staff for Operations and Plans Headquarters, Department of the Army ATTN: DAMO-FDP Washington, DC 20310	23
Deputy Chief of Staff for Personnel Headquarters, Department of the Army ATTN: DAPE-HRE Washington, DC 20310	1
Deputy Chief of Staff for Personnel Headquarters, Department of the Army ATTN: DAPE-MBO Washington, DC 20310	1
Deputy Chief of Staff for Personnel Headquarters, Department of the Army ATTN: DAPE-MBC Washington, DC 20310	1
Deputy Chief of Staff for Logistics Headquarters, Department of the Army ATTN: DALO-SMA Washington, DC 20310	1
Deputy Chief of Staff for Logistics Headquarters, Department of the Army ATTN: DALO-PLS Washington, DC 20310	1

Addressee	No of copies
Chief of Staff, Army ATTN: DACS-DPM Washington, DC 20310	1
Chief of Staff, Army ATTN: DACS-DMS Washington, DC 20310	1
Office, Secretary of the Army (Manpower & Reserve Affairs) ATTN: SAUA-M&RA Washington, DC 20310	1
Comptroller of the Army Headquarters, Department of the Army ATTN: SAUA-RP Washington, DC 20310	1
The Surgeon General Department of the Army Falls Church ATTN: SGRD-MSO The Pentagon Washington, DC 20310	1
Commander Walter Reed Army Medical Center Dept of the Army ATTN: SGRD The Pentagon Washington, DC 20310	1
Defense Technical Information Center ATTN: DTIC-DDA Cameron Station Alexandria, VA 22314	2

Addressee	No of copies
Commander US Army Training and Doctrine Command ATTN: ATCS-PO/ATRM-FO/ATRM-RA/ATTG-R/ ATPL-MS Fort Monroe, VA 23651	5
Commander US Army Materiel Development and Readiness Command ATTN: DRCRE-C/DRCPT-FR-P 5001 Eisenhower Avenue Alexandria, VA 22333	2
Commander US Army Communications Command ATTN: CC-FP-OAOM Fort Huachuca, AZ 85613	1
Department of the Air Force Air Force Wartime Manpower and Personnel Readiness Team Ft Ritchie, MD 21719	1
Office, Assistant Secretary of Defense ATTN: OASD-MRA&L-MR Washington, DC 20301	1
Office of the Army Reserve Headquarters, Department of the Army ATTN: DAAR-ZTF Washington, DC 20310	1
Office, Chief of Engineers Headquarters, Department of the Army ATTN: DAEN-ZCI Washington, DC 20310	1

Addressee	No of copies
The Army Library (ASDIRS) US Army Military District of Washington Washington, DC 20310	1
Commander US Army Forces Command ATTN: AFOP-FS/AFPR-MM/AFOP-FD Fort McPherson, GA 30330	3
Commandant US Army War College ATTN: Library Carlisle Barracks, PA 17013	1
Commander US Military Traffic Management Command ATTN: MT-ML Washington, DC 20315	2
Commander US Army Health Services Command ATTN: HSOP-FR Fort Sam Houston, TX 78234	2
Assistant Chief of Staff for Intelligence Headquarters, Department of the Army ATTN: DAMI-ISI Washington, DC 20310	1
Commander US Army Intelligence and Security Command ATTN: IAOPS-PL/IARM-SA Arlington Hall Station, VA 22212	2

Addressee	No of copies
Commander US Army Military District of Washington ATTN: ANOPS/ANRM-FD Washington, DC 20319	2
Commander US Army RCPAC ATTN: AGUZ-RCM-P St. Louis, MO 63132	2
Commander US Army DESCOM ATTN: DRSDA-SOR DRSDA-SPG DRSDS-F Chambersburg, PA 17201	3

Internal distribution:

CAA Library	2
Assistant Director, FO	1

GLOSSARY

ABBREVIATIONS, ACRONYMS, SHORT TERMS, AND DEFINITIONS

AC	Active Component
ACC	Army Communications Command
ACTV	activity
ADP	automated data processing
ADPE	ADP equipment
ADRL	air date-ready load
AFEES	Armed Forces Examining and Entrance Station(s)
AFT	strengtn after fill
ALO	authorized level of organization
AMOPS	Army Mobilization and Operations Planning System
AMSCO	Army Management Structure Code(s)
ARSTAF	Army Staff
ATRRS	Army Training Resource Requirements System
AVG	average
AVN	aviation
BEF	strengtn before fill
BERE	base operations equipment requirement equation
CAA	US Army Concepts Analysis Agency
CAT	category
CIV	civilian
COMARS	CONUS Base Manpower Requirements Equations Improvement Study
COMPO	composition
COMPO 4	unresourced recognized requirements

CONUS	Continental United States
CONUSA	numbered Armies in CONUS and MDW
CONUS Base	CONUS resources required to mobilize, train, deploy, and sustain the Army during mobilization
CSM	Chief of Staff Memorandum
CS	combat support
CSS	combat service support
DA	Department of the Army
D-day	day of hostilities (or anticipated)
DAMO-FDP/FD	element of ODCSOPS for force structure management
DAMO-OD	element of ODCSOPS for operations and contingency plans
DAPE-MBO	element of ODCSPER for manpower policies and standards
DAPE-PSM	element of ODCSPER for plans and services
DARCOM	US Army Materiel Development and Readiness Command
DEF ACT	defense activities
DESCOM	US Army Depot System Command
E/P	environment/policy
ERE	equipment requirements equations
FED	fill end date
FMTB	Force Mobilization Troop Basis
FOA	field operating agency(ies)
FORSCOM	US Army Forces Command
F/T/P	fill/train/POM
FSD	fill start date
full mobilization	mobilization of all RC units in the existing force structure
GSF	general support forces

HQDA	Headquarters, Department of tne Army
HSC	Healtn Services Command
HV	neavy
inf	information
IMA	individual mobilization augmentee
IMP	installation military population
inproc	inprocessing
instl (inst)	installation
IRR	Individual Ready Reserve
K	one tnousand (e.g., 800K equals 800,000)
LE	less tnan or equal to
LIN	line item number
M-day	mobilization day (peacetime level)
M+day	days during mobilization after M-day
MACOM	major Army Command
MBSAD	mobilization station arrival date
MDW	Military District of Wasnington
mil	military
mob	mobilization(s)
MOBEX	mobility exercise
MOBPERS	mobilization personnel
MOBREM	Mobilization Base Requirements Model
MOBTDA	mobilization table of distribution and allowances
MPPA	mobilization policy planning assumptions
MRE	manpower requirements equation
MTBSP	Mobilization Troop Basis Stationing Plan

MTMC	US Army Military Traffic Management Command
MTOE	Modification Table of Organization and Equipment
MUT	MTBSP unit report - TAADS
NATO	North Atlantic Treaty Organization
OCAR	Office, Chief of Army Reserve
OCSA	Office, Chief of Staff, US Army
ODCSLOG	Office of the Deputy Chief of Staff for Logistics
ODCSOPS	Office of the Deputy Chief of Staff for Operations and Plans
ODCSPER	Office of the Deputy Chief of Staff for Personnel
OSA	Office of the Secretary of the Army
OSD	Office of the Secretary of Defense
ops	operations
paf	productivity adjustment factor(s)
partial mobilization	mobilization of part of the RC units in the existing force structure
pat	patient(s)
PAX	passenger(s)
PCF	personnel confinement facility
PCTFUL	percent full
PCTMIL	percent military
PED	POM end date
pers	personnel
PMITSP	Partial Mobilization Installation Troop Stationing Plan
POC	point of contact
POM	preparation for overseas movement
POMCUS	prepositioning of materiel configured to unit sets

pop	population
POW (PW)	prisoner(s) of war
pris	prisoner(s)
PURE	POMCUS unit residual equipment
QA	quality assurance
RC	Reserve Component
RCPAC	Reserve Component Personnel and Administration Center
rqmt	requirement
RNCS	returning noncombatants
SAG	Study Advisory Group
SDRL	sea date-ready load
sep inf bde	separate infantry brigade
SF	shortfall
spt	support
sta	station
TAADS	The Army Authorization Documents System
TAEDP	The Army Equipment Distribution Program
TDA	table(s) of distribution and allowances
TERE	training equipment requirements equations
THAMOP	theater ammunition requirements option
THTR PA	theater patients
THETR (THTR)	theater
TOE	table(s) of organization and equipment
total mobilization	mobilization and expansion of RC units beyond the existing force structure
TPSN	troop program sequence number
TRADOC	US Army Training and Doctrine Command

TRNG	training
TSG	The Surgeon General
UIC	unit identification code
UNITREP	Unit Status and Identity Reporting System
USAR	United States Army Reserve
wkld	workload
WSC	wholesale supply category

CAA	MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY	STUDY SUMMARY CAA-SR-84-22

THE REASON FOR PERFORMING THE STUDY. The Army required a responsive, consistent, and auditable system for determining the CONUS resources required to support mobilization.

THE PRINCIPAL FINDINGS

(1) MOBREM incorporates a single source automated data base that integrates the essential elements of information for allocating the workloads and assets planned for the CONUS Base during mobilization.

(2) Operation of MOBREM has produced mathematically-derived, workload-based output reports that can support mobilization table of distribution and allowances (MOBTDA) guidance from Headquarters, Department of the Army (HQDA) to the major Army commands (MACOM) and HQDA evaluation of MACOM submissions in response to guidance.

(3) MOBREM provides an automated means for comparing alternative CONUS Base mobilization policies.

(4) Although improved manpower requirements equations were developed during the study, a need remains for new equations and additional field evaluation.

THE MAIN ASSUMPTIONS

(1) The Department of the Army (DA) mobilization planning systems (e.g., MTBSP, TAADS, TAEDP, ATRRS) provide an authoritative source on which to base the requirements computations.

(2) The CONUS installations are organized in conformance with Army management structure code requirements (AR 37-100).

(3) A HQDA mobilization planning system will be established to implement MOBREM.

THE PRINCIPAL LIMITATIONS

(1) MOBREM currently operates in the requirements mode, i.e., it does not constrain requirements by the availability of resources or by facility capabilities.

(2) There is no resources optimization capability. MOBREM will not allocate scarce resources to installations or allocate deploying units to installations in an optimal manner.

(3) Current MOBREM inputs do not consider expansion of the force structure or industrial base.

THE SCOPE OF THE STUDY. The MOBREM study effort has been directed toward the analysis of full mobilization planning, i.e., the identification and integration of data in the DA planning systems that allocate mobilization workloads and assets to the CONUS Base installations and the identification and sizing of CONUS Base functions that provide the support for a NATO/ Warsaw Pact scenario requiring full mobilization response.

THE STUDY OBJECTIVES are to:

(1) Provide the Army with a single source automated data base that will identify the time-phased mobilization workloads and assets for the CONUS Base.

(2) Develop a model which will compute mathematically derived, workload-based CONUS Base manpower required to mobilize, train, deploy, and sustain the Army during mobilization.

(3) Provide an automated means for evaluating CONUS Base mobilization policies.

(4) Improve CONUS Base manpower requirements equations.

THE BASIC APPROACH

(1) The approach taken to model development was initially to define the data requirements, the output reports, and the logic necessary to model the MOBTDA development process.

(2) A functional design was developed and approved by the sponsor, after which programs were written and tested using hypothetical test data.

(3) After acceptance by the sponsor of test data results, actual input data were collected from automated and manual sources; and the model operated to produce test reports for field evaluation by potential users.

(4) As a result of field evaluations, data and program modifications were made to bring the model to operational level.

(5) Operational runs of the model were used to verify the functional design, and a complete set of output reports was provided to the study sponsor in May 1984.

THE STUDY SPONSOR is the Force Development Directorate of the Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS).

THE STUDY EFFORT was directed by Mr. F. Gordon Barry, Forces Directorate.

COMMENTS AND QUESTIONS may be directed to US Army Concepts Analysis Agency, ATTN: Assistant Director for Forces, 8120 Woodmont Avenue, Bethesda, MD 20814-2797.

CAA	MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY	STUDY SUMMARY CAA-SR-84-22

THE REASON FOR PERFORMING THE STUDY. The Army required a responsive, consistent, and auditable system for determining the CONUS resources required to support mobilization.

THE PRINCIPAL FINDINGS

(1) MOBREM incorporates a single source automated data base that integrates the essential elements of information for allocating the workloads and assets planned for the CONUS Base during mobilization.

(2) Operation of MOBREM has produced mathematically-derived, workload-based output reports that can support mobilization table of distribution and allowances (MOBTDA) guidance from Headquarters, Department of the Army (HQDA) to the major Army commands (MACOM) and HQDA evaluation of MACOM submissions in response to guidance.

(3) MOBREM provides an automated means for comparing alternative CONUS Base mobilization policies.

(4) Although improved manpower requirements equations were developed during the study, a need remains for new equations and additional field evaluation.

THE MAIN ASSUMPTIONS

(1) The Department of the Army (DA) mobilization planning systems (e.g., MTBSP, TAADS, TAEDP, ATRRS) provide an authoritative source on which to base the requirements computations.

(2) The CONUS installations are organized in conformance with Army management structure code requirements (AR 37-100).

(3) A HQDA mobilization planning system will be established to implement MOBREM.

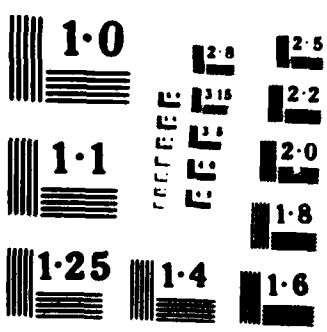
THE PRINCIPAL LIMITATIONS

(1) MOBREM currently operates in the requirements mode, i.e., it does not constrain requirements by the availability of resources or by facility capabilities.

(2) There is no resources optimization capability. MOBREM will not allocate scarce resources to installations or allocate deploying units to installations in an optimal manner.

AD-A148 247 MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY PHASE I ... (U) ARMY CONCEPTS ANALYSIS AGENCY BETHESDA MD ... 3/3

UNCLASSIFIED ... F/G 15/5 NL


1·0
1·1
1·25
1·4
2·8
3·15
2·5
2·2
2·0
1·8
1·6

(3) Current MOBREM inputs do not consider expansion of the force structure or industrial base.

THE SCOPE OF THE STUDY. The MOBREM study effort has been directed toward the analysis of full mobilization planning, i.e., the identification and integration of data in the DA planning systems that allocate mobilization workloads and assets to the CONUS Base installations and the identification and sizing of CONUS Base functions that provide the support for a NATO/Warsaw Pact scenario requiring full mobilization response.

THE STUDY OBJECTIVES are to:

(1) Provide the Army with a single source automated data base that will identify the time-phased mobilization workloads and assets for the CONUS Base.

(2) Develop a model which will compute mathematically derived, workload-based CONUS Base manpower required to mobilize, train, deploy, and sustain the Army during mobilization.

(3) Provide an automated means for evaluating CONUS Base mobilization policies.

(4) Improve CONUS Base manpower requirements equations.

THE BASIC APPROACH

(1) The approach taken to model development was initially to define the data requirements, the output reports, and the logic necessary to model the MOBTDA development process.

(2) A functional design was developed and approved by the sponsor, after which programs were written and tested using hypothetical test data.

(3) After acceptance by the sponsor of test data results, actual input data were collected from [illegible] and [illegible], and the model operated to produce test reports for field evaluation by [illegible].

(4) As a result of field evaluations, data and program modifications were made to bring the model to operational level.

(5) Operational runs of the model were used to verify the functional design, and a complete set of output reports was provided to the study sponsor in May 1984.

THE STUDY SPONSOR is the Force Development [illegible] Deputy Chief of Staff for Operations and Plans [illegible].

THE STUDY EFFORT was directed by Mr. [illegible]

[illegible]

CAA

MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY

STUDY SUMMARY
CAA-[illegible]

THE REASON FOR PERFORMING THE STUDY. The Army required a responsive, consistent, and auditable system for determining the CONUS resources required to support mobilization.

THE PRINCIPAL FINDINGS

(1) [illegible] incorporates a single source automated data base that integrates the [illegible] elements of information for allocating the workloads and [illegible] planned for the CONUS Base during mobilization.

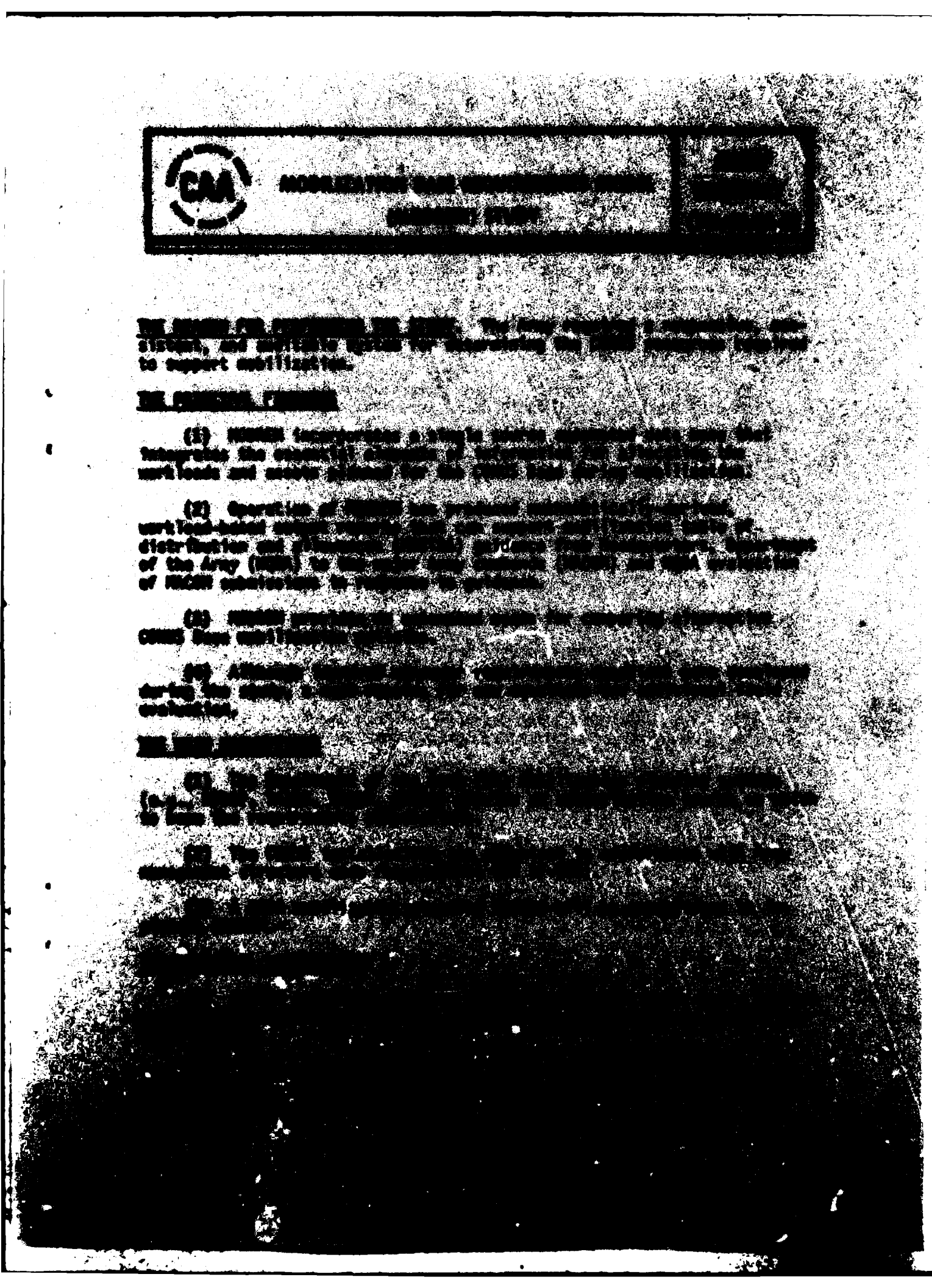
(2) Operation of [illegible] produced mathematically-derived, workload-based [illegible] support mobilization table of distribution and allowances [illegible] guidance from Headquarters, Department of the Army [illegible] to the [illegible] (MACOM) and HQDA evaluation of MACOM [illegible]

(3) [illegible] for comparing alternative CONUS Base [illegible]

(4) [illegible]

[illegible]

[redacted]



[redacted]

CAA [illegible]

[illegible]

THE REASON FOR PERFORMING THE STUDY. The Army requires a responsive, consistent, and auditable system for determining the CONUS base resources required to support mobilization.

THE PRINCIPAL FINDINGS

(1) MOBCON incorporates a single shared automated data base that integrates the essential elements of information for allocating the workloads and assets planned for the CONUS base during mobilization.

(2) Operation of MOBCON has produced automated/quantitative, workload-based manpower [illegible] that can support mobilization tables of distribution and allowances (MOBTDA) guidance from Headquarters, Department of the Army (HQDA) to the major Army commands (MACOM) and HQDA evaluation of MACOM submissions in response to guidance.

(3) MOBCON provides an automated means for comparing alternative CONUS base mobilization policies.

(4) Although [illegible] during the study, [illegible] evaluation.

THE MAIN [illegible]

(1) The Department of the Army (DA) [illegible] (e.g., [illegible]) [illegible] to [illegible].

(2) The [illegible] (or [illegible]).

(3) [illegible]

[illegible]

(3) Current MOBREM inputs do not consider expansion of the force structure or industrial base.

THE SCOPE OF THE STUDY. The MOBREM study effort has been directed toward the analysis of full mobilization planning, i.e., the identification and integration of data in the DA planning systems that allocate mobilization workloads and assets to the CONUS Base installations and the identification and sizing of CONUS Base functions that provide the support for a NATO/ Warsaw Pact scenario requiring full mobilization response.

THE STUDY OBJECTIVES are to:

(1) Provide the Army with a single source automated data base that will identify the time-phased mobilization workloads and assets for the CONUS Base.

(2) Develop a model which will compute mathematically derived, workload-based CONUS Base manpower required to mobilize, train, deploy, and sustain the Army during mobilization.

(3) Provide an automated means for evaluating CONUS Base mobilization policies.

(4) Improve CONUS Base manpower requirements equations.

THE BASIC APPROACH

(1) The approach taken to model development was initially to define the data requirements, the output reports, and the logic necessary to model the MOBTDA development process.

(2) A functional design was developed and approved by the sponsor, after which programs were written and tested using hypothetical test data.

(3) After acceptance by the sponsor of test data results, actual input data were collected from automated and manual sources; and the model operated to produce test reports for field evaluation by potential users.

(4) As a result of field evaluations, data and program modifications were made to bring the model to operational level.

(5) Operational runs of the model were used to verify the functional design, and a complete set of output reports was provided to the study sponsor in May 1984.

THE STUDY SPONSOR is the Force Development Directorate of the Office of the Deputy Chief of Staff for Operations and Plans (DCSOPS).

THE STUDY DIRECTOR was directed by Mr. F. Gordon Berry, Forces Directorate.

COMMENTS AND QUESTIONS may be directed to US Army Concepts Analysis Agency, ATTN: [illegible] Director for Forces, 8120 Woodmont Avenue, Bethesda, MD 20814-2797.

CAA	MOBILIZATION BASE REQUIREMENTS MODEL (MOBREM) STUDY	STUDY SUMMARY CAA-SR-84-22

THE REASON FOR PERFORMING THE STUDY. The Army required a responsive, consistent, and auditable system for determining the CONUS resources required to support mobilization.

THE PRINCIPAL FINDINGS

(1) MOBREM incorporates a single source automated data base that integrates the essential elements of information for allocating the workloads and assets planned for the CONUS Base during mobilization.

(2) Operation of MOBREM has produced mathematically-derived, workload-based output reports that can support mobilization table of distribution and allowances (MOBTDA) guidance from Headquarters, Department of the Army (HQDA) to the major Army commands (MACOM) and HQDA evaluation of MACOM submissions in response to guidance.

(3) MOBREM provides an automated means for comparing alternative CONUS Base mobilization policies.

(4) Although improved manpower requirements equations were developed during the study, a need remains for new equations and additional field evaluation.

THE MAIN ASSUMPTIONS

(1) The Department of the Army (DA) mobilization planning systems (e.g., MTBSP, TAADS, TAEDP, ATRRS) provide an authoritative source on which to base the requirements computations.

(2) The CONUS installations are organized in conformance with Army management structure code requirements (AR 37-100).

(3) A HQDA mobilization planning system will be established to implement MOBREM.

THE PRINCIPAL LIMITATIONS

(1) MOBREM currently operates in the requirements mode, i.e., it does not constrain requirements by the availability of resources or by facility capabilities.

(2) There is no resources optimization capability. MOBREM will not allocate scarce resources to installations or allocate deploying units to installations in an optimal manner.

(3) Current MOBREM inputs do not consider expansion of the force structure or industrial base.

THE SCOPE OF THE STUDY. The MOBREM study effort has been directed toward the analysis of full mobilization planning, i.e., the identification and integration of data in the DA planning systems that allocate mobilization workloads and assets to the CONUS Base installations and the identification and sizing of CONUS Base functions that provide the support for a NATO/ Warsaw Pact scenario requiring full mobilization response.

THE STUDY OBJECTIVES are to:

(1) Provide the Army with a single source automated data base that will identify the time-phased mobilization workloads and assets for the CONUS Base.

(2) Develop a model which will compute mathematically derived, workload-based CONUS Base manpower required to mobilize, train, deploy, and sustain the Army during mobilization.

(3) Provide an automated means for evaluating CONUS Base mobilization policies.

(4) Improve CONUS Base manpower requirements equations.

THE BASIC APPROACH

(1) The approach taken to model development was initially to define the data requirements, the output reports, and the logic necessary to model the MOBTDA development process.

(2) A functional design was developed and approved by the sponsor, after which programs were written and tested using hypothetical test data.

(3) After acceptance by the sponsor of test data results, actual input data were collected from automated and manual sources; and the model operated to produce test reports for field evaluation by potential users.

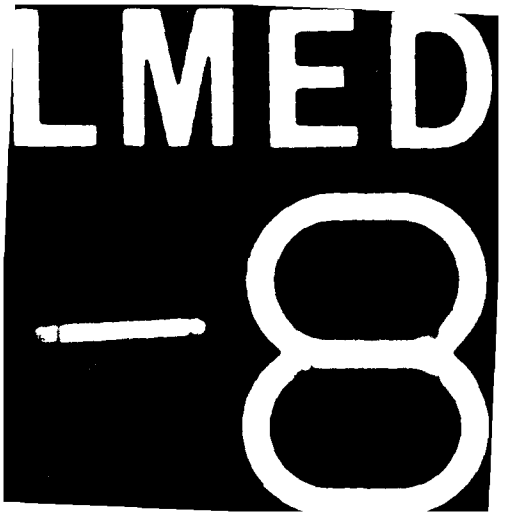
(4) As a result of field evaluations, data and program modifications were made to bring the model to operational level.

(5) Operational runs of the model were used to verify the functional design, and a complete set of output reports was provided to the study sponsor in May 1984.

THE STUDY SPONSOR is the Force Development Directorate of the Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS).

THE STUDY EFFORT was directed by Mr. F. Gordon Barry, Forces Directorate.

COMMENTS AND QUESTIONS may be directed to US Army Concepts Analysis Agency, ATTN: Assistant Director for Forces, 8120 Woodmont Avenue, Bethesda, MD 20814-2797.


LMED
8