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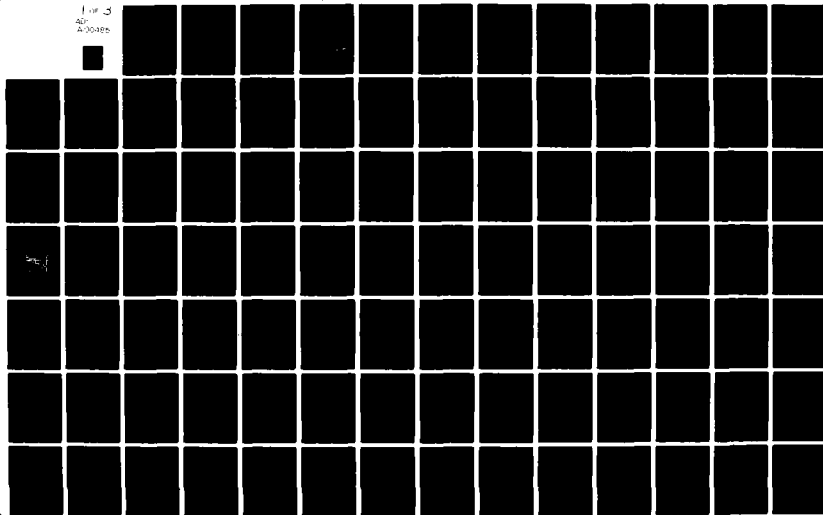
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ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE
IN POST-DEPLOYMENT SOFTWARE SUPPORT (PDSS)
30 JUNE 1980 - 28 FEBRUARY 1981

THIRD INTERIM TECHNICAL REPORT
Volume IV

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UNITED STATES ARMY
COMBINED ARMS COMBAT DEVELOPMENT ACTIVITY
FORT LEAVENWORTH, KANSAS 66027

BDM SERVICES COMPANY
LEAVENWORTH, KANSAS 66048

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This study addresses the role of the US Army Training and Doctrine Command, as the Army's principal Combat Developer, in planning for and providing post-deployment software support (PDSS) to battlefield automated systems (BAS). The Study is a three-phase effort directed toward defining a viable, feasible, and cost effective functional and management structure for the Combat Developer to provide PDSS for BAS, within the framework of Army doctrine and policy, the Post-Deployment Soft- ware Support Concept Plan for Battlefield Automated Systems, and the related functional requirements of the Combat Developer. (Continued on next page.)		

20. Abstract (Continued)

The Phase I effort was conducted to identify and describe the current macro-management level and battlefield functional area (BFA) level PDSS structure and processes, relate these processes to other Combat Developer functions, and identify the Combat Developer's PDSS responsibilities and requirements. Phase I included review of organizational responsibilities, regulatory and directive authority, and the BAS that must be supported. Phase I results were documented in the First Interim Technical Report, Volume II, 30 September 1980.

The Second Interim Technical Report, Volume III, 16 December 1980, documents the results of Phase II. Phase II was directed toward defining three TRADOC functional and management PDSS systems. The first of these systems, the Baseline System, was developed from information gathered and analyzed during Phase I. The description of this system identifies currently-authorized resources, and also projects resource requirements needed to accomplish future PDSS using the present macro- and BFA-level structure. Next, a Theoretical System, unconstrained by resources, is described which would accommodate all identified Combat Developer PDSS-related functions. Finally, a Hybrid System is described recognizing the realities of current organizational structures and their functional responsibilities.

This report documents Phase III of the study. It provides a description of the "Preferred" or "Objective" PDSS System for TRADOC and an Implementation Plan for transitioning from the present situation to the Objective System.

A draft Executive Summary and Final Report, Volume I, 31 January 1981, providing an overview of the entire study as described in the First, Second, and Third Interim Reports has been prepared and presented to TRADOC for review and comment. Following receipt of the results of the TRADOC review an Executive Summary and Final Report, Volume I, 28 February 1981 will be produced as the final effort of this study.

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30 JUNE 1980 - 28 FEBRUARY 1981

Third Interim Technical Report

Volume IV

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CONTRACT REQUIREMENT

This document contains the Third Interim Technical Report of the Assessment of the Combat Developer's Role in Post-Deployment Software Support (PDSS) under Contract Number MDA903-80-C-0479 and satisfies the third requirement of Contract Data Requirements List (CDRL) Item Number 0002AC.

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The Contracting Officer's Technical Representative (COTR) is Mr. R. K. Schwabe, JINTACCS Office, Army C²/JINTACCS Division, Command, Control, Communications and Intelligence Directorate, Combined Arms Combat Development Activity.

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ABSTRACT

This study addresses the role of the US Army Training and Doctrine Command, as the Army's principal Combat Developer, in planning for and providing post-deployment software support (PDSS) to battlefield automated systems (BAS). The Study is a three-phase effort directed toward defining a viable, feasible, and cost effective functional and management structure for the Combat Developer to provide PDSS for BAS, within the framework of Army doctrine and policy, the Post-Deployment Software Support Concept Plan for Battlefield Automated Systems, and the related functional requirements of the Combat Developer.

The Phase I effort was conducted to identify and describe the current macro-management level and battlefield functional area (BFA) level PDSS structure and processes, relate these processes to other Combat Developer functions, and identify the Combat Developer's PDSS responsibilities and requirements. Phase I included review of organizational responsibilities, regulatory and directive authority, and the BAS that must be supported. Phase I results were documented in the First Interim Technical Report, Volume II, 30 September 1980.

The Second Interim Technical Report, Volume III, 16 December 1980, documents the results of Phase II. Phase II was directed toward defining three TRADOC functional and management PDSS systems. The first of these systems, the Baseline System, was developed from information gathered and analyzed during Phase I. The description of this system identifies currently-authorized resources, and also projects resource requirements needed to accomplish future PDSS using the present macro- and BFA-level structure. Next, a Theoretical System, unconstrained by resources, is described which would accommodate all identified Combat Developer PDSS-related functions. Finally, a Hybrid System is described recognizing the realities of current organizational structures and their functional responsibilities.

This report documents Phase III of the study. It provides a description of the "Preferred" or "Objective" PDSS System for TRADOC and an Implementation Plan for transitioning from the present situation to the Objective System.

A draft Executive Summary and Final Report, Volume I, 31 January 1981, providing an overview of the entire study as described in the First, Second, and Third Interim Reports has been prepared and presented to TRADOC for review and comment. Following receipt of the results of the TRADOC review an Executive Summary and Final Report, Volume I, 28 February 1981 will be produced as the final effort of this study.

SUMMARY

1. INTRODUCTION.

a. General. The US Army has spent, is spending, and will spend many billions of dollars on sophisticated battlefield systems. The automated components of many of these systems have increased rapidly in just a few years to the point where automation represents a very substantial, and in some cases the major, portion of system costs. The military value of such systems, in terms of combat effectiveness and combat readiness, cannot be realized unless individual systems perform as intended by the user and the many interdependent systems interoperate as an integrated whole. Achievement of such objectives is a problem of system planning, integration, management, and support--throughout the system life cycle. This study addresses a critical part of this total problem--that part dealing with post-deployment software support (PDSS).

b. The PDSS Requirement. The requirement to provide PDSS to the growing number of battlefield automated systems (BAS) projected to enter the Army inventory during the next several years is one of increasing concern within the Army. The Users, Materiel Developer (MD), and Combat Developer (CD) all have essential roles in the total effort to provide effective PDSS for BAS. The US Army Training and Doctrine Command (TRADOC), as the Army's principal CD and the "battlefield architect", is responsible for determining what capability is required and when it is required. This CD responsibility applies to initial system development and to any subsequent post-deployment changes to a system. In carrying out this role, the CD must be a driver, innovator, and active representative of all Field Users.

2. PURPOSE. The purpose of this three-phase study is to define, in detail, a viable, feasible, and cost effective functional and management structure through which the CD can fulfill his role in providing PDSS for BAS within the framework of Army doctrine and policy, the Army PDSS Concept Plan for BAS and the related functional requirements of the CD.

3. DISCUSSION.

a. Background.

(1) Requirement for an Army-Wide PDSS System. Recognizing the increasing importance of PDSS, the US Army Materiel Development and Readiness Command (DARCOM) initiated a study in May 1978, directed toward developing a concept for a systematic approach to planning for and providing PDSS for BAS on an Army-wide basis in accordance with guidance from the US Army Vice Chief of Staff. A task force of representatives from the Army Staff and several Army commands was formed to assist DARCOM in this effort. Results of the effort are documented in a report entitled PDSS Concept Plan for BAS, May 1980. Both DARCOM and TRADOC have concurred in this report which has been forwarded to Headquarters, Department of the Army (HQDA) for approval.

(2) Approach Selected to Satisfy the Requirement. The approach selected for providing PDSS to the Army's BAS, and documented in the PDSS Concept Plan cited above, focuses on the battlefield functional area (BFA) concept since it is within each BFA that the doctrinal, functional, and technical dependencies and interoperability needs are the greatest. This approach calls for MD-managed PDSS centers to be located at five TRADOC doctrinal centers/schools and at six materiel developing commands, as discussed in Chapter 1. This approach recognizes both the doctrinal sensitivity of certain BAS and the inherently technical complexity of others. This approach requires a case-by-case review of systems and a separate decision as to the optimal location(s) for fielded software support for each. It is designed to achieve the software support benefits resulting from BFA orientation while recognizing the realities of current organizational structures of DARCOM and TRADOC, and the functional responsibilities of the US Army Intelligence and Security Command (INSCOM), the US Army Communications Command (USACC), and the US Army Computer Systems Command (USACSC).

(3) Implementation. Both DARCOM and TRADOC are proceeding with actions directed toward the further development and implementation of the concept plan cited above. This study represents the initial part of the implementation effort within TRADOC.

b. Assumptions.

(1) Missions and PDSS Roles.

(a) The mission and basic role of the MD with respect to PDSS will remain essentially as described in the PDSS Concept Plan for BAS, May 1980.

(b) The mission and basic role of the CD with respect to PDSS will remain essentially as described in the PDSS Concept Plan for BAS, May 1980, and the First Interim Technical Report of the Assessment of the Combat Developer's Role in Post-Deployment Software Support, 30 September 1980.

(c) The major functional responsibilities of TRADOC centers and schools will remain essentially as specified in TRADOC Reg. 10-41 and the respective center and school organization and functions regulations.

(2) PDSS Centers. Materiel/System Developer-managed PDSS Centers will be established as recommended in the PDSS Concept Plan for BAS, May 1980. The 11 recommended centers are identified in Chapter 1.

(3) BAS. BAS addressed in this report will continue to be developed and enter the Army inventory through 1987, generally as currently projected. These BAS are identified in Appendix C.

c. Methodology.

(1) Study Structure. This study is to be completed through the accomplishment of eight tasks over an eight month period divided into three phases. The study began 30 June 1980 and is scheduled to be completed 28 February 1981.

(2) Phase I. Phase I began upon contract award. It consisted of Tasks 1 through 4. It addressed the current structure and processes within the Army at the macro- and BFA-levels for performing PDSS, and identified the Combat Developer's PDSS requirements at the BFA level. Results of Phase I were documented in the First Interim Technical Report, 30 September 1980.

(3) Phase II. Phase II of the study, which consisted of Tasks 5, 6, and 7, was directed toward the definition of the TRADOC Baseline PDSS System and two alternative TRADOC PDSS models or systems that, if implemented, would provide TRADOC a better capability to accomplish its PDSS role. These systems were developed from the PDSS information gained during Phase I, from SAG member feedback, and from further analysis and research during this Phase II effort. These alternatives were reviewed by TRADOC at a SAG Meeting, 17-18 December 1980, to derive and provide guidance for the design of a preferred or "objective" PDSS functional and management system.

(4) Phase III. Following receipt of guidance from the Phase II SAG meeting, the Phase III study effort proceeded. The Phase III effort was devoted to the development of the design and a description of the "Objective" PDSS System, and a plan which would provide for transition from the present to to implementation of the selected alternative model. This Objective System design and the Implementation Plan are documented in this Third Interim Technical Report.

(5) Final Report. An Executive Summary and Final Report is to be prepared and submitted in draft on 31 January and in final copy on 28 February 1981.

d. Analysis.

(1) The Objective PDSS System. The TRADOC Objective PDSS System presented in this report was designed by the Study Team based on guidance provided by the Study Advisory Group (SAG), following its review of the TRADOC PDSS Baseline, Theoretical, and Hybrid System alternatives which were presented at the Phase II SAG Meeting, 17-18 December 1980. This Objective PDSS System incorporates desirable features and capabilities of the organizational structure and operating procedures of the current Baseline as well as the proposed Theoretical and Hybrid System alternatives developed during Phase II. The result is an Objective System, tailored to the PDSS-capability requirements of HQ TRADOC and each integrating and functional center with significant Combat Developer (CD) responsibilities for battlefield automated systems (BAS). This Objective PDSS System design provides for:

- A PDSS Staff Element at Headquarters, TRADOC to provide a focal point for PDSS at the major command level and, in conjunction with the HQ TRADOC CD "hardware directorates", to coordinate and exercise staff supervision over PDSS matters within TRADOC
- PDSS Staff Elements at CACDA to provide a capability to fulfill assigned responsibilities as the TRADOC PDSS proponent and principal integrating center and as proponent of the CCS² concept
- A PDSS capability at the seven major TRADOC doctrinal centers that have proponentcy for functional area components of the BFA concept
- A Combat Developments System Manager (CDSM) for each BAS that has reached Milestone II in the system development cycle (or a comparable point for systems being developed under other (e.g., evolutionary) concepts). The CDSM is to be the CD software developer and principal Field User representative for PDSS of a specified system or group of systems within a BFA
- Provision for maintaining liaison between the CD and those geographically separated MD PDSS Centers with which the CD must interact regularly in planning and providing PDSS for BAS for which the MD and CD each have major responsibilities in their respective functional areas.

The design of this Objective PDSS System provides an appropriate degree of uniformity and commonality throughout the system while recognizing the need for certain differences among system components because of variations in both current capability and current and future requirements for PDSS at the various centers and schools. The full implementation and effective management of this Objective PDSS System would provide HQ TRADOC and subordinate commands an adequate capability to fulfill their roles and responsibilities in planning and providing PDSS for BAS currently projected for deployment through 1987.

(2) The Implementation Plan. The proposed Implementation Plan in Appendix D covers those principal actions or events that need to be accomplished during the initial (approximately one year) period of this TRADOC implementation effort, from March 1981 through March 1982. If this schedule is maintained, other actions originating from these initial actions will then continue on for several years before full implementation is achieved. Throughout this implementation period and beyond, a number of actions associated with the TRADOC Resources Management System (TRADOC Pam 11-11) and the Priorities and Tasking Control Process (TRADOC Reg. 11-2) must be accomplished on a recurring basis.

CHAPTER 1

INTRODUCTION

1-1. STATEMENT OF THE PROBLEM.

a. Need for PDSS. The ever-increasing complexity and magnitude of the requirement to provide post-deployment software support (PDSS) to the growing number of battlefield automated systems (BAS) projected to enter the Army inventory during the next several years is of major concern within the Army. The US Army Training and Doctrine Command (TRADOC), as the Army's principal Combat Developer (CD) and the "battlefield architect", has a key role, together with the Materiel Developer (MD), and system User, in the total effort to provide effective PDSS for BAS. Fulfilling this responsibility necessitates that the CD interact continuously with both the User and MD to ensure that capabilities are fully employed and User requirements are realized to the maximum extent possible. In carrying out this role, the CD must be a driver, innovator, initiator, and active representative of all Field Users.

b. Need for this Study. Within this general concept, the specific role of the CD in the evolving Army system for providing PDSS to BAS must be defined. The functional and management structure and the resource requirements necessary to enable the CD to carry out this role must be identified and addressed in an Implementation Plan that will provide for transitioning from the current situation to achievement of the required capability to provide PDSS. This study is the first step in moving toward the acquisition of this required capability.

1-2. BACKGROUND.

a. Requirement for an Army-Wide PDSS System. Recognizing the requirement for an improved capability to provide timely, effective PDSS to BAS, the US Army Materiel Development and Readiness Command (DARCOM) initiated a study in May 1978, directed toward developing a concept for a systematic approach to planning for and providing PDSS for BAS on an Army-wide basis in accordance with guidance from the US Army Vice Chief of Staff. A task force of representatives from the Army Staff and several Army commands was formed to assist DARCOM in this effort. Results of the effort are documented in a report entitled PDSS Concept Plan for BAS, May 1980. Both DARCOM and TRADOC have concurred in this report which has been forwarded to Headquarters, Department of the Army (HQDA) for approval.

b. Approach Selected to Satisfy the Requirement. The task force that conducted the DARCOM-initiated study, cited above, considered several alternative approaches for providing PDSS to the large number of BAS projected for deployment over the next few years. The approach selected, and documented in the PDSS Concept Plan for BAS, focuses on the battlefield functional area (BFA) since it is within each BFA that the doctrinal, functional, and technical dependencies and interoperability needs are the greatest. Figure 1-1 illustrates the elements included in the BFA concept. In consonance with this

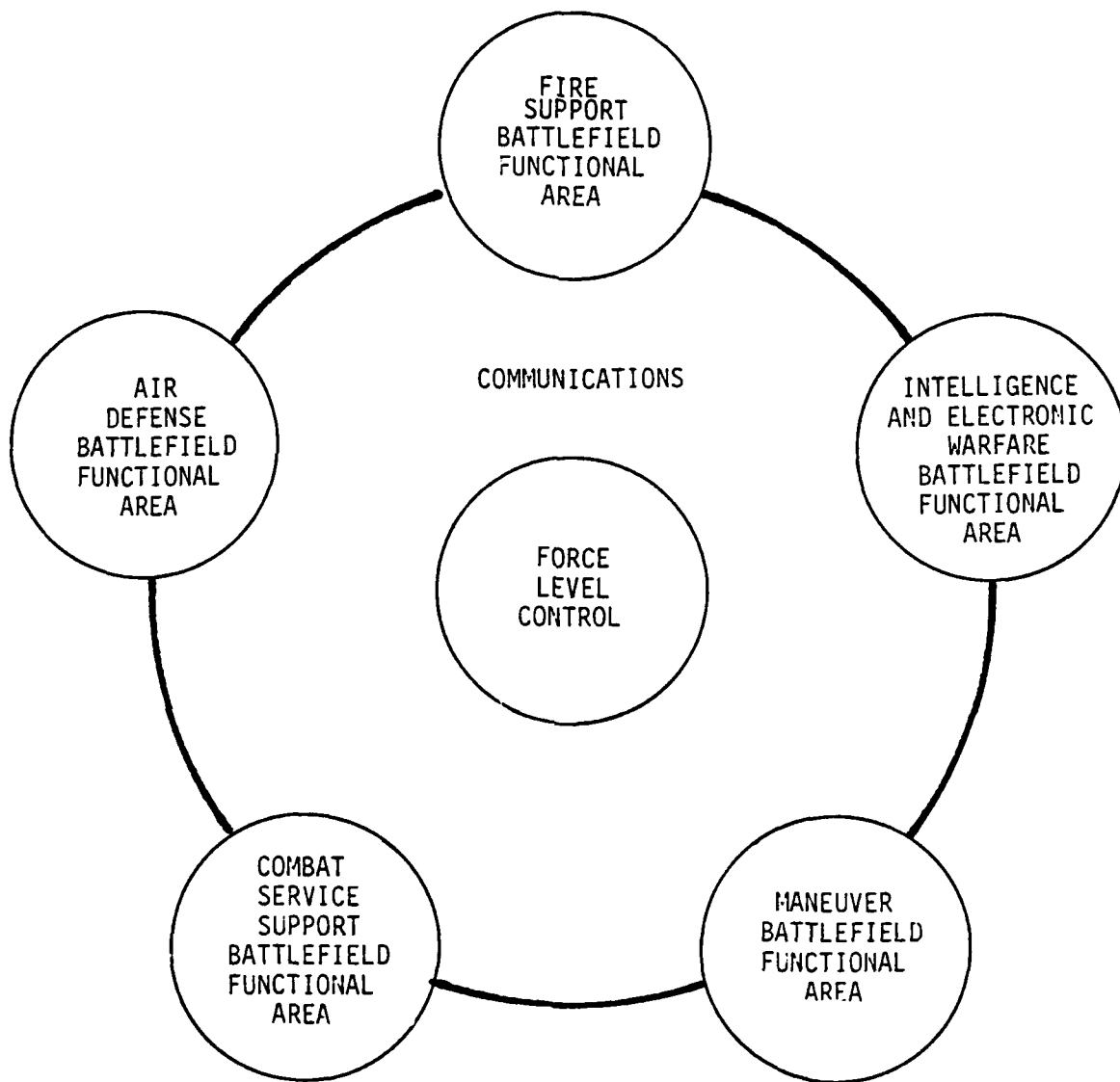


Figure 1-1. Elements of the battlefield functional area concept

concept, an approach for providing PDSS to BAS, called the "hybrid approach", was selected. This approach calls for MD-managed PDSS centers to be located at five TRADOC doctrinal centers/schools and at six developing commands. This hybrid approach recognizes both the doctrinal sensitivity of certain BAS and the inherently technical complexity of others. In addition, it provides for the modular separation of systems which are both highly technical and tactically sensitive and which should, ideally, be supported at more than one location. This approach requires a case-by-case review of systems and a separate decision as to the optimal location(s) for fielded software support for each. It is designed to achieve the software support benefits resulting from BFA orientation while recognizing the realities of current organizational structures of DARCOM and TRADOC, and the functional responsibilities of the US Army Intelligence and Security Command (INSCOM), the US Army Communications Command (USACC), and the US Army Computer Systems Command (USACSC).

c. Concept for Materiel Developer and Combat Developer Facilities. The hybrid approach, discussed above, recognizes the need for both MD and CD facilities for PDSS. The number and location of MD facilities are addressed specifically in the PDSS Concept Plan for BAS; however, CD facilities are only addressed conceptually.

(1) Materiel Developer facilities. With respect to MD facilities, the plan recommends the establishment/maintenance of 11 PDSS software support centers as shown in Figure 1-2. As indicated in the figure, four of these centers are currently operational, although some expansion may be desirable. The establishment of PDSS centers at Fort Bliss, Fort Sill, Fort Leavenworth, and Fort Huachuca, as provided for in the PDSS Concept Plan for BAS, satisfies TRADOC's requirement that the PDSS centers for executive/control systems be located with the CD to provide synergism between the User and the PDSS center.

(2) Combat Developer facilities. The PDSS Concept Plan for BAS outlines a concept for establishing CD facilities to provide for the close and continuous relationship which must exist between the CD and MD throughout a system's life cycle. This concept calls for the designation of Combat Development System Managers (CDSM) and the establishment of Combat Development Support Facilities (CDSF) as determined to be needed by TRADOC. The definitions of these terms are presented below, as developed during this current study effort.

(a) Combat Development System Manager (CDSM). CDSM is a term used to identify the member of TRADOC who is assigned primary responsibility as the software Combat Developer and the principal Field User's representative for PDSS of a designated system or group of systems within a BFA. The CDSM is responsible for managing/conducting and coordinating all software-related actions inherent in the CD mission. A CDSM will be designated by the commander of the responsible center or school for every BAS for which TRADOC has pro-ponency, prior to the attainment of Milestone II in the system life cycle. The CDSM will normally remain in existence until the system(s) for which he is responsible are phased out of operation. The CDSM may be any combat developments staff officer deemed to be capable of fulfilling the responsibilities of the CDSM for a given system or systems. This could be a TRADOC System Manager (TSM) or a member of the TSM's staff if desired.

MATERIEL DEVELOPER PDSS CENTERS		
CENTER	LOCATION	MANAGED BY
1	PICATINNY ARSENAL	ARRADCOM
2	FORT MONMOUTH	CORADCOM
3	FORT LEAVENWORTH	CORADCOM
4	FORT BELVOIR *	CSC
5	FORT LEE *	CSC
6	FORT BLISS *	MICOM
7	FORT SILL *	CORADCOM
8	FORT HUACHUCA	ERADCOM
9	FORT MONMOUTH	ERADCOM
10	REDSTONE ARSENAL	MICOM
11	FORT MONMOUTH	AVRADCOM
*Currently operational		

Figure 1-2. Recommended Materiel Developer PDSS centers

(b) Combat Development Support Facility (CDSF). CDSF is a term used to identify the collection of facilities, equipment, personnel, and operating procedures which provide a CD focal point for addressing PDSS and related matters and together represent the capability of a TRADOC integrating or functional center to fulfill its responsibilities in planning and providing PDSS for BAS. This embodiment of the Combat Developer's PDSS capability may exist, in whole or in part, at a specific location on a continuous basis as a specifically identified part of the TRADOC center's organizational structure or may be formed on an ad hoc basis from resources integral to various organizational elements of the center. A CDSF may exist or be formed as needed through:

- TRADOC participation in the associated DARCOM PDSS facility (either physically or electronically)
- Use of other existing TRADOC resources
- Development of separate facilities collocated with DARCOM PDSS facilities
- Development of separate facilities not associated with DARCOM PDSS facilities.

The prominence and permanency of CDSFs may vary among TRADOC integrating and functional centers depending upon differences in the magnitude of PDSS requirements and local organizational structure and operating procedures. The nature of the CDSF at any given center may also vary from time to time depending upon changes in PDSS requirements, e.g., changes in the number or life cycle stage(s) of battlefield automated systems for which the center has pro-penency.

1-3. OBJECTIVE.

a. Overall Study. The objective of this three-phase study is to define, in detail, a viable, feasible, and cost effective functional and management system through which the CD can fulfill his role in providing PDSS for BAS within the framework of Army doctrine and policy, the Army PDSS Concept Plan for BAS and the related functional requirements of the CD.

b. Phase III. The objective of Phase III, addressed in this report is to integrate the results of Phases I and II into an Implementation Plan for the CD PDSS model or system selected by the Government at the end of Phase II. Achievement of this objective requires the development of a description of the preferred TRADOC PDSS functional and management system and a plan for transitioning from the present to implementation of the preferred system.

1-4. SCOPE.

a. General. This study focuses upon TRADOC's role as the Army's principal CD, in planning for and providing PDSS for BAS. The BAS to be addressed are listed in Appendix C, organized by BFA. While all BAS listed

are being considered, the study effort is being focused primarily on Category 1 and 2 BAS in accordance with Study Advisory Group (SAG) guidance documented in the minutes of the first SAG meeting held on 14 August 1980.

b. Definitions. Several definitions are listed below to further clarify this scope.

(1) Post-Deployment Software Support (PDSS). PDSS is that part of overall system support necessary to sustain, modify, and improve a deployed system's computer software, as defined by the User or his representative. It includes evaluation, development, and timely implementation of system and software modifications to accommodate trouble reports; User proposed changes; and changes to satisfy new or revised doctrinal, tactical, procedural or interoperability requirements. PDSS is discussed further in Paragraph c., below. (Source: Reference 3., Appendix A.)

(2) Battlefield Automated System (BAS). A BAS is a system which contains a computer(s), is intended for use by the Army in the field, and which will not function without computer(s); e.g., AN/TSQ-73, TACFIRE. (Source: Reference 76., Appendix A.)

(3) Battlefield Functional Area (BFA). A BFA is a conceptual grouping of Army personnel, equipment, and procedures which together perform a major battlefield function. The BFAs used in this study are identified in Figure 1-1. (Source: Reference 9., Appendix A.)

c. Relationship of PDSS and the System Life Cycle. Planning for and provision of PDSS must be accomplished as an integral part of system development and life cycle management. The CD's PDSS planning effort begins with participation in preparation of the Computer Resources Management Plan (CRMP) during the Conceptual Phase. This effort continues throughout the remaining system development phases. This planning effort is illustrated in Figure 1-3. It should be noted that the system life cycle illustrated in this figure has been adapted from that contained in DA Pamphlet 11-25 and also that used in the PDSS Concept Plan for BAS, May 1980. Consequently, there are differences between this figure and the system life cycle described in AR 18-1, August 1980, but the two can be generally related through the milestones identified. Also shown in Figure 1-3 is the period when CD PDSS actions may occur. The time when the actions begin will vary among systems but it is generally accepted that CD PDSS-type actions may be required any time after the system software configuration is frozen for engineering development. This initiation of PDSS-type actions normally occurs near Milestone II (from a point slightly before start of engineering development to a point slightly before DT/OT II) in the development cycle as shown in Figure 1-3. Thereafter, the CD may be involved with PDSS actions throughout the remainder of the system life cycle. Any changes before the system software configuration is frozen are considered to be part of system development, not PDSS. For those systems being developed under the evolutionary concept authorized by DOD Instruction 5000.2, PDSS planning must begin early in the conceptual stage. PDSS actions for these evolutionary systems will be required beginning with the deployment of the initial developmental version.

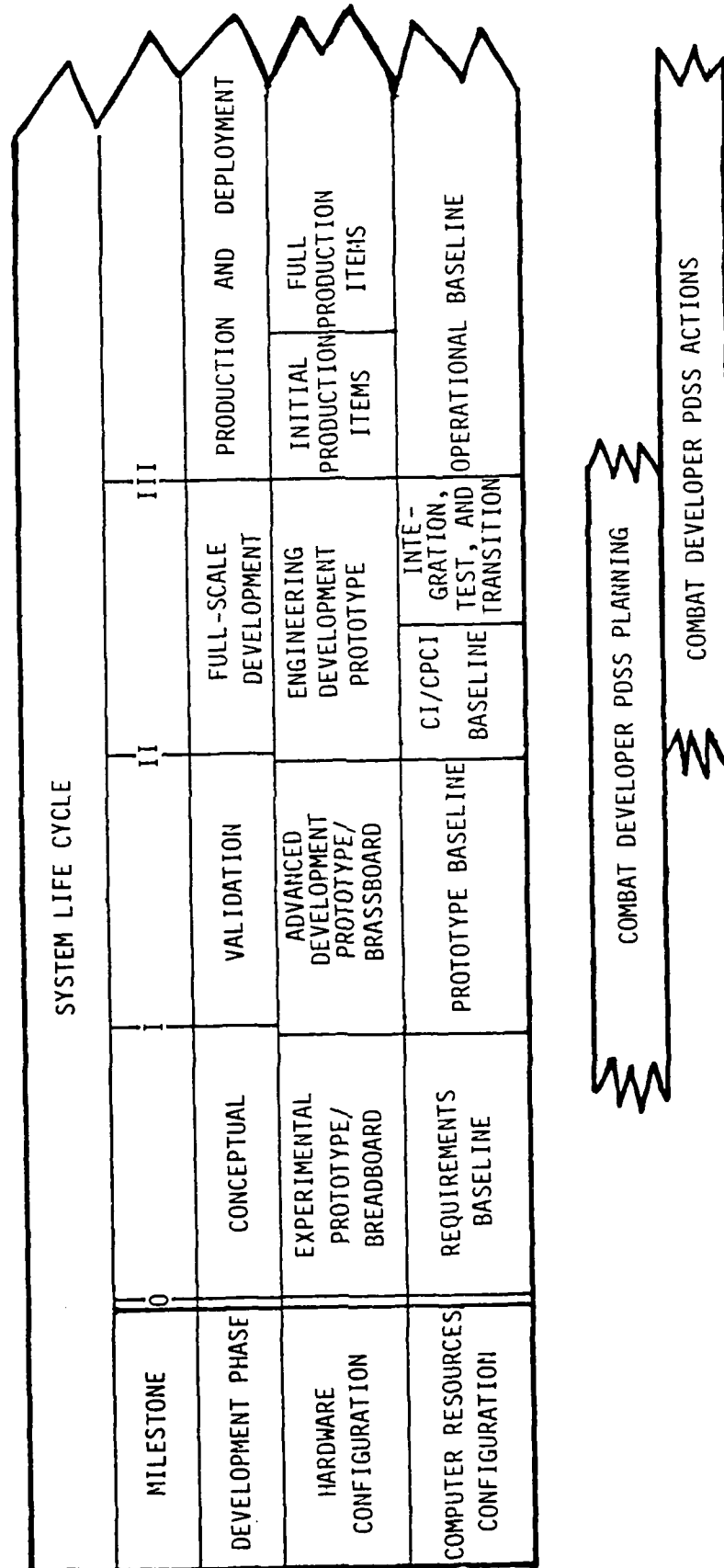


Figure 1-3. Relationship of PDSS to the system life cycle

d. Classification. Contract No. MDA903-80-C-0479 under which this study is being conducted states that, "The highest classification involved in the performance of this contract is SECRET." No systems whose existence is classified within this level were identified to the study team during the Phase I or Phase II research efforts. If there are systems whose existence is classified above the SECRET level, TRADOC PDSS requirements associated with such systems must be identified and addressed separately.

1-5. METHODOLOGY.

a. Study Structure. Within the scope described in Paragraph 1-4, this study is to be completed through the accomplishment of eight tasks over an eight month period divided into three phases as shown in Figure 1-4. This figure also illustrates the relationship between the tasks and phases of the study. The study began 30 June 1980 and is scheduled to be completed 28 February 1981.

b. Phase I. Phase I began upon contract award. It consisted of Tasks 1 through 4.

(1) Task 1. The Work Plan prepared during Task 1 was delivered to the Contracting Officer's Technical Representative (COTR) on 17 July 1980. This plan was then presented to and approved by the SAG at its initial meeting on 14 August 1980.

(2) Tasks 2, 3 and 4. The First Interim Technical Report documents the results of the Phase I effort, devoted to Tasks 2, 3, and 4, which began in early July and ended on 30 September 1980. These tasks addressed macro-management level PDSS processes, BFA-level PDSS processes, and TRADOC's BFA-level PDSS requirements. After presentation and review, the SAG approved this report at its second meeting, 8 October 1980.

c. Phase II. Phase II of the study, documented in the Second Interim Technical Report and consisting of Tasks 5, 6, and 7, was directed toward the definition of the TRADOC Baseline PDSS System and two alternative TRADOC PDSS models or systems that, if implemented, would provide TRADOC a better capability to accomplish its PDSS role. These systems were developed from the PDSS information gained during Phase I, from SAG member feedback, and from further analysis and research during Phase II. A written description of the Baseline System was prepared first, as a basic point of reference. One of the two alternative systems, called the Theoretical System, was then designed to satisfy all CD PDSS responsibilities, without reference to any resource constraints except that it be a potentially achievable alternative. This Theoretical System was structured and a written description was prepared, working primarily from the BFA center level upwards. Then the Baseline and Theoretical Systems were compared and analyzed for insights on which to base the design of the second of the two alternative systems, called the Hybrid System. Phase II results were presented orally at the SAG Meeting on 17-18 December 1980.

AN ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE IN PDSS

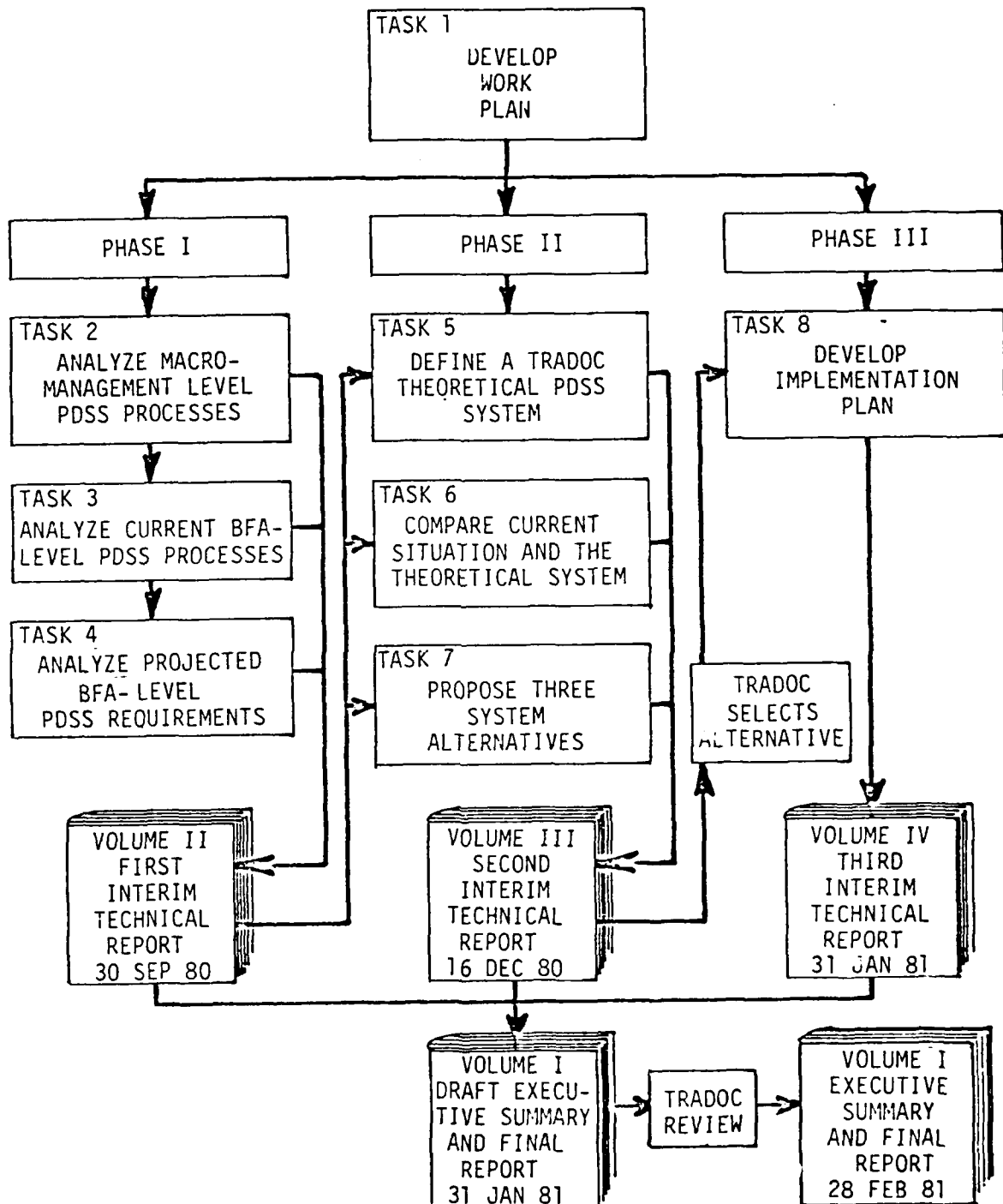


Figure 1-4. PDSS study overview

d. Phase III. Following presentation of the TRADOC PDSS alternatives by the Study Team at the Phase II SAG meeting on 17-18 December 1980, and detailed discussion of each alternative, SAG members provided additional general guidelines relative to an overall concept for a preferred TRADOC PDSS system and more specific guidance for structuring each component of the system. Principal features of this concept and guidance were provided to the Study Team orally and by informal notes and working papers during and following the SAG meeting. Key elements of guidance were also provided subsequently in the minutes of the SAG meeting. Based on the guidance received, the Study Team proceeded to develop a detailed description of the Preferred TRADOC PDSS Alternative System and to identify and describe key elements of an implementation plan. The sequence of effort and principal events during this and previous phases of the study are illustrated in Figure 1-5. The description of the Preferred TRADOC PDSS Alternative System, which will be subsequently referred to as the "Objective PDSS System" and the Implementation Plan are presented in Chapters 2 and 3 of this report, respectively.

e. Final Report. A Final Report is to be submitted in draft on 31 January 1981, revised following government review, and submitted in final copy on 28 February 1981.

1-6. ORGANIZATION OF THIS REPORT. The remainder of this report is organized to provide a description of the TRADOC Objective PDSS System (Chapter 2) and to discuss features of implementation planning (Chapter 3). Appendices A, B, C, and D contain, respectively, the References, Glossary, battlefield automated systems addressed in this study, and a Draft Implementation Plan.

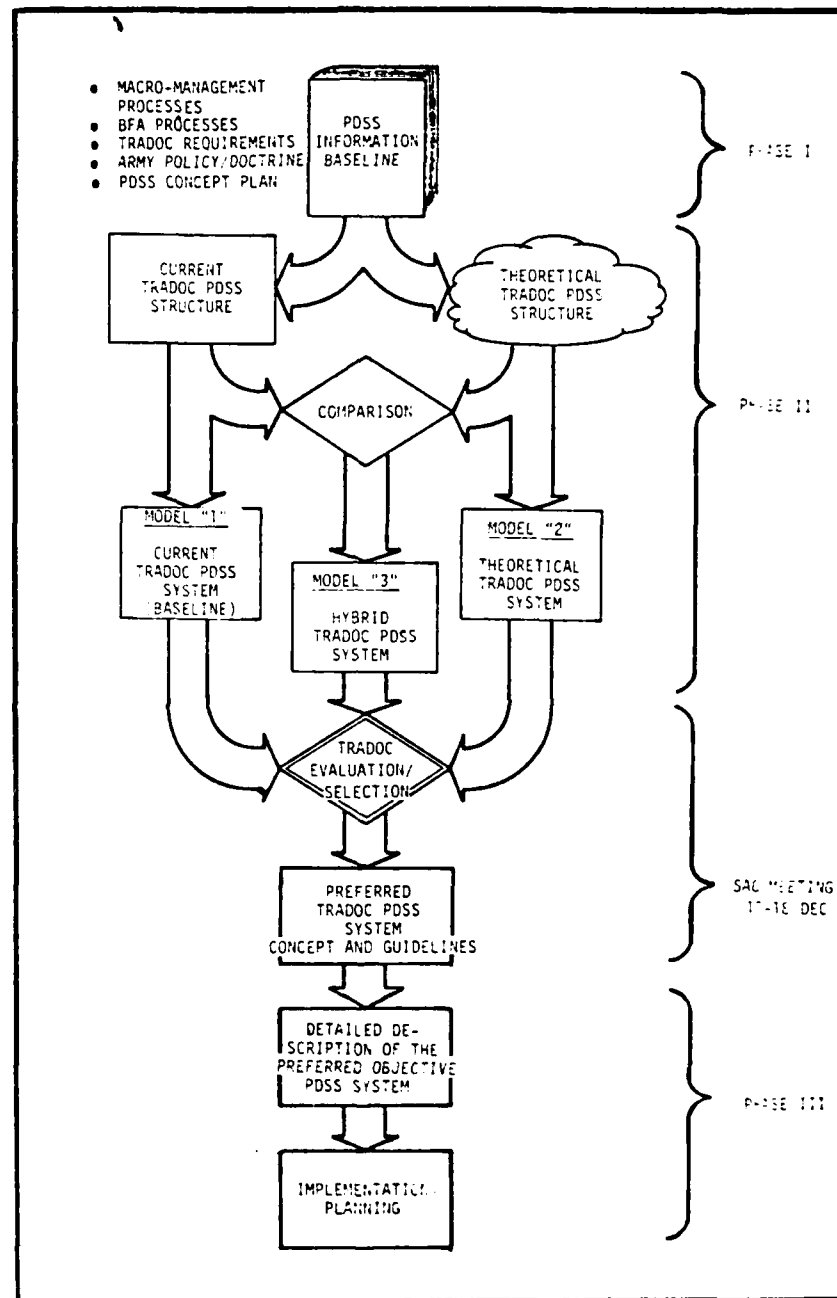


Figure 1-5. Study methodology overview

CHAPTER 2

DESCRIPTION OF THE OBJECTIVE SYSTEM

2-1. GENERAL. This chapter contains a description of the TRADOC Objective Post-Deployment Software Support (PDSS) System. This description has been developed by the Study Team based on guidance provided by the Study Advisory Group (SAG), following its review of the TRADOC PDSS Baseline, Theoretical, and Hybrid System alternatives which were presented at the Phase II SAG Meeting, 17-18 December 1980. This Objective PDSS System incorporates desirable features and capabilities of the organizational structure and operating procedures of the current Baseline as well as the proposed Theoretical and Hybrid System alternatives developed during Phase II. The result is an Objective System, tailored to the PDSS-capability requirements of HQ TRADOC and each integrating and functional center with significant Combat Developer (CD) responsibilities for battlefield automated systems (BAS). The design of this Objective PDSS System provides an appropriate degree of uniformity and commonality throughout the system while recognizing the need for certain differences among system components because of variations in both current capability and current and future requirements for PDSS at the various centers and schools. The full implementation and effective management of this Objective PDSS System would provide HQ TRADOC and subordinate commands an adequate capability to fulfill their roles and responsibilities in planning and providing PDSS for BAS currently projected for deployment through 1987. This chapter discusses the design guidelines and other factors having a significant influence on system design and the generalized models on which the functional and management structure of each system component is based. It also provides an overview of the system, a general description of the concept of operations, and a description of each principal system component.

2-2. PRINCIPAL FACTORS INFLUENCING SYSTEM DESIGN.

a. Assumptions. Common assumptions on which the design of this system is based are presented below. Other assumptions applicable to individual system components are included in Paragraph 2-5.

(1) Missions and PDSS roles.

(a) The mission and basic role of the Materiel Developer (MD) with respect to PDSS will remain essentially as described in the PDSS Concept Plan for BAS, May 1980.

(b) The mission and basic role of the CD with respect to PDSS will remain essentially as described in the PDSS Concept Plan for BAS, May 1980, and the First Interim Technical Report of the Assessment of the Combat Developer's Role in Post-Deployment Software Support, September 30, 1980.

(c) The major functional responsibilities of TRADOC centers and schools will remain generally as specified in TRADOC Reg. 10-41 and the respective center and school organization and functions regulations.

(2) PDSS Centers. Materiel/System Developer-managed PDSS centers will be established as recommended in the PDSS Concept Plan for BAS, May 1980. The 11 recommended centers were identified in Figure 1-2.

(3) BAS. BAS addressed in this report will continue to be developed and enter the Army inventory through 1987, generally as currently projected. These BAS are identified in Appendix C.

b. Design Guidelines.

(1) Relationship of PDSS to TRADOC mission and functions. Within TRADOC, PDSS is to be performed as an integral part of the system development and life cycle management process under the combat developments mission.

(2) Relationship of PDSS to operational concepts. The system to be established for performing PDSS is to be in consonance with:

(a) TRADOC's operational and management concept of centralized management and decentralized control and operations, as described in AR 10-41 and TRADOC Regs. 10-5 and 10-41.

(b) The Battlefield Functional Area (BFA) Concept discussed in Chapter 1.

(c) The Command, Control, and Subordinate Systems (CCS²) concept currently promulgated within TRADOC.

(d) The PDSS Concept Plan for BAS, May 1980.

(3) Relationship among centers and schools. Relationships among PDSS organizational elements at the various centers and schools will be governed by the existing integrating center - associated center and school concept discussed in TRADOC Reg. 10-41. PDSS elements of key centers and schools should be interconnected by appropriate means to facilitate the coordination and interaction that must occur among these centers and schools in managing the major command and control BAS under the CCS² concept.

(4) Organizational structuring. Within the common design guidelines set forth in this chapter, the PDSS system elements at each center and school may be individually tailored to best accomplish local PDSS requirements. The extent to which a center and school's PDSS capability is integrated into the existing organizational structure as opposed to being a separately identified organizational element may vary based upon:

(a) Current capabilities to fulfill PDSS responsibilities

(b) The number, nature, and life cycle stage of BAS for which the center and school is responsible

(c) Relationship to an associated MD-managed PDSS Center

(d) Desires and objectives of each center and school commander.

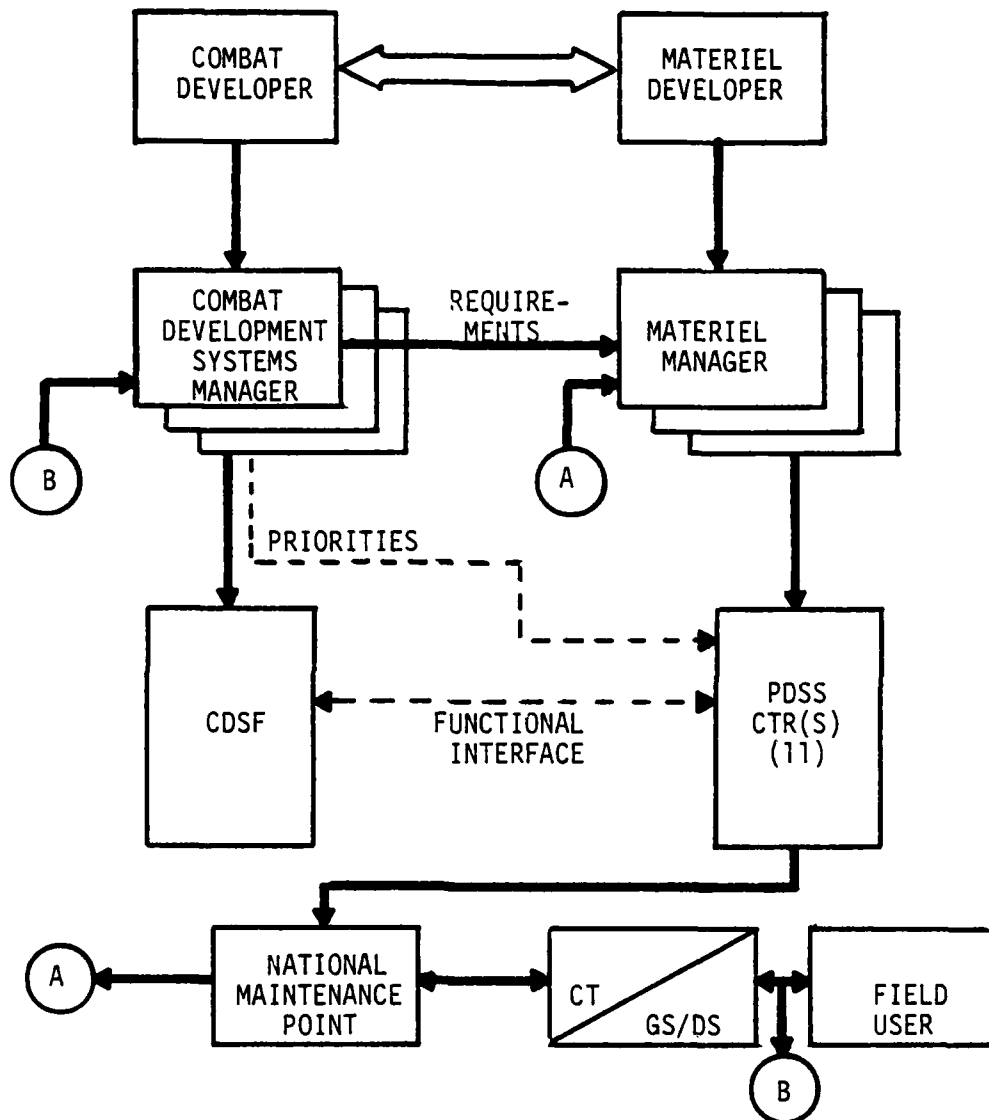
(5) System implementation. This PDSS system represents an objective to be achieved by 1987 through the accomplishment of implementation actions integrated with the Army's Planning, Programming, and Budgeting (PPBS) cycle. Resource requirements should be identified as needed beginning in 1981 although the FY 83 budget and the FY 84-88 Program Objective Memorandum (POM) provide the earliest opportunity for addressing these requirements in the programming and budgeting process.

c. System Models

(1) Generalized Software Support Model for PDSS. The Task Force that prepared the PDSS Concept Plan for BAS developed a generalized software support model for PDSS. This model, which illustrates the general roles of both the CD and MD in the PDSS process and their relationships with system Users, is illustrated in this report as Figure 2-1. This model combines aspects of organizational structure, physical location, and information flow. The model was designed to provide for a systematic flow of post-deployment software problems and solutions between the User and appropriate CD and MD organizations. As indicated, the focal point for MD PDSS activity is the PDSS center. The PDSS Concept Plan for BAS provides for establishing 11 of these centers as discussed in Chapter 1. As shown in Figure 2-1, the CD counterpart to, and principal point of interface with, the MD-managed PDSS center is to be the Combat Development Support Facility (CDSF). The CDSF, which represents the focal point for CD PDSS activity, is to operate in response to requirements of the Combat Development System Manager (CDSM) who has CD PDSS responsibility for the system or systems being addressed. The CDSM, in turn, represents the CD in interactions with the Materiel Manager under whose supervision the PDSS center functions. It should be noted that the CDSF should be construed more as a physical facility than an organizational entity. Like a command post, the CDSF is essentially a place where equipment and personnel from various organizational entities are collocated and structured to most effectively perform certain PDSS functions, when or as required. The CDSF, with respect to both the physical facility itself and the staff entities located within it, may be either permanent or temporary.

(2) Generalized Combat Developer PDSS Models. Considering the structure and procedural concept of the Generalized Support Model for PDSS, and the TRADOC PDSS system design guidelines discussed in Paragraph 2-2, the Study Team developed two models for the functional and management structure of the CDSF. Two generalized models (representing opposite points on a spectrum) were needed to accommodate the differences in current organizational structure, capabilities, and requirements among TRADOC centers and schools as discussed in Paragraph 2-2.b.(4), above. The overall TRADOC Objective PDSS System design is based on one or the other or some intermediate variation of these generalized models being implemented at each center and school that has a need for a PDSS capability. The two models are described below:

GENERALIZED SOFTWARE SUPPORT MODEL FOR PDSS*



* Based on illustration in the PDSS Concept Plan for BAS, May 1980.

Figure 2-1. Generalized Software Support Model for PDSS

(a) CD PDSS Generalized Model 1. This model, which is illustrated in Figure 2-2, is based on the existence/establishment of a permanent organizational entity dedicated to PDSS functions and staffed by an element of the Directorate of Combat Developments (or the Management Information Systems Directorate in cases where this organization is responsible for systems development and life cycle management functions.) This PDSS entity is taken, in this model, to be located, together with personnel and equipment, in a permanent facility identified as a CDSF. Other directorates and staff organizations of the center and school would support PDSS functions within their respective functional areas of responsibility, on an as required basis. The figure shows those elements constituting the permanent staffing of the CDSF as well as the principal organizational elements participating in PDSS functions on an as required basis. The permanent CDSF staff element(s) function under the staff supervision of the Director of Combat Developments or a designated division or separate office chief of this directorate. Close staff coordination is maintained with the appropriate CDSM and TRADOC System Manager (TSM), if a TSM exists, and with other staff elements supporting PDSS functions. The CDSM and the chief of the permanent CDSF element provide the principal interfaces with associated Materiel Developer counterparts as illustrated in Figure 2-2. These are the same principal interfaces as shown in the Generalized Software Support Model in Figure 2-1. As indicated in Appendix C, PDSS for the several BAS which any given TRADOC center and school is proponent may be provided by more than one MD-managed PDSS center. This creates the functional requirement for the proponent TRADOC center and school to maintain an interface with each of these supporting PDSS centers, all but one of which will be located at geographical location(s) separate from the center and school. The way in which the required liaison/interaction is accomplished (e.g., whether by TDY or permanent liaison representation) is the prerogative of the proponent center and school. Arrangements for effecting the needed liaison/interaction will be developed in conjunction with the MD organization(s) concerned.

(b) CD PDSS Generalized Model 2. This model, which is illustrated in Figure 2-3, differs from Model 1 in that, with the exception of a designated PDSS focal point, no distinct PDSS organizational entity exists on a permanent basis, and there is no permanent CDSF. Model 2 is based on the concept of PDSS functions being performed by existing organizational elements (augmented as necessary consistent with the additional workload resulting from PDSS). This model allows for the establishment of a CDSF on an ad hoc basis as required, with staffing being drawn temporarily from the Directorate of Combat Developments (or Management Information Systems Directorate) and other existing organizational elements that have PDSS responsibilities. When such a CDSF is formed, internal CD staff supervision and coordination, and CD-MD interface procedures and responsibilities envisioned under Model 2 are essentially the same as described for Model 1.

←→ JO-MO PRINCIPAL INTERFALL

— COMMAND STAFF SUPERVISION

— STAFF COORDINATION

— PERMANENT JOSE STAFF ORGANIZATION

X — ORGANIZATIONS PERFORMING JO FUNCTIONS

— TEMPORARY EXTENSIONS OF PERMANENT STAFF ELEMENTS

WILL BE IN ANY ORGANIZATIONAL ELEMENT
IN THE COSM ROLE, PERTAINS TO THE
INTEGRATE OF COMBAT DEVELOPMENT

Figure 2-2. CD PDSS Generalized Model 1

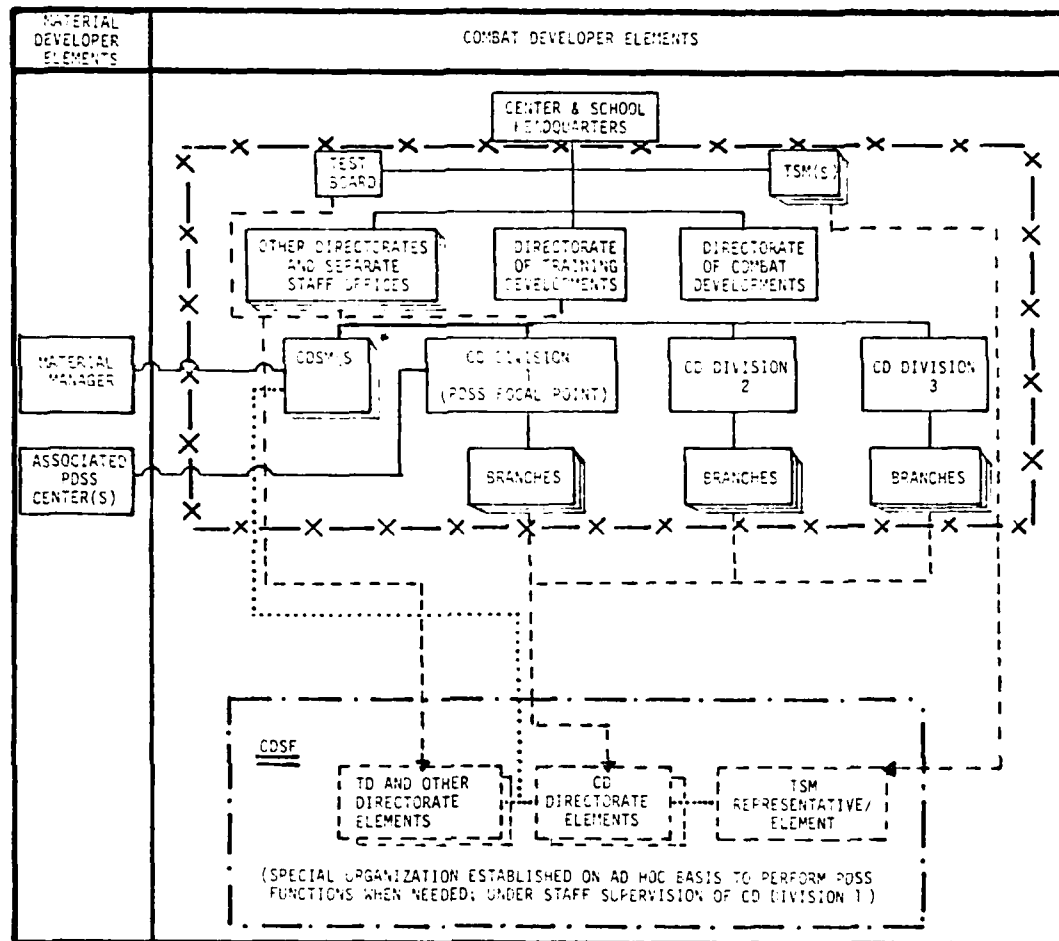


Figure 2-3. CD PDSS Generalized Model 2

2-3. SYSTEM OVERVIEW. Following the assumptions, design guidelines, generalized model alternatives, and other considerations discussed in Paragraph 2-2, the Study Team designed and developed the description of the TRADOC Objective PDSS System presented in this report. This system is illustrated in Figure 2-4, structured within the context of the BFA concept. This structure is in consonance with the Hybrid Approach for establishing MD-managed PDSS centers, discussed in Chapter 1 and documented in the PDSS Concept Plan for BAS, May 1980. As shown, this Objective System provides for:

- A PDSS Staff Element at Headquarters, TRADOC to provide a focal point for PDSS administration and policy at the major command level and, in conjunction with the HQ TRADOC CD "hardware directorates," to coordinate and exercise staff supervision over PDSS matters within TRADOC
- PDSS Staff Elements at CACDA to provide a capability to fulfill assigned responsibilities as the TRADOC PDSS proponent and principal integrating center and as proponent of the CCS² concept.

The CDSM and the Chief of the permanent CDSF Staff Element provide the principal interfaces with associated Materiel Developer counterparts as illustrated in Figure 2-2. These are the same principal interfaces as shown in the Generalized Software Support Model in Figure 2-1.

- A PDSS capability at the seven major TRADOC doctrinal centers that have proponentcy for functional area components of the BFA concept
- CDSM representation for each BAS that has reached Milestone II in the system development cycle (or a comparable point for systems being developed under other (e.g., evolutionary) concepts) (A CDSM may be responsible for more than one BAS within a given BFA.)
- Provisions for maintaining contact with those geographically separated MD PDSS Centers with which the CD must interact regularly in planning and providing PDSS for BAS for which the MD and CD each have major responsibilities in their respective functional areas.

It is emphasized that the composition of this total system as well as each of its elements has been tailored to satisfy TRADOC's functional PDSS requirements. Each component and subordinate element of the system is discussed in detail in Paragraph 2-5.

2-4. CONCEPT OF OPERATIONS. The concept of operations associated with this Objective PDSS System is in full accordance with current Department of the Army and TRADOC operating policies and procedures. Principal elements of this concept are discussed below.

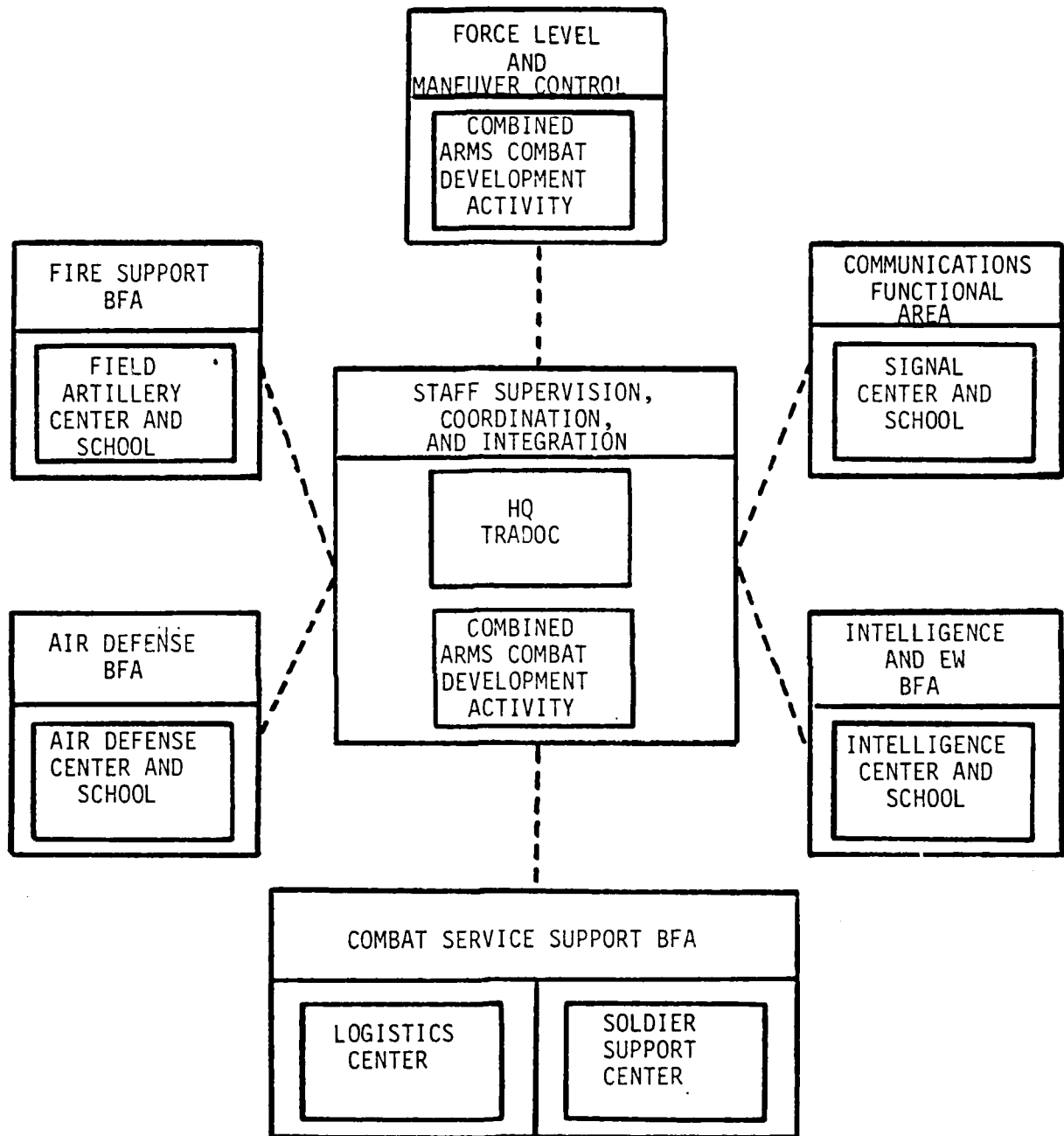


Figure 2-4. Overview of the Objective PDSS System

a. HQ TRADOC. The Commanding General, TRADOC, through the Deputy Chief of Staff for Combat Developments (DCSCD), establishes operating policy, determines priorities, allocates and manages resources, and directs all elements of this Objective PDSS System in the accomplishment of the overall mission and principal functional responsibilities. Within DCSCD, the Telecommunications, Command and Control, and Computer Systems (TC4S) Directorate, the Systems Management Directorate, and each of the "hardware directorates", e.g., Firepower Systems, Maneuver Systems, etc., have PDSS responsibilities.

(1) DCSCD TC4S Directorate. The Director, TC4S, exercises staff supervision over the operation of each major element of the system. Within this Directorate, the Battlefield Systems Integration Branch provides the focal point for coordinating all TRADOC PDSS activity and requirements. PDSS Action Officers of this branch form the Headquarters TRADOC PDSS Staff Element. These action officers are responsible for receiving and acting or coordinating action on directions or requirements from Headquarters, Department of the Army (HQDA), or the Commanding General and other appropriate officials of Headquarters, TRADOC, and on requests from User commands. In conjunction with action officers in the DCSCD hardware directorate(s) and the CACDA PDSS Staff Element (discussed below), they analyze and translate these into requirements or instructions for issuance by Headquarters TRADOC to subordinate commands. Subsequently, they exercise staff supervision and act in coordination with other staff elements of DCSCD on the products of subordinate elements of the system. These action officers also serve as the coordination point for PDSS administration and policy matters within TRADOC and provide a principal interface on these PDSS matters with HQDA and organizations at the major command level external to TRADOC.

(2) DCSCD Hardware Directorates. The DCSCD hardware directorates exercise staff supervision for total systems management of systems within their respective functional areas.

(3) DCSCD Systems Management Directorate. The Systems Management Directorate exercises primary staff responsibility for management of the TRADOC Materiel Total System Management Concept and the TSM Program.

b. CACDA. CACDA is responsible and will operate in this objective system, as the TRADOC PDSS Proponent. Responsibilities associated with this role include working, in conjunction with the PDSS staff at Headquarters TRADOC, to address major PDSS functional and management matters, and coordinating and integrating, as appropriate, PDSS requirements and activity of the TRADOC centers and schools. To fulfill these responsibilities, this Objective System provides for the augmentation of the JINTACCS Office, Army C²/JINTACCS Division, C3I Directorate with staff officers dedicated to PDSS requirements.

c. BFA-Level Operations. As noted in the System Overview, this Objective System provides for a PDSS capability within each of the seven functional areas recognized in the BFA concept. This PDSS capability is established and will operate as an integral part of the combat developments or management information systems organization of each parent center and school. This PDSS

capability provides a focal point for all substantive PDSS activity within each of the seven functional areas of the BFA concept and provides the primary interface on PDSS matters at the BFA level with organizations external to TRADOC. Each of the centers and schools that is to have a PDSS capability will be responsible for planning, directing, coordinating, and performing all CD PDSS functions for the BAS within their respective functional areas. This includes maintaining contact with Systems Users on functional/operational matters and with MD PDSS centers on all aspects of PDSS for the BAS with which they are concerned. The CD PDSS LNOs included in this Objective System are extensions of their respective center and school PDSS organization. They facilitate CD-MD interaction on PDSS for the BAS with which they are concerned and provide the principal User Representation at the MD PDSS center where they are located.

d. Principal Interfaces. To properly fulfill its CD PDSS functions, HQ TRADOC and each center and school involved with the Objective PDSS System, must interact with both Users and Materiel/System Developers on a continuing basis. The CD PDSS LNOs to be established as part of this Objective PDSS System will facilitate this interface. A summary of the principal CD-MD-User interfaces that are seen to be required following implementation of the PDSS Concept Plan for BAS, are shown in Figure 2-5.

2-5. OBJECTIVE PDSS SYSTEM COMPONENTS.

a. General. This paragraph contains a description of each of the components of the Objective PDSS System, shown in Figure 2-4. For each BFA-level component these descriptions include a general discussion of the BFA and the nature of PDSS requirements within the BFA, a discussion of the current system for handling these PDSS requirements, and a description of that portion of the proposed TRADOC Objective PDSS System designed to provide an improved capability to fulfill PDSS responsibilities in each BFA. These descriptions of the various BFA system components are intended to serve as a framework and guide to permit and enable each affected center and school to proceed with detailed PDSS implementation planning. These proposed system component designs reflect CD PDSS requirements, policies, and procedures as known at present. These and other factors that influence system design are of course subject to change any time. Therefore, within the constraints and guidelines discussed in Paragraphs 2-2 through 2-4, each affected center and school should have authority to modify the design of its respective Objective PDSS System component, consistent with changes in PDSS requirements and other related influencing factors.

b. Headquarters, TRADOC.

(1) Role. The role and responsibilities of HQ TRADOC in this Objective PDSS System are seen to be essentially the same as at present. This role is basically one of establishing policy, assigning responsibility, allocating resources, and exercising command, control, and staff supervision over the total system operation. CACDA works closely with and supports HQ TRADOC in this role by serving as the TRADOC PDSS proponent. This CACDA

role is discussed in Paragraph c, below. Most PDSS requirements and operations are assigned to BFA-level components of this Objective System for planning, programming, and execution.

(2) Organization and responsibilities. As discussed previously, PDSS is accomplished within TRADOC, as a part of the combat developments mission directed by the Deputy Chief of Staff for Combat Developments (DCSCD). Organizational staff elements principally involved with this effort are shown in Figure 2- 6. This Objective PDSS System is based on continuation of this overall operating concept. Within DCSCD, the Battlefield Systems Integration Branch of the Telecommunications, Command and Control, and Computer Systems (TC4S) Directorate serves as the focal point for PDSS activity at HQ TRADOC with responsibility for coordinating the associated PDSS activity of other staff elements. Each of the "hardware directorates" (e.g., Firepower Systems, Maneuver Systems, etc.) in DCSCD has staff responsibility for coordinating PDSS activity with its associated functional center. Within these DCSCD directorates, designated staff officers exercise this responsibility for one or more systems in their functional areas. Other directorates of DCSCD and elements of other major TRADOC staff elements outside of DCSCD participate in a coordination role on PDSS staff actions impacting their areas of functional responsibility.

(3) Capabilities. Although the Battlefield Systems Integration Branch has been assigned primary HQ TRADOC staff responsibility for PDSS, no personnel resources have been committed to this function on a full-time or dedicated basis. Current staffing of this branch is not adequate to support such a commitment. To properly fulfill current responsibilities and handle the projected increase in PDSS requirements as more systems are fielded through the program years, additional personnel are needed within the Battlefield Systems Integration Branch. To provide the capability needed, this Objective PDSS System concept provides for the establishment of a PDSS Staff Element within the Systems Integration Branch. This element would provide the focal point for coordination of all TRADOC PDSS administration and policy matters, and the means through which HQ TRADOC staff supervision can be exercised over this important functional area. The relationships that exist and operating procedures that have been established between the hardware directorates of DCSCD and their associated center(s) and schools(s) would remain the same following implementation of this Objective PDSS System.

(4) Resource requirements. Based on evaluation of the currently known workload, it is estimated that four additional staff officers are needed in the Systems Integration Branch to implement this Objective PDSS System. One of these personnel is needed in FY 81 and one each in FY 82, 84, and 86 as shown in Figure 2-7. It is proposed that two of these staff members be military officers with combat arms backgrounds and secondary specialties in operations research/systems analysis or automatic data processing. The other members should be civilians in the operations research/systems analysis or automatic data processing career fields. This will provide a desirable blend of functional and technical knowledge and expertise and should also provide a means of maintaining the long term continuity needed in this functional area. Estimated costs of these personnel are shown in Figure 2-8.

HEADQUARTERS, US ARMY TRAINING AND DOCTRINE COMMAND

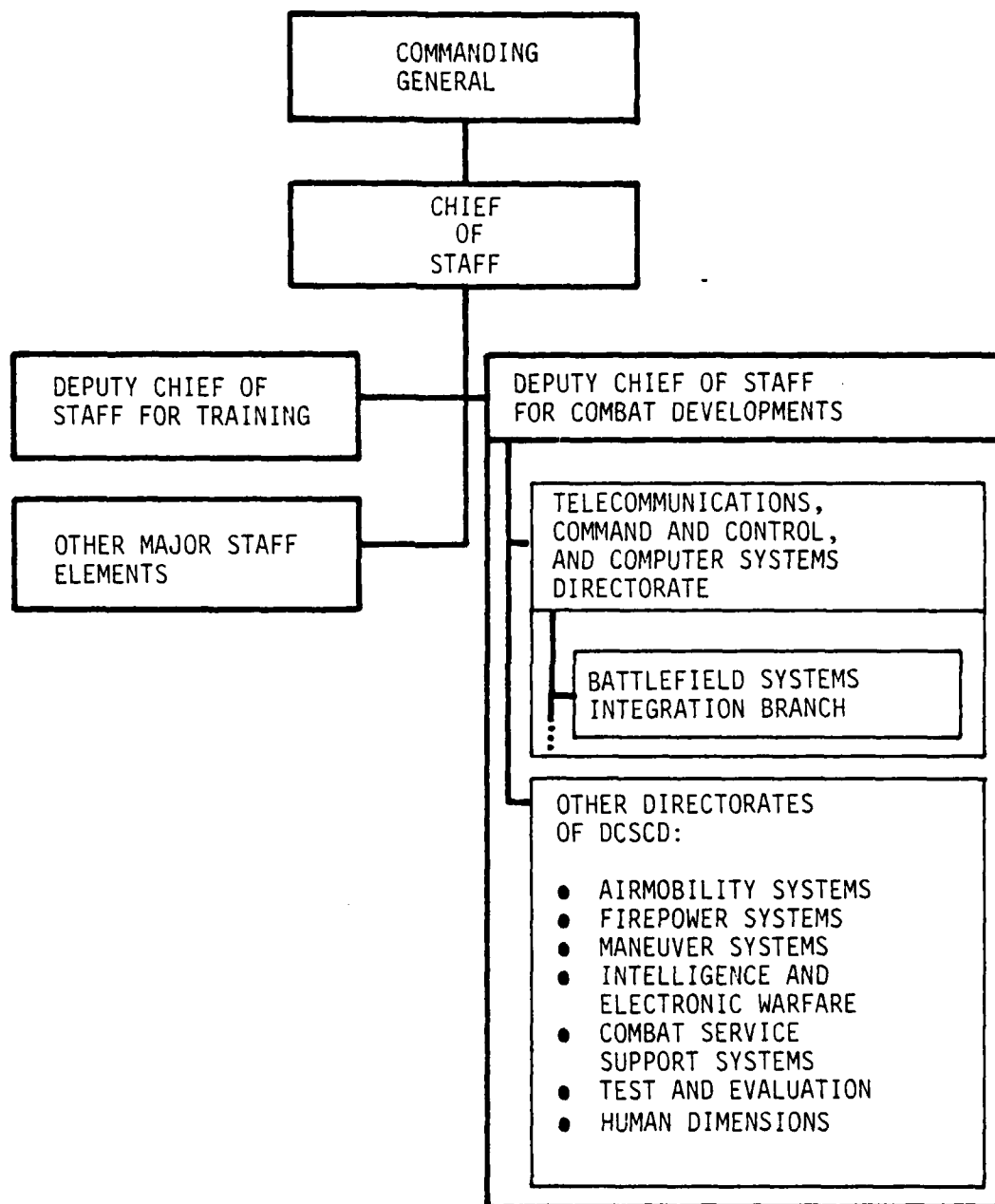


Figure 2-6. HQ TRADOC staff elements with major responsibilities in the PDSS System

HQ TRADOC, ESTIMATED PERSONNEL REQUIREMENT							
PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	1	1	1	1	1	2	2
Civilian	0	1	1	2	2	2	2
TOTAL	1	2	2	3	3	4	4
Authorized							
Military	0	0	0	0	0	0	0
Civilian	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0
Additional Needed							
Military	1	1	1	1	1	2	2
Civilian	0	1	1	2	2	2	2
TOTAL	1	2	2	3	3	4	4

Figure 2-7. Personnel requirements, HQ TRADOC

HQ TRADOC, ESTIMATED PERSONNEL COSTS (\$000)*							
	Fiscal Year						
	81	82	83	84	85	86	87
	0	31.6	31.6	63.2	63.2	63.2	63.2
Civilian Personnel							
* In FY 81 constant dollars. Based on average annual costs of \$31.6K, including 10 percent loading, for one technical civilian.							

Figure 2-8. Estimated personnel costs, HQ TRADOC

c. Combined Arms Combat Development Activity (CACDA).

(1) General. This paragraph contains a discussion of CACDA's PDSS roles in four distinct functional areas -- as proponent for the CCS² concept, as the TRADOC PDSS proponent, as proponent for the Force Level Control Functional Area, and as proponent for the Maneuver Battlefield Functional Area. While functional responsibilities for each of these areas are currently assigned to existing organizational elements of CACDA, an improved capability is needed to meet the growing requirements associated with PDSS as the number and complexity of deployed BAS continue to increase. Also, the requirement to closely coordinate and integrate activities involved with the development and support of command and control BAS under the CCS² concept imposes an additional workload on the responsible elements of CACDA. The Objective PDSS System is designed to provide the improved capability needed to meet these requirements while minimizing changes to the current organizational structure and functional responsibilities.

(2) The current system.

(a) CCS² proponentcy. CACDA is proponent for the CCS² concept which addresses the application of automation and communications to the battlefield decision making process. At present, actions associated with this concept are directed toward the further development and refinement of the CCS² architecture with the ultimate objective of achieving an integrated battlefield command and control network. This effort requires coordination and integration of the design and development of Force Control and Maneuver Control systems with other functional area control systems, and these control systems with their subordinate systems, to ensure that the necessary degree of interoperability will be achieved among these battlefield automated systems. As the development of these systems proceeds and the number that are deployed increases, a greater proportion of CCS² concept-related actions will be focused on ensuring that required interoperability is maintained as systems are modified through PDSS actions. The magnitude and complexity of this effort will continue to grow as more systems are fielded, modified, and eventually phased out and replaced by new systems. This total effort will require continuing coordination between and among CACDA and each center and school that is proponent for one or more control systems or other BAS which have inter-BFA interoperability requirements. The focal point for CCS² proponentcy in CACDA is the Army C²/JINTACCS Division of the Command, Control, Communications, and Intelligence (C3I) Directorate.

(b) TRADOC PDSS proponentcy. Within CACDA, the focal point for exercising PDSS proponentcy is the JINTACCS Office, Army C²/JINTACCS Division, C3I Directorate. In this role, functions performed involve monitoring, coordinating, and integrating as appropriate, the PDSS requirements of TRADOC Centers and Schools, and interacting with Materiel/System Developers (e.g., DARCOM, USACSC, INSCOM, and USACC) on PDSS plans and policy matters. Included in this role is the responsibility to monitor the overall operation of the PDSS system throughout TRADOC and initiate or recommend to HQ TRADOC, actions to correct deficiencies or otherwise improve the capabilities of the system as needed. These functions are performed in close concert with the Systems Integration Branch, TC4S Directorate, DCSCD, HQ TRADOC.

(c) Force Level Control Functional Area proponentcy

1. Functional responsibilities. TRADOC Reg. 10-41 assigns the Combined Arms Combat Development Activity (CACDA) responsibility, among other things, for developing doctrine, organization, and materiel requirements for tactical command and control systems. Within CACDA, this responsibility is assigned to the C3I Directorate. The Army C²/JINTACCS Division of this directorate serves as the TRADOC proponent for Force Control and Maneuver Control (FC & MC) systems, as the focal point for integration of ADP concepts and doctrine for these systems, and as the TRADOC point of contact with DARCOM on actions involving these systems. A TRADOC System Manager's (TSM) office for SIGMA, the principal system in the Force Level Control Functional Area, has been established but is just in the process of being staffed. Prior to this office reaching an operational status, functions that would normally be performed by a TSM for this system were accomplished by the Army C²/JINTACCS Division.

2. BAS to be supported. The BAS to be supported in this functional area are shown in Figure 2-9. While the Position Location Reporting System (PLRS) is included functionally in this area, it will be addressed in further detail in the discussion of the Communications Functional Area since the US Army Signal Center (USASC) is the proponent and will have the greatest requirement for resources to provide PDSS for this system. As indicated in Figure 2-9, the OCCIS (Phase I SIGMA) requires PDSS at present as a result of a current effort to field and test an evolutionary developmental operations control and command information system in USAREUR under operational conditions.

(d) Maneuver BFA proponentcy.

1. Functional responsibilities. The US Army Combined Arms Center is designated by TRADOC Reg. 10-41 as one of three major TRADOC integrating centers. It has the mission of integrating and coordinating materiel and force modernization requirements within the combined arms functional areas of combat, combat support, and command and control. Included in this mission is TRADOC proponentcy for the Maneuver BFA. Within the Combined Arms Center (CAC), CACDA has primary responsibility for this mission and serves as the TRADOC proponent and integrator of combat developments in the Maneuver BFA. CACDA and the other Maneuver-BFA-associated TRADOC centers and schools are shown in Figure 2-10. Of the associated centers and schools shown in the figure, only the US Army Armor Center and the US Army Aviation Center are currently proponents for BAS being addressed in this study. TRADOC System Managers (TSM) involved with BAS in this BFA include:

- The TSM, Advanced Attack Helicopter (AAH), located at the Aviation Center but responsible to the Armor Center, the system proponent
- The TSM, XM-1 Tank, located at the Armor Center. The fire control system of the XM-1 Tank is a Category 3 BAS. The Combined Arms Center is the proponent for this BAS

FORCE LEVEL CONTROL

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
CAC	FORCE LEVEL AND MANEUVER CONTROL SYSTEM (SIGMA) (EVOLUTIONARY DEVELOPMENT)
USASC	PLRS-POSITION LOCATION REPORTING SYSTEM* (FULL SCALE DEVELOPMENT)
* ALSO ADDRESSED IN THE DISCUSSION OF THE COMMUNICATIONS FUNCTIONAL AREA SINCE THE RESOURCE IMPACT IS PRIMARILY IN THAT AREA.	

Figure 2-9. Force Level Control Functional Area
Category 1 and 2 BAS

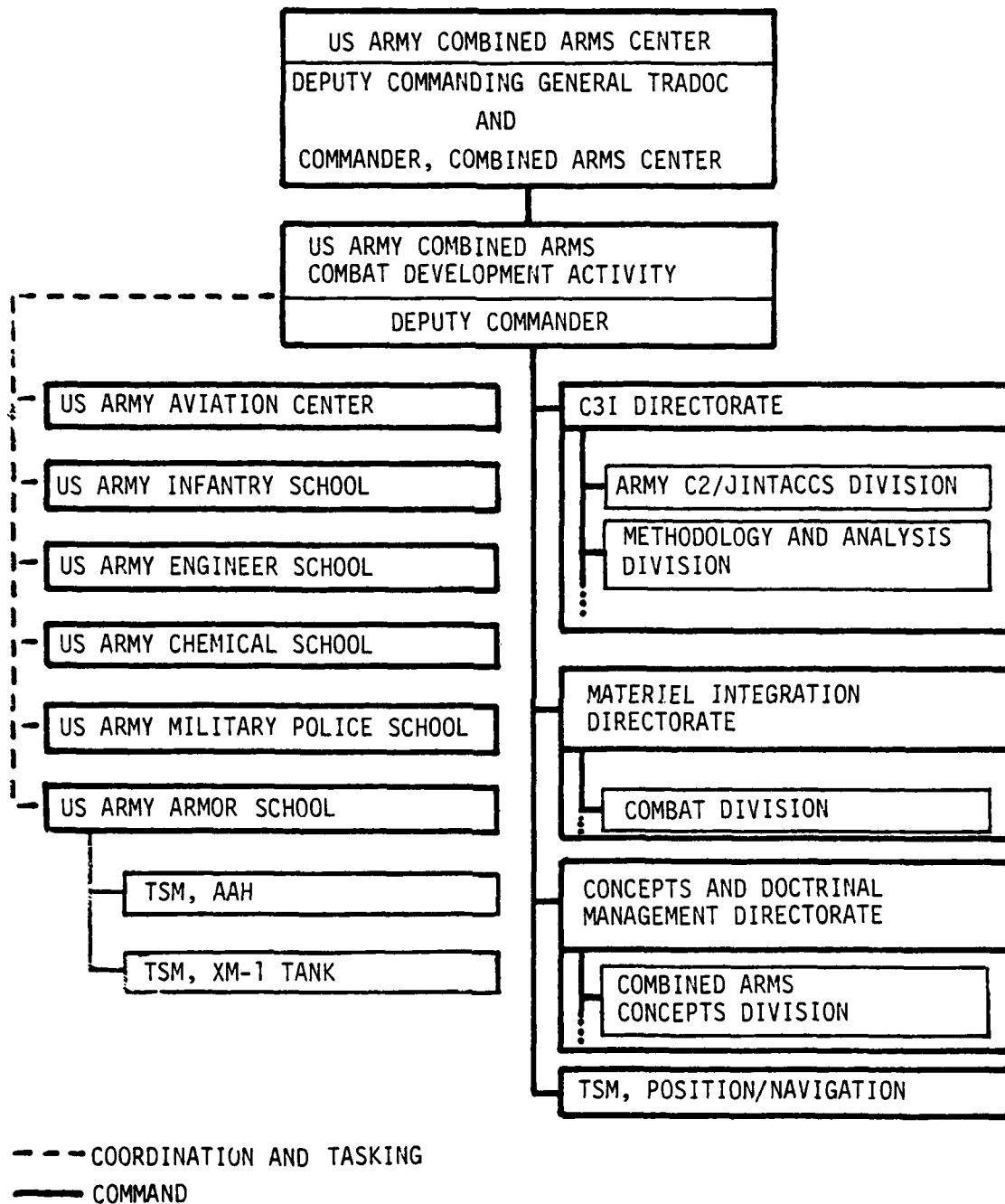


Figure 2-10. Organizations with major responsibilities in the PDSS System for Maneuver BFA BAS

- TSM, Position/Navigation, located at CACDA, who has responsibility for the AN/PSN-6 Position Location Navigation Set (LORAN), a Category 3 system in this BFA, as well as responsibility for additional BAS addressed in other BFA, e.g., PLRS, GPS.

Also shown in Figure 2-10 are the subordinate elements of CACDA that are involved in the development and life cycle management of BAS in this BFA. As indicated by the figure, functions associated with Maneuver BFA BAS fall into three directorates within CACDA. Responsibilities of each of these organizations are discussed in the paragraphs that follow.

a. Concepts and Doctrinal Management Directorate. This directorate, among other functions, acts as the CAC point of contact for the maneuver system at corps, division, and brigade levels. This function is further assigned to the Combined Arms Concepts Division of this directorate.

b. Materiel Integration Directorate. This directorate is responsible for reviewing, integrating, and validating all materiel requirements documents developed by TRADOC-associated schools/centers. The Combat Division of this directorate serves as the CAC proponent for materiel combat developments pertaining to armor, infantry, aviation, airborne, and special forces, major components of the Maneuver BFA.

c. C3I Directorate. This directorate serves as the TRADOC proponent for the Command Control System, for Battlefield Automated Systems (BAS) Management, and the Force Level and Maneuver Control System. Within this directorate, the Army C²/JINTACCS Division serves as the TRADOC proponent for Force Control and Maneuver Control (FC & MC) systems, and acts as the TRADOC focal point for PDSS. The Methodology and Analysis Division is the TRADOC proponent for BAS management and for coordinating, assessing and integrating the tactical data and related communications system requirements of combat, combat support, and combat service support organizations.

2. BAS to be Supported. The Advanced Attack Helicopter is the only Category 1 or 2 BAS to be addressed in this BFA at this time. As mentioned previously, the US Army Armor Center is the proponent for this system. In addition to this Category 2 BAS, there are 13 Category 3 BAS in this BFA which will also require some Combat Developer participation in the PDSS effort devoted to them. The US Army Aviation Center is the proponent for 10 of these systems, CAC is the proponent for three. It should also be noted that portions of both SIGMA and PLRS are to support this BFA. However, PDSS for these systems is addressed under the discussion of the Force Level Control and the Communications Functional Areas, respectively, since it is in those areas that the greatest requirement for PDSS resources to support these systems will exist.

(3) The Objective System.

(a) Purpose and scope. The Objective PDSS System component described in this paragraph has been designed to:

- Provide an improved capability to handle PDSS-related matters associated with the CCS² concept
- Provide CACDA an improved capability to fulfill its responsibilities as the TRADOC PDSS proponent, consistent with the expanding role of the Combat Developer in this functional area
- Provide organizations involved with BAS in the Force Level Control Functional Area and the Maneuver BFA, an adequate capability to accomplish those CD PDSS functions for which they are responsible.

(b) Principal features and structure. This Objective PDSS System component can be generally characterized as an enhancement of current PDSS capabilities through the augmentation and expansion of CACDA's existing organizational structure rather than establishing new PDSS organizational elements. It does not provide for the establishment of a CDSF, per se, for either the Force Level Control Functional Area or the Maneuver BFA, but does identify focal points and clearly establishes responsibilities for each CD PDSS function that must be performed. It provides for retention of current responsibilities for CCS² and TRADOC PDSS proponentcy in the Army C²/JINTACCS Division of the C3I Directorate. It also provides for establishing the focal point for planning, conducting, and/or coordinating CD PDSS activity associated with BAS in both the Force Level Control Functional Area and the Maneuver BFA in this Division. Support in the areas of systems requirements analysis and training development/battlefield simulations development would be provided by/arranged through the Methodology and Analysis Division of the C3I Directorate and elements of the Combined Arms Training Development Activity, respectively.

(c) Structure. CACDA organizational elements with major responsibilities in this component of the TRADOC Objective PDSS System are the same as those shown in Figure 2-10. A more detailed illustration of the structure of the Army C²/JINTACCS Division, as envisioned under the concept of this Objective PDSS System, is provided in Figure 2-11. The CD PDSS responsibilities and related functions of each element of this division are discussed in the following paragraph.

(d) Functional responsibilities.

1. CCS² concept proponentcy. This Objective PDSS System recognizes the growing significance of PDSS to the furtherance of the CCS² concept. The System provides for a staff officer augmentation to the Army C²/JINTACCS Division, specifically for the purpose of coordinating PDSS actions and related activities that impact the CCS² concept. This augmentation, which

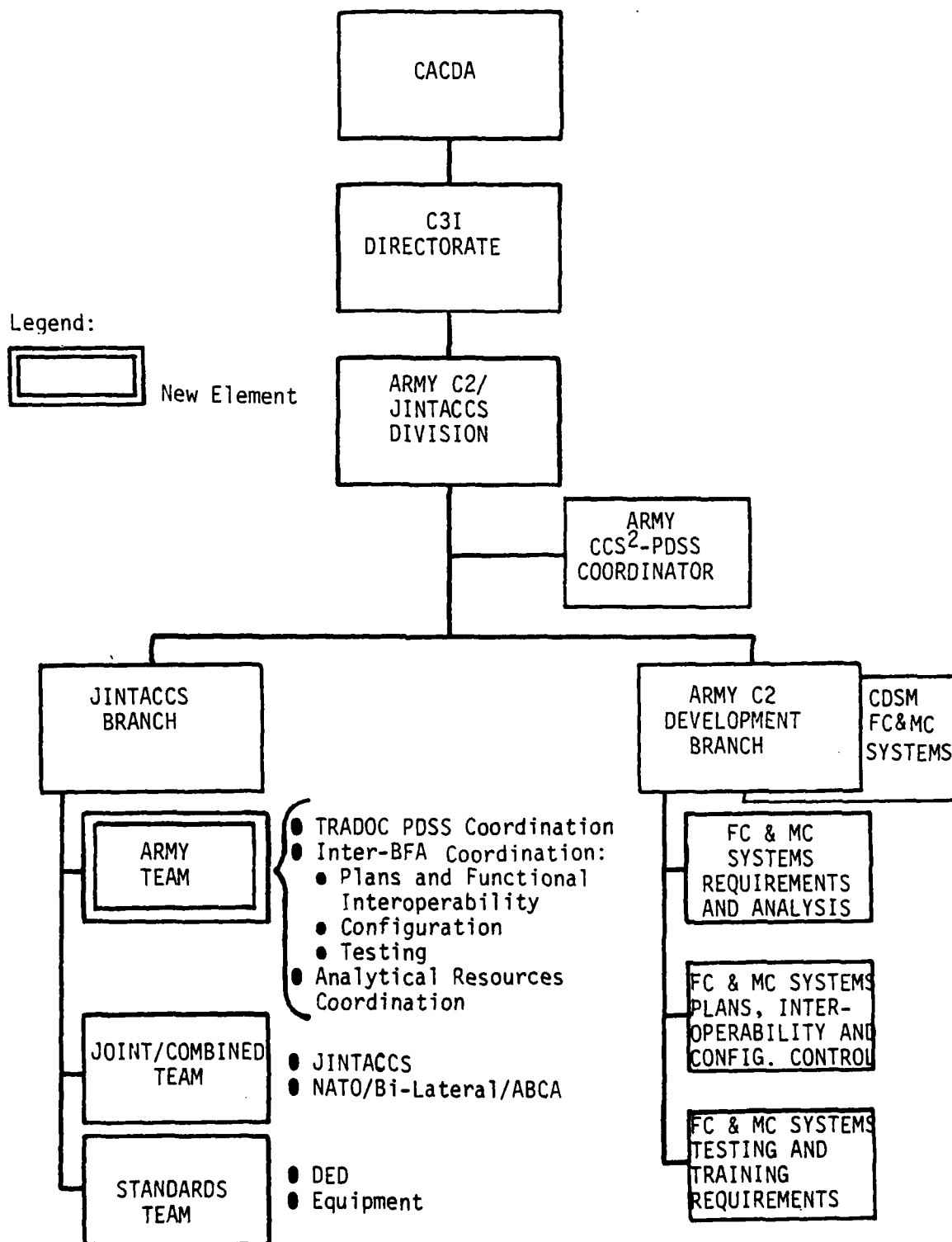


Figure 2-11. Army C2/JINTACCS Division elements with major PDSS responsibilities

is shown in Figure 2-11 as the Army CCS²-PDSS coordinator, is consistent with the anticipated increase in the magnitude and complexity of functional requirements in this area as more command and control and other BAS are fielded.

2. TRADOC PDSS proponency. Under the concept of this Objective PDSS System, primary responsibility for this functional area remains with the JINTACCS Branch, Army C²/JINTACCS Division. A PDSS Staff Element would be established within the JINTACCS Branch to provide an improved capability, consistent with the increasing functional requirements associated with this responsibility. As shown in Figure 2-11, the components of this PDSS Staff Element include:

- PDSS Coordination
- Inter-BFA Plans, Interoperability, and Configuration Control
- Inter-BFA Testing Coordination
- Analytical Resources Coordination.

This PDSS Staff Element would serve as the focal point for overall integration and coordination of PDSS activities for which CACDA is the TRADOC proponent and principal integrating center. This includes system PDSS planning, inter-BFA interoperability requirements, and configuration control under the CCS² concept, and inter-BFA testing coordination. Also included is responsibility for supporting associated centers and schools in identifying and coordinating the efficient use of analytical resources that could contribute to the resolution of CD PDSS requirements.

3. Force Level Control Functional Area Proponency. The concept associated with this Objective PDSS System does not change the current functional responsibilities for this area. The Army C²/JINTACCS Division continues to have overall responsibility. The C2 Development Branch of this division would be the focal point for CD PDSS activity associated with this functional area generally under the concept associated with CD Generalized PDSS Model 2 illustrated in Figure 2-3. This responsibility includes direct and continuous CD participation, in coordination with the TSM, in the evolutionary development, fielding, support, maintenance, and life cycle management (including PDSS) of SIGMA, the principal Force Control and Maneuver Control System. The C2 Development Branch would have primary responsibility for interaction with the CORDACOM-managed PDSS center to be established and operated at Fort Leavenworth. Responsibilities of this center include PDSS for SIGMA. To fulfill its responsibilities, the C2 Development Branch would have elements as shown in Figure 2-11. The general responsibilities of the CDSM, FC & MC System and each branch element are described below. Specific PDSS functions are shown in Figure 2-12.

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	CHIEF, C2 DEVELOPMENT BRANCH	CDSM, FORCE CONTROL AND MANEUF. CONTROL	SYSTEM REQUIREMENTS AND ANALYSIS TEAM	TESTING AND TRAINING REQUIREMENTS TEAM	PLANS, INTEROPERABILITY, & COMMUNICATION CONTROL TEAM
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE COMP. 2. PROVIDE REPRESENTATION ON THE CCRB. 3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X	X	Z	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB. 2. PROVIDE REPRESENTATION ON EACH BAS SSCB. 3. PROVIDE REPRESENTATION ON EACH BAS ESCB. 4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS ² CONCEPT.	2	Z	X	Z	Z	X
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES). 2. PLAN AND PROGRAM FOR RESOURCES. 3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	X	Z	X
2. ANALYSIS	1. PERFORM ANALYSIS OF BAS SOFTWARE PROBLEM REPORTS.	1. IN CONJUNCTION WITH MD, DETERMINE IF SOURCE OF PROBLEM IS FUNCTIONAL OR TECHNICAL. 2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM. 3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS. 4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD. 5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	Z	X	X	Z	Z
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER. 2. EXAMINE BASIS FOR REQUIREMENT. 3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS. 4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	Z	X	X	Z	Z
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS)	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS. 2. DETERMINE AND EXAMINE IMPACT ON SYSTEM-INTEROPERABILITY BASELINE.	2	Z	X	X	Z	Z

Figure 2-12. Assignment of functions, Force Control and Maneuver Control Systems (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	CHIEF, C2 DEVELOPMENT BRANCH	CDSC, FORCE CONTROL AND MANAGED CONTROL	SYSTEM REQUIREMENTS AND ANALYSIS TEAM	TESTING AND TRAINING REQUIREMENTS TEAM	PLANS, INTEROPERABILITY, & CONTINGENCY CONTROL TEAM
5. FIELD SUPPORT (CONTINUED)	2. DEVELOP AND MANAGE TRAINING PROGRAM REQUIRED BY SYSTEM CHANGE (EXCEPT FOR NEW EQUIPMENT TRAINING (NET)).	1. DETERMINE TRAINING/RETRAINING DEVELOPMENT REQUIREMENTS.	2	Z	X	Z	X	Z
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	Z	X	Z	X	Z
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	Z	X	Z	X	Z
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	N	X	Z	X	Z
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	Z	X	X	X	Z
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	Z	X	X	X	Z
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	Z	X	X	X	Z
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	Z	X	X	X	Z
6. OTHER	1. JOINT AND INTER-NATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	Z	X	X	Z	X
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	Z	X	X	Z	X
		1. COORDINATE WITH MD IN PLANNING FOR REQUIRED PDSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	Z	X	Z	Z	X
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	Z	X	Z	Z	X
		1. SPECIFY PDSS RESPONSE REQUIREMENTS.	1	Z	X	X	Z	Z
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE PDSS UNDER VARIOUS SCENARIOS.	1	Z	X	X	Z	Z
		3. COORDINATE WITH THE MD IN PLANNING PDSS SUPPORT.	1	Z	X	X	Z	Z
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	Z	X	X	Z	Z
6. OTHER	3. SUPPORT TO CRISIS/WARTIME OPERATIONS.	5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	Z	X	X	Z	Z
		1. CONDUCT PERIODIC REEVALUATIONS OF BAS TO DETERMINE CONTINUED TACTICAL SUITABILITY AS CHANGES OCCUR IN THREAT, DOCTRINE, AND OPERATIONAL REQUIREMENTS.	3	N	X	X	Z	Z
		2. ASSESS CONTINUED TACTICAL SUITABILITY OF BAS.	3	N	X	X	Z	Z
		1. AUTOTIME AFTER PDSS PLANNING	3	N	X	X	Z	Z
		2. AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)	3	N	X	X	Z	Z
		3. AFTER FIELDING	3	N	X	X	Z	Z

X = Element is responsible
N = Element is not responsible

Figure 2-12. (concluded)

a. CDSM, Force Level and Maneuver Control. The CDSM, Force Level and Maneuver Control System, serves as the CD for software associated with the SIGMA System. He is responsible for managing and coordinating or performing all software-related actions within the CD PDSS role for SIGMA. He is the principal Field User's representative and the primary point of contact with the MD on PDSS matters affecting this system. Specific functions with which he is involved in either a management, coordination, or performance role are shown in Figure 2-12.

b. Plans, Interoperability, and Configuration Control Team. This team supports the CDSM, Force Level and Maneuver Control Systems in all actions associated with planning PDSS support for FC & MC BAS during both pre- and post-deployment phases of the system life cycle. The actions include planning for support, in coordination with the responsible MD, during contingencies and crisis/wartime. The team is also responsible for CD PDSS actions associated with system interoperability and configuration management to include participation with the cognizant TSM and/or CDSM in providing representation on appropriate configuration/control boards. The team coordinates with the CDSM in authorizing release of system change packages to the field.

c. System Requirements and Analysis Team. This team is responsible for all actions involving identification, analysis, and development of system functional change requirements and, in coordination with the CDSM FC & MC Systems and the cognizant TSM, stating these requirements to the MD. The source of these requirements may be any system User or cognizant CD organization. Analyses conducted by the team in examining matters such as system problems, proposed system changes, and the impact of conceptual changes in tactics or doctrine on systems may be manual, computer-assisted, or fully automated depending on the nature of the problem being addressed and the resources available.

d. Testing and Training Requirements Team. As suggested by its title, responsibilities of this team fall generally into two functional areas. With respect to testing, the team is responsible for planning, coordinating, and monitoring or conducting, all assigned CD actions associated with testing changes to FC & MC BAS. Accomplishment of these responsibilities involves working closely with the MD, OTEA, TCATA, and/or other designated test activities, as appropriate. The team is also responsible for determining the training impact of system changes and coordinating with the appropriate training developments organization(s) to initiate all actions necessary to satisfy training requirements.

4. Maneuver BFA proponentcy. As described in Paragraph c.(2)(c), above, CACDA responsibilities associated with proponentcy for the Maneuver BFA are divided among three separate directorates. Under the concept of this Objective PDSS System, each of these directorates would continue to have an interest in PDSS for BAS in the Maneuver BFA, consistent with their

current responsibilities. To ensure an integrated effort, the Objective PDSS System provides a focal point for coordination of PDSS-related activities for Maneuver BFA BAS within CACDA as well as with the associated centers and schools that have proponentcy for specific BAS. This focal point is the PDSS Coordination Element in the JINTACCS Branch, Army C²/JINTACCS Division of the C3I Directorate. This element is identified in Figure 2-11. The Objective PDSS System concept provides that each center and school, with proponentcy for one or more BAS in the Maneuver BFA, would designate a current BAS project officer as the CDSM for each BAS. These CDSM(s) would provide the point(s) of contact with which the CACDA PDSS Coordination Element would interact with respect to PDSS requirements involving specific BAS.

(e) Resources.

1. Personnel. Time phased estimates of personnel resources needed to establish this component of the Objective PDSS System are shown in Figure 2-13. A proposed breakout of these personnel requirements (based on FY 87 needs) by organizational element are shown in Figure 2-14.

2. Major items of equipment. The Army C² Development Branch requires interactive access to a computer at the Data Processing Field Office (DPFO), Fort Leavenworth, or elsewhere, to conduct simulations and support tests and other analyses conducted to support FC & MC systems. This computer access is also required to facilitate interaction with other TRADOC centers which support one or more control systems in the CCS² concept. Specific equipment required to provide this access and the capability required must be determined during detailed implementation planning.

3. Facilities. Physical facility requirements include office space for assigned personnel, a computer terminal area, and a simulation/test/analysis area that would accommodate up to 10 to 12 personnel working simultaneously.

4. Funds. An estimate of funds required for the civilian personnel requirements identified above is shown in Figure 2-15. Funds needed for equipment facilities are dependent upon development of specific requirements and plans addressing these areas as part of detailed implementation planning.

CACDA, ESTIMATED PERSONNEL REQUIREMENTS							
<u>PERSONNEL</u>	<u>FY 81</u>	<u>FY 82</u>	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
Required							
Military	2	4	6	7	9	11	19
Civilian	2	3	3	5	6	6	7
TOTAL	4	7	9	12	15	17	26
Authorized							
Military	1	3	4	5	7	9	14
Civilian	1	1	1	2	3	3	4
TOTAL	2	4	5	7	10	12	18
Additional Needed							
Military	1	1	2	2	2	2	5
Civilian	1	2	2	3	3	3	3
TOTAL	2	3	4	5	5	5	8

Figure 2-13. Personnel requirements, CACDA

PERSONNEL BREAKOUT BY ORGANIZATIONAL ELEMENT, CACDA					
<u>ELEMENT</u>	<u>TECHNICAL</u>		<u>ADMINISTRATIVE</u>		<u>TOTAL</u>
	<u>MIL</u>	<u>CIV</u>	<u>MIL</u>	<u>CIV</u>	
Army C2/JINTACCS Div CCS ² -PDSS					
Coordination	1	0	0	0	1
JINTACCS Branch					
Army Team					
• PDSS Coordination	1	1	0	0	2
• Plans, Interoperability, and					
Configuration Control	0	1	0	0	1
• Testing and Analytical Re-					
sources Coordination	0	1	0	0	1
C2 Development Branch	<u>17</u>	<u>2</u>	<u>—</u>	<u>2</u>	<u>21</u>
TOTAL	19	5	0	2	26

Figure 2-14. Breakout of personnel requirements, CACDA

CACDA, ESTIMATED PERSONNEL COSTS (\$000)*							
Fiscal Year							
	81	82	83	84	85	86	87
Civilian Personnel	63.2	94.8	94.8	110.8	142.4	142.4	168.4
* In FY 81 constant dollars. Based on average annual costs of \$31.6K, including 10 percent loading, for one technical civilian and \$16.0K for one administrative level civilian.							

Figure 2-15. Estimated personnel costs, CACDA

d. Communications.

(1) General. The Communications functional area is seen to extend over and into all of the other BFA-level components, because it is analogous to the central nervous system of the whole Army body of BFA-level components and their functions. The Communications functional area must effectively link together all the BFA-level components and their parts. It must "interoperate" with all and it must be capable of handling in a timely manner all of the essential traffic loads that are necessary for the various other BFA-level components to perform their functions adequately in an intense combat environment. If the Communications functional area does not do its job adequately, the other BFA-level components may be unable to do their jobs at all.

The principal systems in this functional area range from the Position Location Reporting System (PLRS), which uses time-of-arrival technology to spot up to 700 field units; through the more versatile PLRS/JTIDS Hybrid, which combines position determination with considerably greater communications capabilities, in secure digital form; automatic central office telephone and message switching systems; satellite communications relay systems; both message entry and output recording terminals; and, finally, general purpose automatic test equipment. Electronics and electrical engineering technology is heavily reflected in these systems, and essentially all of the newer systems in this area involve a substantial degree of automation, including embedded software and computer hardware. PDSS burdens which may be expected to fall upon the Signal Center are clouded by the fact that most of the significant BAS in this BFA are still emerging and essentially no PDSS experience exists from which to extrapolate.

The Signal Center must be prepared to face the issues of interoperability of the many systems tied together in the total system. The general trend toward greater automation of individual battlefield systems is presenting increasing requirements for larger volumes of traffic, especially digital traffic, at higher data rates and in much shorter response times. In Artillery and Air Defense BAS, seconds are critical, as opposed to the previously prevailing "real time" requirements of manual command and control in which time is measured in minutes to hours. These trends in digital data, time-compression, traffic, and interoperability requirements dictate a need to be able to dynamically simulate and analyze the total system since they suggest that small changes in connected BAS may have profound effects on the total system that are not predictable with the largely manual methods and tools of analysis that have been used traditionally. Small changes may dynamically impact very significantly on requirements for switching, load capacities, and procedures for management of the communication network. For analysis purposes, reliance on static load rates alone, from a source such as the COMSR data base, may be quite misleading. What is needed is a capability to simulate dynamically the total system, under a variety of conditions, including EW and EMP, various frequency management schemes and policies, structures, and loads, and see what happens. This capability needs to be sensitive to variations in characteristics, such as communication protocols and data link languages, to fully explore the interoperability aspects among

BAS and other systems and the network impact of changes in individual systems. Issues that also need to be addressable are survivability, and discrimination among types of information being handled, so that time-critical data reaches its destination soon enough and accountability is achieved for types of information requiring it. Since there is a limit to the degree of detail and resolution which can be provided in any single, total network simulation, higher-resolution simulations of parts of the network or separate subsystems will also be required. Such a capability, which is needed to come to grips fully with the fundamental PDSS issues, is also needed to perform effectively other functions in combat developments, training developments and even training itself. The latter is involved particularly because of the significant training issues related to frequency management, network management, and related policy implementation in the field.

(2) The current system. The focal point for providing PDSS to the BAS within the Communications Functional Area is the US Army Signal Center and Fort Gordon (USASC & FG). The organizational structure of the baseline system within USASC & FG which provides this PDSS is shown in Figure 2-16. As shown there, the TRADOC action level elements include personnel from three directorates, from the US Army Communications-Electronics Board, and from five TRADOC System Manager (TSM) Offices. Figure 2-17 shows the structure of the total TRADOC Baseline PDSS System for the Communications Functional Area.

(a) Functional responsibilities. The responsibilities of the organizational elements, shown in Figure 2-16, are many and varied. In the paragraphs which follow only those responsibilities which are related to PDSS for BAS within the Communications Functional Area are discussed.

1. US Army Signal Center and Fort Gordon. Included in the responsibilities of USASC & FG are the following:

- Develops and validates, through coordination with the User, communications-electronic (C-E) requirements for communications doctrine, equipment and materiel
- Acts as the US Army C-E User Representative in supporting force development objectives and activities by participating with the US Army combat development community, on studies, analyses, field experiments, tests, and life cycle management and evaluation
- Participates in the development and conduct of operational test and evaluations for C-E doctrine, communications systems, equipment and materiel
- Evaluates the life cycle assessment of all proponent materiel and training systems to ensure that optimum training, doctrinal and organizational concepts are being used.

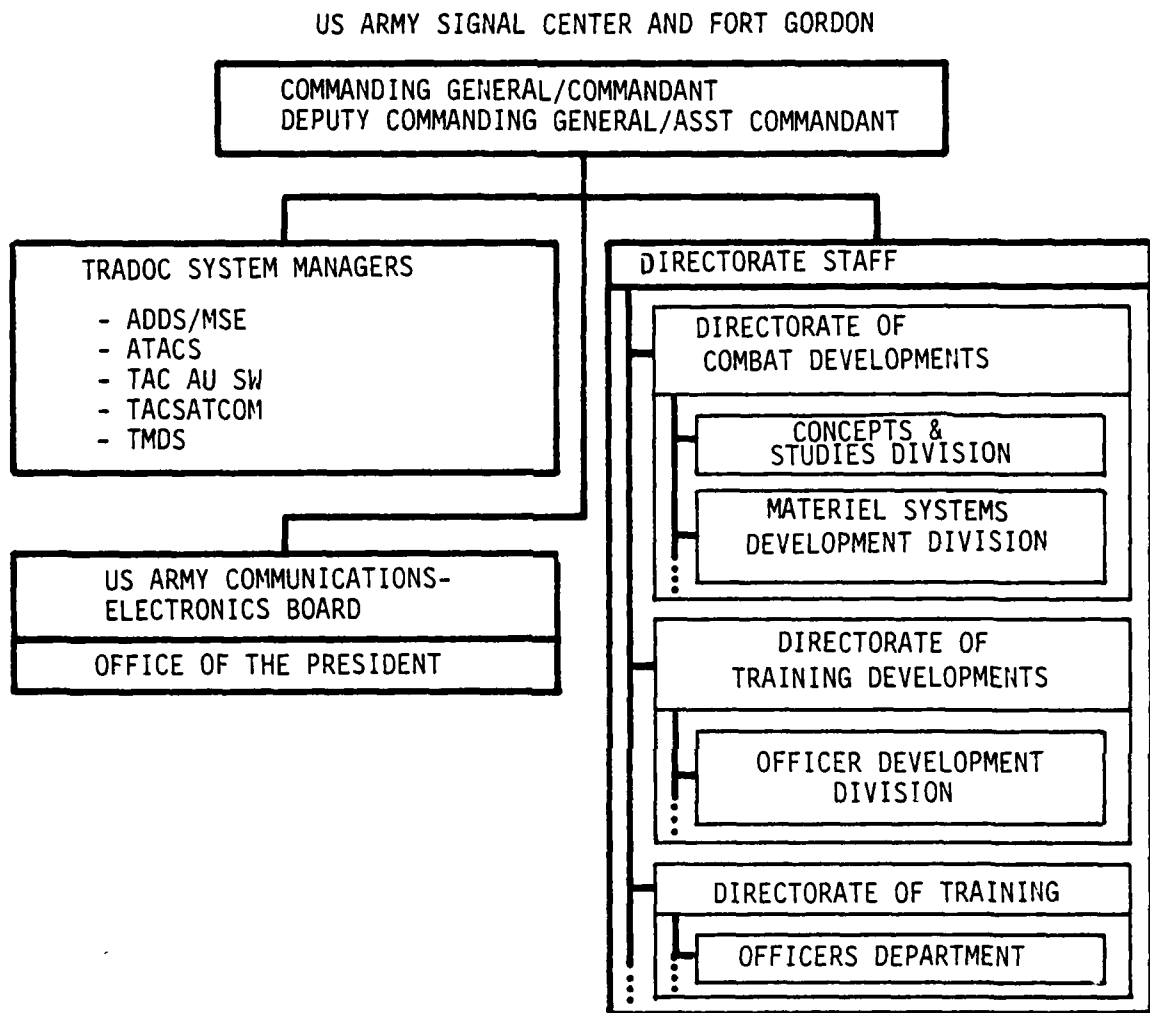


Figure 2-16. USASC & FG elements with primary responsibilities in the Baseline PDSS System

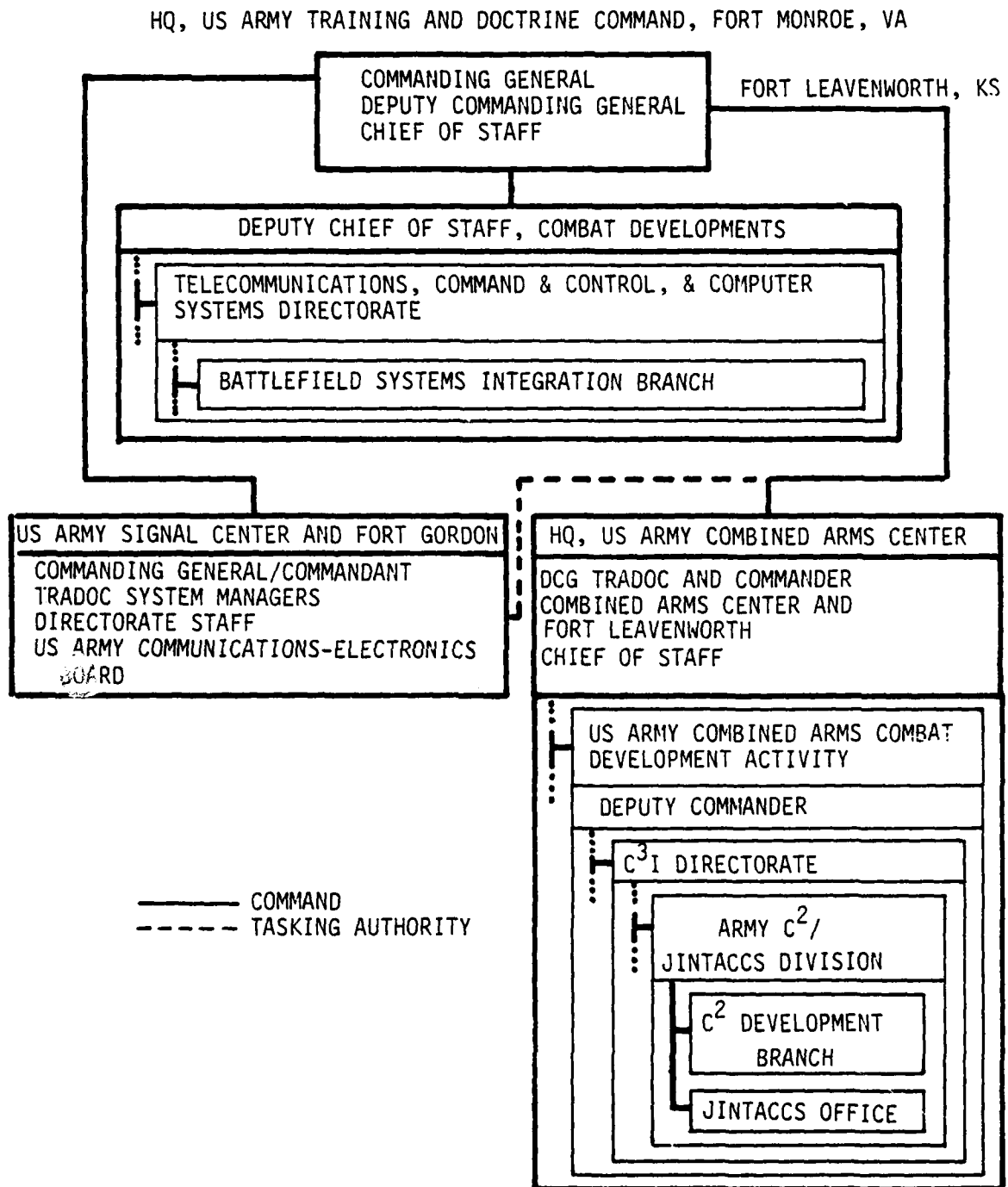


Figure 2-17. Overall TRADOC elements of Baseline PDSS System for the Communications Functional Area

2. Commanding General, USASC & FG. The Commanding General has the following responsibilities:

- Commands all elements of the US Army Signal Center, Fort Gordon
- Serves as the Commandant for the USASC training activities.

3. Concepts and Studies Division (C & S), Directorate of Combat Developments, USASC. Among this organizational element's many functions, those which may impact upon PDSS are as follows:

- Provides input to general functional systems requirements and detailed systems requirements for automated communications control systems
- Assists in determining requirements and preparing proposals for force development testing and experimentation and reviewing results
- Prepares, coordinates, and reviews international standardization agreements within assigned area of proponentcy
- Develops maintenance concepts and reviews the maintenance test package
- Maintains cognizance of computer simulation models used by communication system analyses in C-E system design, engineering, and evaluation.

4. Materiel Systems Development Division, Directorate of Combat Developments, USASC. This organization's PDSS responsibilities include:

- Serves as the USASC life cycle manager (Combat Developer) for all proponent developmental systems and is the principal USASC point of contact for those systems
- Maintains an up-to-date status and continuous evaluation of proponent systems and related conceptual, operational, organizational, training, testing and funding actions throughout the development cycle
- Acts as the USASC action agency for all life cycle development events which are not the functional responsibility of other USASC activities
- Prepares and keeps current the USASC historical files for each proponent system during its development.

5. Officer Development Division, Directorate of Training Developments, USASC. This office is responsible for the development of training materials which deal with tactical data systems.

6. Officers Department, Directorate of Training, USASC. The PDSS related activities of this department are concerned primarily with the training of officers in the use of automatic data processing equipment.

7. US Army Communications-Electronics (C-E) Board. The C-E Board at Fort Gordon is one of eight US Army test boards and as such is assigned the following missions under TRADOC Reg. 10-41:

- Plan, conduct, and report on operational and other user tests
- Participate in other testing as directed
- Provide advice and guidance on test matters to combat, training, and materiel developers, other services, and private industry
- Conduct other tests and selected evaluations as directed by CG TRADOC.

8. TRADOC System Manager (TSM) for Army Data Distribution System and Mobile Subscriber Equipment (ADDS/MSE). The mission, authority, and responsibilities of the TSM-ADDS/MSE are spelled out in the TRADOC System Manager Charter, Army Data Distribution System and Mobile Subscriber Equipment (ADDS/MSE), dated 16 November 1979. By this charter, his mission is to conduct total system management for ADDS and MSE within TRADOC. In terms of PDSS this TSM will be responsible for identifying and/or communicating doctrinal changes which necessitate enhancements in the system or which may represent a new requirement thereby requiring major software, firmware, or hardware changes.

9. TRADOC System Manager (TSM) for Army Tactical Communication Systems (ATACS). The mission, authority, and responsibilities of the TSM-ATACS are spelled out in a TSM Charter dated June 1978. By this Charter, his mission is to conduct total system management for ATACS within TRADOC. For these systems, TSM-ATACS is ensuring that User requirements are being satisfied in terms of operational and organizational concepts, hardware, software, training, fielding, and integrated logistical support.

10. TRADOC System Manager (TSM) for Tactical Automatic Switches (TAC AU SW). The TSM-TAC AU SW, operating under a TSM Charter, is conducting total system management within TRADOC for Tactical Automatic Switches. He is providing User representation for the AN/TTC-39, the AN/TYC-39, and the AN/TSQ-111(V).

11. TRADOC System Manager (TSM) for Tactical Satellite Communications (TACSATCOM). The TSM-TACSATCOM, operating under a TSM Charter dated 10 September 1978, is conducting total system management within TRADOC for Tactical Satellite Communications. All of the systems for which he currently is providing User representation are Category 3.

12. TRADOC System Manager (TSM) for Test Measurement Diagnostic Systems (TMDS). The TSM-TMDS was recently designated and does not yet have a formal charter from TRADOC although a draft charter has been approved. TSM-TMDS will conduct total system management within TRADOC for TMDS.

13. TRADOC System Manager (TSM) for Position/Navigation (TSM-POS/NAV). The TSM-POS/NAV is located at Fort Leavenworth. This TSM is responsible for conducting total system management within TRADOC for the NAVSTAR Global Positioning System (GPS), the Position Location Reporting System (PLRS), the Integrated Inertial Navigation System (IINS), the Light-weight Doppler Navigation System (LDNS), the Self-Contained Vehicle Land Navigation System (VLNS), and the Position and Azimuth Gyro, Lightweight (SIAGL). The functions of the TSM are stated in CAC & Fort Leavenworth Reg. 10-1, dated 1 August 1980.

(b) BAS to be supported. The Category 1 and 2 BAS to be supported at USASC & FG are listed in Figure 2-18. Included in parentheses behind each system name is the current life cycle status of that system.

(3) The Objective System.

(a) Purpose & scope. The Objective PDSS System described here is intended to provide those capabilities needed to adequately fulfill all Combat Developer PDSS responsibilities for battlefield automated systems (BAS) in the Communications Functional Area through 1987. This description is to serve as a blueprint which the US Army Signal Center (USASC) can follow and refine in its detailed PDSS implementation effort.

(b) Principal features. The Objective PDSS System proposed for the Signal Center can be characterized as adding the necessary PDSS capabilities with a minimum of new organizational structure. Wherever possible, these capabilities are added as an augmentation within the existing structure. The result incorporates features of both CD PDSS Generalized Models 1 and 2, illustrated in Figures 2-2 and 2-3. Principal augmentations and other changes needed to achieve the Objective PDSS System are:

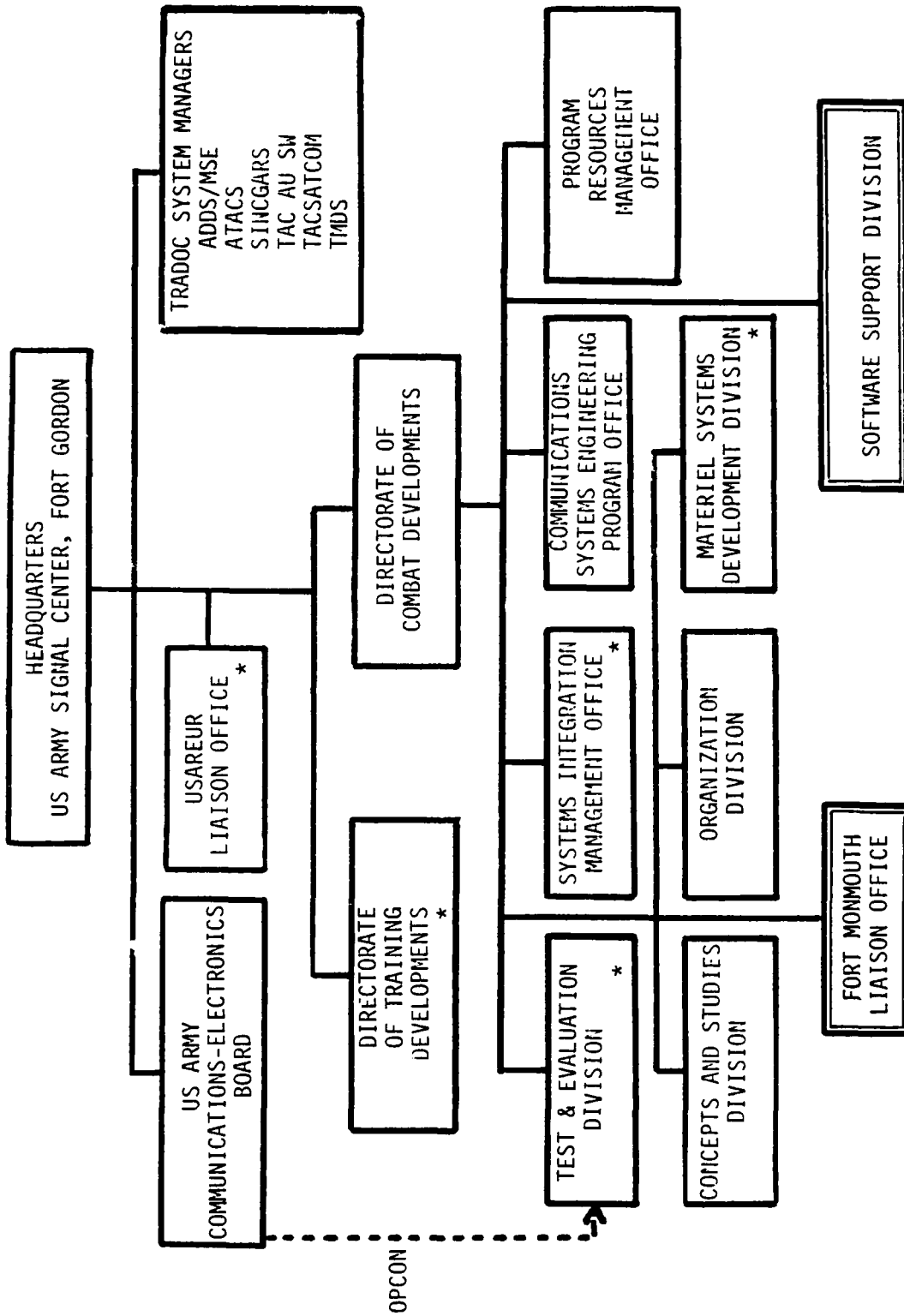
- Addition of a new division within the Directorate of Combat Developments. To be known as the Software Support Division, this organizational element will be dedicated to PDSS functions and will also provide a central focal point for PDSS actions which may be dispersed in other elements.

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USASC	PLRS--POSITION LOCATION REPORTING SYSTEM (FULL SCALE DEVELOPMENT)
USASC	JTIDS--JOINT TACTICAL INFOR- MATION DISTRIBUTION SYSTEM (FULL SCALE DEVELOPMENT)
USASC	PLRS/JTIDS HYBRID (VALIDATION)
USASC	DLDED--DIVISION LEVEL DATA ENTRY DEVICE (CONCEPTUAL)
USASC	AN/TTC-39--AUTOMATIC TELE- PHONE CENTRAL OFFICE (FULL SCALE PRODUCTION)
USASC	AN/TYC-39--AUTOMATIC MESSAGE SWITCHING CENTER (FULL SCALE PRODUCTION)
USASC	AN/UGC-74A(V)--MODULAR RECORD TRAFFIC TERMINAL (MRTT) (FULL SCALE PRODUCTION)
USASC	AN/TSQ-111(V)--COMMUNICATION NODAL CONTROL ELEMENT (CNCE) (FULL SCALE DEVELOPMENT)
USASC	AN/TTC-38--AUTOMATIC TELE- PHONE CENTRAL OFFICE (FULLY OPERATIONAL)
USASC	AN/MSM-105--TEST AND AUTO- MATIC REPAIR FACILITY (LOW RATE INITIAL PRODUCTION)

Figure 2-18. Principal systems requiring PDSS--Communications Functional Area

- Establishment of a liaison office at Fort Monmouth to ensure continuity of contact with the various key Materiel Developer and other organizations in that immediate area, and supplementing the TDY and other forms of contact and communication.
- Limited augmentation of the Materiel Systems Development Division. This augmentation will be that necessary to ensure that, between the personnel in this division and the TRADOC System Manager offices, a designated CDSM can be maintained for each system whose PDSS requirements warrant such a designated responsibility.
- Limited augmentation of the Systems Integration Management Office (SIMO) of DCD. This augmentation will ensure that PDSS functions which are closely related to those of SIMO can be effectively coordinated and performed under the SIMO organizational structure, as appropriate.
- Limited augmentation of the Test & Evaluation Division of DCD. This augmentation will ensure that PDSS test and evaluation needs, including User acceptance and other testing, can be effectively coordinated and participated in, as necessary, within this division.
- Limited augmentation of the Directorate of Training Developments. This augmentation will ensure that PDSS functions relating to training device requirements, training device software, and other aspects of training, can be effectively coordinated and performed within this directorate.
- Addition of one person (an O3 tactical communicator with expertise in software support) to the existing Liaison Office maintained by USASC at USAREUR. This individual will provide a coordination point for forward support, which will be handled primarily on a TDY basis with ad hoc teams from USASC.

(c) Structure. The proposed structure of the Objective PDSS System at USASC is outlined in Figure 2-19. In this figure, existing organizational elements to be augmented are marked with an asterisk, while new organizational elements are highlighted by double lines. Essentially all of the organizational elements outlined in Figure 2-19 are participants, to some degree, in carrying out PDSS responsibilities and functions. Such responsibilities are focused and coordinated, however, in the Software Support Division (SSD) shown at the bottom of that figure. Structure within the SSD is shown in Figure 2-20. This inner structure is designed to ensure (1) coordination of PDSS functions which can be performed in existing organizational elements (appropriately augmented), (2) performance of remaining PDSS functions, and (3) a nucleus of a facility, with computer and computer operations capabilities, which can be both used by other elements of DCD, as appropriate, and also serve for ad hoc collection of resources from various



LEGEND:

NEW ELEMENT

AUGMENTATION *

Figure 2-19. Overview of Objective PDSS System at USASC

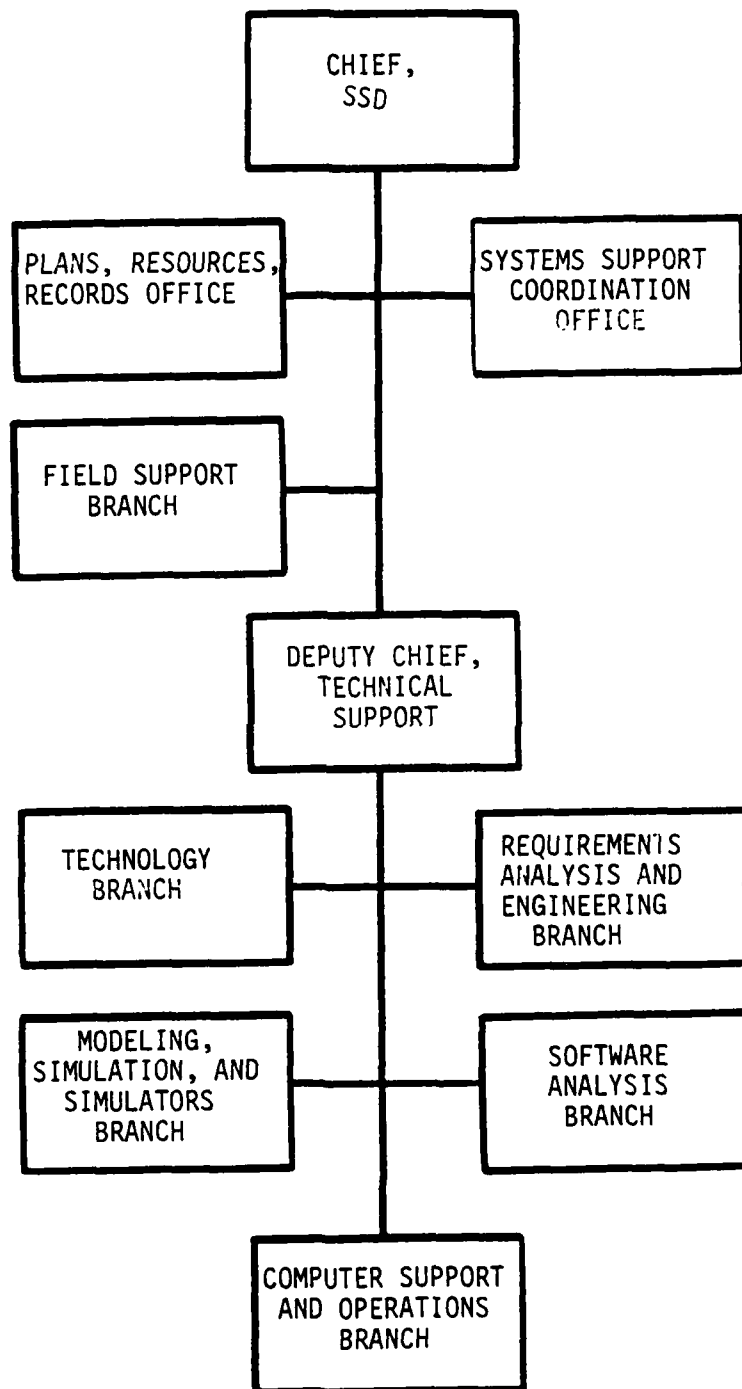


Figure 2-20. Software Support Division (SSD)

elements as may be necessary to address PDSS and PDSS-related issues of the various BAS. From Figure 2-20 it can be seen that the SSD contains the Chief, SSD, who has directly reporting to him the Deputy Chief, Technical Support, and the following three elements:

- Plans, Resources, Records Office
- Systems Support Coordination Office
- Field Support Branch

Reporting to the Deputy Chief, Technical Support, are the following five elements:

- Technology Branch
- Requirements Analysis & Engineering Branch
- Software Analysis Branch
- Modeling, Simulations, & Simulators Branch
- Computer Support & Operations Branch.

(d) Functional Responsibilities.

1. SSD. The overall mission of the Communications/Data Systems Software Support Division (SSD) is to ensure that all CD PDSS responsibilities and functions are adequately fulfilled for the Communications functional area. The SSD relies upon resources outside the SSD to perform a number of these functions, but retains a coordinating role with respect to those functions to ensure integrity of performance of needed functions. The SSD performs the remaining PDSS functions with its own resources, which include the nucleus of a Combat Developer Support Facility (CDSF) and also key analytical capabilities. These internal SSD resources are also available, as appropriate, to support system, system software development, and system life cycle management issues addressed by other elements of the Directorate of Combat Developments and the Directorate of Training Developments. The responsibilities of the elements of the SSD are outlined below.

a. Chief, SSD. The Chief, Communications/Data Systems Software Support Division, reports to the Director, Combat Developments and is responsible for carrying out the basic mission of the SSD, through both internal SSD and other resources at USASC, and by fostering a climate of cooperation with the various elements external to USASC with which the SSD must interface.

b. Plans, Resources, Records Office. The Plans, Resources, Records Office of the SSD reports to the Chief and is the focal point for determination of SSD workload requirements. This office is also

responsible for preparing and maintaining policies and plans for acquisition, separation, and effective use of all resources within the SSD, in coordination with other USASC resources. Included in this responsibility is ensuring that all appropriate educational and training avenues are effectively used in achieving and maintaining necessary skills among SSD personnel. This office will help ensure that both man-machine interface technology and configuration management policies are appropriately addressed in the work of the SSD, and will maintain all necessary official correspondence and other necessary records pertaining to BAS under purview of the SSD.

c. Systems Support Coordination Office. The Systems Support Coordination Office, in support of the Chief, SSD, maintains contact with the CDSMs designated for individual BAS, or groups of BAS, as may be appropriate, and thereby helps to facilitate the allocation of resources within the SSD and elsewhere at USASC to the PDSS needs of individual CDSMs. This office also is responsible for identifying BAS requiring designation of a CDSM, and will monitor the PDSS addressal of the various BAS in this functional area, for the purpose of making appropriate recommendations to the Chief, SSD.

d. Field Support Branch. The Field Support Branch is responsible for developing, coordinating, and maintaining plans for necessary field support of BAS under purview of the SSD. Such field support will include providing guidance to users of BAS, introducing change packages, and providing crisis or wartime support. This branch will provide limited resources, and will manage these, in coordination with other resources, to help fulfill necessary field support functions. This branch will provide essential travel and logistical support to traveling PDSS teams from USASC, and will maintain contact, as appropriate, with served user units or other facilities where field support is required. Generally, field visits will be on an ad hoc basis, with participants selected from various parts of SSD other parts of DCD, or from DTD, as needed. The introduction of software change packages and new equipment training (NET) is performed in conjunction with counterpart Materiel Developer teams.

e. Deputy Chief, Technical Support. The Deputy Chief, Technical Support, in addition to responsibilities which may be assigned, as required, by the Chief, SSD, is responsible for ensuring that technical, engineering, and analytical issues pertaining to the software of Communications BAS are properly addressed and that the necessary technical resources, within the following five branches under his direct control, are available and effectively applied. The Deputy Chief, Technical Support, will also assist in coordinating the use of other USASC resources toward fulfillment of the SSD mission, and will, as appropriate, make his own resources available for other USASC tasks.

f. Technology Branch. The Technology Branch is responsible for acquiring, maintaining, and analyzing current information in the areas of technology that could impact on BAS in the Communications functional area. The purpose of this analysis is to facilitate timely anticipation of impacts on these BAS and their doctrine, software, or software requirements.

g. Requirements Analysis & Engineering Branch. The Requirements Analysis & Engineering Branch is responsible for performing or effecting that analysis necessary to identify the requirements for software in Communications BAS and related simulators, and including support software, as may be appropriate. Such software requirements analysis will pertain to the earliest stages of PDSS planning for a BAS, as well as the later stages, including all significant changes proposed. This branch will also assist in and be the focal point for reduction of identified software requirements to document forms which can serve effectively to transmit requirements to the MD and others for coordination and implementation. Training software requirements associated with BAS are included in the responsibilities of this branch.

h. Software Analysis Branch. The Software Analysis Branch is responsible for performing or effecting necessary functional examination and analysis of software in or pertaining to BAS and simulators under the purview of the SSD. Such functional examination and analysis will have the objective of ensuring that the software in question performs the tactical functions intended by the user. This branch will make use of models, simulations, simulators, and manual analysis, as well as detailed examinations of the algorithms which implement tactics and doctrine, to achieve this objective. This branch will have the capability to perform such analyses as deemed necessary by the CDSMs and will be responsible for recommending areas for such analysis to the CDSMs and others. This branch will not duplicate the "verification and validation" work properly performed by the MD, but will obtain and take full advantage of such work, as necessary. Teams within this branch will specialize in particular BAS and will be responsive to the respective CDSMs. This branch will prepare appropriate records of the software analyses performed.

i. Modeling, Simulation & Simulators Branch. The Modeling, Simulation, & Simulators Branch provides a center of expertise in the conception, development and use of computerized models, simulations, system simulators, and necessary scenarios or driver equipment, and also the analysis of results of their use, to contribute to the analysis interests of the CDSMS and also other elements of USASC. A section within this branch will prepare appropriate scenarios in computer-input form. Skills required in this branch will include operations research, systems analysis, mathematics, electrical and electronic engineering, computer science, communications and Army communications management and related doctrine and tactics. Most of the personnel in this branch will be organized into teams, each of which will specialize in a particular BAS and be responsive to the respective CDSM. A section in this branch will be devoted to anticipating analysis requirements and recommending analysis approaches and techniques to the CDSMs and others.

j. Computer Support & Operations Branch. The Computer Support & Operations Branch is to be the nucleus for a Combat Development Support Facility (CDSF). This branch is responsible for the acquisition, maintenance and disposal of all necessary computer resources local to the SSD plus the arrangement or coordination of all external computer resources

utilized by the SSD. Such resources include computers, peripheral equipment, tapes or other storage devices, terminals and related equipment, key aspects of the physical facility housing such equipment, models, simulations, and support software for SSD research and analysis activities, plus personnel needed for operation and maintenance of equipment, models/simulations, and other related software, and non-BAS software documentation. This section will include a model maintenance element, which will assist in the writing and modification/maintenance of needed models/simulations and a support software element, which will provide expertise, software utilities, and other items of software which may be needed to support the work of the SSD.

2. Other elements. In this Objective PDSS System, other elements of USASC assume significant PDSS responsibilities. These and other elements are discussed below.

a. US Army Communications-Electronics Board. The US Army Communications-Electronics Board, having operational control over the Test & Evaluation Division of DCD, assumes responsibility for coordination of, and necessary participation in, testing of BAS within the purview of the SSD.

b. Test & Evaluation Division. The Test and Evaluation Division of DCD, which functions under the operational control of the C-E Board, is responsible for maintaining schedules and records of all significant testing performed or to be performed at all locations on BAS under the purview of the SSD. This division provides a nucleus of skilled personnel for participation in planning, observation, and analysis of system tests. This division also provides advice and assists in tests that may be conducted with SSD and other DCD or DTD resources. Within this division, teams will be formed to specialize in individual BAS, as appropriate. The work of this division will be facilitated by the efforts of the BAS PDSS test & evaluation resources coordination element to be established at CACDA.

c. USAREUR Liaison Office. The USASC Liaison Office at USAREUR will be augmented to assume a local contact, coordination, and continuity point for forward support of Communications BAS. Forward support will nevertheless be performed primarily on a TDY basis by teams from USASC, formed on an ad hoc basis.

d. TRADOC System Manager Offices. The TRADOC System Manager Offices at USASC contain personnel from among whom candidates may be selected to serve as CDSMs of BAS with which they are thoroughly familiar. (The other principal source of CDSM candidates is the Materiel Systems Development Division of DCD.) Designation of a CDSM must be concurred in by the Chief, SSD. The CDSM is a focal point for all PDSS activities pertaining to his particular BAS and is also a principal interface point for all external and internal communication regarding software in that BAS. The CDSM is specialized in knowledge of his particular BAS. He fosters similar knowledge among members of the systems teams devoted to that BAS among the various tactical and technical functional elements of the Objective PDSS System, such as concepts and studies, field support, requirements analysis, and test and

evaluation. Under the matrix organization concept he is the system manager for the activities of those team members devoted to his BAS. He is responsible, in conjunction with the TRADOC System Manager, if any, for seeing that the software of his BAS contributes most efficiently to overall system effectiveness and readiness, and he is concerned with this systems software, from User requirements through User acceptance testing and subsequent system modifications and adjustments, to include training software and User guidance on employment.

e. Materiel Systems Development Division. The Materiel Systems Development Division of DCD, provides, similar to the TSM offices, a source of candidates for selection as CDSMs of BAS with which they are thoroughly familiar. The discussion of CDSMs given in the preceding paragraph applies also here.

f. Directorate of Training Developments. Little change from the Baseline System is seen in the responsibilities of the Directorate of Training Developments (DTD) and its elements, in the Objective System. Close cooperation between DTD and the SSD will be essential to take full advantage of the analytical capabilities for PDSS provided in SSD.

g. Systems Integration Management Office. The Systems Integration Management Office of DCD assumes responsibility for interoperability analysis and engineering of Communications BAS in the Objective PDSS System. This responsibility involves performing or effecting the necessary detailed examination and analysis of interoperability capabilities and limitations of BAS under the purview of the SSD. This office will maintain a detailed and up-to-date awareness of the interoperability requirements and characteristics of all BAS with which the SSD BAS may interface or impact upon. Within this framework, this office has the principal objective of ensuring that potential interface problems are anticipated as early as possible in the BAS development life cycle, that, as BAS design and development proceeds, these interfaces are properly accommodated, and that, at later stages, BAS code properly performs the necessary interface functions and that changes in any of the interoperating systems are continuously monitored and evaluated for impact. As appropriate, this office will organize teams to support the CDSM-managed BAS. The analytical capabilities resident in the SSD, particularly in the area of simulations and simulators, will support these efforts as appropriate.

h. Concepts & Studies Division. The Concepts & Studies Division of DCD assumes responsibility for providing a local center of expertise and information on the detailed, system-peculiar tactics and doctrine of system employment and operations of the relevant Communications BAS, based upon the broad communications doctrine provided by the Directorate of Training and Doctrine at USASC, and also upon general doctrine of the Army and other Services. This division is responsible for coordinating with other centers of doctrinal/conceptual information and developments in the Army and other Services, to ensure that both established and advanced concepts can readily interplay in the analyses focused in the elements of the Objective

PDSS System. Within this division a team may be formed, as appropriate to concentrate on each of the principal communications BAS and to provide necessary assistance in this functional area to the CDSM of that BAS.

i. CACDA and other elements. At Fort Leavenworth, responsibilities of CACDA are consistent with those enunciated above, involving the Force Level Control System and the JINTACCS Office, and the two BAS PDSS coordination elements, one for analysis resources and one for test and evaluation resources. Through the first of these elements, a variety of analytical resources may be available for assistance, such as in the Combined Arms Studies and Analysis Activity (CASAA) at Fort Leavenworth, CACDA's Scenarios & Wargames Directorate, TRADOC Systems Analysis Activity (TRASANA) at White Sands Missile Range, Concepts Analysis Agency (CAA) of DCSOPS, and DARCOM's Battlefield Systems Integration Directorate (BSI), at Alexandria, and Army Materiel Systems Analysis Agency, at Aberdeen. Test and evaluation resources whose availability may be coordinated, as appropriate, through the second element include, for example, the Tactical Interoperability Support Element (TISE) and TCATA at Fort Hood, the Joint Test Element (JTE) and the Modular Automated Integrated Systems Interoperability Test and Evaluation (MAINSITE) at Fort Huachuca, and NTC (Fort Irwin).

(e) Estimate of Resource Requirements. Estimates of resources required by the Objective PDSS System for the Communications functional area are provided in the following paragraphs for personnel, major items of equipment, facilities, and funds. These estimates are time-phased for the fiscal years 81-87, where possible.

1. Personnel. Personnel required by the Objective PDSS System at the USASC have been estimated by the study team. These estimated personnel requirements are based on consideration of the functions of each new organizational element within the SSD and also the PDSS and related functions added to the various existing organizational elements at USASC. The resulting total requirements numbers shown in the top portion of Figure 2-21 include only those requirements within the Directorate of Combat Developments (DCD). Requirements of other elements are indicated in the footnotes to that figure. Authorized personnel numbers shown in the middle of the figure are similarly restricted to DCD. The last portion of this figure shows additional personnel needed (required minus authorized). For FY 87, a breakout of personnel by major element in the SSD is shown in Figure 2-22.

2. Major Equipment. A very preliminary identification of major equipment items is shown in Figure 2-23.

3. Facilities. A very preliminary estimate indicates that new facilities may be required for 50 people and the computer equipment and work area, for a total of 13,000 sq. ft.

4. Funds. A very preliminary estimate of DCD funding needed to establish and operate the Objective PDSS System at USASC is based on the preceding estimates and is shown in Figure 2-24. Requirements of elements outside DCD are not included.

COMMUNICATIONS, ESTIMATED PERSONNEL REQUIRED							
PERSONNEL	<u>FY 81</u>	<u>FY 82</u>	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
Required							
Military	22	24	27	30	32	33	33
Civilian	16	17	19	21	22	22	22
TOTAL	38	41	46	51	54	55	55
Authorized							
Military	0	0	0	0	0	0	0
Civilian	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0
Additional Needed							
Military	22	24	27	30	32	33	33
Civilian	16	17	19	21	22	22	22
TOTAL	38	41	46	51	54	55	55

Figure 2-21. Estimated personnel required, Objective PDSS System, Communications functional area

<u>ELEMENT</u>	<u>MANAGERIAL AND TECHNICAL</u>		<u>CLERICAL AND TECHNICIANS</u>		<u>TOTAL</u>
	<u>MIL</u>	<u>CIV</u>	<u>MIL</u>	<u>CIV</u>	
Office of the Chief, SSD	1	0	0	1	2
Plans, Resources, Records Office	1	1	1	0	3
Systems Support Coordination Office	1	0	1	0	2
Field Support Branch	3	1	1	1	6
Office of Deputy Chief, Technical Support	0	1	0	1	2
Technology Branch	0	1	1	0	2
Requirements Analysis & Engineering Branch	2	2	2	0	6
Software Analysis Branch	1	3	1	0	5
Modeling, Simulation & Simulators Branch	2	4	3	0	9
Computer Support & Operations Branch	1	3	5	1	10
LNO, Fort Monmouth	1	0	0	0	1
TOTAL SSD	<u>13</u>	<u>16</u>	<u>15</u>	<u>4</u>	<u>48</u>
Augmentation of Existing Elements:					
LNO, USAREUR	1	0	0	0	1
Directorate of Training Devel., USASC	0	1	0	0	1
Test & Evaluation Div., DCD	1	1	0	0	2
Systems Integration Mgt. Office, DCD	1	1	0	0	2
Materiel Systems Devel. Div., DCD	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>
TOTAL AUGMENTATION	<u>5</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>8</u>
GRAND TOTAL, USASC	<u>18</u>	<u>19</u>	<u>15</u>	<u>4</u>	<u>56</u>
DCD PORTION OF GRAND TOTAL	18	18	15	4	55

Figure 2-22. Estimated personnel required, by element, FY 1987

SECURE TERMINAL TO TRADOC COMPUTER AT FORT LEAVENWORTH

COMPUTER & PERIPHERAL EQUIPMENT:

- 2 - VAX 11/780, sharing extra 900K memory
- 1 - Line Printer
- 1 - Disk Unit
- 2 - Tape Drives
- 1 - Card Reader
- 4 - Console/Terminal

Figure 2- 23. Preliminary identification of major equipment required, Objective PDSS System, Communications functional area

COMMUNICATIONS, ESTIMATED COSTS (\$000)*							
	Fiscal Year						
	81	82	83	84	85	86	87
Development (RDT&E)	100	200	500	500	400	300	300
Procurement (PA)	0	0	325	50	100	50	50
Construction	0	0	1650	0	0	0	0
Operations & Maintenance (OMA):							
Civilian Salaries	474	500	555	605	665	665	665
Building Modifications	0	50	50	25	25	0	0
Travel & Other	20	40	60	60	70	70	70
TOTAL	<u>594</u>	<u>790</u>	<u>3140</u>	<u>1240</u>	<u>1260</u>	<u>1085</u>	<u>1085</u>

*Constant FY 81 dollars.

Figure 2-24. Estimated funding required, Objective PDSS System, Communications functional area

e. Fire Support BFA.

(1) General. The US Army Field Artillery Center, Fort Sill, is the proponent for this BFA. Within the Field Artillery Center, the mission and functions associated with the Combat Developer's role in system development and life cycle management, to include PDSS, are primarily the responsibility of the US Army Field Artillery School. Organizational elements principally involved in fulfilling these responsibilities are shown in Figure 2-25. They include the Tactical Data Systems Division, Combat Developments Directorate; the Computer Test and Technical Support Division of the US Army Field Artillery Board; and three TRADOC System Managers. The Objective PDSS System proposed for this BFA builds upon this existing organizational structure and the current capability and provides the improved capability needed to fulfill the increasing CD responsibilities for providing PDSS to BAS in this BFA through the mid- to late-1980s. This improved capability is achieved primarily through the expansion and enhancement of the structure and capabilities of the Tactical Data Systems Division to form a CDSF, generally following Model 1, illustrated in Figure 2-2. This CDSF will provide the focal point for addressing all PDSS requirements of concern to the Fire Support BFA. This includes coordination and interaction with the Materiel Developer-managed PDSS Centers that support BAS in this BFA. These MD-managed Centers include the CORADCOM PDSS Center at Ft Sill, the ERADCOM and AVRADCOM PDSS Centers at Fort Monmouth, the ARRADCOM PDSS Center at Picatinny Arsenal, and the MICOM PDSS Center at Redstone Arsenal.

(2) The current system. The current system for accomplishing CD PDSS responsibilities in this BFA is described in general terms above. Organizational elements principally involved with this system are those shown in Figure 2-25. The PDSS-related functional responsibilities of these organizations and the BAS supported are discussed in the paragraphs that follow.

(a) Functional responsibilities.

1. US Army Field Artillery School (USAFAS). The principal PDSS related responsibilities of USAFAS are to:

- Participate in the review of doctrine, organization, and equipment for which training responsibility has been assigned, including the development of training plans to support new items of materiel, new organizations, or new tactical and technical concepts
- Review and evaluate new or revised doctrine, tactics, and techniques prepared by other Army agencies or other services, as appropriate
- Serve as the User proponent throughout the life cycle of Field Artillery system materiel. Serve as spokesman for the Field Artillery in qualitative interpretations and definitions in support of the materiel development community

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US ARMY FIELD ARTILLERY CENTER AND FORT SILL

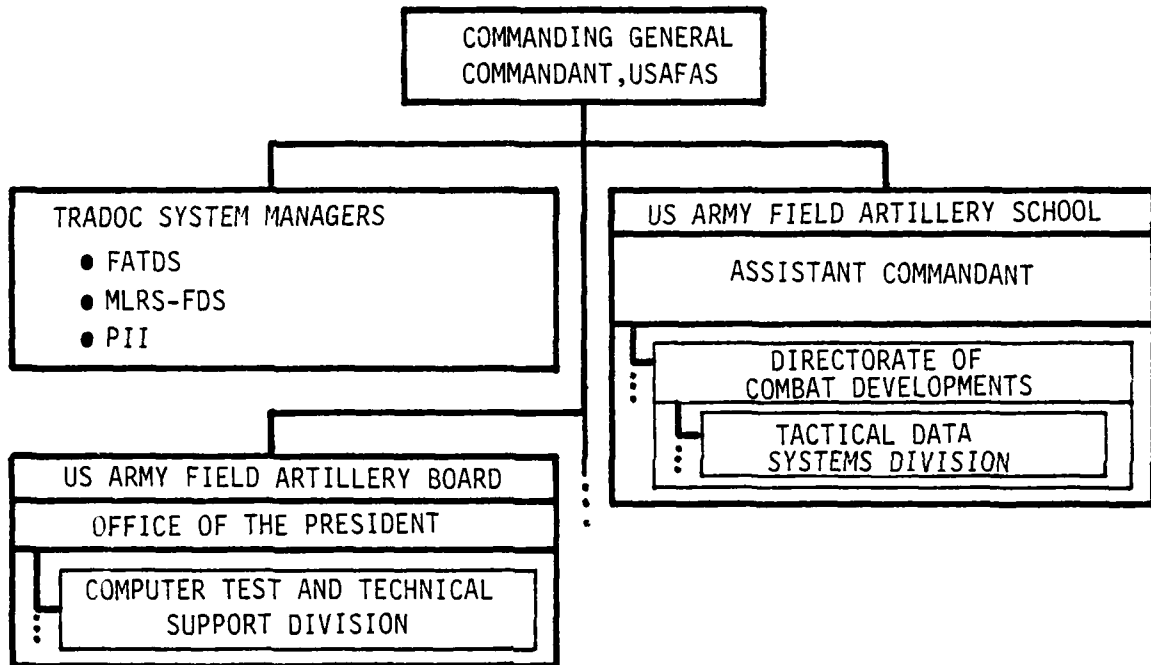


Figure 2-25. USAFACFS elements with primary responsibilities in the current PDSS System

- Serve as the principal Field Artillery advisor to the Commander, TRADOC.

2. The Tactical Data Systems (TDS) Division, Combat Developments (CD) Directorate USAFAS. This organization has maintenance and support responsibilities for all Field Artillery systems which have reached Initial Operating Capability (IOC). Included in these responsibilities is the front-end evaluation and definition of, and establishment of requirements for, system changes to meet User needs before release to the Materiel Developer. The TDS-CD also analyzes and develops requirements for training devices and procedures for fielded BAS as software changes occur.

3. US Army Field Artillery Board (USAFABD). The PDSS related responsibilities of USAFABD are as follows:

- Plan, conduct, and report on Operational Test I, Operational Test II, Operational Test III, and any other User type tests of Field Artillery materiel
- Participate in Development Test I, Development Test II (Engineering Phase), and Development Test III as directed
- Provide advice and guidance on test and evaluation matters to materiel developers, materiel producers, other services, and private industry
- Conduct other tests and evaluation as directed by Commander, TRADOC.

On 10 August 1977, the USAFABD was designated by HQ TRADOC (via TRADOC Msg, ATCD-TM, 101918Z Aug 77, subject: TACFIRE Tape Validation) as the responsible agency for User validation of TACFIRE system master tapes developed by the DARCOM TACFIRE Software Support Center, Fort Sill. In accordance with this tasking, the Software Validation Branch, Test and Technical Support Division, USAFABD, has been performing acceptance testing of new TACFIRE software releases. Depending on requirements, this testing has been or can be operational testing, developmental testing, or command post exercise oriented. In addition to its testing responsibilities, this organization is also a member of the local Software Configuration Control Board.

4. TRADOC System Manager (TSM), Field Artillery Tactical Data Systems (FATDS). The mission, authority, and responsibilities of the TSM-FATDS are spelled out in the TRADOC System Manager Charter, Field Artillery Tactical Data Systems (FATDS), dated 1 November 79. By this charter, his mission is to "conduct total system management within TRADOC for FATDS to include TACFIRE, Battery Computer System (BCS), Digital Message Device (DMD), and other follow-on system enhancements". One of the responsibilities of the TSM-FATDS which is delineated in that charter is "managing the TRADOC aspects of Post-Deployment Software Support (PDSS) for FATDS and other Field Artillery

systems requiring software support". Included in these PDSS duties is coordination with other organizations to ensure that plans for training, personnel, logistics, testing, and new doctrine/tactics are timely and fully integrated into the materiel development program.

5. TRADOC System Manager (TSM), Multiple Launch Rocket System (MLRS)-Fire Direction System (FDS). The TSM-MLRS monitors overall management of the MLRS-FDS during production and deployment phases. He acts as User representative in the writing of the Computer Resources Management Plan (CRMP) for MLRS-FDS. He ensures User participation in all Engineering Change Proposals (ECP). In addition, the TSM-MLRS participates as a principal member on the TACFIRE/MLRS Executive Committee dealing with all aspects of TACFIRE-FDS interoperability.

6. TRADOC System Manager (TSM), Pershing II Tactical Missile System (PII). The TSM-PII conducts total system management within TRADOC for the Pershing II. Due to the life cycle status of the PII, he currently has no PDSS activities.

(b) BAS to be supported. The Category 1 and 2 BAS to be supported at USAFAS are listed in Figure 2-26. Included in parentheses behind each system name is the current life cycle status of that system. In addition to these BAS, there are 14 Category 3 BAS, listed in Appendix C, for which the USAFAS is proponent.

(3) The Objective System.

(a) Purpose. The purpose of the Objective PDSS System described in this paragraph is to provide the USAFAS the capability to adequately fulfill its currently known CD PDSS responsibilities through the mid- to late-1980s.

(b) Principal features and structure. The Objective PDSS System proposed for the Fire Support BFA can be characterized generally as an expansion and enhancement of the existing structure and capability of the Directorate of Combat Developments, USAFAS, to accomplish PDSS functions that are the responsibility of the CD. This is accomplished primarily through the augmentation and expansion of the Tactical Data Systems Division to establish, staff, manage, and operate a CDSF. The US Army Field Artillery Board is also augmented in this Objective System to provide an improved capability to conduct and support testing requirements. The structure of the expanded Tactical Data Systems Division and the relationship of this organization, and the CDSF which it operates, to other elements of the US Army Field Artillery Center and School are shown in Figure 2-27. As indicated, elements of the Tactical Data Systems Division include:

- A division headquarters element in which the division chief is also designated the Chief, CDSF. The TSM, FATDS holds these titles in addition to his TSM designation.

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USAFAS	AN/GSG-10(U) --TACTICAL FIRE DIRECTION SYSTEM (TACFIRE) (PARTIALLY FIELDDED)
USAFAS	AN/GYK-29--BATTERY COMPUTER SYSTEM (BCS) (DTII)
USAFAS	PERSHING II--TACTICAL MISSILE SYSTEM (DT/OTI)

Figure 2-26. Category 1 and 2 systems requiring PDSS - Fire Support BFA

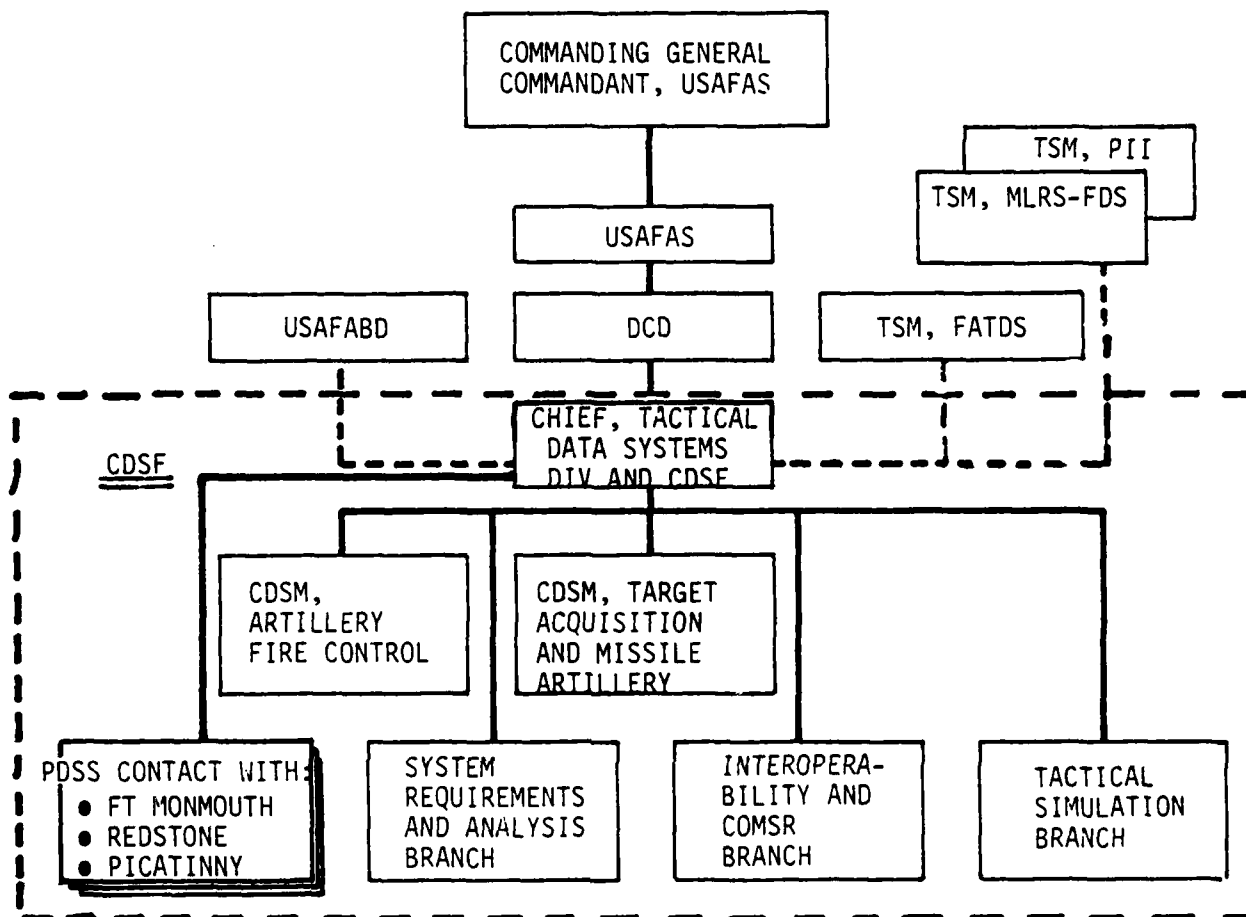


Figure 2-27. PDSS organizational structure, USAFACFS

- Two CDSMs responsible for coordinating PDSS support for two groups of Fire Support BFA BAS -- (1) Artillery Fire Control and (2) Target Acquisition and Missile Artillery
- Three operating branches as shown in Figure 2-27 for handling CD PDSS actions
- Resources for establishing and maintaining contact/liaison with MD-managed PDSS Centers at Redstone Arsenal, Fort Monmouth, and Picatinny Arsenal that will be supporting Fire Support BFA BAS.

(c) Operating concept. The concept of operations associated with this Objective PDSS System at the US Army Field Artillery Center envisions that PDSS will continue to be performed by the Tactical Data Systems Division under cognizance of the Director of Combat Developments. TRADOC System Managers, the Directorate of Training Developments, and the US Army Field Artillery Board will participate in this PDSS effort in their respective areas of functional responsibility. The focal point for this total effort will be the CDSF operated by the Tactical Data Systems Division. Primary responsibility for a PDSS action would rest with the CDSM having cognizance for the BAS being addressed. Each element of the CDSF would perform those PDSS functions for which it is responsible, in support of and under the staff coordination of the cognizant CDSM.

(d) Functional responsibilities. Under the concept of this Objective PDSS System, the overall PDSS responsibilities of the USAFAS to include the Directorate of Combat Developments, and those of the US Army Field Artillery Board and each of the TSMs would remain essentially the same as discussed in Paragraph e.(2)(a), above. Functional responsibilities of the Chief, Tactical Data Systems Division and each element of this division, which form the staffing of the CDSF, are discussed in the paragraphs that follow.

1. Chief, Tactical Data Systems Division and Chief, CDSF. Chief, Tactical Data Systems Division, Directorate of Combat Developments Department, USAFAS, is designated Chief, Combat Developments Software Support Facility. As Chief, Tactical Data Systems Division, he plans, directs, and manages all administrative and functional activities of the division. As the Chief of the CDSF at Fort Sill, he plans, directs, and supervises the operation of the CDSF in accomplishing its PDSS responsibilities for BAS in the Fire Support BFA. He establishes priorities and allocates CDSF resources to address requirements for support of all BAS functioning as a part of the Fire Support BFA. He serves as the primary point of interface with the Chief, TACFIRE/FATDS Software Support Group, and with the President, US Army Field Artillery Board for validation and acceptance testing of changed software. Specific functions of the Chief, CDSF are shown in Figure 2-28. The Chief, Tactical Data Systems Division, must coordinate all software interoperability requirements which originate from TRADOC Systems Managers of the developmental Materiel BAS functioning as a part of the Fire Support BFA.

2. CDSM, Artillery Fire Control (AFC). This CDSM serves as the CD manager for all PDSS activities associated with artillery fire control systems. Included in this group are one Category 1 system (TACFIRE/FATDS) and one Category 2 system (BCS), and five Category 3 systems. The CDSM, AFC is the system software Combat Developer and the principal User's representative for these systems. As such, he is responsible for planning, programming, and coordinating those PDSS functions to be performed by the CDSF in support of his systems. Specific functions with which he is involved in either a management, coordination, or performance role are listed in Figure 2-28.

3. CDSM, Target Acquisition and Missile Artillery. This CDSM serves as the CD manager for all PDSS activities associated with target acquisition systems and missile artillery systems. Included in this group is one Category 2 system (Pershing II) and nine Category 3 systems. The PDSS responsibilities and functions of this CDSM are the same as those described previously for the CDSM, Artillery Fire Control except for variations imposed by differences in system types and quantities. Specific functions of this CDSM are shown in Figure 2-28.

4. System Requirements and Analysis Branch. This branch of the CDSF is responsible for all actions involving identification, analysis, and development of system functional change requirements and, in coordination with the two CDSMs, stating these requirements to the MD. The source of these requirements may be any system User or cognizant CD organization. Analyses conducted by this branch in examining matters such as system problems, proposed system changes, and the impact of conceptual changes in tactics or doctrine on these systems may be manual, computer-assisted, or fully automated. Specific functions included in the responsibilities of the System Requirements and Analysis Branch are shown in Figure 2-28.

5. Interoperability and Communications Support Requirements (COMSR) Branch. The responsibilities of this branch focus on two major subject areas. The first area is interoperability. In this area, the branch analyzes the impact of functional changes on the interoperability of the system. It identifies interoperability change requirements which result from either changes to a fire support BAS or changes to another system with which the fire support BAS must interoperate. The second area of responsibility for this branch concerns communications support requirements (COMSR). In this area, the branch establishes and maintains requirements for communications between target acquisition systems and fire control systems and with external systems. It also analyzes the impact of adding new target acquisition or fire control systems to its communications network.

6. Tactical Simulation Branch. This branch of the CDSF has responsibility for preparing and conducting all simulations needed by the CD during front-end requirements analysis. Preparation of the simulations may include the design and development of experimental software to test basic

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	CHIEF, TAC DATA SYS/	CHIEF, COSE	CDSM, ARTILLERY FIRE CONTROL	CDSM, TARGET ACQUISITION	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY AND COMSR BRANCH	TACTICAL SIMULATION BRANCH	USAFABD	TSM FATDS	TSM PERSHING II
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP. 2. PROVIDE REPRESENTATION ON THE CHRG. 3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X	X	X	X	X	X	X	X	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB. 2. PROVIDE REPRESENTATION ON EACH BAS SSCB. 3. PROVIDE REPRESENTATION ON EACH BAS FSCB. 4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS CONCEPT.	2	X	X	X	X	X	X	X	X	X	X
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES). 2. PLAN AND PROGRAM FOR RESOURCES. 3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	X	X	X	X	X	X	X	X
2. ANALYSIS	1. PERFORM ANALYSTS OF BAS SOFTWARE PROBLEM REPORTS.	1. IN CONJUNCTION WITH MD, DETERMINE IF SOURCE OF PROBLEM IS FUNCTIONAL OR TECHNICAL. 2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM. 3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS. 4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD. 5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	X	X	X	X	X	X	X	X	X	X
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER. 2. EXAMINE BASIS FOR REQUIREMENT. 3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALUATED REQUIREMENTS. 4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	X	X	X	X	X	X	X	X	X	X
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS. 2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	X	X	X	X	X	X	X	X	X	X

Figure 2-28. Assignment of functions, Objective PDSS System, Fire Support BFA (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	CHIEF, TAC DATA SYS/CHIEF, CDSF	CDSM, ARTILLERY FIRE CONTROL	CDSM, TARGET ACQUISITION	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY AND COMSR BRANCH	TACTICAL SIMULATION	USAFABD	TSM FATDS	TSM PERSHING II
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	Z	X	X	X	X	X	Z	Z	Z
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	Z	X	X	X	X	X	Z	Z	Z
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	3. IDENTIFY TRAINING IMPACT.	2	Z	X	X	X	X	X	Z	Z	Z
		4. IDENTIFY LOGISTICAL IMPACT.	2	Z	X	X	X	X	X	Z	Z	Z
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	Z	X	X	X	X	X	Z	Z	Z
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	Z	X	X	X	X	X	Z	Z	Z
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	Z	X	X	X	X	X	Z	Z	Z
		1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	Z	Z	Z	X	Z	Z	Z	X	Z
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	Z	Z	Z	X	Z	Z	Z	X	Z
		3. PROVIDE REQUIREMENT TO MD.	2	X	Z	Z	X	Z	Z	Z	X	Z
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	X	Z	Z	X	Z	Z	Z	X	Z
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	X	Z	Z	X	Z	Z	Z	X	Z
		11. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	X	Z	Z	Z	Z	X	X	Z	Z
		12. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	Z	Z	Z	Z	Z	X	X	Z	Z
		13. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	Z	Z	Z	Z	Z	X	X	Z	Z
		14. MONITOR DEVELOPMENT TEST (DT).	2	X	Z	Z	Z	Z	X	X	Z	Z
		15. PARTICIPATE AS TASKED BY MD IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	Z	Z	Z	Z	Z	X	X	Z	Z
		16. PLAN AND CONDUCT OTHER SYSTEM OT.	2	X	Z	Z	Z	Z	X	X	Z	Z
		17. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING.	2	X	Z	Z	Z	Z	X	X	Z	Z
		18. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	X	Z	Z	Z	Z	X	X	Z	Z
		19. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	Z	Z	Z	X	Z	X	X	Z	Z
		1. MAINTAIN COMMUNICATIONS WITH USERS.	3	Z	Z	Z	X	Z	X	X	Z	Z
		2. FUNCTION AS USER SURROGATE.	3	Z	Z	Z	X	Z	X	X	Z	Z
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	Z	Z	Z	X	Z	X	X	Z	Z
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	3	X	X	X	X	X	X	X	X	Z

Figure 2-28. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	CHIEF, TAC DATA SYS/CHIEF, CDSP	CDSP, ARTILLERY FIRE CONTROL	CDSP, TARGET ACQUISITION	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY AND COMSR BRANCH	TACTICAL SIMULATION BRANCH	USAFABD	TSM FATDS	TSM PERSHING II
5. FIELD SUPPORT (CONTINUED)	2. DEVELOP AND MANAGE TRAINING PROGRAM REQUIRMENTS BY SYSTEM CHANGE (EXCEPT FOR NEW EQUIPMENT TRAINING (NET)).	1. DETERMINE TRAINING/RETRAINING DEVELOPMENT REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	X	Z
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	X	Z
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	X	Z
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	Z	Z	Z	Z	Z	Z	Z	X	Z
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	Z	Z	Z	Z	Z	Z	Z	X	Z
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	X	Z
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	Z	Z	Z	Z	Z	Z	Z	X	Z
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	Z	Z	Z	Z	Z	Z	Z	X	Z
	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	Z	Z	Z	Z	Z	Z	Z	X	Z
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	Z	Z	Z	Z	Z	Z	Z	X	Z
6. UINMENT	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	Z	Z	Z	Z	Z	Z	X	Z
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	X	Z	Z	Z	Z	Z	Z	X	Z
	3. SUPPORT TO CRISIS/WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	Z	Z	Z	Z	Z	Z	Z	Z	Z
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	Z	Z	Z	Z	Z	Z	Z	Z	Z
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	Z	Z	Z	Z	Z	Z	Z	Z	Z
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	Z	X	X	X	X	X	X	Z	Z
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	Z	X	X	X	X	X	X	Z	Z
	4. ASSESS CONTINUED TACTICAL SUITABILITY OF BAS.	1. CONDUCT PERIODIC REEVALUATIONS OF BAS TO DETERMINE CONTINUED TACTICAL SUITABILITY AS CHANGES OCCUR IN THREAT, DOCTRINE, AND OPERATIONAL REQUIREMENTS.	3	Z	X	X	X	X	X	Z	X	Z
		2. AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)		Z	X	X	X	X	X	Z	X	Z
		3. AFTER FIELDING		Z	X	X	X	X	X	Z	X	Z

X = Element is responsible
N = Element is not responsible

Figure 2-28. (concluded)

concepts, the collection of data, the building of automated data bases, and the generation of scenarios to drive the simulations. Since much of this work requires computer support, this branch has a requirement for either direct or remote access to computer resources.

7. PDSS Liaison. The Objective PDSS System for the Fire Support BFA provides the capability to maintain essential contact/ liaison with geographically separated PDSS Centers which support Fire Support BFA BAS. These PDSS centers include:

a. Redstone Arsenal. The MICOM PDSS Center supports four missile Artillery systems listed in Appendix C.

b. Picatinny Arsenal. The ARRADCOM PDSS Center support three Artillery fire control systems listed in Appendix C.

c. Fort Monmouth. The ERADCOM PDSS Center supports five target acquisition systems and one fire control system and to the AVRADCOM PDSS Center for one target acquisition system as listed in Appendix C.

(e) Estimate of resource requirements. Time-phased estimates of the resources required to establish the Objective PDSS System in support of the Fire Support BFA are discussed below.

1. Tactical Data Systems Division.

a. Personnel requirements. The estimated personnel requirements needed in the Tactical Data Systems Division to implement this Objective PDSS System are shown in Figure 2-29. A breakout of these requirements for FY 87 by organizational element is shown in Figure 2-30.

b. Major items of equipment. This CDSF requires either direct or remote access to computer resources in order to perform its functions. In addition, computer access is also required to provide linkage with other CDSFs which support control systems in the CCS² concept. Specific items of equipment required to provide this access must be determined during initial implementation planning.

c. Facilities. Physical facility requirements include office space for assigned personnel and floor space for a computer and/or remote computer terminals. The physical space that is required exists at present and is currently occupied by elements of the Tactical Data Systems Division. No requirements for additional space are known at this time.

TACTICAL DATA SYSTEMS DIVISION, ESTIMATED PERSONNEL REQUIREMENTS							
PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	17	19	19	21	21	21	21
Civilian	11	12	12	13	13	13	13
TOTAL	28	31	31	34	34	34	34
Authorized							
Military	21	21	21	21	21	21	21
Civilian	4	4	4	4	4	4	4
TOTAL	25	25	25	25	25	25	25
Additional Needed							
Military	-4	-2	-2	0	0	0	0
Civilian	7	8	8	9	9	9	9
TOTAL	3	6	6	9	9	9	9

Figure 2-29. Personnel requirements, USAFAS

ELEMENT	MANAGERIAL AND TECHNICAL		CLERICAL AND TECHNICIANS		TOTAL
	MIL	CIV	MIL	CIV	
Chief, CDSF	0	0	0	0	0*
CDSM, Artillery Fire Control	6	3	0	1	10
CDSM, Target Acquisition & Missile Artillery	3	1	0	1	5
Systems Requirements and Analysis Branch	4	2	0		6
Interoperability and COMSR Branch	3	2	0		5
Tactical Simulation Branch	1	2	1	1	5
PDSS Liaison Support	3	0	0	0	3
TOTALS	20	10	1	3	34

* Assumes utilization of staff currently assigned to TSM, FATDS office.

Figure 2-30. Breakout of personnel requirements by organizational element

d. Funds. An estimate of funds required for the CDSF civilian personnel requirements identified above is shown in Figure 2-31. Funds needed for equipment and facilities are dependent upon development of specific requirements during initial implementation planning.

2. US Army Field Artillery Board (USAFABD).

a. Personnel. In order to fulfill its expanding PDSS responsibilities in testing TACFIRE update master tapes, the USAFABD will require additional personnel as shown in Figure 2-32.

b. Major items of equipment and facilities. There is a need for an Instrumented Test Facility for use jointly by USAFABD and the TACFIRE Software Support Group (TSSG). This facility needs to be funded jointly by TRADOC and CORADCOM and could be provided as an expanded capability of the present TSSG (CORADCOM) machine room to reduce expenditures.

c. Funds. An estimate of funds required in the USAFBD personnel identified above is shown in Figure 2-33.

USAFAS, ESTIMATED PERSONNEL COSTS (\$000)*							
Fiscal Year							
	81	82	83	84	85	86	87
Civilian Personnel	300.8	332.4	332.4	364.0	364.0	364.0	364.0
* In FY 81 constant dollars. Based on average annual costs of \$31.6K, including 10 percent loading, for one technical civilian and \$16.0K for one administrative level civilian.							

Figure 2-31. Estimated personnel costs, USAFAS

US ARMY FIELD ARTILLERY BOARD, ESTIMATED PERSONNEL REQUIREMENTS							
PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	3	3	3	3	3	3	3
Civilian	2	2	2	2	2	2	2
TOTAL	5	5	5	5	5	5	5
Authorized							
Military	0	0	0	0	0	0	0
Civilian	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0
Additional Needed							
Military	3	3	3	3	3	3	3
Civilian	2	2	2	2	2	2	2
TOTAL	5	5	5	5	5	5	5

Figure 2-32. Personnel requirements, US Army Field Artillery Board

USAFAB, ESTIMATED PERSONNEL COSTS (\$000)*							
Fiscal Year							
	81	82	83	84	85	86	87
Civilian Personnel	63.2	63.2	63.2	63.2	63.2	63.2	63.2
* In FY 81 constant dollars. Based on average annual costs of \$31.6K, including 10 percent loading, for one technical civilian and \$16.0K for one administrative level civilian.							

Figure 2-33. Estimated personnel costs. USAFAB

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ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE IN POST-DEPLOYMENT SO--ETC(U)

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f. Air Defense BFA.

(1) General. This BFA and its PDSS requirements are heavily influenced by the major air defense systems (such as Patriot, TSQ-73, and I-HAWK) and the environment in which they must operate. In the integrated air defense environment of NATO, such air defense systems must be capable of responding, with a minimum of human intervention, very rapidly, to a massive, high speed air threat. Both interoperability and response time requirements are very demanding. Interoperability requirements involve multi-national, Air Force, and Other Service interfaces in addition to most Army ground air defense weapon and weapon control systems. Response times, for effective sequencing of events and counteractions, are measured in milliseconds. To achieve such response, human intervention must be eliminated wherever possible and, to do this, large amounts of complicated decision-making logic must be embedded in weapons systems and weapons control system software. If these systems, including such software, are not ready to respond effectively on instant notice, the military and political consequences could be very grave, since air defense in such an environment is essentially the first line of defense.

Ensuring such readiness, places very demanding requirements on the whole Combat Developer-Materiel Developer relationship and process throughout the life cycle of individual and integrated air defense systems, including the PDSS process. History has demonstrated on a number of occasions the costly mistakes in system software development which also can seriously undermine the effectiveness and readiness of air defense. Such experience has shown that advanced and extensive analytical capabilities are necessary to properly handle PDSS responsibilities for just the several major air defense systems already in or shortly to enter the inventory--systems into which billions of dollars have been poured in recent years to play air defense catch-up after the Vietnam years when attention was turned elsewhere. Because of the complexity of current air defense systems, minor changes in tactics or procedures, for instance, can ripple through many stages of automated logic with results that are hard to anticipate. Field tests often cannot duplicate the battlefield conditions of threat and interoperability necessary to uncover such problems. Therefore, extensive capabilities, in the form of system simulators and computer simulations, and the qualified people to use them, are necessary to analyze interactions before system changes are released to the field or incorporated in developing systems.

The magnitude of the problem faced in the Air Defense BFA is typified in the Patriot air defense missile system. This system normally performs all target acquisition, identification, tracking, engagement decision and weapon assignment, missile control, and post-intercept kill assessment functions automatically, in coordination with other AD weapons (ground and air) and control systems. In addition to the software required to perform these tactical functions, additional system software supports personnel in maintenance operations and troop proficiency training. The tactical software portion of the operations programs in a fire unit of this system involves over 250,000

words of instructions and data; a battalion control station over 190,000 words; while total Patriot software exceeds five million words. A contractor taskforce, reaching a level of well over 300 workers, was devoted to development of the Patriot system, including its software. Combat Developer review accomplished so far on the resulting software in Patriot has revealed 200 questions or areas, each of which calls for a significant CD research and analysis project. These 200 projects on Patriot alone require a very substantial set of analytical resources (operations research analysts, engineers, mathematicians, programmers, computer models and simulations, system simulators, and computers and other equipment).

(2) The current system. The current TRADOC Baseline System for providing PDSS in the Air Defense BFA has its focal point in the US Army Air Defense School (USAADS), within the US Army Air Defense Center and Fort Bliss, at Fort Bliss Texas. There the principal action-level element is the Combat Systems Software Division (CSSD), in the Directorate of Combat Developments. Other TRADOC elements, both at USAADS and at other installations, are actively involved in the Baseline System. Outside of TRADOC, elements of DARCOM, the Users of Air Defense systems, the US Army Research Institute, and various contractors are involved in the Baseline PDSS System either actively or as interface points. Figure 2-34 delineates the organizational structure of the TRADOC elements of the Baseline PDSS System at Fort Bliss. Figure 2-35 shows the structure of the total TRADOC Baseline PDSS System for the Air Defense BFA.

(a) Functional responsibilities. Overall responsibilities of USAADS are defined in USAADS Reg. 10-1. Within USAADS, the Directorate of Combat Developments (DCD) is principally responsible for representing the users of air defense systems, developing system requirements, tactics and, in conjunction with the Directorate of Training and Doctrine (DOTD), developing and implementing doctrine. Responsibilities for developing training materials, devices, and courses of instruction in Air Defense are focused in the Directorate of Training Developments (DTD). Responsibilities relating to software and PDSS fall primarily upon the Combat Systems Software Division (CSSD) of DCD, and the Software Branch, within DTD, as indicated in Figure 2-34, above. Based on USAADS Reg. 10-1 and additional information, Figure 2-36 summarizes and identifies principal USAADS responsibilities, working from the general level down to the level of software and PDSS. Identified in that figure are those functions which have particular relevance to PDSS.

(b) BAS to be supported. In the first phase of this study, the BAS within the Air Defense BFA were reviewed to identify those which require, or can be clearly anticipated to require, PDSS. Seven specific BAS, plus an additional category, were thus identified, as summarized in Figure 2-37.

(c) Principal interfaces. As indicated in Figures 2-34, and 2-35, discussed above, and Figure 2-38, below, the number of TRADOC and other elements involved in the Baseline PDSS System for the Air Defense BFA is very substantial. Thus, a multiplicity of interfaces between elements is possible.

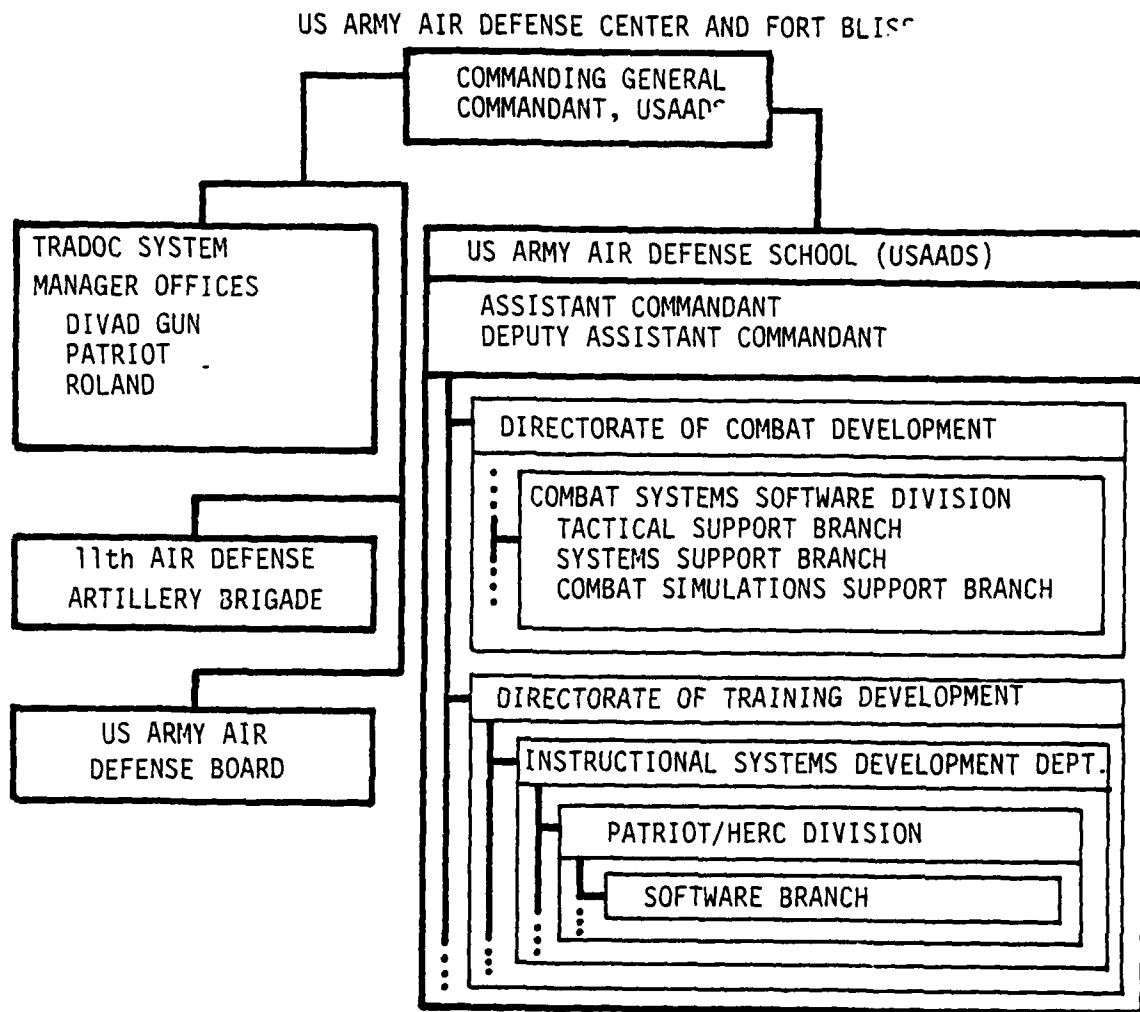


Figure 2-34. TRADOC elements of Baseline PDSS System at Ft. Bliss

HQ, US ARMY TRAINING AND DOCTRINE COMMAND, FT. MONROE, VA

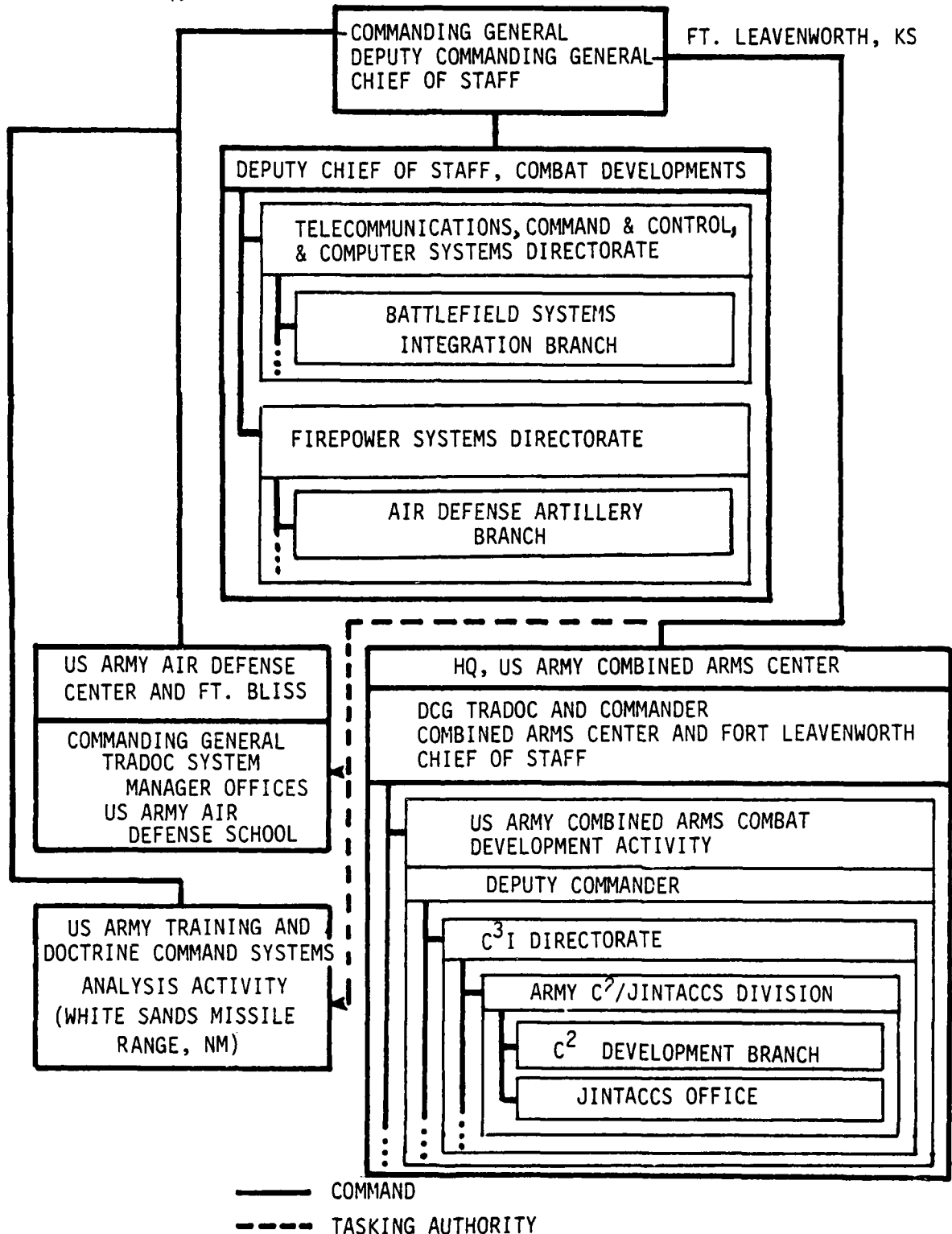


Figure 2-35. Overall TRADOC elements of Baseline PDSS System for Air Defense BFA

General: Prepare and conduct courses of instruction for training US military and other students in Air Defense Artillery. Develop concepts, doctrine, materiel, and training literature; devise procedures for their application in operation, training, and maintenance of air defense weapons and control systems, personnel, units, and organization.

Selected Functions:

1. Conduct research and develop procedures, tactics, and techniques for the application of approved doctrine in the operation, maintenance, and training of air defense artillery units and control systems.
2. Develop doctrine and organizational evaluation requirements, and analyze test results to determine the validity of doctrine and organizational concepts.
3. Coordinate actions and conduct liaison with activities of other major commands to provide user guidance during all phases of air defense development, production, and employment to ensure user interests are fully incorporated.
4. Act as proponent agency for TRADOC for all air defense weapons systems and, as such, serve as principal advisor and representative for TRADOC in areas of air defense organization, doctrine, training, tactics, and techniques.
5. Determine air defense materiel (system hardware and software) requirements and provide user guidance throughout its development.
6. Coordinate approved air defense doctrine with other schools to ensure that it is current and encompasses the latest concepts.
7. Develop training requirements and programs to support the introduction of new and modified air defense equipment.
8. Develop doctrine for employment and deployment of air defense weapons and command and control systems.

Figure 2-36. Summary of USAADS mission & functions
(continued on next page)

9. Develop, optimize, verify, and maintain system operations and firing doctrine (SYSOPS/FIDOC) for current and future air defense weapons systems and command and control systems, including airspace control systems.
10. Review, compile, and analyze air threat data and conduct wargames, simulations, systems analysis, cost effectiveness studies, and other analyses in support of air defense operational doctrine, organizations, and equipment tests and evaluations, to include training devices.
11. Develop, improve, maintain, and use computer models and data bases, and other analytical tools to support simulations, wargames, and other analyses of air defense systems and software.
12. Develop requirements for air defense training devices/simulators (hardware and software) and training device scenarios.
13. Verify that software incorporated in air defense systems correctly reflects air defense doctrine.
14. Insure compatibility between doctrine incorporated into interrelated or interdependent systems.
15. Perform continuing analysis of suitability of air defense doctrine in light of changing threat, technology, and employment.
16. Define and conduct operational and user acceptance tests of air defense systems.

Figure 2-36. (concluded)

BATTLEFIELD AUTOMATED SYSTEM (BAS) AND STAGE IN LIFE CYCLE
PATRIOT Air Defense Missile System (Limited Production)
AN/TSQ-73 (Missile Minder) (Post-Deployment)
SHORAD C ² --Short Range Air Defense Command and Control System (Early Concept Formulation)
DIVAD Gun--Division Air Defense Gun (Engineering Development)
I-HAWK--Improved HAWK Air Defense Missile System (Post-Deployment + New Improvements)
ROLAND--Air Defense Missile System (Advanced Eng'g Development)
ADEWS--Air Defense Electronic Warfare System (Conceptual Study)
Other--Including AD Control System for CCS ²

Figure 2-37. Systems requiring PDSS--Air Defense BFA

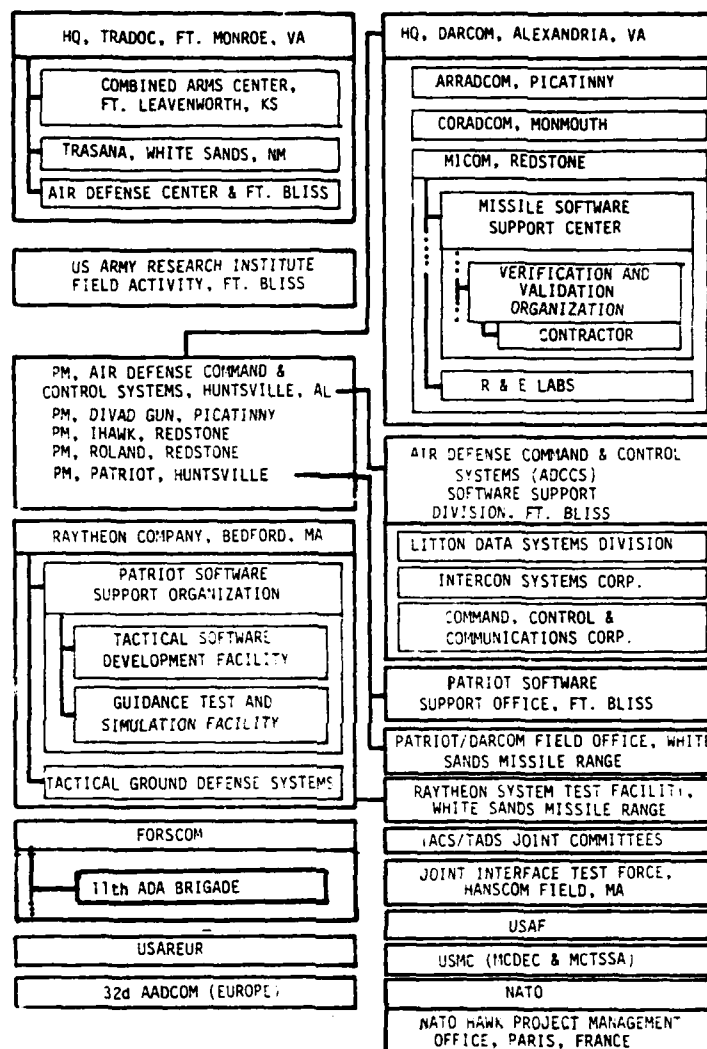


Figure 2-38. Principal TRADOC and other elements in Baseline PDSS System for Air Defense BFA

Because of the central responsibility of USAADS in PDSS for this BFA, however, the principal PDSS interfaces in this system will tend to be between USAADS (particularly the Combat Systems Software Division of DCD and the Software Branch of DTD) and other key elements. Such principal interfaces are summarized in Figure 2-39.

(3) The Objective System.

(a) Purpose and scope. The Objective PDSS System described in this section is intended to be capable of adequately fulfilling all CD PDSS responsibilities and functions, looking forward into at least the late 1980's, for the entire Air Defense BFA. This description is to serve as a blueprint which the US Army Air Defense Center and School can follow and refine in its detailed PDSS implementation effort.

(b) Principal features. The Objective PDSS System proposed for Air Defense closely resembles the CD PDSS Generalized Model 1 discussed and illustrated above in Figure 2-2. The Objective System is centered in an organization seen to logically evolve from the existing Combat Systems Software Division. The resulting organizational element, in the Objective PDSS System, is labeled here as the Battlefield Systems Software Support Organization (BS³O). The BS³O remains an integral element in the structure of the Directorate of Combat Developments (DCD). The BS³O also remains a division-level element, although it embodies a very substantial increase in number of personnel, over the element from which it evolves, and also directly addresses, from a software viewpoint, some functions also addressed in the existing Materiel Systems Division of DCD. Internal structure stresses a matrix organization. The BS³O provides for a permanent facility in which some of the necessary analytical personnel and the principal items of equipment and related tools (computers and peripherals, simulators, data bases, simulations) can be centered to support PDSS and related software systems research and analysis. This Combat-Developer Support Facility (CDSF) is based on the CDSF model in the PDSS Concept Plan for BAS, of May 1980, and serves, among other things, as the CD counterpart of the several MD PDSS Centers, one of which is maintained at Fort Bliss by MICOM. In this Objective PDSS System, the BS³O and its CDSF operate in close coordination with the corresponding organizations at the other TRADOC centers and schools. The CDSF is closely linked by special communications with the CCS² activities at Fort Leavenworth which control and coordinate developments in all Control and Subordinate Systems, one of which is the Air Defense Control System, within the overall Force Level Control System. The BS³O includes a principal mission of supporting the requirements definition, planning, and support needs of the existing Directorate of Training Developments at USAADS, in certain areas. Foremost in these areas are software-containing training

* In contrast to the MICOM and other DARCOM PDSS Centers, the CDSF is a support rather than an operating facility. The CDSF is an analytical facility which contains the analytical tools, devices, documentation, and technical support personnel necessary to support all USAADS functions related to BAS PDSS. The MICOM PDSS Center, on the other hand, focuses on the technical and mechanical aspects of software production, documentation, and testing.

[illegible]

Figure 2-39. Principal interfaces, Baseline PDSS System, ADA BFA

simulators and devices in the Air Defense BFA. Other TRADOC elements, both at Fort Bliss and at other installations, are active parts of this Objective System. Outside of TRADOC, there are elements of DARCOM, the Users of Air Defense systems, other Services (USAF, USMC), NATO, the Army Research Institute, and various contractors which are involved in the Objective System, either actively or as interface points. For example, a key element is the Raytheon Patriot Software Support Organization at Bedford, Mass., which constitutes the MD PDSS Center for the Patriot Air Defense missile system. Contact with key elements in the Objective System will be facilitated, where appropriate, with special communications means, such as television conferencing, and high rate digital data exchange. No substitute is seen, however, for on-site visits by those personnel from the BS³O who are immersed in both the specific issues of a particular software system and also the broader combat developments environment of their home base. Therefore, substantial TDY is included in resource requirements. The Objective PDSS System is basically a TRADOC system, although it must interact with, and is heavily dependent on, many non-TRADOC elements.

(c) Principal Elements Involved. Principal elements involved in the Objective PDSS System for the Air Defense BFA are identified in Figure 2-40. This figure also indicates some of the principal interfaces involved, thus providing a type of system overview. Structure within the system is addressed below. Other DARCOM elements are also involved, but are not shown here in Figure 2-40. Army combat modeling/simulation capabilities at three separate locations, being developed under the Army Models Improvement Program (AMIP) are included in this figure. These are the battalion-level capability at TRADOC Systems Analysis Agency (TRASANA), White Sands, the corps/division level capability at the Combined Arms Studies and Analysis Activity (CASAA), Fort Leavenworth, and the theater-level capability at the US Army Concepts Analysis Agency, Bethesda. Also shown are the CACDA Scenarios and Wargames Directorate, and the TRADOC general purpose computer center at Fort Leavenworth. All of these modeling/simulation/gaming and computer elements are shown here because they are resources that could contribute to the overall PDSS mission. Although these battalion, division, corps, and theater models and simulations form an important hierarchy of analysis capability, it must be understood that they have very limited utility in tactical software development and analysis, which requires in almost all instances much higher (finer) resolution and fidelity than those models and simulations possess. Use of these and possibly other analysis resources will be coordinated through a BAS PDSS analysis resources coordination element established at CACDA in the Objective System. Similarly, requirements for inter-BFA testing support will be coordinated, as appropriate, through a BAS PDSS test & evaluation resources coordination element at CACDA. Although not indicated in the figure, resources for such testing may include the Tactical Interoperability Support Element (TISE) and TCATA at Fort Hood, the Joint Test Element (JTE) and the Modular Automated Integrated Systems Interoperability Test and Evaluation (MAINSITE) at Fort Huachuca, ARMTE, OTEA, CDEC, and NTC (Fort Irwin). USAADS will deal directly with field units with respect to ADA user testing. In this context, it should be stressed that test beds and field tests have serious limitations or disadvantages, in many cases, for ADA system testing relevant to software issues. Such limitations and disadvantages include high costs of moving and using field units and creating usefully realistic threat environ-

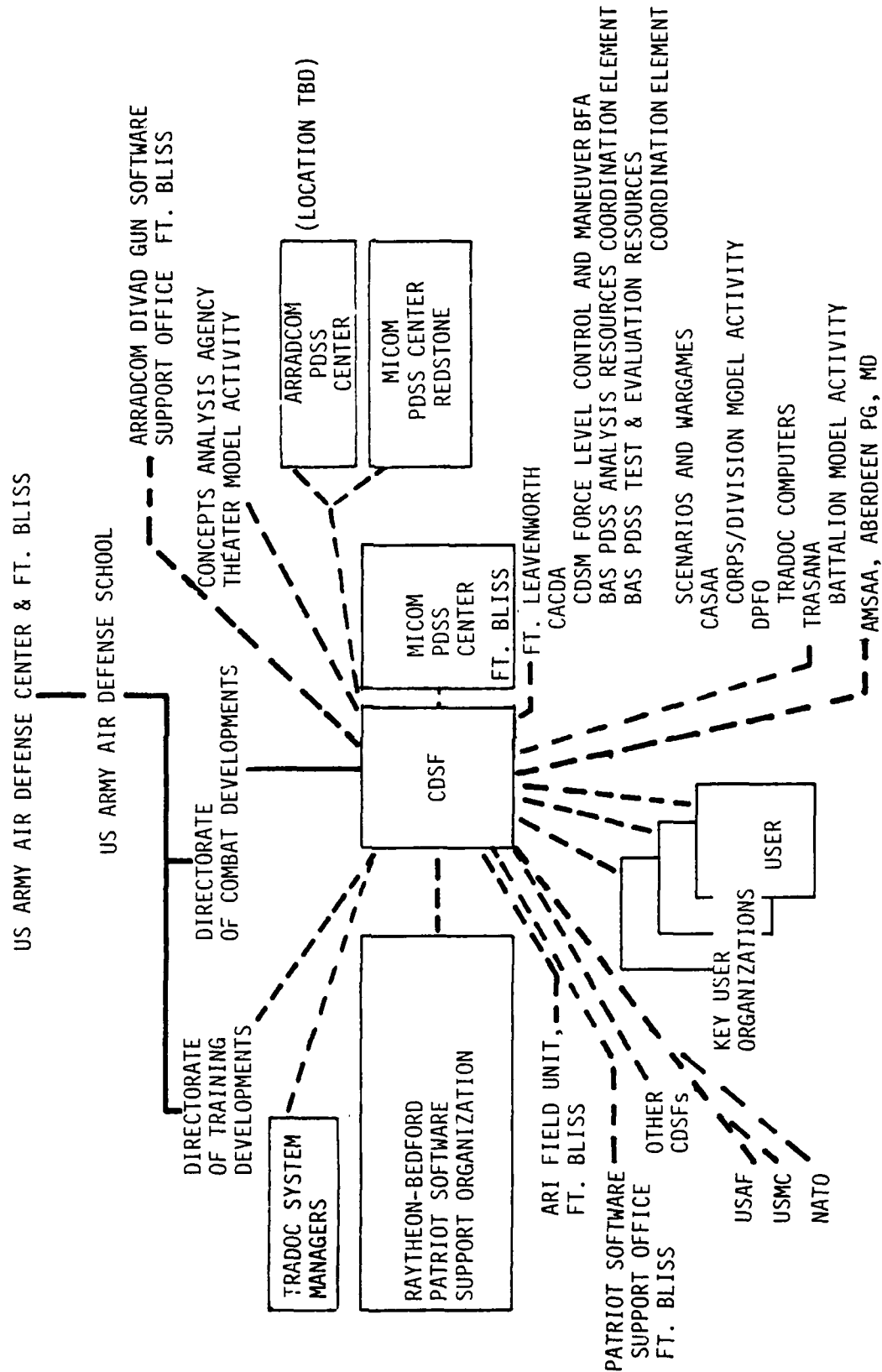


Figure 2-40. Principal elements, Objective PDSS System for Air Defense BFA

ments, inability to capture essential test data and freely reproduce or vary experiments, and timeliness of results. Such means cannot be justified for many software test questions. As a result, USAADS must depend, in large measure, upon simulations and simulators for software testing analyses. Contact teams for forward support will be formed on an ad hoc basis in the Objective PDSS System. Ad hoc teams will be formed from appropriate elements under the auspices of the Field Support Branch. The ARRADCOM DIVAD Gun Software Support Office at Fort Bliss is a recommended element.

(d) Structure. The macro-structure of the Objective PDSS System for Air Defense is illustrated in Figure 2-41. This macro-structure including such elements as the US Army Air Defense Board and the TRADOC System Managers for air defense systems, bears a close resemblance to the CD PDSS Generalized Model 1, illustrated in Figure 2-2. The BS³O is a distinct and permanent element within which dedicated attention is given to PDSS and other software-related functions. Also, a permanent Combat Developer Support Facility (CDSF) exists within the Air Defense Objective PDSS System. This CDSF is "owned" by an element of the BS³O and a substantial portion of the personnel and equipment of the BS³O reside within that CDSF.

A more detailed illustration, showing the structure within the BS³O, is provided in Figure 2-42. The internal organization of the BS³O is seen to reflect three principal dimensions: a dimension involving mainly tactical expertise, issues, and functions; a dimension involving largely technical expertise, issues, and functions; and a battlefield system dimension, focusing on each of the principal air defense systems. In the organization of the BS³O, these three dimensions intersect, in a matrix form, in which the system dimension cuts across the tactical and technical dimensions. This matrix form results in the existence of a system-centered team, or nucleus of expertise, for each principal system, appearing within each of several functional branches, which in turn are organized under tactical and technical headings.

(e) Operating concept. The operating concept for this Objective System involves CD performance of CD functions, but in conjunction with MD performance of MD functions. In fact, the basic mission of this Objective System cannot be achieved without a high degree of cooperation among CD, MD, and User elements at many levels, in what is essentially a common process. The nature of this process demands not only coordinated actions, including joint forums, actions, and decisionmaking, but also, to the maximum extent possible, collocated facilities and joint use of facilities and equipment. Items of equipment located in the MD-owned facility may be a vital resource for performance of CD functions, as may be MD use of equipment in a CD-owned facility. In many instances the problem is a common one requiring joint participation/observation and analysis. In many other aspects the MD and CD functions require separate, different types of equipment and analytical tools. Within the BS³O, the matrix form of organization permits maintaining a system-by-system project orientation within a functional structure. These features promote flexibility, responsiveness, effective transfer of skills, efficient use of resources, and cooperation and coordination, but require good management. Containing the analytical tools, devices, documentation,

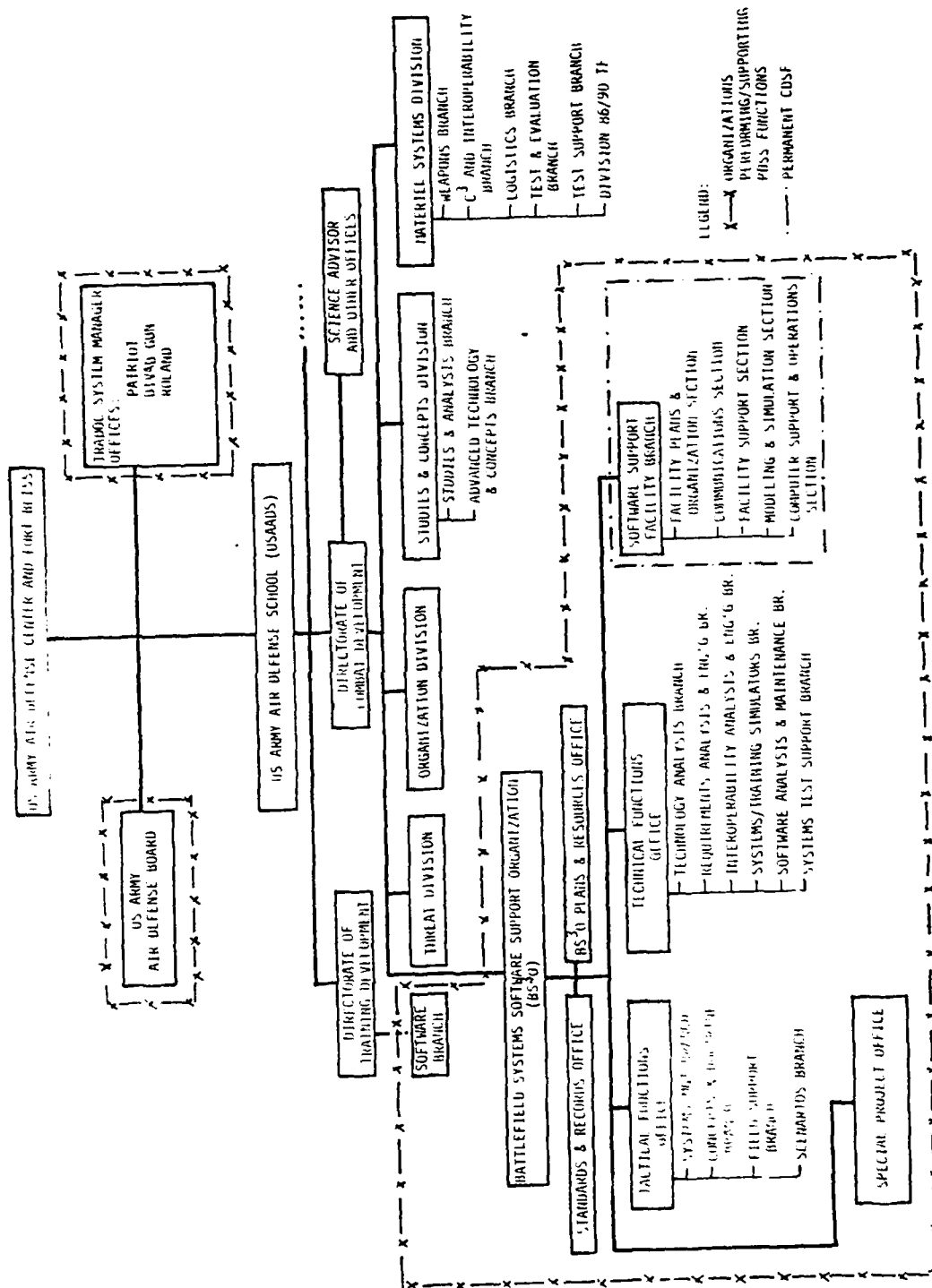


Figure 2-41. Macro-structure of CD PDSS Objective System at Air Defense Center.

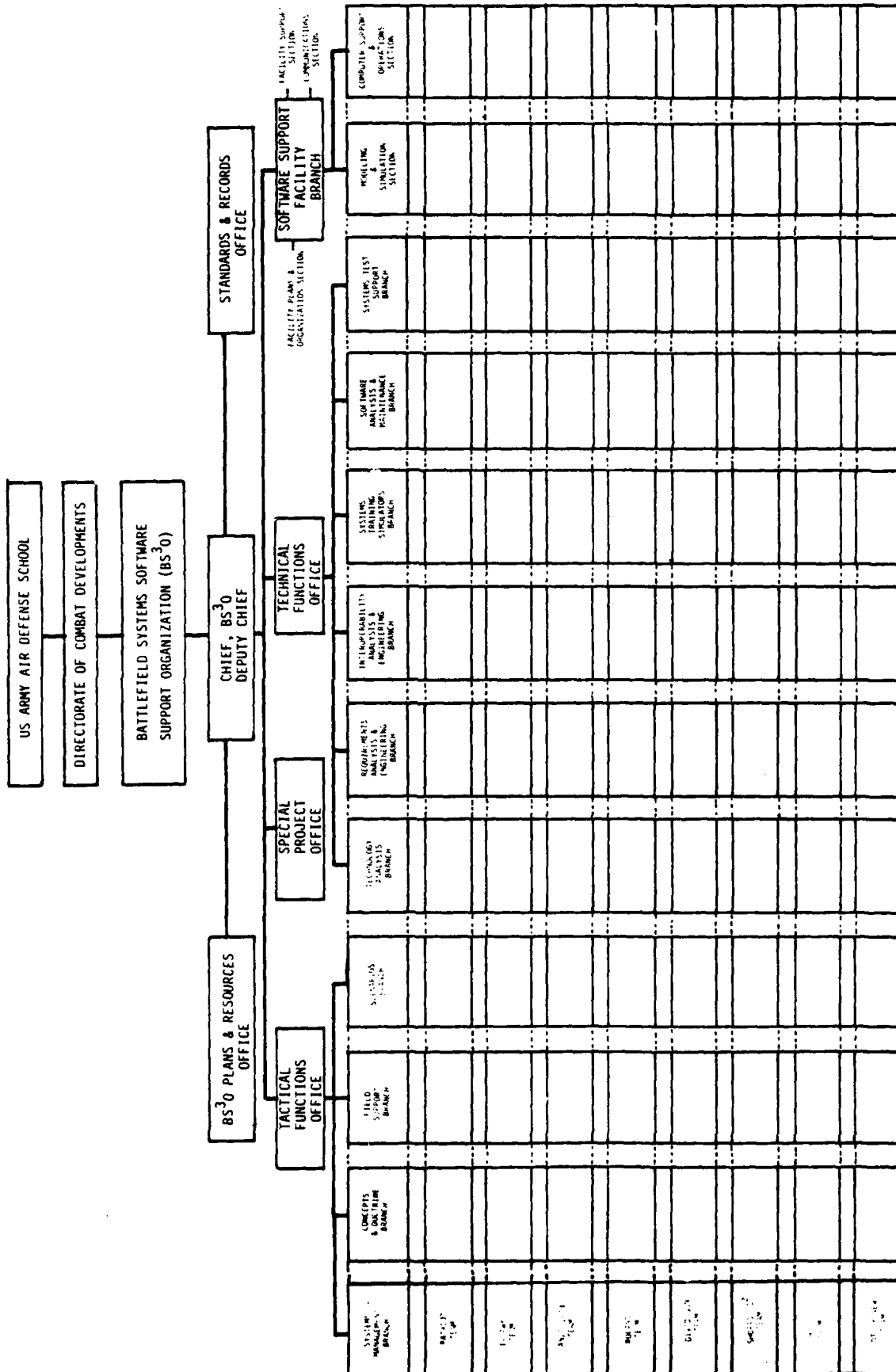


Figure 2-42. Battlefield Systems Software Support Organization (BS³O)

and technical support personnel necessary to support all USAADS functions related to BAS PDSS, the CDSF is seen as an analytical support facility. In contrast, MD PDSS Centers, such as the MICOM facility at Fort Bliss, are seen as production operations centers which focus on the technical and mechanical details of producing, documenting, and verifying against specifications (at the computer program code level) BAS software products, which are only a part of the total ADA system. The CDSF, however, set in the framework of the total ADA system, focuses, with the BS³O, on user needs and requirements, system architectures, and ADA system functional requirements, in terms of both how these can be met by and how they can guide development of emerging ADA systems. In its evaluations, the CDSF examines software products only down to the level of the algorithms which the computer code implements.

(f) Functional responsibilities.

1. BS³O. The overall mission of the Air Defense Battle-field Systems Software Support Organization (BS³O) is to ensure that all CD PDSS responsibilities and functions are adequately fulfilled for the entire Air Defense BFA. Responsibilities of the BS³O include facilitation of the Combat Developer's system and system software development and life cycle management processes in coordination with other elements of the Directorate of Combat Developments and also the Directorate of Training Developments. The BS³O maintains a permanent facility (CDSF) which supports these responsibilities. The responsibilities and functions of the elements of the BS³O are outlined below.

a. Chief, Air Defense BS³O. The Chief, Air Defense BS³O, reports to the Director, Combat Developments, US Army Air Defense School. The Chief is responsible for carrying out the overall mission of the BS³O, through the resources at his disposal and through fostering a climate of cooperation with the many external elements with which the BS³O must interface. The Chief is also responsible for the resources at his disposal, which include the personnel, equipment, and facilities involved in the six major elements of the BS³O. These major elements are:

- BS³O Plans & Resources Office
- Standards & Records Office
- Tactical Functions Office
- Technical Functions Office
- Special Project Office
- Software Support Facility Branch.

b. Deputy Chief, Air Defense BS³O. The Deputy Chief, Air Defense BS³O carries the responsibilities delegated to him by the Chief, and is to act for the Chief in his absence or as required.

c. BS³O Plans and Resources Office. The BS³O Plans and Resources Office is the focal point for the determination of BS³O workload requirements, and the preparation and maintenance of plans and policies for acquisition, separation, and effective use of all resources within the BS³O. This function is performed in coordination with superior elements as well as the elements within the BS³O. This office also participates in determining BS³O personnel requirements, in planning for personnel acquisition and separation, and is responsible for ensuring that all appropriate educational and training avenues are effectively used in achieving and maintaining necessary skills among BS³O personnel. A section within this office is responsible for serving as a focal point and assisting in analysis and development of man-machine interface technology involved in the BAS under purview of the BS³O. This office will also ensure that basic configuration management policies are understood and adhered to throughout the BS³O.

d. Standards & Records Office. The Standards & Records Office obtains and maintains as necessary for use within the BS³O essential items of documentation otherwise not readily available on the systems under purview of the BS³O. Maintained by the branch will be all appropriate official correspondence and, as necessary standards and regulations pertaining to the systems under purview. This branch will also maintain a library of other documentation and related materials commonly used within the facility, and will provide an appropriate storage and reproduction capability for all items. The efforts of this branch are not intended to duplicate, unless necessary, the efforts of other elements.

e. Chief, Tactical Functions Office. The Chief, Tactical Functions Office is responsible for ensuring that Air Defense doctrinal and tactical issues are appropriately addressed within the activities of the BS³O and that appropriate information and expertise are available for that purpose. This responsibility is carried out with the assistance of the four branches which report to the Chief, Tactical Functions Office. These branches are:

- Systems Management Branch
- Concepts and Doctrine Branch
- Scenarios Branch
- Field Support Branch.

f. Systems Management Branch. The Systems Management Branch is the central point within the BS³O for activities pertaining to each of the principal air defense battlefield automated systems (BAS). For each such BAS, a manager (CDSM) is designated within this branch. The CDSM is a focal point for all BS³O activities pertaining to his particular BAS and is also the principal interface point for all external and internal communication regarding software in that BAS. The CDSM is specialized in knowledge of his particular BAS. He fosters similar knowledge among members of the systems teams devoted to that BAS among the various tactical and technical functional elements of the BS³O, such as concepts and doctrine, field support, requirements analysis, and test and evaluation. Under the matrix organization concept he is the system manager for the activities of those team members devoted to his BAS. He is responsible for seeing that the software of his BAS contributes most efficiently to overall system effectiveness and readiness, and he is concerned with this systems software, from User requirements through User acceptance testing and subsequent system modifications and adjustments, to include training software and User guidance on employment. In the Systems Management Branch, CDSMs are designated for the following systems:

- Patriot
- IHAWK
- AN/TSQ-73
- Roland
- DIVAD Gun
- SHORAD C²
- Other/New Systems.

The CDSMs will maintain contact and exchange necessary information with the BAS PDSS analysis resources coordination element and the BAS PDSS test & evaluation resources coordination element at CACDA. Through these elements, additional temporary resources, for local projects, may be arranged as appropriate and as available from other locations.

g. Concepts and Doctrine Branch. The Concepts and Doctrine Branch provides a local center of expertise and information on the detailed system-peculiar air defense tactical doctrine pertaining to employment and operations of the relevant air defense systems in an integrated air defense environment, such as in NATO, based upon the broad air defense doctrine provided by the Directorate of Training and Doctrine, USAADS, as well as Army/other Services general doctrine. This branch is responsible for coordinating with other centers of doctrinal/conceptual information and developments in the Army and other Services, to ensure that both established and advanced concepts can readily interplay in the analyses focused in other branches.

Within this branch, a team is formed to concentrate on each of the principal air defense BAS and to provide necessary assistance in this functional area to the CDSM of that BAS.

h. Scenarios Branch. The Scenarios Branch is responsible for acquiring, maintaining, and analyzing current information to maintain an automated data base on threats that could impact on BAS in the Air Defense BFA, to facilitate timely anticipation of impacts on these BAS and their doctrine, software or software requirements. This branch also contains a section equipped to contribute, as needed, to the preparation of detailed scenarios (in narrative and in computer-input-ready form) for various analysis and training purposes.

i. Field Support Branch. The Field Support Branch is responsible for providing resources, management, and coordination of resources to help support effectively the overall BS³O mission in the area of field support. Most of the personnel resources of this branch will be divided into teams, each representing a particular BAS and operationally responsive to the respective CDSM. This branch will concentrate on the functions of providing guidance to users of BAS, introducing change packages, including training, and providing crisis or wartime support, to include developing, coordinating, and maintaining plans for such support. The introduction of software change packages and new equipment training (NET) is performed in conjunction with counterpart materiel developer teams (i.e., joint CD/MD fielding team). This branch will provide necessary travel, logistical, and other support to traveling teams, and will maintain contact, as appropriate, with served user units or other facilities where field support is required. Generally, field visits will be on an ad hoc basis, with participants selected from various parts of BS³O as needed.

j. Chief, Technical Functions Office. The Chief, Technical Functions Office, is responsible for ensuring that technical, engineering, and analytical issues of air defense BAS software are properly addressed and that the necessary technical resources are available and effectively applied to support the BS³O mission. This responsibility is carried out with the assistance of the six branches which are subordinate to this office, as follows:

- Technology Analysis Branch
- Requirements Analysis & Engineering Branch
- Interoperability Analysis & Engineering Branch
- Systems/Training Simulators Branch
- Software Analysis & Maintenance Branch
- Systems Test Support Branch.

These branches of the Technical Functions Office, while an integral part of the BS⁰, are also available, as appropriate, to support other DCD needs. These branches are intended to provide a broad capability for the intensive, sophisticated, computer-supported, and system-technically-oriented research and analysis necessary to effective fulfillment of the BS⁰ mission. It is intended that this office possess the expertise, tools, and equipment or access to equipment, necessary to fulfill a variety of key analysis functions inherent to PDSS of complex BAS.

k. Technology Analysis Branch. The Technology Analysis Branch is responsible for acquiring, maintaining, and analyzing current information in the areas of technology that could impact on BAS in the Air Defense BFA. The purpose of this analysis is to facilitate timely anticipation of impacts on these BAS and their doctrine, software, or software requirements. As appropriate, this branch will be organized into teams addressing individual BAS and responsive to the CDSM for that BAS.

l. Requirements Analysis & Engineering Branch. The Requirements Analysis & Engineering Branch is responsible for performing or effecting that analysis necessary to identify the requirements for software in BAS and related simulators, and including support software, as may be appropriate. Such software requirements analysis will pertain to the earliest stages of PDSS planning for a BAS, as well as the later stages, including all significant changes proposed. This branch will also assist in and be the focal point for reduction of identified software requirements to document forms which can serve effectively to transmit requirements to the MD and others for coordination and implementation. Training software requirements associated with BAS are included in the responsibilities of this branch.

m. Interoperability Analysis & Engineering Branch. The Interoperability Analysis & Engineering Branch is responsible for performing or effecting the necessary detailed examination and analysis of interoperability capabilities and limitations of BAS under the purview of the BS⁰. This branch will maintain a detailed and up-to-date awareness of the interoperability requirements and characteristics of all BAS with which the BS⁰ BAS may interface or impact upon. Within this framework, this branch has the principal objective of insuring that potential interface problems are anticipated as early as possible in the BAS development life cycle, that, as BAS design and development proceeds, these interfaces are properly accommodated, and that, at later stages, BAS code properly performs the necessary interface functions and that changes in any of the interoperating systems are continuously monitored and evaluated for impact. As appropriate, this branch will be organized in teams to support the CDSM-managed BAS.

n. Systems/Training Simulators Branch. The Systems/Training Simulators Branch is responsible for the conception, development and research or analytical use of system simulators and necessary driver equipment. When designed or used for training purposes, such simulators may be called

training simulators or training devices. The distinction between models or simulations on the one hand and simulators on the other hand is that the former are representations of the real system, at a level of abstraction appropriate to the particular analytical objectives; simulators, however, will duplicate as closely as possible either all or selected features of the real BAS. System prototypes may be used for this purpose in some cases. Research/analytical use of simulators permits experiencing, in advance, the types of capabilities and problems which can be encountered when the real system is employed in the field. Such use of simulators is an essential in performance of the BS³O mission. This branch will support the Directorate of Training Developments in identifying the requirements for training simulators and their use. As appropriate, most of the people in this branch will be organized into teams, each of which will specialize in a particular BAS and be responsive to the respective CDSM.

o. Software Analysis & Maintenance Branch. The Software Analysis & Maintenance Branch is responsible for performing or effecting necessary functional examination and analysis of software in or pertaining to BAS and simulators under the purview of the BS³O. Such functional examination and analysis of software will have the objective of insuring that the software in question performs correctly the intended tactical functions. This branch will make use of models, simulations, simulators, and manual analysis, as well as detailed examinations of algorithms implementing tactics and doctrine, to achieve this objective. This branch will have the capability to perform such analyses as deemed necessary by the CDSMs, and will be responsible to recommend areas for such analysis to the CDSMs and others. This branch will not supplant or duplicate the "verification and validation" work properly performed by the MD, but will obtain and take full advantage of such work, as necessary. This branch will prepare appropriate records of the software analyses performed. Under the category of software maintenance, this branch will perform similar analysis pertaining to any software changes that may be considered at later stages in the system life cycle. Teams within this branch will specialize in particular BAS and be responsive to the respective CDSMs.

p. Systems Test Support Branch. The Systems Test Support Branch provides a common focal point for coordination of necessary BS³O participation in testing of BAS within the purview of the BS³O. This branch maintains schedules and records of all significant testing performed or to be performed on these BAS at all locations, and provides a nucleus of skilled personnel for BS³O participation in planning, observation, and analysis of system tests. This branch also provides advice and assists in tests that may be conducted with BS³O resources. Within this branch, teams will be formed to specialize in individual BAS, as appropriate. The work of this branch will be facilitated by the efforts of the BAS PDSS test & evaluation resources coordination element to be established at CACDA.

q. Special Projects Office. The Special Projects Office contains a small staff responsible for classified projects.

r. Chief, Software Support Facility Branch. The Chief, Software Support Facility Branch, is responsible for planning, coordinating, and maintaining the permanent facility (CDSF). He is also responsible for planning, coordinating, and acquiring certain of the equipment and personnel which are permanently resident in that facility within the following five sections of the Software Support Facility Branch:

- Facility Plans & Organization Section
- Communications Section
- Facility Support Section
- Modeling and Simulation Branch
- Computer Support & Operations Section.

s. Facility Plans & Organization Section. The Facility Plans & Organization Section is responsible for formulating and coordinating the long- and short-range plans for the CDSF, including provisions to facilitate the effective use of space, equipment, and personnel.

t. Communications Section. The Communications Section is responsible for all aspects of acquisition and maintenance of appropriate communications capabilities needed to provide the rapid (and, as needed, secure and reliable) interchange of digital, audio, visual, and graphics data or information among the CDSF, its remote elements, and other key interfacing elements. Among required capabilities may be television conferencing, and high bit rate audio or digital interchanges.

u. Facility Support Section. The Facility Support Section is responsible for obtaining or providing, for the physical facility and the equipment therein, any support or expertise needed, and not otherwise provided, to permit the efficient conduct of the BS³O mission. This branch will participate in the preparation and maintenance of resource plans for the CDSF.

v. Modeling and Simulation Section. The Modeling and Simulation Section provides a center of expertise in the development and exercise of computerized models and simulations and also the analysis of model or simulation results to contribute to the analysis interests of the CDSMs and the other branches in the BS³O. Skills required in this section will include operations research/systems analysis, computer programming, understanding of the scientific and engineering principles and characteristics of air defense C² and weapons systems, and also an understanding of air defense system doctrine and tactics. Most of the personnel in this section will be organized into teams, each of which will specialize in a particular BAS and be responsive to the respective CDSM. A part of this section will be devoted to anticipating analysis requirements and recommending analysis

approaches and techniques to the CDSMs and others. Models developed and/or maintained will be in support of other DCD/DTD analysis efforts, as well as for PDSS. This section will be responsible for the development and/or maintenance and configuration management of models. A lesser degree of simulation capability will have to exist in other elements of BS⁰ to do detailed analysis and explorative excursions in development of tactics and doctrine and software requirements definition.

w. Computer Support & Operations Section. The Computer Support & Operations Section is responsible for the planning for and acquisition, maintenance and disposal of all computer resources local to the CDSF plus the arrangement or coordination of all external computer resources utilized by the CDSF. Such resources include computers, peripheral equipment, tapes or other storage devices, terminals and related equipment, key aspects of the physical facility housing such equipment, models, simulations, and support software for CDSF research and analysis activities, plus personnel needed for operation and maintenance of equipment, models/simulations, and other related software, and non-BAS software documentation. This section will include a model maintenance element, which will assist in the writing and modification/maintenance of needed models/simulations and a support software element, which will provide expertise, software utilities, and other items of software which may be needed to support the work of the CDSF.

2. Other Elements. The responsibilities of the USAADS Directorate of Combat Developments and the Directorate of Training Developments remain, in this Objective System, essentially the same as in the Baseline System. At Fort Leavenworth, responsibilities of CACDA are consistent with those enunciated in Paragraph c, involving the Force Level Control System and the JINTACCS Office, and the two BAS PDSS coordination elements, one for analysis resources and one for test and evaluation resources. Through the first of these elements, a variety of analytical resources may be available for assistance, such as in the Combined Arms Studies and Analysis Activity (CASAA) at Fort Leavenworth, CACDA's Scenarios & Wargames Directorate, TRADOC Systems Analysis Activity (TRASANA) at White Sands Missile Range, Concepts Analysis Agency (CAA) of DCSOPS, and DARCOM's Battlefield Systems Integration Directorate (BSI), at Alexandria, and Army Materiel Systems Analysis Agency, at Aberdeen. The types of test and evaluation resources that may be available through the second branch have been indicated above.

(g) Estimate of Resource Requirements. Estimates of the resources required to establish the Objective PDSS System for the Air Defense BFA are discussed below. Where possible, these estimates are time-phased for the fiscal years 81-87. The resource categories addressed are personnel, major items of equipment, facilities, and funds.

1. Personnel. Personnel needed to staff the Air Defense Battlefield Systems Software Support Organization (BS³O) in the Objective PDSS System have been estimated by the study team. These estimated personnel requirements are based on consideration of the responsibilities of each element within the BS³O through the branch and section level. Requirements for Directorate of Training Development personnel working in the CDSF or in similar functions are not included. The resulting total requirements figures are shown by fiscal year in the top portion of Figure 2-43. These total requirements, exclusive of DTD, are the numbers perceived by the study team as necessary to accomplish all of the functions identified above for each element of the BS³O, without consideration of what portion of the work could or should be done by contractual support. It is possible that a breakdown of requirements into in-house and contractor personnel would yield slightly different totals, because of the additional requirement for supervision of contractor efforts. The total requirements shown in this figure, however, are seen to grow from a total of 162 in FY 81 to 199 in FY 87. The authorized personnel numbers shown in the middle of Figure 2-43 include only the Combat Systems Software Division. The last portion of this figure shows additional personnel needed (required minus authorized). For the last fiscal year, a breakout of the personnel requirements is provided by major organizational element in Figure 2-44.

2. Major equipment. Preliminary identification of types and numbers of major equipment items required by the Objective PDSS System for Air Defense is provided in Figure 2-45. Information in that figure must be considered preliminary because a detailed implementation planning study, needed to yield definitive information, has not yet been made for Air Defense.

3. Facilities. A preliminary estimate of facility space requirements for the Objective PDSS System for Air Defense, based on the BS³O and its associated CDSF, indicates a requirement for the entire space within the existing Building 5800 at Fort Bliss. Such an occupation would displace approximately 100 personnel. Accordingly, a rough estimate of new construction cost has been included in the funding section, based on 100 personnel. The estimate was based on current applicable guideline data and includes the building itself with conference rooms, the utilities and other externals, equipment and furnishings, and cost escalation for a four year approval cycle.

4. Funds. Estimates of funding needed to support the establishment and operation of the Objective PDSS System for Air Defense are provided below. Estimates provided by the Air Defense School have been reviewed, rearranged, and supplemented by the study team to reflect the activities of the BS³O and its associated CDSF. The resulting figures shown in Figure 2-46 are for fiscal years 1981 through 1987, but do not include the requirements of other elements at Fort Bliss, such as the Directorate of Training Developments (DTD) or the Air Defense Board. DTD will require contractual support, for PDSS functions only, in addition to the civilian salaries cost of their PDSS personnel requirement footnoted in Figure 2-43,

ADA, ESTIMATED PERSONNEL REQUIREMENTS							
PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required*							
Military	68	82	97	97	97	97	97
Civilian	94	98	102	102	102	102	102
TOTAL	162	180	199	199	199	199	199
Authorized							
Military	19	19	19	19	19	19	19
Civilian	14	14	14	14	14	14	14
TOTAL	33	33	33	33	33	33	33
Additional Needed							
Military	49	63	78	78	78	78	78
Civilian	80	84	88	88	88	88	88
TOTAL	129	147	156	156	156	156	156
* Includes personnel in both mission-oriented and facility support functions of combat development area. Requirements are total needed to perform all identified functions, without distinction as to whether in-house or by contract support--see text. Does not include requirements within the Directorate of Training Development (DTD) for the following numbers of civilian personnel for DTD PDSS functions, only, for FYs 82 through 87, respectively: 2, 5, 6, 6, 7, 7.							

Figure 2-43. Estimated personnel required, Objective PDSS System, ADA BFA

	MANAGERIAL AND TECHNICAL		CLERICAL AND TECHNICIAN		TOTAL
	MIL	CIV	MIL	CIV	
Office of the Chief, BS ³ O	2	0	1	1	4
BS ³ O Plans & Resources Office	2	4	2	1	9
Standards & Records Office	0	2	2	1	5
Office of the Chief, Tactical Functions	1	0	0	1	2
Systems Management Branch	8	1	0	1	10
Concepts & Doctrine Branch	11	11	1	1	24
Scenarios Branch	7	5	5	1	18
Field Support Branch	8	1	2	1	12
Office of the Chief, Technical Functions	0	1	1	1	3
Technology Analysis Branch	0	5	0	0	5
Requirements Analysis & Engineering Branch	3	6	0	1	10
Interoperability Analysis & Engineering Branch	4	6	0	0	10
Systems/Training Simulators Branch	3	7	0	0	10
Software Analysis & Maintenance Branch	3	6	1	1	11
Systems Test Support Branch	3	4	2	0	9
Special Projects Office	1	4	2	1	8
Office of the Chief, Software Support					
Facility Branch	0	1	1	1	3
Facility Plans & Organization Section	1	1	3	0	5
Communications Section	1	2	2	0	5
Facility Support Section	0	2	2	1	5
Modeling & Simulation Section	6	11	2	1	20
Computer Support & Operations Section	1	4	3	3	11
TOTAL	65	84	32	18	199

Figure 2-44. Estimated 1987 personnel requirements by element,
Objective PDSS System, Air Defense BFA

SECURE TERMINAL TO TRADOC COMPUTER AT FORT LEAVENWORTH*

COMPUTER, MID-SIZE, WITH VARIOUS PERIPHERALS AND DATA LINKS, TO SUPPORT LOCAL MODELS & SIMULATIONS AND TO INTERFACE BETWEEN SIMULATORS AND SELECTED ITEMS OF WEAPON SYSTEM HARDWARE EMPLOYED AS PART OF SIMULATION ENVIRONMENT

SIMULATORS

PATRIOT - 1 SINGLE-CONSOLE PATRIOT SIMULATOR (TOS-T) WITH MINI-COMPUTER*
 - 1 FOUR-CONSOLE PATRIOT SIMULATOR (TOS-4) WITH MINI-COMPUTER**

I-HAWK
 DIVAD GUN
 ROLAND
 AN/TSQ-73
 SHORAD C2

NATURE AND EXTENT TO BE DETERMINED

SELECTED PORTIONS OF WEAPON SYSTEMS (HARDWARE) FOR AD SYSTEMS

* CURRENTLY ON HAND. BEING UP-GRADED TO A TWO-STATION DEVICE.

** TO BE DELIVERED IN EARLY 1981. DOES NOT INCLUDE TRAINING EQUIPMENT REQUIRED BY OR IN PROCUREMENT FOR DIRECTORATE OF TRAINING DEVELOPMENT.

Figure 2-45. Preliminary identification of major equipment required, Objective PDSS System, ADA BFA

ADA, ESTIMATED COSTS (\$000)* - BS ³ 0							
	Fiscal Year						
	81	82	83	84	85	86	87
Development (RDT&E) Contracts	830	550	2030	1760	1400	200	200
Procurement (PA)	-	-	2700	-	-	-	-
Construction (MCA)	-	-	2900	-	-	-	-
Operations & Maintenance (OMA):							
Civilian Salaries	1058	1058	1198	1198	1198	1198	1198
Contracts	1300	4700	4440	4700	4530	4590	4440
Building Modifications	-	-	150	150	100	100	100
IDY	150	150	298	314	264	264	264
Communications	50	50	50	50	50	50	50
Other	500	500	400	400	450	450	450
TOTAL	<u>3888</u>	<u>7008</u>	<u>14166</u>	<u>8572</u>	<u>7992</u>	<u>6852</u>	<u>6602</u>
* Constant FY 81 dollars.							

Figure 2-46. Estimated funding required, Objective PDSS System, ADA BFA, BS³0 only

above. The costs of required DTD PDSS contractual support are estimated for fiscal years 1982 through 1987 to be: \$150K, \$260K, \$350K, \$350K, \$500K, and \$500K, respectively. These and the DTD civilian salaries for PDSS should be added to the numbers in Figure 2-46 to approach total Ft. Bliss costs of the Objective System. A brief indication of the type of activity or items covered by the numbers shown in Figure 2-46 is given below for each line in the figure.

a. Development (RDT&E). Included in this category are contractual costs to develop detailed, high-resolution simulation models of ADA systems and subsystems. Such models are essential to studies and evaluations of the weapon-specific doctrine and tactics of system deployment, co-deployment, interoperability, and employment as these affect the software embedded or to be embedded in the systems. Also included are model drivers, ancillary data bases, and simulators (like the Patriot TOS/T) of the tactical operations of ADA systems.

b. Procurement (PA). This category is for the purchase of developed items of hardware and associated software to equip the USAADS software facility. Included are a mid-size computer with peripherals, analyst consoles, color graphics consoles, large screen display unit, hardware to interface the simulation models to tactical system hardware and to system tactical operations simulators, and special integrating and support software.

c. Construction (MCA). This category is for construction of a facility to house people displaced by the new organization, as discussed in paragraph (g)3, above.

d. Civilian Salaries (OMA). This subcategory of Operations & Maintenance-Army is for the non-military component of the personnel requirements listed in Figure 2-43. The costs of civilian salaries shown in Figure 2-46, however, are based on about 48 civilians, which are deemed by USAADS to represent that core complement of in-house civilian personnel necessary and desirable to permit operation of the software support program with an appropriate mix of contractor support. For TRADOC budgeting purposes, military pay and allowances (MPA) are not addressed.

e. Contracts (OMA). This OMA subcategory covers contractor support in several areas. The largest area involves provision of about 56 professional personnel to assist USAADS in performance of PDSS and related software development tasks, in augmentation/in lieu of in-house resources. Other areas involve provision of technical advice and expertise in specific ADA systems and their software (on a full-time basis), maintenance and necessary updating of simulation models of ADA systems, and maintenance and necessary updating of system simulators such as the Patriot TOS/T and TOS-4.

f. Building Modifications. This subcategory of OMA is to cover local Engineer support in modifying or converting portions of the USAADS software facility to accomodate addition of computers, analytical equipment/consoles, and necessary rearrangement of work areas.

g. TDY. This subcategory of OMA is to cover travel and temporary duty costs of trips within and outside the continental US as required for participation in software design reviews, contractor and government testing, investigation of field user problems, user acceptance testing, introduction of new software to the field, and maintenance of contact and liaison.

h. Communications. This subcategory of OMA is to cover costs for dedicated, high-speed, data quality leased lines between the USAADS software facility and other government/contractor installations. These lines are required for remote use of large central computers (e.g., DPFO, Ft. Leavenworth), interoperability testing with other air defense systems/facilities, and various types of communications and tasking with other systems/facilities (e.g., CCS² at Ft. Leavenworth).

i. Other. This subcategory of OMA basically covers supplies and other items incident to the USAADS software facility. Included are ADP consumables, such as computer paper, service and repair of ADP equipment and peripherals, technical reference materials and publications, and office supplies for on-site contractor personnel.

g. Intelligence and Electronic Warfare BFA.

(1) General. The US Army Intelligence Center and School (USAICS) is the proponent for this BFA. This proponentcy includes the mission of conducting general intelligence and cryptologic/electronic warfare training, training developments, combat developments, and operational testing. Systems development and life cycle management, to include post-deployment software support, are carried out as part of the combat developments mission. USAICS' organizational elements involved in performing Combat Developer PDSS functions at present are shown in Figure 2-47. While these functions are concentrated in the Directorate of Combat Developments, other organizational elements shown in the figure also have significant roles in this effort. These include the US Army Intelligence and Security Board, four separate TRADOC System Managers, the Computer Systems Management Office, and the Directorate of Training Developments at both USAICS and the US Army Intelligence School, Fort Devens. The Objective PDSS System proposed for this BFA has been designed to take maximum advantage of the existing and projected capabilities of these organizations. It provides for the enhancement of these capabilities consistent with the increase in PDSS requirements anticipated to occur as additional Intelligence/EW BAS are deployed and/or extended to other Users. This needed improvement in capabilities is to be achieved through augmentation of existing organizational elements involved with PDSS activities, and the establishment of one new PDSS staff element within the Directorate of Combat Developments. This latter element would provide the nucleus of a CDSF to be established at USAICS as part of this Objective PDSS System. This CDSF, which would be formed generally following Model 1, illustrated in Figure 2-2, would provide a focal point for PDSS activity associated with Intelligence/EW BAS. It would facilitate coordinating and integrating the efforts of all USAICS elements who have or should have a role in PDSS actions. It would also facilitate the USAICS interface with the two ERADCOM-managed PDSS Centers that are to support Intelligence and EW BFA systems under the PDSS Concept Plan for BAS. One of these ERADCOM-managed centers is to be established at Fort Huachuca for supporting the ASAS. The other PDSS center for supporting all other Intelligence and EW BAS will be located at Fort Monmouth.

(2) The current system.

(a) Functional responsibilities.

1. USAICS. As the TRADOC proponent for tactical intelligence, electronic warfare, and intelligence support to operational security, USAICS is responsible for developing operational concepts, doctrine, organization, and materiel requirements for new intelligence and electronic warfare systems and units at all echelons of the Army. This includes a broad range of functions associated with all phases of the system life cycle, working both independently and in coordination with System Users, Materiel Developers, Operational Testers, and others involved with various aspects of intelligence systems.

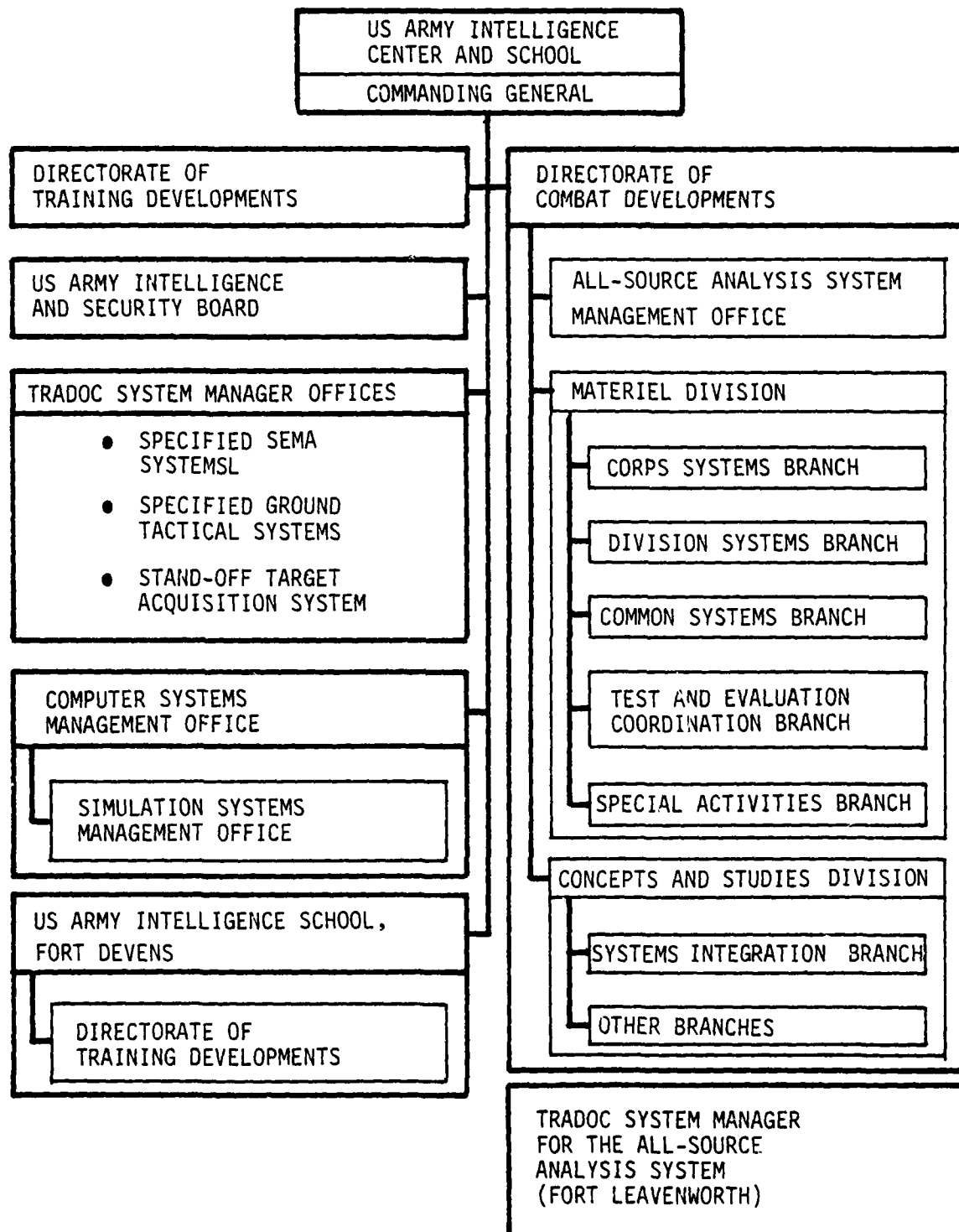


Figure 2-47. Organizational elements with major responsibilities in the PDSS Baseline System for the Intelligence and EW BFA

2. Directorate of Combat Developments. Within USAICS, primary responsibility for these functions is assigned to the Directorate of Combat Developments. Two divisions of this directorate--the Concepts and Studies Division and the Materiel Division--are extensively involved with these functions. The Corps, Division, and EAC/Common Systems Branches of the Materiel Division have action officers with responsibility for accomplishing or coordinating all CD actions for specified intelligence and electronic warfare systems in their functional areas. The All-Source Analysis System (ASAS) Management Office in the Directorate of Combat Developments discharges combat development responsibilities inherent in the USAICS propensity for the ASAS and related systems/test bed (i.e., TCAC, ADM/SEWS, and BETA). It supports the TRADOC System Manager for ASAS (TSM-ASAS) (located at CACDA) as required.

3. Other elements. Other organizational elements, external to the Directorate of Combat Developments, that have major responsibilities in the current PDSS System include:

- The TSMs for Corps, Division, and EAC/Common Intelligence and EW Systems, whose responsibilities are prescribed in TRADOC Reg. 71-12.
- The US Army Intelligence and Security Board which, under TRADOC Reg. 10-41, is responsible for monitoring or planning, programming, and supporting or conducting operational tests and other tests and evaluations as directed. This board also provides advice and assistance to the Directorate of Combat Developments and TSMs on matters associated with systems testing.
- The Directorate of Training Developments, USAICS, which has training development responsibility for all Intelligence and Electronic Warfare systems except Signal Intelligence systems. Training development for these latter systems is the responsibility of the US Army Intelligence School, Fort Devens.
- The Simulation Systems Management Office of the Computer Systems Management Office which, under a phased plan, is to develop a capability for providing automated support (e.g., simulations and analyses) to the system development and life cycle management effort at USAICS.

(b) BAS to be supported. The Category 1 and 2 BAS in this functional area that are addressed in this study are shown in Figure 2-48. The stage of each system in the life cycle is also shown in the figure. In addition, to these Category 1 and 2 BAS, there are 11 Category 3 systems which will also require some CD participation in the effort devoted to their PDSS.

INTELLIGENCE/EW BFA

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USAICS*	AN/MS-67--COMMUNICATIONS CENTER (COMFAC) (VALIDATION PHASE)
USAICS	ASAS--ALL SOURCE ANALYSIS SYSTEM (CONCEPTUAL PHASE)
USAICS	AN/TSQ-114--TRAILBLAZER (PRODUCTION AND DEPLOYMENT)
USAICS	AN/ALQ-151--QUICKFIX (INITIAL PRODUCTION)
USAICS	AN/TSQ-105--GUARDRAIL V (PRODUCTION AND DEPLOYMENT)
USAICS	AN/ALG-133--QUICKLOOK II (PRODUCTION AND DEPLOYMENT)
USAICS	SOTAS--STAND-OFF TARGET ACQUISITION SYSTEM (FULL-SCALE DEVELOPMENT)
USAICS	TCAC(D)--TECHNICAL CONTROL AND ANALYSIS CENTER (DIVISION)**
* USASC TO BECOME PROPONENT AT THE TIME SYSTEM IS FIELDED ** BEING DEVELOPED UNDER QRC-51 IAW AR 105-37.	

Figure 2-48. Intelligence and Electronic Warfare Category 1 and 2 BAS

(3) The Objective System.

(a) Purpose. The component of the Objective PDSS System described in this paragraph is to provide USAICS the capability to adequately fulfill its currently known CD PDSS responsibilities for Intelligence and EW BFA BAS through the mid- to late-1980s.

(b) Principal features. This Objective System can be characterized generally as an enhancement of USAICS' current capability to accomplish those PDSS functions that are the responsibility of the CD. This enhancement is to be accomplished through the following steps:

- Establishment of a CDSF at USAICS in conjunction with the ERADCOM-managed PDSS Center that is to be established there. This CDSF would be formed along the lines of Model 1, illustrated in Figure 2-2.
- Establishment of a PDSS Staff Element within the Directorate of Combat Developments to operate and form the nucleus of the CDSF.
- The augmentation of certain existing USAICS organizational elements with additional personnel to provide these organizations an improved capability to perform or support CD PDSS actions. The organizational elements are:
 - The All-Source Analysis System Management Office
 - The Corps, Division, and EAC/Common Systems Branches of the Materiel Division
 - The Test and Evaluation Coordination Branch of the Materiel Division
 - The Systems Integration Branch of the Concepts and Studies Division
 - The News Systems Branch of the Individual Training Division, Directorate of Training Developments.
- The designation of CDSMs for ASAS and for other Corps, Division, and EAC/Common Intelligence and EW BAS.

The proposed new PDSS Staff Element, called the Combat Developments Support Office, would be subordinate to the Director of Combat Developments. This office would form the nucleus and principal functional operating element of the proposed USAICS' CDSF. It would provide a focal point for coordination and integration of PDSS actions and related matters and would facilitate interaction with both Materiel Developers and Users of Intelligence and EW BFA BAS. The Combat Developments Support Office would maintain contact/ liaison with the ERADCOM-managed PDSS center located at Fort Monmouth.

(c) Structure. The basic structure and the relationships among elements involved with this Objective PDSS System, to include an illustration of the proposed way of forming the CDSF, are shown in Figure 2-49. The principal elements in this structure are the same as those shown in Figure 2-47 with the exception of the Combat Developments Support Office discussed in Paragraph (b), above. As indicated, permanent staff elements within the proposed CDSF would include the proposed Combat Developments Support Office and the Simulation Systems Management Office. The Combat Developments Support Office would have primary responsibility for operation of the CDSF and for coordinating and integrating all CD PDSS activity at USAICS. The Simulation Systems Management Office would provide computer support for the analyses and simulations conducted in the CDSF, by elements of the Directorate of Combat Developments, to examine PDSS requirements. Other CDSF elements would be formed on a task force basis from existing USAICS staff organizations when and as needed to provide a team tailored to address each major PDSS requirement. The size and composition of these task force teams would vary depending upon the nature of the PDSS requirement to be addressed.

(d) Operating concept. The concept of operations associated with this Objective PDSS System at USAICS envisions that PDSS will continue to be performed under the cognizance of the Director of Combat Developments with participation by the TRADOC System Managers (TSM), Directorate of Training Developments, Computer Systems Management Office, and the US Army Intelligence and Security Board, in their respective areas of functional responsibility. Within the Directorate of Combat Developments, while the focal point for coordinating and integrating all PDSS matters will be the Combat Developments Support Office, primary responsibility for a PDSS action involving any given BAS will normally rest with the CDSM for the system being addressed or impacted. Other elements of this directorate, and other elements of USAICS identified above, will have major roles in each PDSS action consistent with their current functional responsibilities as specified in USAICS Reg. 10-1.

(e) Functional responsibilities. As indicated by the discussion of the concept of operations associated with this Objective PDSS System, existing organizational elements of USAICS would have PDSS responsibilities consistent with and inherent in their system development and life cycle management responsibilities as currently assigned by USAICS Reg. 10-1. The responsibilities of the proposed new elements of the Objective PDSS structure--the CDSMs, the Combat Developments Support Office, and the CD PDSS Liaison Office at Fort Monmouth--are discussed below. Specific functions of both the existing and proposed organizational elements with major responsibilities in fulfilling CD PDSS requirements are shown in Figure 2-50.

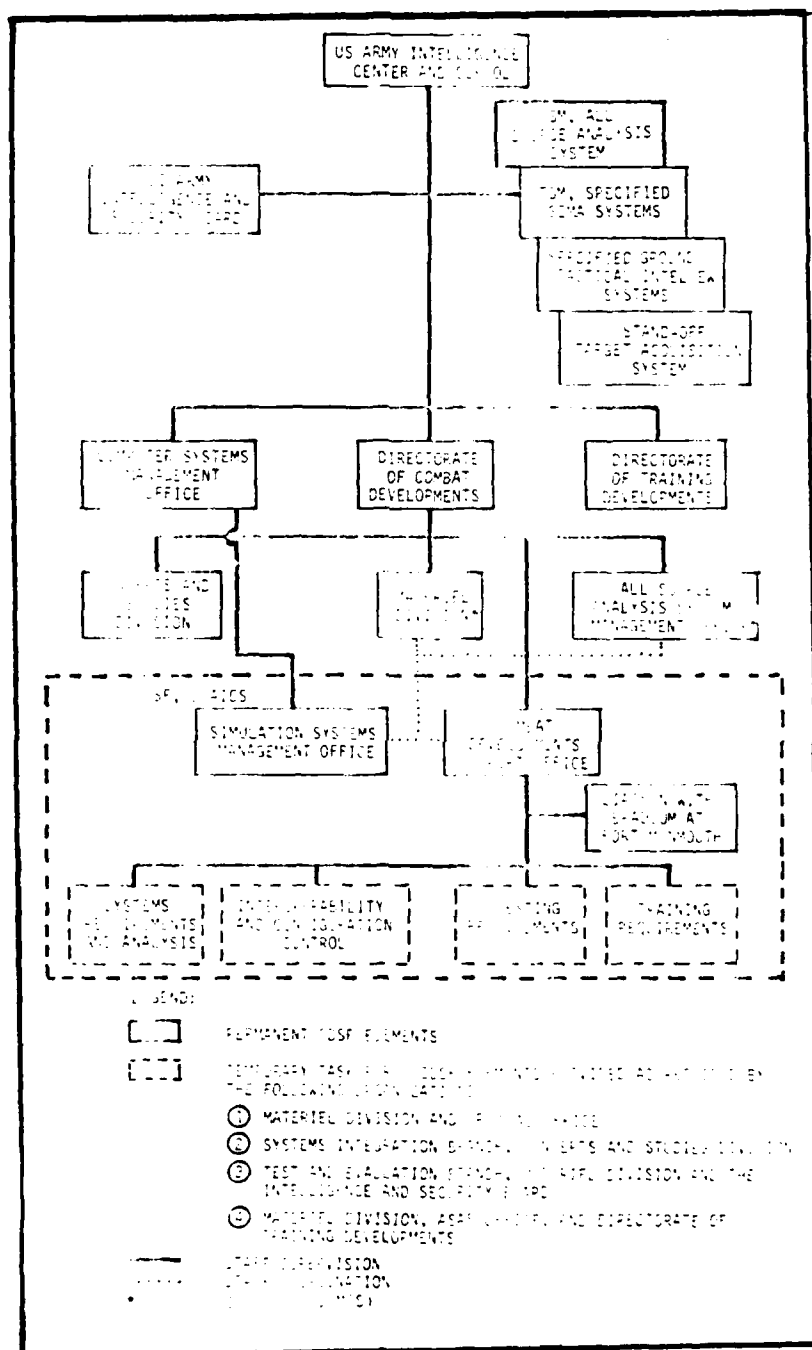


Figure 2-49. Concept for CDSF, USAICS

[illegible]

Figure 2-50. Assignment of functions, Objective PDSS System, Intelligence and EW BFA (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	COMBAT DEVELOPMENTS SUPPORT OFFICE	CDPM(S)	CD PSS LNO	TEST AND EVALUATION BR.	MATERIAL DIVISION	SYSTEMS INTEGRATION BR.	CONCEPTS AND STUDIES DIV	NEW SYSTEMS BR.	DIR. OF TRAINING DEV.	COMPUTER SYSTEMS MANAGEMENT OFFICE	ARMY INTELLIGENCE AND SECURITY BOARD	TSM(S) (CORPS, DIVISION, SOTAS, AND ASAS)
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	X	X	X	X	X	X	X	X	X	X	X	X
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	X	X	X	X	X	X	X	X	X	X	X	X
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	3. IDENTIFY TRAINING IMPACT.	X	X	X	X	X	X	X	X	X	X	X	X
		4. IDENTIFY LOGISTICAL IMPACT.	X	X	X	X	X	X	X	X	X	X	X	X
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPRO- PRIATE.	5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	X	X	X	X	X	X	X	X	X	X	X	X
		6. IDENTIFY HUMAN FACTORS IMPACT.	X	X	X	X	X	X	X	X	X	X	X	X
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	X	X	X	X	X	X	X	X	X	X	X	X
		1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	X	X	X	X	X	X	X	X	X	X	X	X
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	X	X	X	X	X	X	X	X	X	X	X	X
		3. PROVIDE REQUIREMENT TO MD.	X	X	X	X	X	X	X	X	X	X	X	X
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	X	X	X	X	X	X	X	X	X	X	X	X
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	X	X	X	X	X	X	X	X	X	X	X	X
		1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	X	X	X	X	X	X	X	X	X	X	X	X
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	X	X	X	X	X	X	X	X	X	X	X	X
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	X	X	X	X	X	X	X	X	X	X	X	X
		4. MONITOR DEVELOPMENT TEST (DT).	X	X	X	X	X	X	X	X	X	X	X	X
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	X	X	X	X	X	X	X	X	X	X	X	X
		6. PLAN AND CONDUCT OTHER SYSTEM OF TESTING.	X	X	X	X	X	X	X	X	X	X	X	X
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING.	X	X	X	X	X	X	X	X	X	X	X	X
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	X	X	X	X	X	X	X	X	X	X	X	X
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	X	X	X	X	X	X	X	X	X	X	X	X
		1. MAINTAIN COMMUNICATIONS WITH USERS.	X	X	X	X	X	X	X	X	X	X	X	X
		2. FUNCTION AS USER SURROGATE.	X	X	X	X	X	X	X	X	X	X	X	X
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	X	X	X	X	X	X	X	X	X	X	X	X
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	X	X	X	X	X	X	X	X	X	X	X	X

Figure 2-50. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	COMBAT DEVELOPMENTS SUPPORT OFFICE	CDPM(S)	CD POSS LNC	TEST AND EVALUATION BR.	SYSTEMS INTEGRATION BR.	CONCEPTS AND STUDIES DIV.	NEW SYSTEMS BR.	DIR. OF TRAINING DEV.	COMPUTER SYSTEMS MANAGEMENT OFFICE	ARMY INTELLIGENCE AND SECURITY BOARD	TSM(S) (CORPS DIVISION, SOTAS AND ASAS)
5. FIELD SUPPORT (CONTINUED)	2. DEVELOP AND MANAGE TRAINING PROGRAM RE- QUIRED BY SYSTEM CHANGE (EXCEPT FOR NEW EQUIPMENT TRAIN- ING (C7)).	1. DETERMINE TRAINING/RETRAINING DEVELOPMENT REQUIREMENTS.	X	X	X	X	X	X	X	X	X	X	X
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	X	X	X	X	X	X	X	X	X	X	X
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	X	X	X	X	X	X	X	X	X	X	X
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	X	X	X	X	X	X	X	X	X	X	X
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	X	X	X	X	X	X	X	X	X	X	X
6. OTHER	1. JOINT AND INTER- NATIONAL INTEROPER- ABILITY REQUIREMENTS. 2. SUPPORT TO CONTINGENCY PLANNING.	6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	X	X	X	X	X	X	X	X	X	X	X
		7. VALIDATE/VERIFY TRAINING MATERIALS.	X	X	X	X	X	X	X	X	X	X	X
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	X	X	X	X	X	X	X	X	X	X	X
		1. IDENTIFY REQUIREMENTS.	X	X	X	X	X	X	X	X	X	X	X
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	X	X	X	X	X	X	X	X	X	X	X
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. COORDINATE WITH HQ IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	X	X	X	X	X	X	X	X	X	X	X
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELD SOFTWARE TO CONTINGENCY MISSION.	X	X	X	X	X	X	X	X	X	X	X
		1. SPECIFY POSS RESPONSE REQUIREMENTS.	X	X	X	X	X	X	X	X	X	X	X
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	X	X	X	X	X	X	X	X	X	X	X
		3. COORDINATE WITH THE HQ IN PLANNING POSS SUPPORT.	X	X	X	X	X	X	X	X	X	X	X
	4. ASSESS CONTINUED TACTICAL SUITABILITY OF BAS.	4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	X	X	X	X	X	X	X	X	X	X	X
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	X	X	X	X	X	X	X	X	X	X	X
		1. CONDUCT PERIODIC REEVALUATIONS OF BAS TO DETERMINE CONTINUED TACTICAL SUITABILITY AS CHANGES OCCUR IN THREAT, DOCTRINE, AND OPERATIONAL REQUIREMENTS.	X	X	X	X	X	X	X	X	X	X	X
		2. AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)	X	X	X	X	X	X	X	X	X	X	X
		3. AFTER FIELDING	X	X	X	X	X	X	X	X	X	X	X

X = Element is responsible
N = Element is not responsible

Figure 2-50. (concluded)

1. Combat Development System Managers. Each CDSM in the Intelligence and EW BFA will serve as the software Combat Developer and principal Field User's representative for PDSS for the system or group of systems for which he is responsible. He manages and coordinates or performs all software-related actions within the CD PDSS role for these BAS. He is the primary point of contact with the MD on PDSS matters involving any of these BAS. He coordinates with the Combat Developments Support Office in establishing priorities and in planning and arranging CDSF operations in support of BAS for which he is responsible. He interacts with the CD PDSS Liaison Office at Fort Monmouth on matters involving PDSS for Intelligence and EW BAS with which he is concerned and that are supported by the ERADCOM-managed PDSS Center at Fort Monmouth. Specific functions with which he is involved in either a management, coordination, or performance role are shown in Figure 2-50.

2. Combat Developments Support Office. This office:

- Serves as the focal point for coordinating and integrating all PDSS requirements and related matters within USAICS
- Plans and manages the operations of the CDSF in supporting the accomplishment of all CD PDSS actions for BAS in the Intelligence and EW BFA.
- Establishes, in coordination with affected CDSMs, priorities for addressing PDSS requirements
- Serves as the primary USAICS interface on PDSS management and operational matters with the ERADCOM-managed PDSS Centers at Fort Huachuca and Fort Monmouth
- Maintains technical expertise in Intelligence and EW BAS and provides a communications medium for system software matters between the User and Materiel Developer
- Serves as the primary interface between elements of the Directorate of Combat Developments and the Simulation Systems Management Office in planning and arranging automated support to PDSS analyses
- Supervises the CD PDSS Liaison Office at Fort Monmouth which is responsible for interfacing and coordinating USAICS PDSS requirements with the ERADCOM PDSS Center at that installation
- Arranges, coordinates, and participates in visits to User locations as necessary to assist in identification and isolation of User reported major system problems, in developing functional workaround procedures, and in stating the problem and CD requirement(s) deriving therefrom to the MD.

3. PDSS Liaison. Seven Category 2 BAS and 11 Category 3 BAS in the Intelligence and EW BFA are to be supported at the PDSS Center operated by ERADCOM at the EW Laboratory, Fort Monmouth. The Combat developments Support Office will establish and maintain liaison with this ERADCOM PDSS Center in connection with PDSS requirements and various related matters involving software support to these systems. This liaison effort will facilitate the day-to-day working level interaction that is needed between USAICS, as the CD and User representative, and ERADCOM to ensure that CD/User requirements are adequately stated and understood, and that the CD is aware of MD capabilities in general and the status of PDSS actions in particular.

(f) Resources. Estimates of the resources needed to implement this component of the Objective PDSS System at USAICS are presented below.

1. Personnel. Time-phased personnel resources estimated to be needed are shown in Figure 2-51. A breakout of these personnel by organizational element is provided in Figure 2-52. As discussed previously and as indicated in these figures, the estimated resource requirements provide for establishing the one new organizational element called for by this Objective System--the Combat Developments Support Office--and for augmenting certain existing elements of USAICS that will be assuming added PDSS responsibilities under the Objective PDSS System. These personnel should include both military and civilian intelligence specialists, operations research analysts, and computer systems analysts. This will provide for the blend of functional and technical expertise needed to address CD PDSS requirements in this BFA.

2. Facilities. A physical facility is needed to house the CDSF to be established under the concept of this Objective PDSS System. Requirements for this facility include office space for the Combat Developments Support Office and elements of the Computer Systems Management Office, a computer center, working space for personnel working as members of a task force in the CDSF, and a simulation/analysis/test area that would accommodate up to 10 personnel working simultaneously. It would be desirable to collocate this CDSF with the ERADCOM-managed PDSS Center to be established at Fort Huachuca. If collocation is not feasible, other suitable space should be provided for the CDSF that will facilitate interaction with the PDSS Center. It is the understanding of the Study Team that space requirements for the Computer Systems Management Office, referred to above, have been separately determined to be 4000 square feet. The requirement for this space is being addressed in a phased plan which provides for needed expansion and development of the capabilities of the Computer Systems Management Office. Excluding that requirement, it is estimated that an additional 5000 square feet of space is needed for the remainder of the CDSF, to be used as discussed above.

3. Major items of equipment. Major items of equipment have been addressed, in part, in the plans for the Computer Systems Management Office, referred to above. Other specific equipment needed must be determined during initial detailed implementation planning.

USAICS, ESTIMATED PERSONNEL REQUIREMENTS							
PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	6	7	7	9	9	9	9
Civilian	8	9	11	13	13	13	13
TOTAL	14	16	18	22	22	22	22
Authorized							
Military	0	0	0	0	0	0	0
Civilian	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0
Additional Needed							
Military	6	7	7	9	9	9	9
Civilian	8	9	11	13	13	13	13
TOTAL	14	16	18	22	22	22	22

Figure 2-51. Estimated personnel requirements, USAICS

ELEMENT	TECHNICAL		ADMINISTRATIVE		TOTAL
	MIL	CIV	MIL	CIV	
Combat Developments Support Office	4	5	1	1	11
Augmentation to:					
ASAS Management Office	1	0	0	0	1
Materiel Division					
• Corps Systems Branch	1	1	0	0	2
• Division Systems Branch	1	1	0	0	2
• EAC/Common Systems Branch	0	1	0	0	1
• Test and Evaluation Office	0	1	0	0	1
Concepts and Studies Division					
• Systems Integration Branch	1	1	0	0	2
Directorate of Training Developments					
• New Systems Branch, DTD	0	2	0	0	2
TOTALS	8	12	1	1	22

Figure 2-52. Breakout of USAICS personnel requirements by organizational element

4. Funds. An estimate of funds required for the civilian personnel identified above and the CDSF physical facility are shown in Figure 2-53. Funds needed for equipment are dependent on requirements identified during detailed implementation planning. The civilian personnel costs shown are based on an estimated average annual cost of \$31.6K, including 10 percent loading, for a technical-level civilian and \$16.0K for an administrative-level civilian.

USAICS, ESTIMATED PERSONNEL COSTS (\$000)*							
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Development (RDT&E) Procurement (PA) Construction (MCA) Operations and Maintenance (OMA)	500.0**						
Civilian Personnel	<u>252.8</u>	<u>284.4</u>	<u>347.6</u>	<u>379.6</u>	<u>379.6</u>	<u>379.6</u>	<u>379.6</u>
TOTAL	252.8	284.4	347.6	879.6	379.6	379.6	379.6
** Does not include space required for the Simulation Systems Management Office. *In FY 81 constant dollars.							

Figure 2-53. Estimated personnel costs, USAICS

h. Combat Service Support BFA--US Army Logistics Center.

(1) General. Proponency for the Combat Service Support BFA is divided between the US Army Logistics Center (LOGCEN), for logistics functions, and Soldier Support Center (SSC), for soldier support functions. Separate descriptions are provided, in this paragraph and in paragraph 2-5.i., of the Objective PDSS System proposed for each of these organizations for providing PDSS to BAS in their respective portions of this BFA.

(2) The LOGCEN role and mission. The LOGCEN is designated by TRADOC Reg. 10-41 as one of three major TRADOC integrating centers. It has the mission of ensuring the systematic integration of combat and training developments functions in the logistics area. Included in this broad mission are the requirements for developing and coordinating the functional design, installation, and maintenance of multicommand intermediate and user logistics operating/management information systems and providing customer assistance for these systems. LOGCEN organizational elements involved in performing these system-related functions, to include PDSS, in the Current System are shown in Figure 2-54. As indicated by the figure, these functions are concentrated in the Management Information Systems Directorate and the Concepts and Doctrine Directorate of the LOGCEN. The LOGCEN has been involved for many years in performing CD PDSS functions for logistics systems already deployed. The projected deployment of new systems and the further extension of some currently fielded systems requires that the current PDSS capability be improved. The Objective PDSS System, outlined in this report, has been designed to provide the needed enhancement in the LOGCEN's current capability with minimum change to existing organization and operational procedures.

(3) The current system.

(a) Functional responsibilities.

1. LOGCEN. As the TRADOC proponent for the logistics portion of the Combat Service Support (CSS) BFA, the LOGCEN is responsible, among other things, for the functional design and development of requirements for testing, validation, installation (conversion), and maintenance of all Army retail logistics systems for supply (except supply Class I), maintenance, transportation, and ammunition.

2. Management Information Systems Directorate. Within the LOGCEN, primary responsibility for the above functions is assigned to the Management Information Systems Directorate. Except for the conceptual design of certain systems for which the Concepts and Doctrine Directorate is assigned responsibility, the Management Information Systems Directorate is responsible for developing and coordinating the functional plans, design, installation, maintenance, and customer assistance of retail logistics operating/management information systems. Designated staff officers assigned to branches of the Field Systems and Supply Systems Divisions, are assigned as action officers

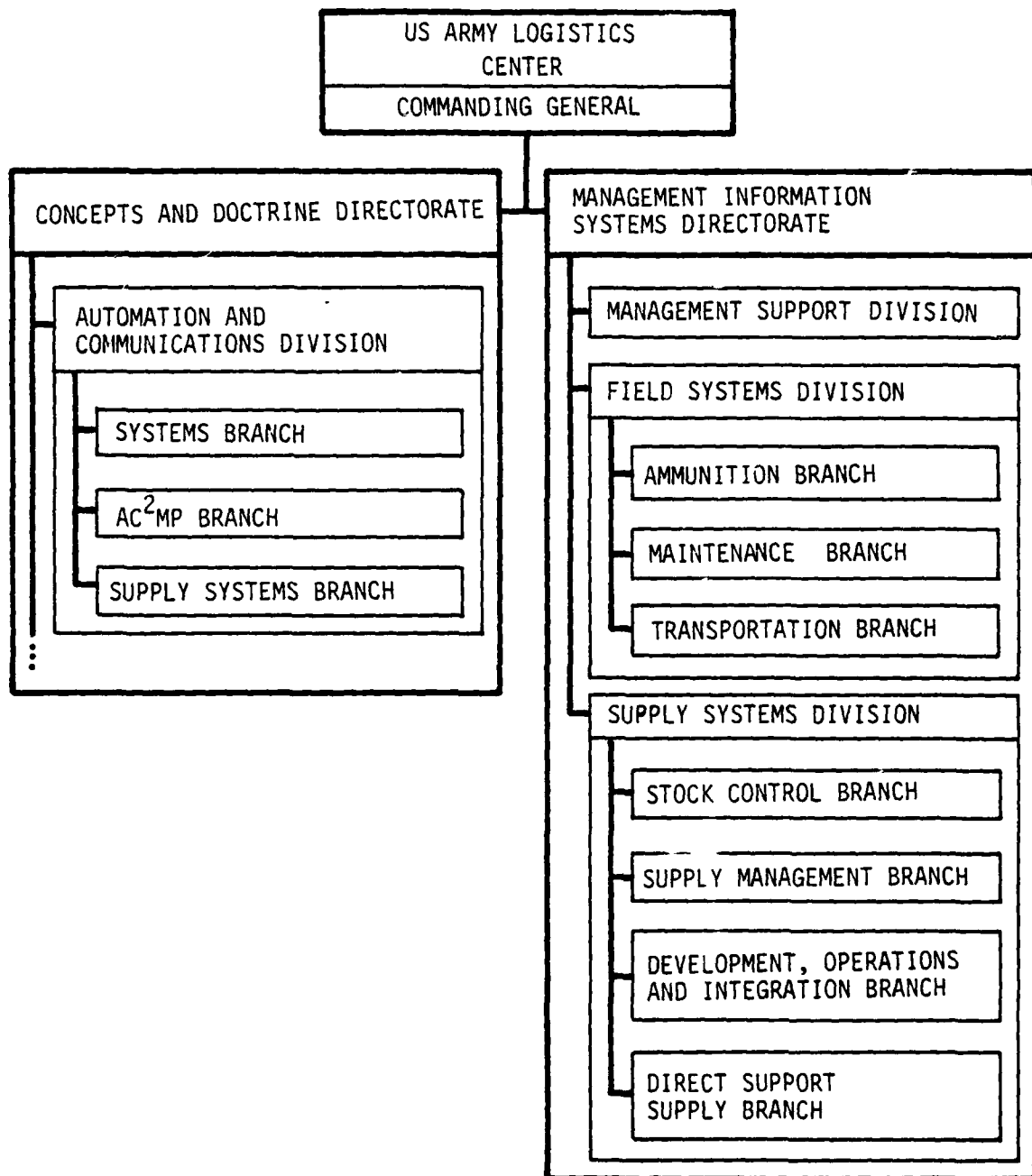


Figure 2-54. Organizational elements with major responsibilities in the current PDSS system for the Logistics portion of the CSS BFA

for specific logistics systems. These personnel perform CD functions associated with all phases of the management information system life cycle. During the Deployment and Operation Phase of the life cycle, they perform a broad range of PDSS functions. These extend from participating in customer assistance actions, through developing and participating in the testing of system functional change requirements, to the installation of system changes and updating functional User procedures as required.

3. Concepts and Doctrine Directorate. The Concepts and Doctrine Directorate has responsibility for analysis and development of logistics automation requirements, and for the conceptual design of specified logistics systems. Design of the CSS Control System is currently assigned to this directorate.

(b) BAS to be supported. The LOGCEN is the TRADOC proponent for all logistics systems addressed in this study. These systems are shown in Figure 2-55. Included among these systems in the CSS Control System for which the LOGCEN has been tasked to take the lead role in developing the requirements and functional design, under the CCS² Concept. (The Soldier Support Center and Academy of Health Sciences have been tasked to develop their respective inputs to this CCS Control System design effort.) The LOGCEN's responsibilities for these systems include action associated with all aspects of the Combat Developer's role in all phases of the system life cycle including PDSS.

(4) The Objective System.

(a) Purpose. The purpose of the Objective PDSS System described in this paragraph is to provide needed enhancement of the LOGCEN's capability to fulfill its currently known CD PDSS responsibilities associated with the fielding of new BAS and the further extension of currently fielded BAS through the mid- to late-1980s.

(b) Principal features. The Objective PDSS System proposed for the LOGCEN can be characterized generally as an enhancement of the existing structure and capability to accomplish PDSS functions that are the responsibility of the CD. This is accomplished through:

- The establishment of a PDSS coordination and integration staff element within the Management Support Division
- The designation of a CDSM for each Logistics BAS
- The augmentation of the Field Systems and Supply Systems Divisions of the Management Information Systems Directorate with additional staff officers for handling PDSS actions.

FUNCTIONAL PROponent	BATTLEFIELD AUTOMATED SYSTEM (BAS)
LOGCEN/ DCSLOG	DSU/GSU--DIRECT SUPPORT UNIT GENERAL SUPPORT UNIT (OPERATION)
USA ¹ SC	DLED (DEFINITION/DESIGN)
LOGCEN/ DCSLOG	SAMS--STANDARD ARMY MAIN- TENANCE SYSTEM (CONCEPT DEVELOPMENT)
LOGCEN/ DCSLOG	DLOGS--DIVISION LOGISTICS SYSTEM (MAINTENANCE)
LOGCEN/ DCSLOG	MRM--MAINTENANCE REPORTING AND MANAGEMENT (OPERATION)
LOGCEN/ DCSLOG	SAAS-3--STANDARD ARMY AMMUNITION SYSTEM (SYSTEM DEVELOPMENT)
LOGCEN/ DCSLOG	SAILS--ABX STANDARD ARMY INTERMEDIATE LEVEL SUPPLY (OPERATION)
LOGCEN/ DCSLOG	DS4--DIRECT SUPPORT STANDARD SUPPLY SYSTEM (SYSTEM DEVELOPMENT)
LOGCEN/ DCSLOG	PHOENIX (OPERATION)
LOGCEN	CSS CONTROL SYSTEM FOR CCS2 (CONCEPT DEVELOPMENT)
LOGCEN/ DCSLOG	DASPS--DA STANDARD PORT SYSTEM (OPERATION)
LOGCEN/ DCSLOG	DASPS-E--DA STANDARD PORT SYSTEM ENHANCED (SYSTEM DEVELOPMENT)
LOGCEN/ DCSLOG	TOPS--TRANSPORTATION OPERATIONAL PERSONNEL PROPERTY STANDARD SYSTEM (SYSTEM DEVELOPMENT)
LOGCEN/ DCSLOG	DAVIS--DA MOVEMENT MANAGEMENT SYSTEM SUBSYSTEM 1: CMM-- CARGO MOVEMENT MODULE (SYSTEM DEVELOPMENT/ MAINTENANCE) SUBSYSTEM 2: MPM-- MOVEMENT PLANNING MODULE (SYSTEM DEVELOPMENT)
LOGCEN/ DCSLOG	DAS-3--DECENTRALIZED AUTOMATED SERVICE SUPPORT SYSTEM (DEPLOYMENT)
LOGCEN/ DCSLOG	SARSS--STANDARD ARMY RETAIL SUPPLY SYSTEM

Figure 2-55. Logistics systems

(c) Structure. A principal objective in designing this proposed enhancement to the PDSS capability at the LOGCEN was that it should require minimum change to the existing organizational structure and to the long-standing and effective operating procedures at the LOGCEN. The Objective System resulting from this design effort, the elements of this System, and their relationship to the existing organizational structure are shown in more detail in Figure 2-56. The responsibilities and functions of each element are discussed in the following paragraphs.

(d) Functional responsibilities.

1. CD PDSS Staff Element. This staff element represents the focal point for coordination of all PDSS requirements and activities at the LOGCEN. It is organized as an element of the Management Support Division in the Management Information Systems Directorate. The head of this staff element would serve as the primary point of contact on PDSS matters with other elements of the LOGCEN, other organizations of TRADOC, and on administrative and management matters with the USACSC-managed PDSS center at Fort Lee which provides PDSS for all logistics systems addressed in this study. He coordinates PDSS requirements and actions among the operating elements of the Management Information Systems Directorate (MISD) and the Concepts and Doctrine Directorate. He supports these organizations administratively in accomplishing PDSS actions on systems for which they are responsible. The establishment of this PDSS Staff Element will enable current personnel of the Management Support Division to concentrate on other essential functions. Specific functions of this staff element are shown in Figure 2-57.

2. CDSM for each logistics system. At present, selected staff officers within the Field Systems and Supply Systems Divisions are designated as Project Officers for automated logistics systems. In keeping with the objective, stated above, of minimizing changes to current organization and operating procedures, this Objective System provides for designating these same Project Officers the CDSM for the system(s) for which they are currently responsible. In this role, these officers serve as the CD for PDSS associated with their respective system(s). They are responsible for managing and performing or coordinating the performance of all software-related actions within the CD PDSS role. Each CDSM is the principal field User's representative and the primary point of contact with USACSC on PDSS matters affecting his system(s). Specific functions for which each CDSM is responsible in either a management, coordination, or performance role are shown in Figure 2-57.

3. PDSS staff augmentation to the Field Systems and Supply Systems Divisions. This Objective System provides that CD PDSS actions will continue to be accomplished by system personnel in each of these MISD divisions, as they are at the present time, under the control and supervision of the CDSM for each system. To provide an improved capability to handle the increased PDSS requirements associated with new systems projected for fielding and systems currently fielded but being extended to additional users, this Objective System provides for a personnel augmenta-

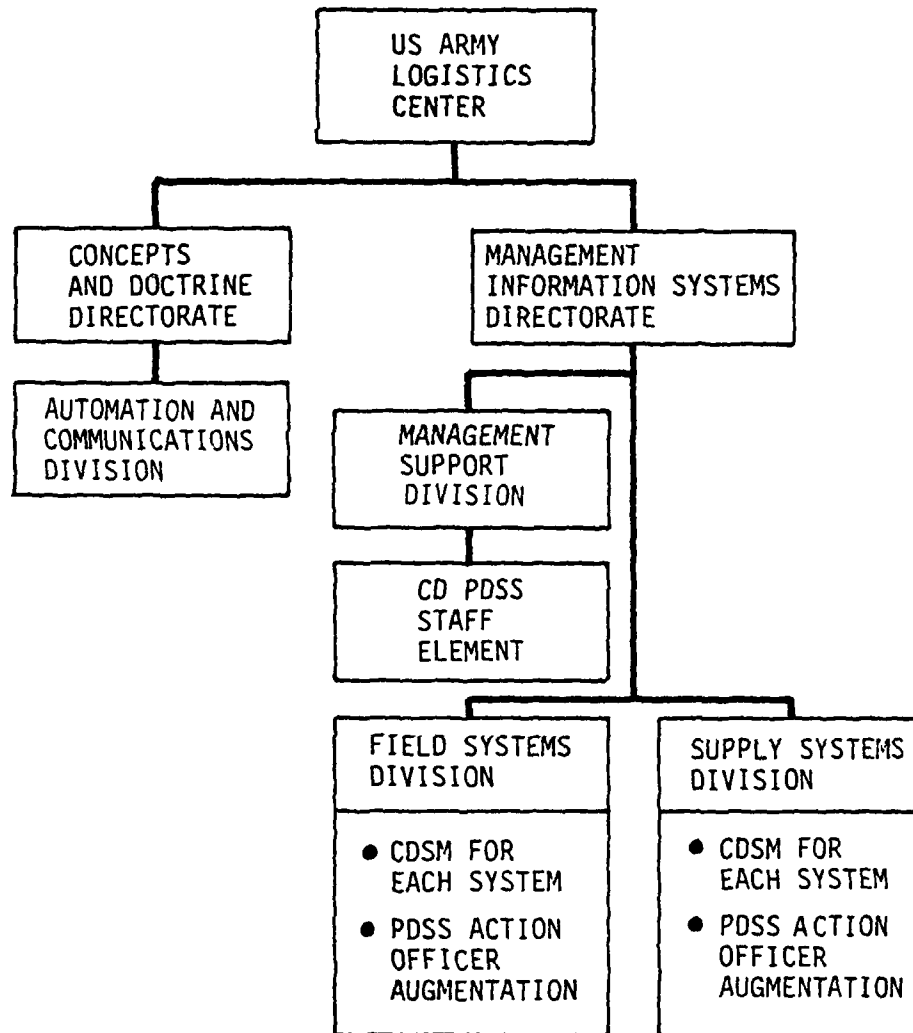


Figure 2-56. Elements of the Objective PDSS System -- LOGCEN

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	PDSS STAFF ELEMENT	FIELD SYSTEMS DIVISION, MIS DIRECTORATE	SUPPLY SYSTEMS DIVISION, MIS DIRECTORATE	AUTOMATION & COMMUNICATIONS DIV, C&D DIT																
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING PDSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP. 2. PROVIDE REPRESENTATION ON THE CRMP. 3. PARTICIPATE IN DESIGNATION OF PDSS CENTER FOR EACH BAS.	1	1	1	1	1																
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB. 2. PROVIDE REPRESENTATION ON EACH BAS SSCB. 3. PROVIDE REPRESENTATION ON EACH BAS FSCB. 4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS CONCEPT.	2	2	2	2	2																
	3. MANAGE CD PDSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES). 2. PLAN AND PROGRAM FOR RESOURCES. 3. ACQUIRE AND MANAGE RESOURCES.	1	1	1	1	1																
2. ANALYSIS	1. PERFORM ANALYSIS OF BAS SOFTWARE PROBLEM REPORTS.	1. IN CONJUNCTION WITH MD, DETERMINE IF SOURCE OF PROBLEM IS FUNCTIONAL OR TECHNICAL. 2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM. 3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS. 4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD. 5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	2	2	2	2																
	2. ANALYZE USER-STATE REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER. 2. EXAMINE BASIS FOR REQUIREMENT. 3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS. 4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	2	2	2	2																
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS. 2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	2	2	2	2																

Figure 2-57. Assignment of functions, Objective PDSS System, Logistics Center (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	PDSS STAFF ELEMENT	FIELD SYSTEMS DIVISION, MIS DIRECTORATE	SUPPLY SYSTEMS DIVISION	MIS DIRECTORATE	AUTOMATION & COMMUNICATIONS DIV, CAD DIR.															
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	Z	X	X	X	Z															
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	Z	X	X	X	Z															
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	3. IDENTIFY TRAINING IMPACT.	2	Z	X	X	X	Z															
		4. IDENTIFY LOGISTICAL IMPACT.	2	Z	X	X	X	Z															
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	Z	X	X	X	Z															
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	Z	X	X	X	Z															
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	Z	X	X	X	Z															
		1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	Z	X	X	X	Z															
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	Z	X	X	X	Z															
		3. PROVIDE REQUIREMENT TO MD.	2	Z	X	X	X	Z															
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	Z	X	X	X	Z															
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	X	X	X	X	Z															
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	Z	X	X	X	Z															
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	Z	X	X	X	Z															
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	Z	X	X	X	Z															
		4. MONITOR DEVELOPMENT TEST (OT).	2	Z	X	X	X	Z															
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	Z	X	X	X	Z															
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	Z	X	X	X	Z															
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING.	2	Z	X	X	X	Z															
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	Z	X	X	X	Z															
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	Z	X	X	X	Z															
		1. MAINTAIN COMMUNICATIONS WITH USERS.	3	X	X	X	X	Z															
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	2. FUNCTION AS USER SURROGATE.	3	X	X	X	X	Z															
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	Z	X	X	X	Z															
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	3	X	X	X	X	Z															
			3	X	X	X	X	Z															

Figure 2-57. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	POSS STAFF ELEMENT	FIELD SYSTEMS DIVISION	SUPPLY SYSTEMS DIVISION	MIS DIRECTORATE	AUTOMATION & COMMUNICATIONS DIV. CAD DIV.
5. FIELD SUPPORT (CONTINUED)	2. DEVELOP AND MANAGE TRAINING PROGRAM REQUIRED BY SYSTEM CHANGE (EXCEPT FOR NEW EQUIPMENT TRAINING (NET)).	1. DETERMINE TRAINING/RETRAINING DEVELOPMENT REQUIREMENTS.	2	Z	X	X	X	Z
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2					
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2		X	X	X	Z
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	X	X	X	X	Z
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	Z	X	X	X	Z
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2		X	X	X	Z
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	Z	X	X	X	Z
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	Z	X	X	X	Z
1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	Z	X	X	X	Z	
	2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	Z	X	X	X	Z	
2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	X	X	X	Z	
	2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	X	X	X	X	Z	
3. SUPPORT TO CRISIS/WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	X	X	X	X	Z	
	2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.							
	3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	X	X	X	X	Z	
	4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	N	X	X	X	Z	
	5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	N	X	X	X	Z	
6. OTHER	4. ASSESS CONTINUED TACTICAL SUITABILITY OF BAS.	1. CONDUCT PERIODIC REEVALUATIONS OF BAS TO DETERMINE CONTINUED TACTICAL SUITABILITY AS CHANGES OCCUR IN THREAT, DOCTRINE, AND OPERATIONAL REQUIREMENTS.	3	X	X	X	X	N
		2. 1 - ANYTIME AFTER POSS PLANNING 2 - AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED) 3 - AFTER FIELDING						

X = Element is responsible
N = Element is not responsible

X = Element is responsible
N = Element is not responsible

Figure 2-57. (concluded)

tion to each operating division of MISD. It is envisioned that these personnel would be integrated into the existing branch structure of these divisions and assigned responsibility for PDSS functions. The functions to be performed are shown in Figure 2-57.

4. Concepts and Doctrine Directorate. No requirement for a personnel augmentation to the Concepts and Doctrine Directorate for handling PDSS actions is foreseen or provided for in this System. Except for PDSS planning during system design, it is assumed that PDSS for all systems will be the responsibility of MISD.

(e) Resources. Time-phased estimates of resources needed to establish this Objective PDSS System component for support of the logistics portion of the CSS BFA are discussed below.

1. Personnel. Personnel needed in addition to current authorizations are shown in Figure 2-58. A breakout of these additional personnel requirements by organizational element is shown in Figure 2-59.

2. Facilities. Physical facility requirements include office space for the CD PDSS Staff element and the PDSS personnel augmentations to the Supply Systems and Field Systems Divisions. This space should be made available within the current MISD area.

3. Major equipment. A terminal is needed to the TRADOC Data Processing Field Office computer at Fort Leavenworth to facilitate interaction with CACDA in designing, managing, and exercising configuration control over the major command and control BAS under the CCS² Concept. Specific equipment requirements must be identified during detailed implementation planning.

4. Funds. An estimate of funds required for the additional civilian personnel requirements identified above is shown in Figure 2-60. This estimate is in FY 81 constant dollars and is based on an average annual cost of \$31.6K including 10 percent loading, for technical-level civilian personnel.

LOGCEN, ESTIMATED PERSONNEL REQUIREMENTS							
PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	3	3	4	6	6	7	7
Civilian	6	6	7	11	11	12	12
TOTAL	9	9	11	17	17	19	19
Authorized							
Military	0	0	0	0	0	0	0
Civilian	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0
Additional Needed							
Military	3	3	4	6	6	7	7
Civilian	6	6	7	11	11	12	12
TOTAL	9	9	11	17	17	19	19

Figure 2-58. Personnel requirements, LOGCEN

ELEMENT	TECHNICAL		ADMINISTRATIVE		TOTAL
	MIL	CIV	MIL	CIV	
CD PDSS Staff Element	1	2	0	0	3
Field Systems Division	4	6	0	0	10
Supply Systems Division	2	4	0	0	6
TOTALS	7	12	0	0	19

Figure 2-59. Breakout of LOGCEN personnel requirements by organizational element

LOGCEN, ESTIMATED PERSONNEL COSTS (\$000)*							
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	189.6	189.6	221.2	347.6	347.6	379.2	379.2
* In FY 81 constant dollars.							

Figure 2-60. Estimated personnel costs, LOGCEN

i. Combat Service Support BFA-Soldier Support Center.

(1) General.

(a) US Army Soldier Support Center Mission. TRADOC Reg. 10-41 which is based on AR 10-41, designates the US Army Soldier Support Center (SSC) as one of three major TRADOC integrating centers with responsibility to ensure the systematic integration of combat and training developments functions in the soldier support operational area. With respect to automated systems, this TRADOC Reg. assigns SSC the mission to develop and coordinate the functional design, evaluation, and extension of battlefield administration management information systems applicable to the corps level and below. This TRADOC Reg. further states that the TRADOC integrating center commanders are authorized and required to task and provide guidance to other Army commands and agencies having combat developments functions assigned by HQDA and to integrate the resultant products into the overall combat and training development effort.

(b) US Army Military Personnel Center. AR 10-5 assigns the Deputy Chief of Staff for Personnel (DCSPER) general staff responsibility for automated management information systems in support of all assigned functional areas of responsibility. Included is responsibility for developing personnel systems to meet the needs of new or improved doctrine, organization, and materiel. The US Army Military Personnel Center (MILPERCEN), a field operating agency of the DCSPER, performs the functions necessary to enable the DCSPER to fulfill these responsibilities. Based on this assignment of responsibility, MILPERCEN has been functioning as the Combat Developer for most personnel support systems.

(c) DCSPER-TRADOC Memorandum of Understanding. On 5-7 August 1980, a memorandum of understanding (MOU) was signed by the DCSPER and the Commanders of TRADOC, MILPERCEN, and SSC. This MOU was intended to clarify, define, and realign certain functional responsibilities and boundaries between MILPERCEN and Soldier Support Center. Portions of this MOU are relevant to responsibilities for the development and support of personnel and administrative information systems. This MOU is discussed in considerable detail in Paragraph 2-4., f., Volume II, First Interim Technical Report of the Assessment of the Combat Developer's Role in Post Deployment Software Support. Since no formal changes have occurred since publication of that report, that discussion will not be repeated here. However, it should be noted that while this MOU is a major step toward realization of the intended goal, some questions remain regarding the division of responsibilities between MILPERCEN and SSC in this important functional area. As a result, the role exercised by SSC in system development and life cycle management, to include PDSS, is not as clearly defined as it should be and appears to be more limited than that of other TRADOC integrating and functional centers. The current capability that exists at SSC to fulfill the PDSS role presently identified is discussed in Paragraph (2), below. The Objective PDSS System, which provides for needed improvement in this current capability, is discussed in Paragraph (3).

(2) The Current System. The Current System for providing PDSS to automated systems in the soldier support portion of the CSS BFA has its focal point in the Management Information Systems Division (MISD) in the Directorate of Doctrine and Combat Development (DDCD), of the US Army Institute of Personnel and Resource Management, SSC. The Directorate of Training Developments of that Institute is also involved, secondarily, in the current PDSS System, as are certain TRADOC elements at other installations. Outside of TRADOC, elements of the Deputy Chief of Staff for Personnel (DCSPER), MILPERCEN, the Computer Systems Command, Health Services Command, and Users, are also involved. Figure 2-61 shows the organizational structure of the elements of this system at SSC. Figure 2-62 shows, in less detail, the structure of the total TRADOC PDSS System for the personnel portion of the CSS BFA.

(a) Functional responsibilities. Principal PDSS responsibilities within SSC fall within the MISD and other elements of the DDCD, identified in Figure 2-61, above. Responsibility for training materials pertaining to PDSS falls within the Directorate of Training Development, although no relevant BAS has reached a stage where such responsibility has needed to be exercised, since MILPERCEN has exercised responsibility over the Standard Installation Division Personnel System (SIDPERS).

(b) BAS addressed. In the First Interim Technical Report of this study effort, ten BAS or related categories of activity were identified that could be anticipated to require some degree of PDSS in this portion of the CSS BFA. Because many of those ten are seen primarily to involve monitoring or coordination responsibilities by SSC, that list of ten has been consolidated into five categories. Of these five, one is a specific BAS which will require significant PDSS, the New Personnel System or PERMIS. Another one of the five which may present a significant PDSS requirement is the Personnel Support Subsystem for the CSS Control System being developed under the Command, Control and Subordinate Systems (CCS²) concept. Of the remaining three categories, only Software Conversion for New Hardware, which is in the post-deployment phase, appears to present a significant, current PDSS requirement (and MILPERCEN has retained control of that effort thus far). These five categories are identified in Figure 2-63.

(c) Principal interfaces. Figures 2-61 and 2-62, above, identified the TRADOC elements involved in the current PDSS System for the SSC portion of the CSS BFA. Figure 2-64 combines that TRADOC structure with a summary identification of the non-TRADOC elements involved. Although PDSS interfaces of some sort will exist among most of these elements, those interfaces, through which the major TRADOC portions of the volume of PDSS transactions pass in the Current PDSS System, center around the MISD of the DDCD at SSC. Such principal interfaces are indicated in Figure 2-65.

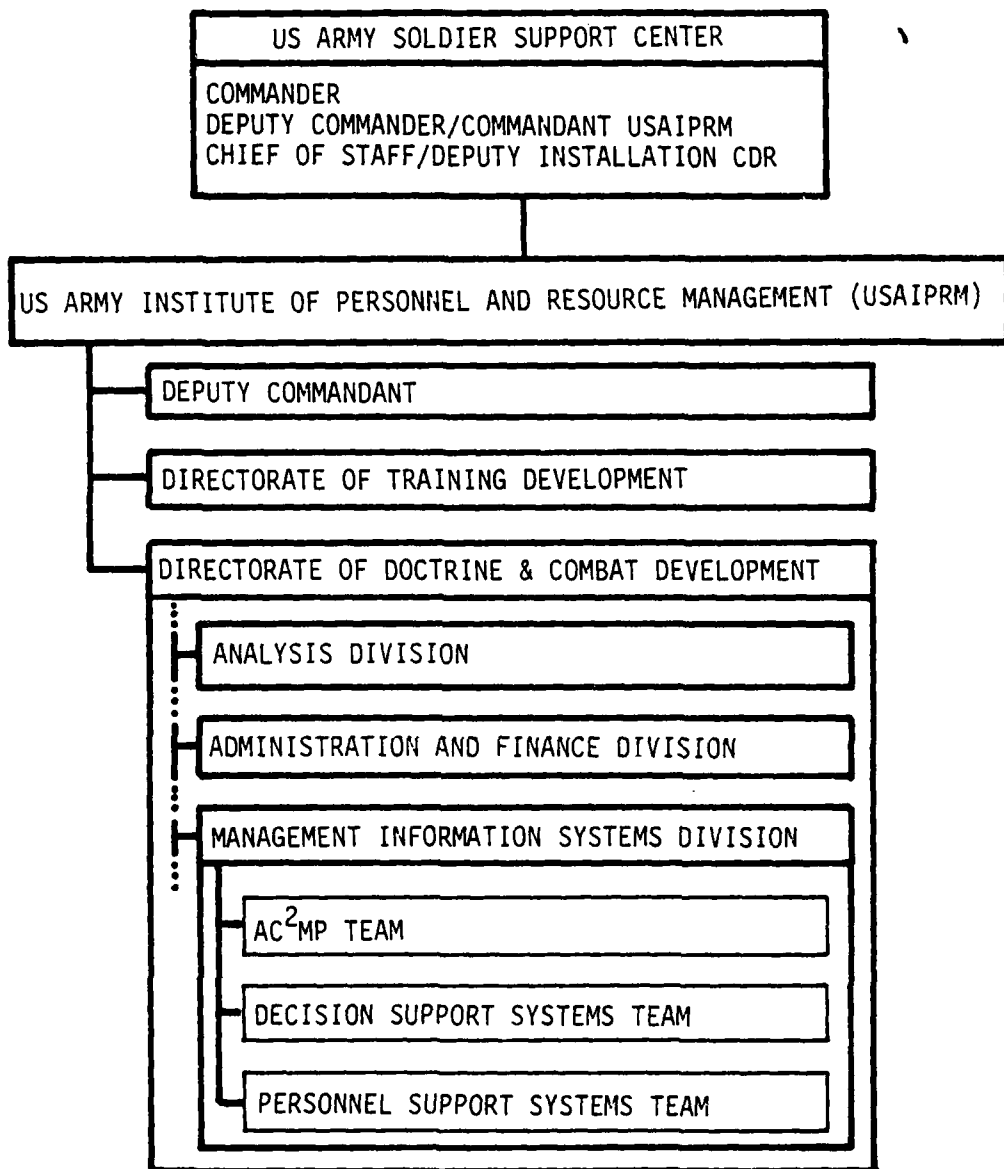


Figure 2-61. TRADOC elements of the current PDSS System at SSC

HQ, US ARMY TRAINING AND DOCTRINE COMMAND, FORT MONROE, VA

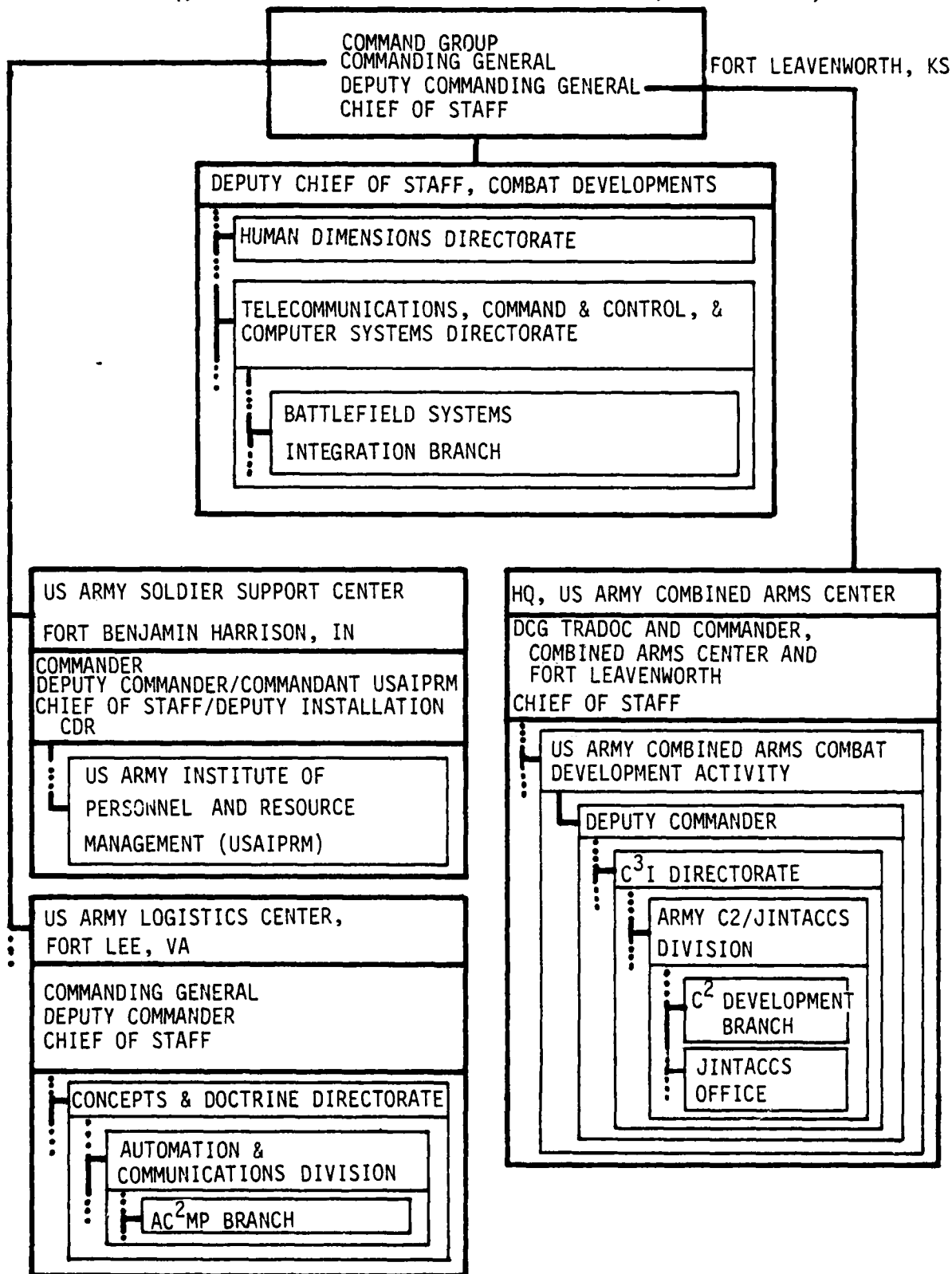


Figure 2-62. Overall TRADOC elements of the current PDSS system for Personnel portion of CSS BFA

BATTLEFIELD AUTOMATED SYSTEM (BAS) AND STAGE IN LIFE CYCLE
1. SOFTWARE CONVERSION FOR NEW HARDWARE (DAS3, ETC.) (POST-DEPLOYMENT) 2. PERSONNEL SUPPORT SUBSYSTEM FOR THE CSS CONTROL SYSTEM FOR CCS² (CONCEPTUAL) 3. NEW PERSONNEL SYSTEM (PERSONNEL MANAGEMENT INFORMATION SYSTEM (PERMIS)) (CONCEPTUAL) 4. INTERFACES WITH TAMMIS (CONCEPTUAL) 5. OTHER* (POST-DEPLOYMENT THROUGH EARLY CONCEPTUAL)
* PRIMARILY MONITORING, OVERSIGHT, COORDINATION. SYSTEMS INCLUDED ARE: SIDPERS AND SIDPERS WARTIME AND A RELATED PERSONNEL SOFTWARE PACKAGE FOR DLDED; PWIS; VFDNIS; OESS; TAPER AND TAPER WARTIME; AND VTAADS. FOR ADDITIONAL DETAILS, REFERENCE MAY BE MADE TO FIRST INTERIM TECHNICAL REPORT, PP. 2-53 THROUGH 2-55, AND 3-30 THROUGH 3-31.

Figure 2-63. Systems requiring PDSS--Soldier Support Center

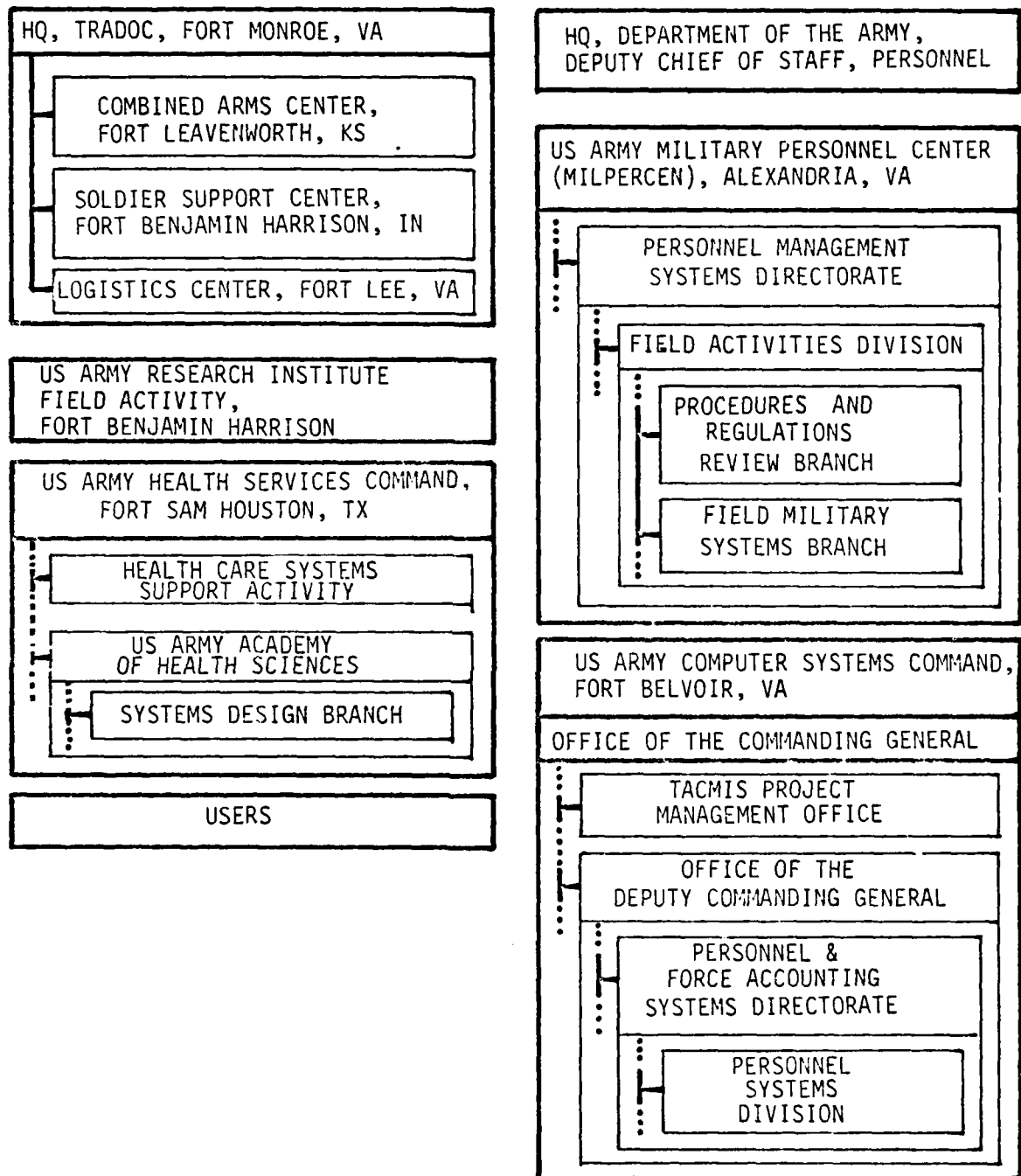


Figure 2-64. Principal TRADOC and other elements in the current PDSS system for Personnel portion of CSS BFA

	MANAGEMENT INFO SYS. DIV., DDCD, SSC	ANALYSIS DIV., DDCD	ADMINISTRATION AND FINANCE, DDCD	AC ² MP BR., A & C DIV., CDD, LOGCEN	C ² DEVEL. BR. AC ² /J DIV., C ³ I, CACDA	JINTACCS OFFICE, AC ² /J DIV.	SYSTEMS DESIGN BR., AHS	FIELD MILITARY SYS. BR., MILPERCEN	SSC LIAISON, NATIONAL CAPITOL REGION	TACMIS PMO, USACSC	PERS. SYS. DIV., PAFASD, USACSC	DTD, SSC	HEALTH CARE SYSTEMS SUPPORT ACTIVITY
MANAGEMENT INFORMATION SYSTEMS DIVISION, DDCD, SSC	●	●	●	●	●	●	●	●	●	●	●	●	●
ANALYSIS DIVISION, DDCD	●	●	●	●	●	●	●	●	●	●	●	●	●
ADMINISTRATION AND FINANCE DIV., DDCD	●	●	●	●	●	●	●	●	●	●	●	●	●
AC ² MP BRANCH, AUTOM. & COMM. DIV., CDD, LOGCEN	●	●	●	●	●	●	●	●	●	●	●	●	●
C ² DEVELOPMENT BRANCH, AC ² /J DIV., C ³ I, CACDA	●	●	●	●	●	●	●	●	●	●	●	●	●
JINTACCS OFFICE, AC ² /J DIV.	●	●	●	●	●	●	●	●	●	●	●	●	●
SYSTEMS DESIGN BRANCH, AHS, FT. SAM HOUSTON	●	●	●	●	●	●	●	●	●	●	●	●	●
FIELD MILITARY SYSTEMS BR., FLD ACTIVITIES DIV., PER.MGT.SYS.DIR., MILPERCEN	●	●	●	●	●	●	●	●	●	●	●	●	●
SSC LIAISON OFFICE, NATIONAL CAPITOL REGION	●	●	●	●	●	●	●	●	●	●	●	●	●
TACMIS PMO, USACSC	●	●	●	●	●	●	●	●	●	●	●	●	●
PERS. SYS. DIV., PERS. & FORCE ACTG SYST. DIR., USACSC	●	●	●	●	●	●	●	●	●	●	●	●	●
DTD, SSC	●	●	●	●	●	●	●	●	●	●	●	●	●
HEALTH CARE SYSTEMS SUPPORT ACTIVITY, USAHSC	●	●	●	●	●	●	●	●	●	●	●	●	●

Figure 2-65. Principal interfaces, current PDSS system, SSC portion of the CSS BFA

(3) The Objective System.

(a) Purpose. The purpose of this component of the proposed TRADOC PDSS Objective System is to provide the SSC an improved capability to perform CD PDSS functions for which it is responsible based on projected requirements through the mid- to late-1980s. This component of the Objective PDSS System has been designed based on the assumption that there will be no changes in system proponentcy and no further transfer of PDSS-related functions or associated resources between MILPERCEN and SSC.

(b) Principal features. This component of the Objective PDSS System can be characterized as an augmentation to the Management Information Systems Division, Directorate of Doctrine and Combat Developments, to provide an improved capability for handling current and projected PDSS requirements. This augmentation is achieved through the establishment of a PDSS Team in the MISD to serve as the focal point and principal action element for PDSS and related activities. The Chief of the PDSS Team would also be designated the Assistant CDSM for Personnel Systems. The Chief, MISD would be designated the CDSM, Personnel Systems.

(c) Structure. The structure of organizational elements at SSC involved with PDSS in this Objective PDSS System are shown in Figure 2-66. The focal point for PDSS activity will be the proposed PDSS Team, discussed above. This PDSS Team is shown as one of four principal teams under MISD. The CDSM and Assistant CDSM for Personnel Systems are also shown. The composition of the PDSS Team includes:

- The Team Chief
- A Systems Action Element including representatives or action officers for:
 - CCS²
 - PERMIS
 - Other Systems.
- A Facility Support Action Officer
- A PDSS Liaison Officer to coordinate PDSS activity with MILPERCEN and USACSC.

(d) Operating concept. Under the concept of operations associated with this component of the Objective PDSS System, the PDSS Team at the SSC will function as the focal point for fulfilling TRADOC responsibilities for all PDSS-related actions involving the systems or groups of systems listed in Figure 2-63. This PDSS Team would interface with and, as appro-

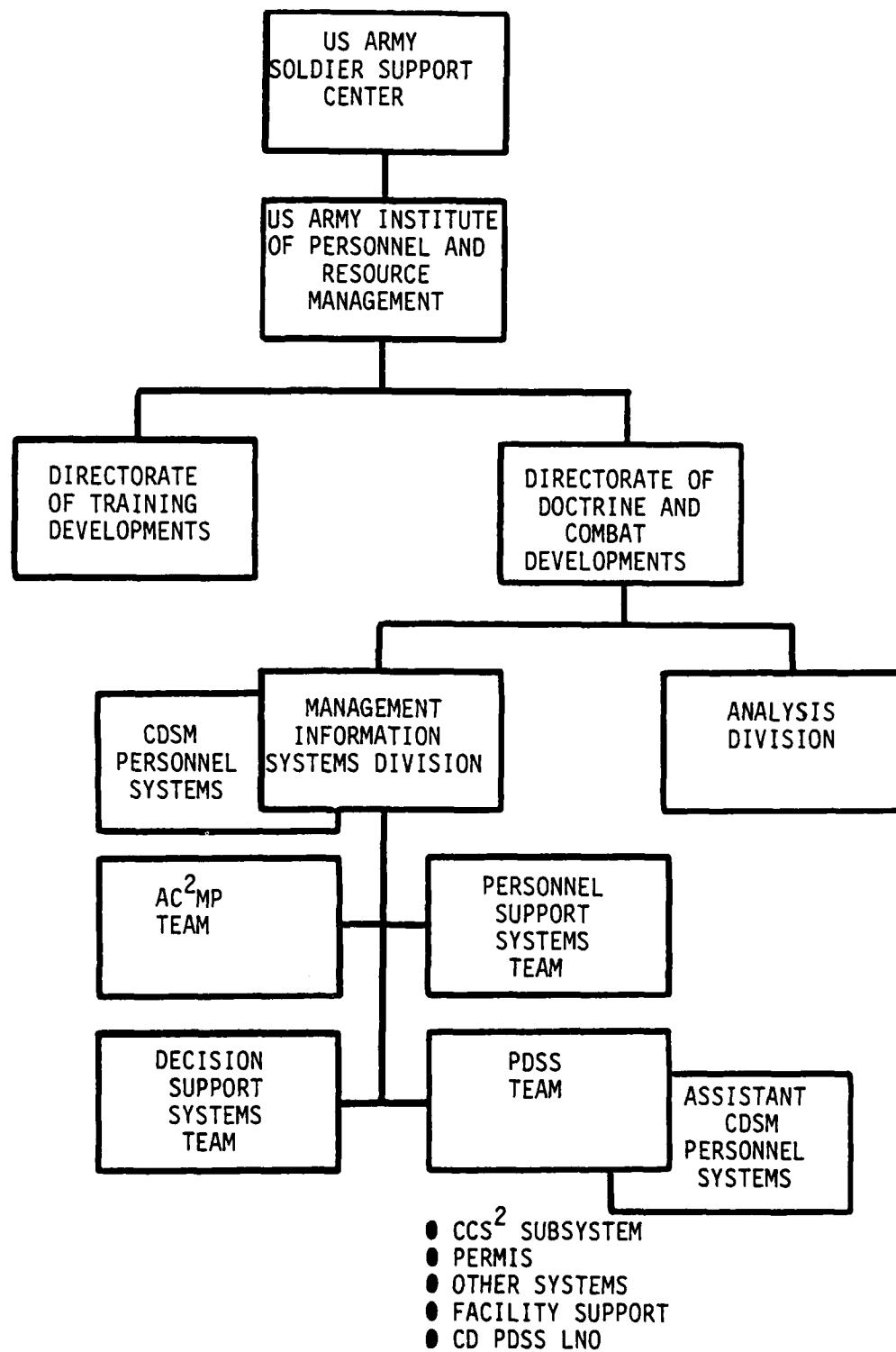


Figure 2-66, SSC elements involved with the Objective PDSS System

priate, coordinate and integrate the activities of other SSC elements, other TRADOC organizations, and Army organizations external to TRADOC that are involved with PDSS for these systems. The principal elements and interfaces involved in this operational concept are shown in Figure 2-67.

(e) Functional responsibilities. The overall responsibility of the CDSM, Personnel Systems and the SSC PDSS Team is to ensure that all CD PDSS requirements pertaining to the soldier support portion of the CSS BFA which are assigned to the SSC are adequately fulfilled. Specific responsibilities and functions of the elements of the PDSS Team are outlined below.

1. CDSM, Personnel System. The CDSM, Personnel Systems, is responsible for all substantive CD PDSS actions for BAS for which the Soldier Support Center is assigned responsibility. Because of the currently limited nature of these responsibilities, the Chief, MIS Division, is designated as CDSM, Personnel Systems, as an additional duty. He is assisted in all substantive PDSS actions by the Chief of the PDSS Team who serves as the Assistant CDSM.

2. Chief, PDSS Team and Assistant CDSM, Personnel Systems. The Chief, PDSS Team is the principal administrator of PDSS functions at the Soldier Support Center. He reports to the Chief, MIS Division. He is responsible for planning and directing operations of the PDSS Team in close coordination with other SSC, TRADOC, and Army organizations with which the PDSS Team interfaces. As stated above, the Chief, PDSS Team, is also designated the Assistant CDSM, Personnel Systems. In this capability, he assists the CDSM, Personnel Systems, in fulfilling responsibilities as the CD for PDSS actions affecting systems for which the SSC has proponentcy.

3. Systems Action Element of the PDSS Team. This element consists of representatives or action officers who provide the focal point for actions involving the BAS or groups of BAS shown in Figure 2-63. Responsibilities are described below.

- a. CCS² Subsystem Action Officer. This action officer is involved with PDSS aspects of the Personnel Subsystem of the CSS Control System being designed and developed under the CCS² Concept. The US Army LOGCEN has been assigned the lead role in the development of the CSS Control System with participation and appropriate input from both SSC and the Academy of Health Sciences.

- b. New Personnel System (PERMIS) Action Officer. This action officer is involved with PDSS aspects of PERMIS, a system being designed to replace SIDPERS. PERMIS will interface with the Theater Army Medical Management Information System (TAMMIS) which is in the conceptual stage.

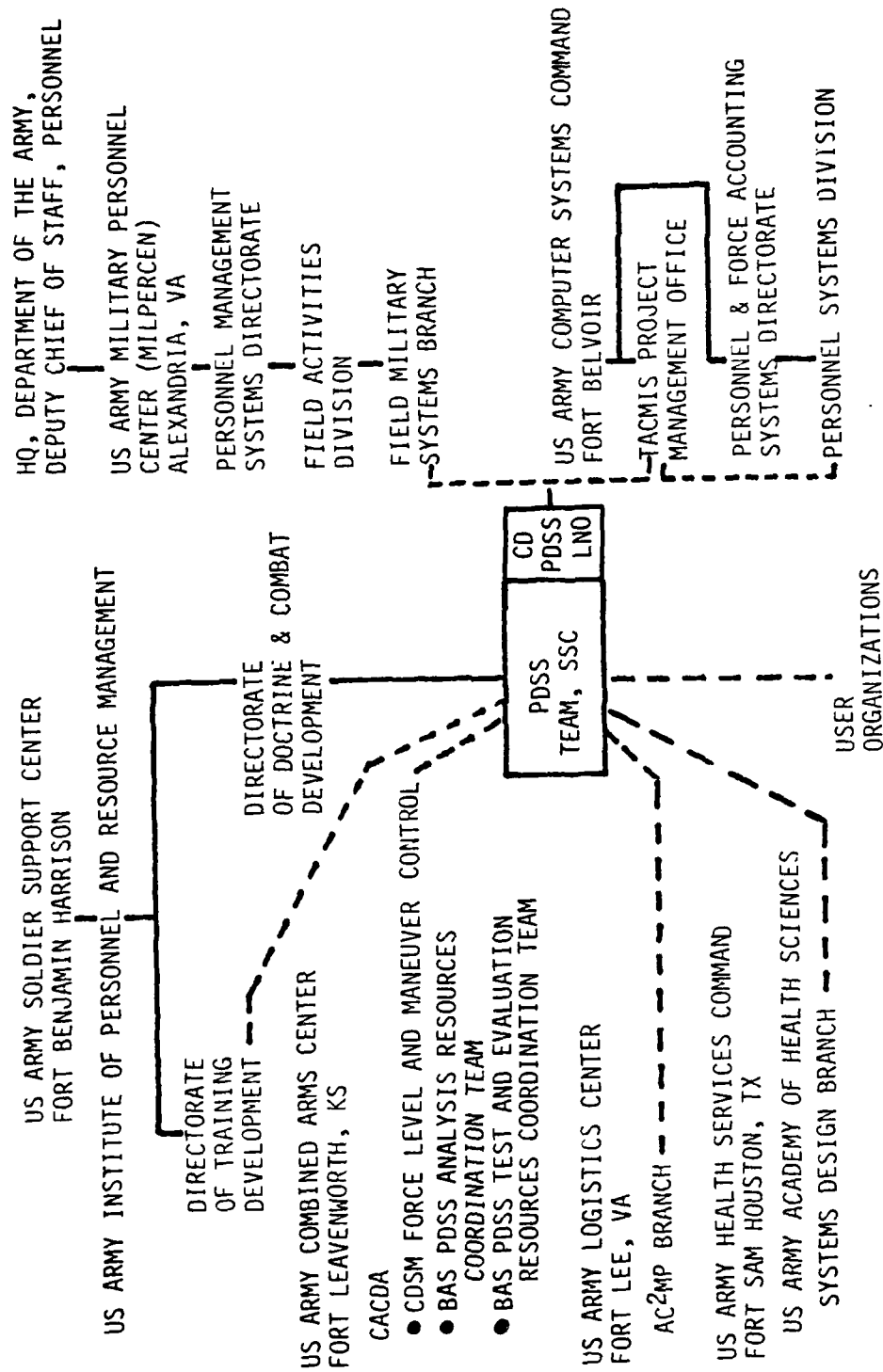


Figure 2-67. Principal elements and interfaces involved in the Objective PDSS System for SSC

c. Other Systems Action Officer. This action officer is involved with monitoring and coordinating responsibilities pertaining to several BAS, including SIDPERS, SIDPERS Wartime, a Personnel Software Package for DLDED, the Prisoners of War Information System (PWIS), the Vertical Force Development Information System (VFDMIS) Theater Army Personnel Rollup (TAPER) and TAPER Wartime, Vertical The Army Authorization Documents System (VTAADS), and OESS. It should be noted that under provisions of the MOU discussed in Paragraph 2-5.i.(1), the SSC is responsible for all changes to SIDPERS software which are anticipated to cost over \$100K. The small PDSS Team proposed for the SSC in this Objective PDSS System does not provide a capability to handle actions of such a magnitude. There have been no such requirements to date. The way they would be handled, should they occur, is a subject area that must be addressed further.

4. Facility Support Action Officers. The Facility Support Action Officer is responsible for anticipating and planning for meeting the facility, equipment, and related support needs of the PDSS Team, including any needs that may arise for computer support, modeling, simulation, testing, and analysis of BAS software. This action officer will also support or effect support of any special communications capabilities needed by the PDSS Team.

5. CD PDSS Liaison Office. This office, located with the SSC, National Capital Region, will provide liaison to both the MILPERCEN and USACSC on PDSS and related matters involving systems with which SSC is involved.

(f) Resources. An estimate of personnel resources needed to implement the Objective PDSS System at the SSC is shown in Figure 2-68. A breakout of these resources by organizational element is provided in Figure 2-69. An estimate of the costs for these personnel and a limited amount of TDY expenses is presented in Figure 2-70. The personnel costs shown are based on an average annual cost of \$31.6K for each managerial/technical level civilian, including 10 percent loading.

SSC, PDSS TEAM, ESTIMATED PERSONNEL REQUIREMENTS							
PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	3	3	3	4	4	4	4
Civilian	0	0	0	2	2	2	2
TOTAL	3	3	3	6	6	6	6
Authorized							
Military	3	3	3	6	6	6	6
Civilian	0	0	0	0	0	0	0
TOTAL	3	3	3	6	6	6	6
Additional Needed							
Military	0	0	0	-2	-2	-2	-2
Civilian	0	0	0	2	2	2	2
TOTAL	0	0	0	0	0	0	0

Figure 2-68. Personnel requirements, SSC

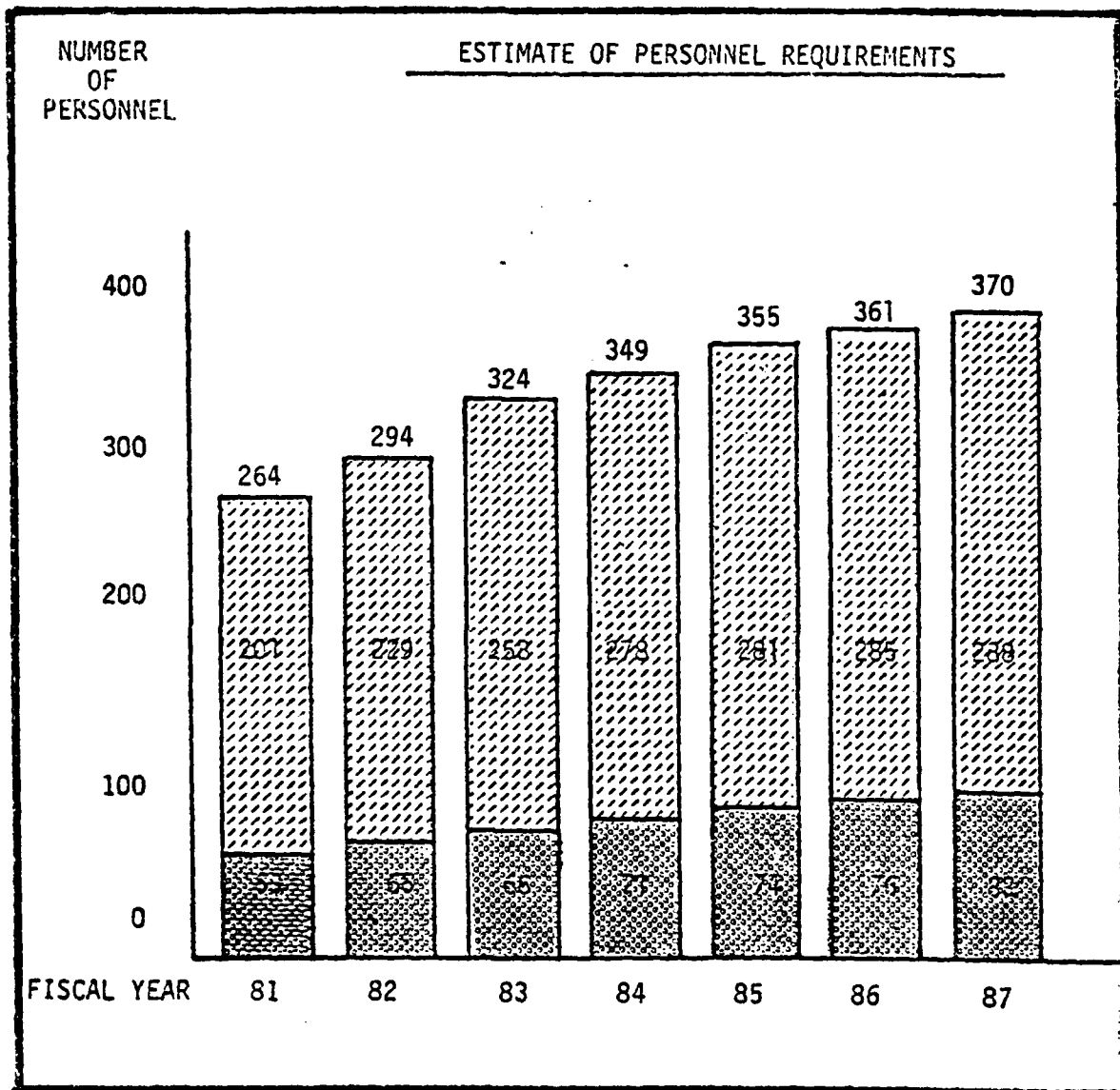
ELEMENT	MANAGERIAL AND TECHNICAL		CLERICAL AND TECHNICIANS		TOTAL
	MIL	CIV	MIL	CIV	
Chief, PDSS Team and Assistant CDSM	1	0	0	0	1
CCS2 Subsystem	1	0	0	0	1
PERMIS	1	0	0	0	1
Other Systems	0	1	0	0	1
Facility Support	0	1	0	0	1
CD PDSS LNO	1	0	0	0	1
TOTAL	4	2	0	0	6

Figure 2-69. Breakout of personnel requirements
by organizational element

SSC, ESTIMATED PERSONNEL COSTS (\$000)*							
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Development, (RDT&E) Procurement (PA) Construction (MCA) Operations and Maintenance (OMA)							
Civilian Salaries				63.2	63.2	63.2	63.2
TDY	12	12	30	61	43	34	34
TOTAL	12	12	30	123.2	106.2	97.2	97.2
* In FY 81 constant dollars.							

Figure 2-70. Estimate of funding required, SSC

j. Summary. The proposed Objective PDSS System described in the previous paragraphs would, if implemented, provide TRADOC a capability adequate to accomplish currently identified PDSS requirements through the mid- to late-1980s. The system described should be regarded as a blueprint which may be modified, within the constraints and guidelines presented in Paragraph 2-2, as PDSS requirements and other driving factors change prior to or during the course of implementation. The description of the Objective PDSS System and the proposed Implementation Plan contained in this report provide the basis for proceeding with detailed planning for each component of the system. Further component planning must address and refine or develop details of resource requirements in the areas of personnel, physical facilities, equipment, and funding needed to implement the system. Each of these areas has been addressed to some extent for each system component, but further refinement is needed based on detailed planning at the center and school level. With respect to personnel requirements, estimates for each major system component were presented in the previous paragraphs. Figure 2-71 provides a summary of the total requirements for TRADOC from FY 81 through FY 87.



LEGEND:



NUMBER OF AUTHORIZED PERSONNEL



NUMBER OF ADDITIONAL PERSONNEL REQUIRED

Figure 2-71. Estimated TRADOC PDSS personnel requirements by fiscal year

CHAPTER 3

OBJECTIVE SYSTEM IMPLEMENTATION

3-1 GENERAL. Task 8 of the Statement of Work of the contract under which this study is being conducted specifies that an implementation plan is to be developed that will provide for transition from the present situation to a TRADOC-selected PDSS model or system. The Objective PDSS System described in Chapter 2 represents the "selected" TRADOC model or system to be implemented although it may undergo some further revision during subsequent TRADOC review. This chapter addresses the plan for implementation of the Objective PDSS System as required by the statement of work.

3-2. THE PROPOSED IMPLEMENTATION PLAN.

a. Structure of the Plan. A proposed implementation plan, to be staffed, approved, and issued by HQ TRADOC, has been prepared and is included as Appendix D of this Third Interim Technical Report. This proposed plan consists of the following:

- Essential introductory and administrative material to include:
 - The origin of the PDSS mission
 - The purpose, scope, authority, and applicability of the plan
 - Identification of key references
 - Assumptions on which the plan is based.
- Responsibilities for executing the plan
- Coordination authority and requirements
- Principal actions to be accomplished in executing the plan
- A discussion of the implementation schedule
- Reporting requirements
- Three annexes for inclusion of:
 - A listing of key references
 - A description of the TRADOC Objective PDSS System (essentially as presented in Chapter 2 of this report)
 - A tabular arrangement of the principal actions to be accomplished, to facilitate use of this information by all TRADOC elements involved with the execution of the plan.

b. The Proposed Implementation Schedule.

(1) Time period addressed. The proposed implementation plan in Appendix D covers those principal actions or events that need to be accomplished during the initial (approximately one year) period of this TRADOC implementation effort, from March 1981 through March 1982. If this schedule is maintained, other actions originating from these initial actions will then continue on for several years before full implementation is achieved. Throughout this implementation period and beyond, a number of actions associated with the TRADOC Resources Management System (TRADOC Pam. 11-11) and the Priorities and Tasking Control Process (TRADOC Reg. 11-2) must be accomplished on a recurring basis.

(2) Critical aspects of the schedule. In the interest of proceeding with implementation expeditiously, a very compressed schedule has been proposed for the execution of this plan. For example, it provides for the accomplishment of special actions directed toward the inclusion of critical PDSS resource requirements in the FY 83 TRADOC Command Budget Estimate (CBE). If these actions are not taken, a delay of one year may be experienced in getting PDSS requirements into the programming and budgeting process. However, to meet the schedule that is proposed, some actions must be initiated immediately upon receipt of the final report of this current TRADOC PDSS Study. These early actions would have to precede the finalization and issuance of this implementation plan. Therefore, the complete set of principal actions that need to be accomplished to effect implementation have been divided into two groups or phases. Those actions that should be accomplished or at least initiated prior to the time that this implementation plan can be completed and issued constitute Phase I. Those that are to be initiated following issuance of this plan constitute Phase II. Phase I actions would proceed based on verbal authority of the Commander, TRADOC. The approved implementation plan would be authority for continuing with the Phase II actions. To provide a complete picture of the implementation effort, the total set of implementation actions (both Phases I and II) are included in the proposed plan at Appendix D.

3-3. ACTIONS REQUIRED TO FINALIZE THE PLAN. The proposed implementation plan, as presented in Appendix D, is essentially complete except for inclusion of the final version of the description of the TRADOC Objective PDSS System (as Annex II to the plan) and making any other modifications determined during TRADOC review to be needed (e.g., changes to the set of actions or schedule). The proposed schedule provides for the plan to be revised following formal TRADOC review (expected to be in late March or early April), staffed, published, and distributed in late August or early September 1981.

APPENDIX A

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APPENDIX B

GLOSSARY 1

TERMS

Air Defense BFA--This BFA reacts to and defeats a varied and growing aircraft and countermeasures threat under all environmental and tactical conditions and in all intensities of combat.

Baseline PDSS System--The personnel, equipment, organizational structure, and operating procedures presently existing within TRADOC that are employed in accomplishing PDSS functions for which that command is responsible.

Battlefield Automated System (BAS)--A system which contains a computer(s), is intended for use by the Army in the field, and which will not function without computer(s); e.g., AN/TSQ-73, TACFIRE.

Battlefield Functional Area (BFA)--A conceptual grouping of Army personnel, equipment, and procedures which together perform a major battlefield function. The BFAs used in this study are identified in Figure 1-1.

Combat Developer--The agency or command responsible for the formulation of concepts, doctrine, organization, and materiel objectives, and requirements for the employment of U.S. Army Forces in a theater of operations and in the control of civil disturbances. The Combat Developer formulates Army functional systems (logistics, personnel, administrative, and others, as designated) which impact directly on or extend into a theater of operations. The U.S. Army Training and Doctrine Command (TRADOC) is the Army's principal Combat Developer.

Combat Developer PDSS Liaison Office (CD PDSS LNO)--An office consisting of one or more Combat Developer personnel who represent the Combat Developer and User on PDSS matters pertaining to specified BAS at a Materiel Developer organization. The CD PDSS LNO coordinates and facilitates Combat Developer-Materiel Developer interaction.

Combat Development Support Facility (CDSF)--The CDSF is a TRADOC analytical facility which encompasses one or more BFAs and which may or may not be collocated, in whole or in part, with an MD PDSS facility at the TRADOC doctrine center or school. The CDSF has as its primary purpose the provision of both the system/software analytical capability and the technical personnel necessary to perform CD functions in the development, maintenance, application, and training for BAS in order to develop, field, use, sustain, and evolve these systems. It should be noted that the CDSF should be construed more as a physical facility than an organizational entity. Like a command post, the CDSF is essentially a place where equipment and personnel from various organizational entities are collocated and structured to most effectively perform certain PDSS functions, when or as required. The CDSF, with respect to both the physical facility itself and the staff entities located within it, may be either permanent or temporary.

Combat Development System Manager (CDSM)--The Combat Developments System Manager (CDSM) is the system/software CD and the principal Field User's representative for a designated system or systems. The CDSM is responsible for managing and coordinating and/or performing all software-related actions inherent in the CD mission. The CDSM is also responsible for planning, programming, and coordinating those software tasks required to be performed by the CDSF in support of the systems for which he is responsible.

Combat Service Support BFA--This BFA supports the commander at each tactical echelon in seeing the battlefield and sustaining the force by providing decisive and timely personnel, administrative, and logistical support and technical expertise as far forward as possible, to give the command a full complement of personnel, operating equipment, and weapons. Support is also provided to all other BFA.

Communications Functional Area--This functional area provides the mechanism by which the commander controls all other battlefield functions in the performance of his mission.

Fire Support BFA--This BFA is the major contributor of fire support for maneuver forces to include Field Artillery.

Force Level Control Functional Area--This functional area is the exercise of the inherent authority of a commander to plan, direct and monitor implementation of tasks by subordinate elements within all Battlefield Functional Areas.

Functional Proponent--The Army Staff agency responsible for the subject area in which automation is used or is to be used, including automation in support of the function performed.

Hybrid PDSS System--The conceptual system consisting of personnel, equipment, facilities, organizational structure, and operating procedures, derived during this study from a comparative analysis of the PDSS Baseline and Theoretical Systems, which incorporates the desirable features of each of those systems, and which would provide TRADOC a capability to fulfill its role and responsibilities in providing PDSS for BAS.

Intelligence Surveillance and Electronic Warfare BFA--This BFA assists the commander and his staff in knowing and understanding the enemy and in seeing the battlefield through surveillance and target acquisition. In its electronic capability this BFA attacks or defends systems that employ electromagnetic energy, including command and control, weapon and acquisition systems.

Maneuver BFA--This BFA, through its inherent subsystems of direct fire and integration provides the timely means to generate and apply decisive combat power on the modern battlefield. Also included in this BFA are the functional areas of Air/Ground, Engineer and that portion of Command and Control in the area of planning.

Materiel Developer--The command or agency responsible for research, development, and production validation of an item (including the system for its logistic support) which responds to DA objectives and requirements.

Post-Deployment Software Support (PDSS)--is that part of overall system support necessary to sustain, modify, and improve a deployed system's computer software, as defined by the User or his representative. It includes evaluation, development, and timely implementation of system and software modifications to accommodate trouble reports; User proposed changes; and changes to satisfy new or revised doctrinal, tactical, procedural or interoperability requirements.

Post-Deployment Software Support (PDSS) Center--A facility, managed by the Materiel/System Developer, with necessary equipment and personnel to provide PDSS to designated BAS.

Priorities on Tasking Control Process (TRADOC Regulation 11-12), by which

Proponent Agency (PA)--The element assigned responsibility by the functional proponent for the functional design, development, implementation, and maintenance of an automated system.

Theoretical PDSS System--The conceptual system consisting of personnel, equipment, facilities, organizational structure, and operating procedures determined during this study to be needed within TRADOC to enable that command to fulfill its role and responsibilities for providing PDSS for BAS, within the context of Army regulatory policy and the PDSS Concept Plan for BAS.

User--The command or agency ultimately intended to employ an item of equipment and so designated by DCSOPS (AR 1000-1) when approving the requirement document. The User or Users representative provides guidance to the developer throughout the materiel acquisition process on matters pertaining to the expected operational employment of the item. Unless another command is so designated, TRADOC will act as the User representative and will carry out the "User" functions.

GLOSSARY 2

ACRONYMS

AAH--Advanced Attack Helicopter
ADP--Automatic Data Processing
AMIP--Army Models Improvement Program
ARRADCOM--Armaments Research and Development Command
ASAS--All-Source Analysis System
BAS--Battlefield Automated Systems
BCS--Battery Computer System
BFA--Battlefield Functional Area
BS³O--Battlefield Systems Software Support Organization
BSI--Battlefield Systems Integration Directorate
C & E--Communications-Electronics
C & S--Concepts and Studies
C²--Command and Control
C³I--Command, Control, Communications, and Intelligence
CAA--Concepts Analysis Agency
CAC--Combined Arms Center
CACDA--Combined Arms Combat Development Activity
CASAA--Combined Arms Studies and Analysis Activity
CCS²--Command, Control, and Subordinate System
CD--Combat Developer
CD PDSS LNO--Combat Developer PDSS Liaison Office
CDSF--Combat Development Support Facility
CDSM--Combat Development System Manager
C-E--Communications-Electronic

CMSR--Communications Support Requirements
 CORADCOM--Communications Research and Development Command
 COTR--Contracting Officer's Technical Representative
 CRMP--Computer Resources Management Plan
 CSS--Combat Service Support
 CSSD--Combat Systems Software Division
 DARCOM--US Army Materiel Development and Readiness Command
 DCD--Directorate of Combat Developments
 DCSCD--Deputy Chief of Staff for Combat Developments
 DCSPER--Deputy Chief of Staff for Personnel
 DDCD--Directorate of Doctrine and Combat Development
 DMD--Digital Message Device
 DPFO--Data Processing Field Office
 DT--Development Testing
 DTD--Directorate of Training Developments
 EAC--Echelon Above Corps
 ECP--Engineering Change Proposal
 ERADCOM--Electronic Research and Development Command
 EW--Electronic Warfare
 FATDS--Field Artillery Tactical Data Systems
 FC--Force Control
 FDS--Fire Direction System
 GPS--Global Positioning System
 HQDA--Headquarters, Department of the Army
 INSCOM--US Army Intelligence and Security Command

IOC--Initial Operating Capability
JINTACCS--Joint Interoperability of Tactical Command and Control Systems
JTE--Joint Test Element
LOGCEN--Logistics Center
MAINSITE--Modular Automated Integrated System Interoperability Test and
Evaluation
MC--Maneuver Control
MD--Materiel Developer
MICOM--Missile Command
MILPERCEN--Military Personnel Center
MISD--Management Information System Directorate (Division)
MLRS--Multiple Launch Rocket System
MOU--Memorandum of Understanding
NET--New Equipment Training
OTEA--Operation, Test and Evaluation Agency
PDSS--Post-Deployment Software Support
PERMIS--New Personnel System
PII--Pershing II
PLRS--Position Location Reporting System
POM--Program Objective Memorandum
PPBS--Planning, Programming, and Budgeting System
PTC--Priorities and Tasking Control Process
PWIS--Prisoners of War Information System
SAG--Study Advisory Group
SIDPERS--Standard Installation Division Personnel System
SSC--Soldier Support Center

TACFIRE--Tactical Fire Control System
TAMMIS--Theater Army Medical Management Information System
TAPER--Theater Army Personnel Rollup
TC4S--Telecommunications, Command and Control, and Computer Systems
TCATA--TRADOC Combined Arms Test Activity
TDS--Tactical Data Systems
TISE--Tactical Interoperability Support Element
TRADOC--US Army Training and Doctrine Command
TRASANA--TRADOC Systems Analysis Agency
TSSG--TACFIRE Software Support Group
TSM--TRADOC System Manager
USAADS--US Army Air Defense School
USACC--US Army Communications Command
USACSC--US Army Computer Systems Command
USAFAB--US Army Field Artillery Board
USAFAS--US Army Field Artillery School
USAICS--US Army Intelligence Center and School
USAREUR--United States Army Europe
USASC--US Army Signal Center
USASC & FG--US Army Signal Center and Fort Gordon
VFDNIS--Vertical Force Development Information System
VTAADS--Vertical The Army Authorization Document Systems

APPENDIX C

BATTLEFIELD AUTOMATED SYSTEMS (BAS)

C-1. CONTENT OF APPENDIX. This appendix contains the Battlefield Automated Systems (BAS) addressed during this Post-Deployment Software Support (PDSS) Study organized by their Battlefield Functional Area (BFA). Consistent with current doctrinal literature, there are now considered to be five BFA's and two functional areas instead of the 11 former BFA's that were recognized. Figure C-1 clarifies this new classification in relationship to the 11 former BFA's. Figures C-2 through C-8 list the systems according to this new classification and identify the system proponent, development command, readiness command, and projected PDSS center.

C-2. SYSTEM CATEGORIES. The focus of this study has been on System Categories 1, 2A and 2B as defined in the PDSS Concept Plan for BAS, May 1980, since those are the systems with which TRADOC is principally concerned with respect to PDSS:

a. Category 1 systems are defined as large (over 100K lines of code) evolutionary systems and include SIGMA, ASAS, TACFIRE, AN/TSQ-73, PATRIOT, CSS Control System, AN/MSM-105(V), and PLRS/JTIDS Hybrid.

b. Category 2A systems are defined as small (less than 100K lines of code) evolutionary systems, e.g., DIVAD GUN, Battery Computer System (BCS), and SHORAD C2.

c. Category 2B systems include large stable systems, e.g., PLRS, SOTAS, and ADDS.

d. Category 3 systems are small stable systems in which the software is normally transparent to the user and is not expected to change greatly once the system is fielded.

C-3. CATEGORIZATION SOURCE. The above system categorization, used during this study was accomplished during a previous DARCOM-initiated study, Post-Deployment Software Support (PDSS) Concept Plan for Battlefield Automated Systems, May 1980.

BATTLEFIELD FUNCTIONAL AREAS (BFA)	
FORMER CLASSIFICATION	
1. FORCE LEVEL CONTROL BFA	FORCE LEVEL CONTROL FUNCTIONAL AREA (THAT PORTION WHICH AFFECTS THE COMMANDER AND HIS STAFF IS NOW CONSIDERED TO BE IN THE FORCE LEVEL CONTROL AREA AND TO INTERACT WITH THE FIVE BFA'S LISTED BELOW.)
2. MANEUVER BFA 3. AIR GROUND BFA 4. ENGINEER BFA	1. MANEUVER BFA (ALSO INCLUDES THAT PORTION OF COMMAND AND CONTROL IN THE AREA OF PLANNING.)
5. AIR DEFENSE BFA	2. AIR DEFENSE BFA
6. FIRE SUPPORT BFA	3. FIRE SUPPORT BFA
7. LOGISTICS BFA 8. ADMINISTRATION BFA	4. COMBAT SERVICE SUPPORT BFA
9. INTELLIGENCE BFA 10. ELECTRONIC WARFARE BFA	5. INTELLIGENCE AND ELECTRONIC WARFARE BFA
11. COMMUNICATIONS BFA	COMMUNICATIONS FUNCTIONAL AREA (IS NOW CONSIDERED TO BE A SUPPORT FUNCTIONAL AREA WHICH SUPPORTS AND INTERACTS WITH THE FIVE BFA'S LISTED ABOVE.)

Figure C-1. Classification of the current functional areas in relationship to the 11 former BFA's

SYSTEM	CATEGORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
SIGMA (Force Level and Maneuver Control System)	1	CAC	CORADCOM (FT. MONMOUTH)	CERCOM	FORT LEAVENWORTH	CORADCOM
PLRS Position Location Reporting System*	2	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FORT MONMOUTH	CORADCOM
NBDS Nuclear Burst Detection System	3	CAC	ERADCOM (FT. MONMOUTH)	CERCOM	FORT MONMOUTH	ERADCOM

* Also addressed under the Communications Functional Area since
USASC is the proponent.

Figure C-2. Force Level and Maneuver Control

SYSTEM	CATEGORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER MANAGED BY	
					LOCATION	
AH-1S COBRA ATTACK HELICOPTER	3	CAC	ARRADCOM (DOVER SITE)	ARRCOM	PICATINNY ARSENAL	ARRADCOM
XM-1, TANK (FIRE CONTROL SYSTEM)	3	CAC	ARRADCOM (DOVER SITE)	ARRCOM	PICATINNY ARSENAL	ARRADCOM
AN/ASN-86 INERTIAL NAVIGATION SYSTEM	3	USAAC	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
AN/ASN-132 INTEGRATED INERTIAL NAVIGATION SYSTEM	3	USAAC	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
AN/PSN-6 POSITION LOCATION NAVIGATION SET (LORAN)	3	TRADOC POS/NAV	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
IACS INTEGRATED AVIONICS CONTROL SYSTEM	3	USAAC	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
JTMLS JOINT TACTICAL MICROWAVE LANDING SYSTEM	3	USAAC	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
AN/ASN-128 LIGHTWEIGHT DOPPLER NAVIGATION SYSTEM	3	USAAC	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM

Figure C-3. Maneuver BFA Systems (continued on next page)

SYSTEM	CATEGORY	PROPOSER	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
AN/ASN-43B IMPROVED HEADING REFERENCE SYSTEM	3	USAAC	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
ATHS AUTOMATIC TARGET HANDOFF SYSTEM	3	USAAC	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
LR-80 ATTITUDE HEADING REFERENCE SYSTEM	3	USAAC	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
ADVANCED ATTACK HELICOPTER	2B	ARMOR CENTER	PM AAH (ST. LOUIS)	CERCOM/ TSARCOM/ ARRCOM/ MICOM	*	*
AN/ALQ-136 COUNTERMEASURES SET	3	USAAC	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/APR-39 RADAR WARNING RECEIVER	3	USAAC	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM

* System for which a DARCOM PDSS Center is not required or for which the need has not been determined.

Figure C-3 (concluded)

SYSTEM	CATE-GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER MANAGED BY	
					LOCATION	
DIVAD GUN DIVISION AIR DEFENSE GUN	2A	USAADS	ARRADCOM (DOVER SITE)	ARRCOM	*	*
AN/TSQ-73 MISSILE MINDER	1	USAADS	USAMICOM (REDSTONE)	MICOM/ CERCOM	REDSTONE ARSENAL	MICOM
SHORAD C2 SHORT RANGE AIR DEFENSE COMMAND AND CONTROL	2A	USAADS	USAMICOM (REDSTONE)	MICOM		MICOM
PATRIOT AIR DEFENSE MISSILE SYSTEM	1	USAADS	DARCOM (PM PATRIOT)	MICOM	REDSTONE ARSENAL	MICOM
HAWK-IMPROVED	2A	USAADS	MICOM (REDSTONE)	MICOM	BEDFORD, MASS.	RAYTHEON CONTRACTOR
ROLAND AIR DEFENSE	3	USAADS	MICOM (REDSTONE)	MICOM	REDSTONE ARSENAL	MICOM
ADEWS AIR DEFENSE EW SYSTEM	*	USAADS	*	*	*	*

* To be determined.

Figure C-4. Air Defense BFA Systems

SYSTEM	CATEGORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
FADAC FIELD ARTILLERY DIGITAL AUTOMATIC COMPUTER	2A	USAFAS	ARRADCOM (DOVER SITE)	ARRCOM	PICATINNY ARSENAL	ARRADCOM
COPPERHEAD ROLL RATE SENSOR	3	USAFAS	ARRADCOM (DOVER SITE)	ARRCOM	PICATINNY ARSENAL	ARRADCOM
APPS ANALYTICAL PHOTOGRAM-METRIC POSITION SYSTEM	3	USAFAS	ARRADCOM (DOVER SITE)	ARRCOM	PICATINNY ARSENAL	ARRADCOM
AH/GSG-10(U) TACTICAL FIRE DIRECTION SYSTEM (TACFIRE)	1	USAFAS	CORADCOM (FT. MONMOUTH)	CERCOM	FT. SILL	CORADCOM
AN/GYK-29 BATTERY COMPUTER SYSTEM (BCS)	2A	USAFAS	CORADCOM (FT. MONMOUTH)	CERCOM	FT. SILL	CORADCOM
AN/PSG-2 DIGITAL MESSAGE DEVICE (DMD)	3	USAFAS	CORADCOM (FT. MONMOUTH)	CERCOM	FT. SILL	CORADCOM
LASER RANGE FINDER	3	USAFAS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/TNS-10 SOUND RANGE SET	3	USAFAS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM

Figure C-5. Fire Support BFA Systems (continued on next page)

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SYSTEM	CATE- GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER MANAGED BY	
					LOCATION	
AN/TPQ-36 FIREFINDER (MORTAR)	3	USAFAS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/TPQ-37 FIREFINDER (ARTILLERY)	3	USAFAS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
BSTAR BATTLEFIELD SURVEILLANCE TARGET ACQUISITION RADAR	3	USAFAS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
FAMAS FIELD ARTILLERY METEORO- LOGICAL ACQUISITION SYSTEM	3	USAFAS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
PERSHING II TACTICAL MISSILE SYSTEM	2B	USAFAS	MICOM (REDSTONE)	MICOM	REDSTONE ARSENAL	MICOM
LANCE SHORT-RANGE TACTICAL MISSILE SYSTEM	3	USAFAS	MICOM (REDSTONE)	MICOM	REDSTONE ARSENAL	MICOM
PERSHING PIA TACTICAL MISSILE SYSTEM	3	USAFAS	MICOM (REDSTONE)	MICOM	REDSTONE ARSENAL	MICOM
MLRS MULTIPLE LAUNCH SYSTEM	3	USAFAS	MICOM (REDSTONE)	MICOM	REDSTONE ARSENAL	MICOM

Figure C-5. (continued)

SYSTEM	CATE-GORY	PROPONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
RPV REMOTELY PILOTED VEHICLE	3	USAFAS	AVRADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	AVRADCOM
PADS POSITIONING AZIMUTH DIRECTION SYSTEM	3	USAFAS	ENGINEER TOPOLOGICAL LABS (DARCOM)	TSARCOM	*	*

* Systems for which a DARCOM PDSS Center is not required or for which the need has not been determined.

Figure C-5. (concluded)

SYSTEM	CATEGORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
MEDLOG MEDICAL LOGISTICS SYSTEM	*	SURGEON GENERAL	ACADEMY OF HEALTH SCIENCES	CSC	FT. BELVOIR	CSC
MEDBLOOD BLOOD MANAGEMENT SYSTEM	*	SURGEON GENERAL	ACADEMY OF HEALTH SCIENCES	CSC	FT. BELVOIR	CSC
MEDREG MEDICAL REGULATING	*	SURGEON GENERAL	ACADEMY OF HEALTH SCIENCES	CSC	FT. BELVOIR	CSC
PAR PATIENT ACCOUNTING REPORTING	*	SURGEON GENERAL	CSC (FT. BELVOIR)	CSC	FT. BELVOIR	CSC
SIDPERS STANDARD INSTALLATION DIVISION PERSONNEL SYSTEM	*	MILPERCEN	CSC (FT. BELVOIR)	CSC	FT. BELVOIR	CSC
CIUS CORPS INTERIM UPGRADE SYSTEM (HARDWARE ONLY)	*	N/A	CSC (FT. BELVOIR)	CERCOM	FT. BELVOIR	CSC
XM-19-XM-2 BIOLOGICAL DETECTOR	3	USAOCCS	ARRADCOM (DOVER SITE)	ARRCOM	PICATINNY ARSENAL	ARRADCOM
CSS CONTROL SYSTEM	1	LOGCEN	CSC	CSC/CERCOM	FT. LEE	CSC
SIDPERS FUTURE	*	SSC	CSC	CSC	FT. BELVOIR	CSC

*Not categorized but treated as Category 2 for PDSS planning.

Figure C-6. Combat Service Support BFA Systems (continued on next page)

SYSTEM	CATE- GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
PWIS PRISONERS OF WAR INFORMATION SYSTEM	*	DCSPER	CSC	CSC	FT. BELVOIR	CSC
VFDMIS VERTICAL FORCE DEVELOPMENT MANAGEMENT INFORMATION SYSTEM	*	ODCSOPS	CSC	CSC	FT. BELVOIR	CSC
TAPER THEATER ARMY PERSONNEL ROLLUP AND TAPER WARTIME	*	USAREUR	CSC	CSC	FT. BELVOIR	CSC
VTAADS VERTICAL THE ARMY AUTHORIZATION DOCUMENT SYSTEM	*	ODCSOPS	CSC	CSC	FT. BELVOIR	CSC
XM-21 CHEMICAL AGENT ALARM REMOTE SENSING	3	USAOCCS	ARRADCOM (DOVER SITE)	ARRCOM	PICATINNY ARSENAL	ARRADCOM
DSU/GSU DIRECT SUPPORT UNIT/GENERAL SUPPORT UNIT	*	LOGCEN/ DCSLOG	CSC (FT. BELVOIR)	CERCOM/CSC	FT. BELVOIR	CSC
MOBILE 360/40 (HARDWARE ONLY)	*	N/A	CSC (FT. BELVOIR)	CERCOM	FT. BELVOIR	CSC

* Not categorized but treated as Category 2 for PDSS planning.

Figure C-6. (continued)

SYSTEM	CATEGORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER MANAGED BY	
					LOCATION	
CS3 COMBAT SERVICE SUPPORT SYSTEM (HARDWARE ONLY)	*	N/A	CSC (FT. BELVOIR)	CERCOM	FT. BELVOIR	CSC
SAMS STANDARD ARMY MAINTENANCE SYSTEM	*	LOGCEN/ DCSLOG	CSC/LOGCEN (FT. LEE)	CERCOM/CSC	FT. LEE	CSC
DLOGS DIVISION LOGISTICS SYSTEM	*	LOGCEN/ DCSLOG	LOGCEN/CSC (FT. LEE)	CSC	FT. LEE	CSC
DS4 DIRECT SUPPORT STANDARD SUPPLY SYSTEM	*	LOGCEN/ DCSLOG	LOGCEN/CSC (FT. LEE)	CSC	FT. LEE	CSC
MRM MAINTENANCE REPORTING AND MANAGEMENT	*	LOGCEN/ DCSLOG	LOGCEN/CSC (FT. LEE)	CSC	FT. LEE	CSC
SAAS-3 STANDARD ARMY AMMUNITION SYSTEM	*	LOGCEN/ DCSLOG	LOGCEN/CSC (FT. LEE)	CERCOM/CSC	FT. LEE	CSC
SAILS ABX STANDARD ARMY INTER- MEDIATE LEVEL SUPPLY	*	LOGCEN/ DCSLOG	LOGCEN/CSC (FT. LEE)	CERCOM/CSC	FT. LEE	CSC
DAS-3 (HARDWARE)	*	LOGCEN/ DCSLOG	CSC (FT. BELVOIR)	CERCOM	FT. LEE	CSC

* Not categorized but treated as Category 2 for PDSS planning.

Figure C-6. (continued)

SYSTEM	CATE- GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
DASPS DA STANDARD PORT SYSTEM	*	LOGCEN/ DCSLOG	LOGCEN/CSC	CSC	FT. LEE	CSC
DASPS-E DA STANDARD PORT SYSTEM ENHANCED	*	LOGCEN/ DCSLOG	LOGCEN/CSC	CSC	FT. LEE	CSC
TOPS TRANSPORTATION OPERATIONAL PERSONNEL PROPERTY STANDARD SYSTEM	*	LOGCEN/ DCSLOG	LOGCEN/CSC	CSC	FT. LEE	CSC
DAMMS DA MOVEMENT SYSTEM	*	LOGCEN/ DCSLOG	LOGCEN/CSC	CSC	FT. LEE	CSC
SUBSYSTEM 1: CMM--CARGO MOVEMENT MODULE						
SUBSYSTEM 2: MPM--MOVE- MENT PLANNING MODULE						
PHOENIX	*	LOGCEN/ DCSLOG	LOGCEN/CSC	CSC	FT. LEE	CSC
SARSS STANDARD ARMY RETAIL SUPPLY SUBSYSTEM	*	LOGCEN/ DCSLOG	LOGCEN/CSC	CSC	FT. LEE	CSC

* NOT CATEGORIZED BUT TREATED AS CATEGORY 2 FOR PDSS PLANNING.

Figure C-6 (concluded)

SYSTEM	CATE- GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
AN/MSC-67 COMMUNICATIONS CENTER	2A	USAICS	USACC	CERCOM	FT. MONMOUTH	CORADCOM
ASAS ALL SOURCE ANALYSIS SYSTEM	1	USAICS	ERADCOM	CERCOM	FT. HAUCHUCA	ERADCOM
AN/TSQ-114 TRAILBLAZER	2A	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/ALQ-151 QUICKFIX	2B	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/TSQ-105 GUARDRAIL V	2B	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/ALG-133 QUICKLOOK II	2B	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
SOTAS STAND-OFF TARGET ACQUISITION SYSTEM	2B	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
TCAC TECHNICAL CONTROL AND ANALYSIS CENTER	2B	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM

Figure C-7. Intelligence and Electronic Warfare BFA Systems (continued
on the next page)

SYSTEM	CATE- GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
AN/MLQ-33 CLOSE AIR SUPPORT ELECTRONIC COUNTERMEASURE (CAS ECM)	3	USAICS/ USAADS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/MLQ-34 TACTICAL JAMMER (TACJAM)	3	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
U/E ECM UNATTENDED/EXPENDABLE ELECTRONIC COUNTERMEASURE	3	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AGTELIS AUTOMATIC GROUND-TRANSPOR- TABLE EMITTER LOCATION/ IDENTIFICATION SYSTEM	3	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/ALR-46 AIRBORNE RADAR WARNING RECEIVER	3	USAADS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
AN/MSQ-103 TEAMPACK	3	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
MAGIIC MOBILE AIR-GROUND IMAGE INTERPRETATION CENTER	3	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM

Figure C-7. (continued)

SYSTEM	CATE- GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
MDPG-OL-192 METEOROLOGICAL DATA PROCESSING GROUP	3	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
REMBASS REMOTELY MONITORED BATTLEFIELD SENSOR SYSTEM	3	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
SLAR SIDE-LOOKING AIRBORNE RADAR	3	USAICS	ERADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	ERADCOM
FENC FREQUENCY EXTENSION NON-COMMUNICATIONS	3	INSCOM	ERADCOM (FT. MONMOUTH)	TBD	*	*

* Systems for which a DARCOM PDSS Center is not required or for which the need has not been determined.

Figure C-7. (concluded)

SYSTEM	CATEGORY	PROponent	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
AN/MSM-105(V)1,2 TEST AND AUTOMATIC REPAIR FACILITY	1	ATE	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
PLRS/JTIDS HYBRID POSITION LOCATION REPORTING SYSTEM/JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM	1	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/MYQ-Z TRANSPORTABLE AUTOMATIC DIGITAL SWITCH (TADS)	2B	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/TTC-38 AUTOMATIC TELEPHONE CENTRAL OFFICE	2B	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/TTC-39 AUTOMATIC TELEPHONE CENTRAL OFFICE	2B	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/TYC-39 AUTOMATIC MESSAGE SWITCHING CENTER	2B	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/UGC-74A(V)3 COMMUNICATIONS TERMINAL	2B	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM

Figure C-8. Communications Systems (continued on next page)

SYSTEM	CATE- GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER MANAGED BY	
					LOCATION	
PLRS POSITION LOCATION REPORTING SYSTEM *	2B	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/USC-28(V) SATELLITE COMMUNICATION SET	3	DCA	CORADCOM/SATCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
BURST COMMUNICATIONS SYSTEM	3	USAINA (FT BRAGG)	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
DCSS FAULT CONTROL SUBSYSTEM	3	DCA	CORADCOM/SATCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/TSQ-84(A) COMMUNICATIONS TECHNICAL CONTROL CENTER	3	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
RTACS REAL-TIME ADAPTIVE CONTROL SYSTEM	3	DCA	CORADCOM/SATCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
SINGGARS SINGLE CHANNEL GROUND AND AIRBORNE RADIO SUBSYSTEM	3	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
TSCVT TACTICAL SATELLITE SINGLE CHANNEL VEHICULAR TERMINAL	3	USASC	CORADCOM/SATCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM

* Also addressed under Command and Control Functional Area.

Figure C-8. (continued)

SYSTEM	CATE- GORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
MSE MOBILE SUBSCRIBER EQUIPMENT	3	DCA	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
PCS PILOT CONTROL SYSTEM	3	DCA	CORADCOM/SATCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AJ/CON ANTI-JAM CONTROL MODEM	3	USASC	CORADCOM/SATCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/GSC-40 COMMAND POST TERMINAL	3	USASC	CORADCOM/SATCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/MSQ-64 FORCE TERMINAL	3	USASC	CORADCOM/SATCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
AN/MSQ-114 SATELLITE COMMUNICATIONS MONITORING CENTER	3	USACC	CORADCOM (FT. MONMOUTH)	CERCOM	FT. MONMOUTH	CORADCOM
DLDED DIVISION LEVEL DATA ENTRY DEVICE	**	SIGCEN	CSC (FT. BELVOIR)	CERCOM/CSC	FT. BELVOIR	CSC

** Not categorized but treated as Category 2 for PDSS planning.

Figure C-8. (continued)

SYSTEM	CATEGORY	PROONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
AN/TSQ-111(V) COMMUNICATIONS NODAL CONTROL ELEMENT	2B	USASC	ESD AFSC	TBD	*	*
JTIDS JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM	2B	USASC	ESD AFSC	TBD	*	*
GPS GLOBAL POSITIONING SYSTEM	3	USASC	SAMSO/AFSC	AIR FORCE	*	*

* Systems for which a DARCOM PDSS Center is not required or for which the need has not been determined.

Figure C-8. (concluded)

APPENDIX D

US ARMY TRAINING AND DOCTRINE COMMAND
OBJECTIVE POST-DEPLOYMENT SOFTWARE SUPPORT SYSTEM
IMPLEMENTATION PLAN (TRADOC PDSS PLAN)

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A Note About this Proposed Implementation Plan:

Included among the principal actions that must be accomplished in connection with implementing the Objective PDSS System within TRADOC is the completion, staffing, approval, and publication of this Implementation Plan. It is envisioned that these actions can be completed by late August and that the Implementation Plan can be distributed soon afterward. However, prior to that time, certain other actions, essential to the total implementation effort, must be initiated and in some cases completed. Many other implementation actions will have to be accomplished after issuance of this plan.

To provide a complete picture of all principal actions in the total implementation effort, this plan identifies and discusses the total set of actions--those that must precede the publication of this plan as well as those that will follow. For reference purposes, the actions that precede publication of this plan are referred to herein as Phase I actions. Those that follow its publication are referred to as Phase II actions. By including the total set of actions, a draft of this plan can be used as a guide by TRADOC organizations that will be responsible for the early (Phase I) actions as well as guidance and authority for the Phase II actions. The language used in the body of this proposed plan is consistent with the concept outlined above for issuing the final version of this plan in late August/early September. For example, Phase I actions are referred to as if they have been completed. Phase II actions are included for the reasons stated above.

APPENDIX D

US ARMY TRAINING AND DOCTRINE COMMAND
OBJECTIVE POST-DEPLOYMENT SOFTWARE SUPPORT SYSTEM
IMPLEMENTATION PLAN (TRADOC PDSS PLAN)

D-1. INTRODUCTION.

a. General.

(1) Mission and functions. Army Regulation 10-41 assigns the mission and defines the major functions of the United States Army Training and Doctrine Command (TRADOC). Included in this mission is the responsibility to conduct all Combat developments not assigned by Headquarters, Department of the Army (HQDA) to other commands and agencies and, as the Army's principal combat developer, guide, coordinate, and integrate the total combat development effort of the Army. TRADOC Regulations 10-5 and 10-41 implement this Army Regulation. The first of these two TRADOC Regulations defines the organization of HQ TRADOC and delineates staff organization, responsibilities, and functions. TRADOC Regulation 10-41 prescribes missions and principal functions of major elements of TRADOC.

(2) Derivation of post-deployment software support responsibilities. Inherent in the combat developments mission assigned by HQDA to TRADOC, and in the missions and functions assigned by HQ TRADOC to major subordinate elements, is the responsibility for fulfilling the combat developer's role in the development and life cycle management and support of battlefield automated systems (BAS). An integral part of this process is the requirement to participate with the material developer in planning and providing support to BAS following their deployment to insure that the software portion of these systems is sustained, modified, and improved as necessary to satisfy system user requirements. These actions constitute post-deployment software support (PDSS).

(3) The Combat developer's role in PDSS. The combat developer's role in the Army's PDSS process has not been well defined nor broadly recognized in the combat developments, materiel developments, or user communities. However, the ever-increasing magnitude and complexity of the requirement to provide PDSS to the growing number of BAS, and the rapidly escalating costs of providing this support, make it imperative that the combat developer play a more prominent and active role in this total effort. This plan addresses the combat developer's PDSS role, the functional requirements associated with it, and provides for transitioning from the present situation to implementation of the capability needed to adequately fulfill PDSS responsibilities.

b. Purpose. This plan:

(1) Defines the combat developer's role in the PDSS process.

(2) Describes the objective functional and management structure that, when implemented, will provide the capability needed to enable the combat developer to fulfill this role.

(3) Describes a phased, step-by-step, procedure for transitioning from the present to implementation of the objective system.

c. Scope. This plan addresses TRADOC-wide requirements associated with PDSS for BAS projected for deployment through the mid- to late-1980s.

d. Authority. The authority for this plan derives from responsibilities implicit in the combat developments mission assigned to TRADOC by Army Regulation 10-41 and further assigned to major TRADOC elements by TRADOC Regulations 10-5 and 10-41. A separate TRADOC regulation is being prepared which will address the PDSS functional area more explicitly. The new regulation will serve as authority for actions associated with PDSS following its publication.

e. Applicability. This plan is applicable to all TRADOC elements that are involved with any facet of the system development and life cycle management and support process.

f. Implementation. Actions required by this plan are divided into two phases. Phase I includes those actions that, because of time constraints, had to be initiated prior to formal issuance of this plan. Phase I covered the period from early March through August 1981. Verbal authority of the Commander, TRADOC provided the basis for proceeding with these Phase I actions. Phase II includes those actions to be initiated following the formal issuance of this plan. Phase II actions begin in late August 1981 and continue into March 1982. This plan provides authority for proceeding with these Phase II actions. The plan is effective for implementation upon receipt.

g. References. Key references are listed in Annex I.

h. Assumptions. This plan is promulgated based on the assumptions listed below. Changes in any of the areas addressed will necessitate development and issuance of corresponding changes to this plan.

(1) Missions and PDSS roles.

(a) The mission and basic role of the materiel developer with respect to PDSS will remain essentially as described in the PDSS Concept Plan for BAS, May 1980 (Reference 18).

(b) The mission and basic role of the combat developer with respect to PDSS will remain essentially as described in the PDSS Concept Plan for BAS, May 1980, and Volume II, First Interim Technical Report of the Assessment of the Combat Developer's Role in Post-Deployment Software Support, September 30, 1980.

(c) The major functional responsibilities of TRADOC centers and schools will remain generally as specified in TRADOC Regulation 10-41 and the respective center and school organization and functions regulations.

(2) PDSS Centers. Materiel/system developer-managed PDSS centers will be established as recommended in the PDSS Concept Plan for BAS, May 1980. The 11 recommended centers are identified in Figure 1-2 of Annex II.

(3) BAS. BAS addressed in this report will continue to be developed and enter the Army inventory through 1987, generally as currently projected. These BAS are identified in Inclosure C to Annex II.

(4) Soldier Support Center-Military Personnel Center relationships. The division of responsibility for PDSS and related functions between the Soldier Support Center (SSC) and the Military Personnel Center (MILPERCEN) will remain as stated in the Memorandum of Agreement signed by the Deputy Chief of Staff for Personnel, and the Commanders of TRADOC, SSC, and MILPERCEN, 5-7 August 1980 (Reference 23).

i. Organization of this Plan. The remainder of the body of this implementation plan prescribes responsibilities for its execution, specifies coordination authority and requirements, identifies actions to be accomplished, provides an implementation schedule, and prescribes reporting requirements. Basic references are listed in Annex I. A detailed description of the TRADOC Objective PDSS System is contained in Annex II. That description includes introductory material, an overview of the system, a discussion of the concept of operations, a description of each major component of the system, and time phased estimates of resources necessary to implement each component of the system. These resource estimates will require further refinement as detailed implementation planning and actions are conducted at each center and school. Annex III contains additional detail regarding each major action to be accomplished during the implementation of this plan. This additional information is presented in tabular form to facilitate its use by all organizational elements involved with this implementation effort. Annex IV provides additional guidance regarding TRADOC center and school implementation plans.

D-2. RESPONSIBILITIES FOR EXECUTING THIS PLAN.

a. HQ TRADOC. The Deputy Chief of Staff for Combat Developments (DCSCD) has primary HQ TRADOC staff responsibility for the execution of this Implementation Plan. In discharging this responsibility he will:

(1) Designate a primary action office within HQ TRADOC to implement the plan as it pertains to the headquarters, and to supervise and coordinate its execution throughout TRADOC.

(2) Monitor implementation progress.

(3) Resolve problems and conflicts resulting from implementation.

(4) Insure that implementation is appropriately coordinated with organizations external to TRADOC, in particular the US Army Materiel Development and Readiness Command (DARCOM) and the US Army Computer Systems Command (USACSC). Both of these commands will be establishing and operating PDSS Centers in accordance with the PDSS Concept Plan for BAS, May 1980.

(5) Conduct formal periodic reviews of the status of the TRADOC-wide implementation effort.

(6) Recommend to the Commander, TRADOC changes to this plan as required.

b. Commander, Combined Arms Center. The Commander, Combined Arms Center (CAC), as the TRADOC PDSS proponent, has primary responsibility to support HQ TRADOC in the execution of this plan by coordinating and integrating the actions of all centers and schools involved in its implementation. The Commander CAC will:

(1) Designate a primary action office within CAC for implementation of the plan as it pertains to that center and to serve as the focal point for coordinating and integrating all efforts associated with its execution throughout TRADOC.

(2) Direct the preparation and execution of additional detailed implementation plans relevant to CAC as may be required in accordance with Annex IV.

(3) Monitor implementation progress and submit reports as specified in Paragraph D-6.

(4) Resolve problems and conflicts resulting from implementation actions, at CAC or at other centers, that are within his authority; coordinate the resolution of other matters with HQ TRADOC.

(5) Coordinate and/or direct the coordination of implementation actions as appropriate within TRADOC and with organizations external to TRADOC, in particular with DARCOM and USACSC organizations involved with the establishment and operation of PDSS Centers.

(6) Assist the DCSCD, HQ TRADOC, in planning and conducting formal periodic reviews of the status of the TRADOC-wide implementation effort.

(7) Recommend to HQ TRADOC changes in the Implementation Plan as required.

c. Other TRADOC Integrating Centers. The Commanders of TRADOC's other two integrating centers, the US Army Logistics Center (LOGCEN) and US Army Soldier Support Center (SSC), are responsible for the execution of this plan within their respective centers and in their associated schools that are affected by the plan. In discharging these responsibilities, each of these commanders will:

(1) Designate a primary action office within their respective centers for implementation of the plan as it pertains to each center and to serve as the focal point for coordinating and integrating all efforts related to its execution at associated schools.

(2) Direct the preparation and execution of additional detailed implementation plans relevant to each of their respective centers and associated schools as may be required in accordance with Annex IV.

(3) Monitor implementation progress and submit reports as specified in Paragraph D-6.

(4) Coordinate implementation actions as appropriate within TRADOC and with organizations external to TRADOC, in particular with USACSC and MILPERCEN.

(5) Refer problems and conflicts resulting from implementation that cannot be resolved locally to the Commander, CAC and/or Commander, TRADOC.

(6) Recommend to CAC and/or HQ TRADOC changes in the Implementation Plan as required.

d. Other TRADOC Functional and Doctrinal Centers. The Commanders of other TRADOC functional and doctrinal centers that are impacted by this Implementation Plan are responsible for its execution within their respective centers. These commanders will:

(1) Designate a primary action office within their respective centers for implementation of the plan as it pertains to each center and to serve as the focal point for coordinating actions as appropriate with other centers and organizations both internal and external to TRADOC.

(2) Direct the preparation and execution of additional detailed implementation plans as may be required for their respective centers.

(3) Monitor implementation progress and submit reports as specified in Paragraph D-6.

(4) Refer problems and conflicts resulting from implementation actions that cannot be resolved locally to the Commander, CAC and/or Commander, TRADOC.

(5) Recommend to CAC and/or HQ TRADOC changes in the Implementation Plan as required.

e. Other TRADOC Elements. The commanders of other TRADOC organizations will support and participate in the execution of this Implementation Plan as specifically directed or tasked by the Commander, TRADOC.

D-3. COORDINATION. All TRADOC elements involved with the implementation of this plan are authorized and required to coordinate all actions as appropriate with other organizations, both internal and external to TRADOC, consistent with the roles, missions, functional responsibilities, and organizational relationships specified in TRADOC Regulations 10-5 and 10-41. Problems encountered in effecting coordination that cannot be resolved between the organizations directly involved will be referred to the Commander, CAC, and/or the Commander, TRADOC.

D-4. ACTIONS TO BE ACCOMPLISHED. This part of the plan addresses the actions/events that must be accomplished beginning in March 1981 and continuing through March 1982 to provide the framework for transitioning from the present to implementation of the TRADOC Objective PDSS System described in Annex II. Full implementation is to be achieved by 1987.

a. Organization of Required Actions. It should be noted that certain of the actions identified are concerned with the final development and approval of this plan itself, and, therefore, were accomplished prior to the formal approval and distribution of this plan. These preliminary implementation actions and other actions that also had to be initiated prior to distribution of this plan are considered to constitute Phase I of the implementation effort. These Phase I actions are included here to provide a complete listing of all principal actions/events. Other required actions, which are to be accomplished following formal approval and distribution of the final version of this Implementation Plan, constitute Phase II of the implementation effort. The Phase II actions are also addressed in this plan.

b. Discussion of Required Actions. Each principal action/event that must be accomplished as part of the total implementation effort (both Phases I and II) is discussed below, generally in the sequence in which the actions should be initiated. Each action or event is numbered for ease of identification and subsequent reference. Additional details relative to each of these actions/events is presented in Annex III in tabular form to facilitate the use of this information by all TRADOC elements involved with the execution of this plan. Annex III:

(1) Identifies and describes the principal actions and events that must be accomplished to complete this implementation effort.

(2) Organizes these actions and events into a logical sequence that should or in some cases must be followed, associates each with an action/event number for subsequent identification and reference purposes, and indicates the time period in which the action is to be initiated.

(3) Indicates the TRADOC organization(s) responsible for each action/event.

(4) Identifies and briefly describes the product(s) or other results(s) of each action/event.

c. Phase I Actions/Events. The principal Phase I actions and events are presented and discussed below. They began in March 1981 and continued through August 1981. A schedule is presented in Annex III.

Action/Event 1: Receive and review the final documentation (Volumes I, II, III, and IV) of the TRADOC PDSS Study. This action, applicable to all elements of TRADOC, is to insure that all TRADOC personnel involved with the execution of this plan have a common understanding of the background, purpose, and results of the TRADOC PDSS Study.

Action/event 2: Prepare material for the First Formal TRADOC PDSS Review. This action, primarily involving HQ TRADOC and CAC/CACDA, is to prepare appropriate information for presentation and discussion at the First Formal TRADOC PDSS Review planned for late March 1981.

Action/event 3: Provide inputs for the First Formal TRADOC PDSS Review as requested. This action, applicable to all TRADOC centers and schools, is to insure that the views and interests of each center and school are considered and appropriately addressed in the First Formal TRADOC PDSS Review.

Action/event 4: Conduct the First Formal TRADOC PDSS Review and receive results of the review. This action involves HQ TRADOC and CAC/CACDA with participation as appropriate by other centers and schools.

Action/event 5: Revise the Draft TRADOC PDSS Implementation Plan (this plan) based on results of the First Formal TRADOC PDSS Review. This action is the responsibility of CAC/CACDA and is to incorporate all guidance and decisions resulting from the First Formal TRADOC PDSS Review into a final version of the TRADOC PDSS Plan for execution throughout TRADOC.

Action/event 6: Begin detailed PDSS planning. Centers and schools initiate the development of detailed PDSS plans based on results of the First Formal TRADOC PDSS Review and other guidance to date. See Annex IV for further details.

Action/event 7: Develop a First Draft of the proposed TRADOC PDSS Regulation. This action is the responsibility of CAC/CACDA. This proposed regulation is to establish policy and assign responsibilities for TRADOC participation, as the Army's principal combat developer, in planning for and development, acquisition, testing, training, and support of major and nonmajor Army battlefield automated systems.

Action/event 8: Distribute the First Draft TRADOC PDSS Regulation for review and comment. This action by CAC/CACDA is to provide for a TRADOC-wide review of the proposed regulation.

Action/event 9: Distribute the Draft Implementation Plan (this plan) for coordination or comment. This action by CAC/CACDA is intended to obtain concurrence with the final draft of the implementation plan prior to formal approval and issuance of the plan for execution.

Action/event 10: Issue budget instructions for PDSS resources for FY 83. This is a HQ TRADOC action. Basic budget instructions are issued by HQ TRADOC in the March-April time period, too early to incorporate specific budget instructions relative to PDSS resources. The purpose of issuing these supplemental budget instructions in the May-June time frame pertaining to PDSS would be to provide for the inclusion of critical PDSS requirements in the FY 83 Command Budget Estimate (CBE). Note: If this action is not taken, the alternative is to defer addressal of PDSS requirements until development of the Program Analysis and Resource Review (PARR) for the FY 84-88 Program Objective Memorandum (POM).

Action/event 11: Submit comments to CAC/CACDA on the First Draft TRADOC PDSS Regulation. This action, applicable to all TRADOC elements, is to be accomplished in response to Action/event 8.

Action/event 12: Submit concurrence or comments on the Draft Implementation Plan. This action, applicable to all TRADOC elements involved in PDSS planning is to be accomplished in response to Action/event 9.

Action/event 13: Submit implementation progress reports. This action is applicable to all TRADOC centers and schools involved in the execution of this plan. Reports will be submitted in accordance with instructions in Paragraph D-6.

Action/event 14: Prepare material for the Second Formal TRADOC PDSS Review. This action, involving HQ TRADOC and CAC/CACDA, is to prepare appropriate information for presentation and discussion at the Second Formal TRADOC PDSS Review anticipated for late July 1981.

Action/event 15: Conduct the Second Formal TRADOC PDSS Review and receive results. This action involves HQ TRADOC and CAC/CACDA with participation as appropriate by other centers and schools. One of the major objectives of this review would be to obtain approval of the updated/revised version of this Implementation Plan.

Action/event 16: Develop the Second Draft of the TRADOC PDSS Regulation. This action, which is the responsibility of CAC/CACDA, will be initiated following receipt of comments resulting from Action/event 11.

Action/event 17: Prepare the Implementation Plan for TRADOC approval and distribution. This action, by CAC/CACDA, will incorporate results of Actions/events 12 and 15 and will produce the final version of the Implementation Plan for TRADOC.

Action/event 18: Submit CBE input pertaining to PDSS requirements. This action, applicable to all elements of TRADOC, is required in response to Action/event 10. Should HQ TRADOC elect not to proceed with Action/event 10, this action will not be required.

d. Phase II Actions/Events. The Phase II actions/events discussed below begin in late August/early September 1981 and continue into March 1982. A schedule is presented in Annex III.

Action/event 19: Approve the TRADOC PDSS Implementation Plan for execution. This action by HQ TRADOC, marks the beginning of Phase II of the implementation effort.

Action/event 20: Distribute the Second Draft TRADOC PDSS Regulation. This action, by CAC/CACDA, will initiate final coordination of this key regulation. The Second Draft will incorporate all comments resulting from action on the First Draft (Action/event 11) and will provide policy guidance relative to PDSS pending finalization and distribution of the approved regulation.

Action/event 21: Submit CBE to HQDA. This is a recurring action by HQ TRADOC, accomplished as part of the TRADOC Resource Management System. This action can provide for the addressal of PDSS requirements in the CBE for FY 83 if Actions/events 10 and 18 have been accomplished.

Action/event 22: Develop and submit TDA revisions. This action, applicable to all elements of TRADOC, is a recurring action accomplished generally on a semi-annual basis. This action will provide for reflecting in TDA documents, organizational changes resulting from PDSS Plan implementation. If TDA revisions are not required at this time, this action may be deferred until the next periodic TDA update.

Action/event 23: Develop input for the TRADOC Management Information System (TRAMIS). This action, applicable to all TRADOC elements, provides for initial entry of PDSS-related information in the TRAMIS data base in accordance with TRADOC Regulation 71-1. For entry into TRAMIS, PDSS resources should be accounted for as either "PDSS Management" or "PDSS Execution." Within the latter category, resources will be further identified by battle-field automated system.

Action/event 24: Complete detailed implementation plans initiated in Action/event 6. This requirement is applicable to all elements of TRADOC impacted by the Objective PDSS System described in Annex II. These plans will be in consonance with this basic TRADOC PDSS Plan and specifically with the guidance provided in Annex IV. They will be coordinated with other elements of TRADOC as appropriate. One copy of each of these supplementary plans will be provided to HQ TRADOC (ATTN: ATCD-C-B Mr. Fallon) and one copy to CACDA (ATTN: ATZL-CAC-IA Mr. Schwabe).

Action/event 25: Distribute instructions to all TRADOC elements for Modernization Resources Information System (MRIS) submissions. This is a recurring HQ TRADOC action which can provide for the development and submission of PDSS-resource data for inclusion in the MRIS.

Action/event 26: Submit comments on the Second Draft TRADOC PDSS Regulation. This action is applicable to all TRADOC elements in response to Action/event 20.

Action/event 27: Develop final copy of the TRADOC PDSS Regulation; submit to HQ TRADOC for approval. This CAC/CACDA action will include resolution of all comments received as a result of Action/events 20 and 26.

Action/event 28: Approve and publish the TRADOC PDSS Regulation. This HQ TRADOC action will be taken following receipt of results of Action/event 27.

Action/event 29: Review/approve and submit TDA revisions. This is a recurring HQ TRADOC action which can include review/approval of TDA document revisions resulting from PDSS implementation actions (i.e., Action/event 22).

Action/event 30: Initiate action to enter PDSS workload and priority data in the Priorities and Tasking Control (PTC) Process. This action is applicable to all elements of TRADOC. It will be initiated in accordance with procedures prescribed in TRADOC Regulation 11-2.

Action/event 31: Revise HQ TRADOC and center and school mission and functions regulations to reflect changes required by the TRADOC PDSS Regulation (Action/event 28) and to show changes in organizational elements and functional responsibilities resulting from PDSS implementation. This action is applicable to all elements of TRADOC. Copies of revised local regulations (e.g., 10-1 regulations) will be provided to HQ TRADOC in accordance with TRADOC Regulation 10-2.

Action/event 32: Submit implementation progress reports. This action is applicable to all TRADOC centers and schools involved in the execution of this plan. Reports will be submitted in accordance with instructions in Paragraph D-6.

Action/event 33: Prepare material for the Third Formal TRADOC PDSS Review. This action, involving HQ TRADOC and CAC/CACDA, is to prepare appropriate information for presentation and discussion at the Third Formal TRADOC PDSS Review anticipated for late November.

Action/event 34: Conduct the Third Formal TRADOC PDSS Review and receive results. This action involves HQ TRADOC and CAC/CACDA with participation as appropriate by other elements of TRADOC. The purpose of the review is to apprise senior officials of TRADOC of the status of PDSS implementation and subsequent plans and requirements.

Action/event 35: Develop Memorandum of Agreement (MOA) with associated material/system developers. This action is applicable to all centers and schools involved in this implementation effort. The development of this

MOA will be one of the detailed implementation actions addressed in supplementary plans to be prepared (Action/event 24). It is identified here to emphasize its importance to the success of the total PDSS effort.

Action/event 36: Develop and submit the TRADOC PARR. This is a recurring HQ TRADOC action which can provide for addressing TRADOC PDSS resource requirements in the FY 84-88 POM.

Action/event 37: Issue budget instructions for the FY 84 CBE. This is a scheduled HQ TRADOC action. Instructions issued relative to PDSS will depend on decisions and actions taken previously in connection with Actions/events 10, 18, 21, and 36. If PDSS resources were not addressed in Actions/events 10, 18, or 21, this will be the initial addressal of PDSS resources in a budget submission.

D-5. IMPLEMENTATION SCHEDULE. As indicated in Paragraph D-4, the initial implementation actions and events that are identified herein are to be accomplished during a time period spanning approximately one year from March 1981 through March 1982. Other actions that originate from these initial actions will continue on for several years before full implementation is achieved in 1987. Throughout this time and beyond, a number of actions associated with the TRADOC Resources Management System (TRADOC Pamphlet 11-11) and the Priorities and Tasking Control Process (TRADOC Regulation 11-2) will be accomplished on a recurring basis. Due to their nature, some of the actions identified in this plan were completed prior to its final approval and distribution. Verbal authority from the Commander, TRADOC provided the basis for proceeding with these preliminary actions. This approved plan is the authority for Phase II actions. Annex III indicates the time or time period when each principal implementation Action/event is to be accomplished. The key milestones in this schedule are listed below:

<u>DATE OR TIME PERIOD</u>	<u>MILESTONE</u>
28 Feb 1981	● Receive the final documentation of the TRADOC PDSS Study
Late Mar	● Conduct the First Formal TRADOC PDSS Review
Late May	● Distribute the First Draft of the proposed TRADOC PDSS Regulation for review
	● Distribute Draft Implementation Plan for TRADOC coordination
Early June	● Issue FY 83 Budget Instructions for PDSS
Early July	● Centers and Schools Submit Progress Reports
Late July	● Conduct Second Formal TRADOC PDSS Review
	● All TRADOC elements submit CBE PDSS input

<u>DATE OR TIME PERIOD</u>	<u>MILESTONE</u>	Continued
Late Aug/early Sep	● Distribute approved TRADOC PDSS Implementation Plan (this plan)	
Late Aug/early Sep	● Distribute Second Draft TRADOC PDSS Regulation for review/coordination	
Sep	● All elements submit: ●● TDA revisions to HQ TRADOC reflecting changes resulting from PDSS Plan Implementation (Note: This action could be deferred six months or one year pending the allocation of personnel spaces against PDSS resource requirements.) ●● Prepare PDSS input for TRAMIS	
Late Sep/early Oct	● Centers and schools complete supplementary detailed implementation plans	
Oct	● Approve, publish, and distribute TRADOC PDSS Regulation	
Nov	● All elements develop input for the PTC Process ● Centers and Schools Submit Progress Reports ● Conduct Third Formal TRADOC PDSS Review	
Feb 1982	● Submit TRADOC PARR reflecting PDSS resource requirements for FY 84-88 POM	
Mar	● Issue FY 84 budget instructions	

D-6. REPORTING REQUIREMENTS. Each TRADOC center and school involved in the execution of this plan will submit implementation progress reports to be used as input for the Second and Third TRADOC PDSS Reviews to be held in late July and late November, respectively. These reports will be prepared as of 1 July and 1 November and submitted to HQ TRADOC (ATTN: ATCD-C-B) with information copy to CACDA (ATTN: ATZL-CAC-IA). These reports will be submitted to reach TRADOC and CACDA not later than 15 July and 15 November. Each report will provide the status of implementation to date, major problems encountered, lessons learned, and principal actions planned to continue implementation efforts. In addition to these scheduled reports, any problems encountered by a center and school that cannot be resolved locally will be submitted for resolution as indicated in Paragraph D-2. Other TRADOC elements will submit information as requested by CAC to provide input to the periodic Formal TRADOC PDSS Reviews, or to satisfy other requirements as they arise.

ANNEX I

KEY REFERENCES

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3. _____. Department of Defense Directive 5000.3: Test and Evaluation. Washington, D.C.: 26 December 1979.
4. _____. Department of Defense Directive 5000.29: Management of Computer Resources in Major Defense Systems. Washington, D.C.: 26 April 1976.
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6. _____. Army Regulation 18-1: Army Automation, Army Automation Management. Washington, D.C.: 15 August 1980.
7. _____. Army Regulation 70-1: Army Research, Development, and Acquisition. Washington, D.C.: 1 February 1977.
8. _____. Army Regulation 70-37: Configuration Management. Washington, D.C.: 19 July 1976.
9. _____. Army Regulation 71-1: Force Development, Army Combat Developments. Washington, D.C.: 25 June 1969.
10. _____. Army Regulation 1000-1: Basic Policies for Systems Acquisition. Washington, D.C.: 1 April 1978.
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12. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 10-2: Organizations and Functions, Control of Mission Assignment and Organization Structure. Fort Monroe. July 1973.
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14. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 10-41: Organization and Functions, Mission Assignments. Fort Monroe: 1 May 1980.

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16. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 71-12: Force Development, Total System Management - TRADOC System Manager (TSM). Fort Monroe: 15 September 1978.
17. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Pam 11-11: TRADOC Resource Management System. Fort Monroe: 2 September 1975.
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19. _____. Battlefield Automation Management Program (BAMP). Fort Leavenworth: 1 July 1978.
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21. _____. Army Battlefield Interface Concept 80 (U) (Short Title: ABIC 80). Draft. ACN Number 47635. Washington, D.C. (CONFIDENTIAL)
22. _____. Headquarters, US Army Materiel Development and Readiness Command/Headquarters, US Army Training and Doctrine Command. DARCOM/TRADOC Materiel Acquisition Handbook. Alexandria/Fort Monroe: 1 January 1980.
23. _____. Memorandum of Understanding between the Deputy Chief of Staff for Personnel and the Commanders, US Army Training and Doctrine Command, US Army Military Personnel Center, and US Army Soldier Support Center, 5-7 August 1980.

ANNEX II

THE TRADOC OBJECTIVE PDSS SYSTEM

Note: When this Implementation Plan is prepared in final copy, this Annex will contain a description of the TRADOC Objective PDSS System structured essentially the same as the description contained in Chapter 2 of this Third Interim Technical Report.

ANNEX III

PRINCIPAL ACTIONS AND EVENTS

This annex presents a listing of the principal actions and events that must be accomplished during the initial (approximately one year) period of the TRADOC PDSS implementation effort. These actions and events are presented in tabular form on the following pages in the general sequence that they should, or in some cases must, be accomplished for proper continuity. Each action/event is identified by a number (corresponding to that used in Paragraph D-4 of the basic plan) for ease of reference. The TRADOC element(s) responsible for each action/event is/are identified and the products or results of each action/event are shown.

The time period when each action is to be initiated is also shown. These times may vary depending upon future decisions. In particular, the Phase II actions dealing with TDA documents may be deferred six months or one year pending the allocation of personnel spaces against PDSS resource requirements.

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ACTION/ EVENT NO.	TIME TO BE INITIATED	DESCRIPTION OF ACTION/EVENT	ORGANIZATIONS(S) INVOLVED			DESCRIPTION OF RESULTS OF ACTION EVENT
			HQ TRADOC	CAC/ CACDA	CENTERS & SCHOOLS	
1.	28 FEB 81	Receive and review Final Report (Volumes I, II, III, & IV) of the TRADOC PDSS Study	X	X	X	N/A
2.	MAR	Prepare material for the First Formal TRADOC PDSS Review	X	X		Briefing and discussion materials
3.	MAR	Provide inputs to the First Formal TRADOC PDSS Review as requested			X	Various items of PDSS-related information
4.	LATE MAR/ APR	Conduct the First Formal TRADOC PDSS Review	X	X		Approval of actions to date; guidance for future actions
5.	APR	Revise Implementation Plan based on results of First Formal TRADOC PDSS Review		X		Revised plan for staffing
6.	APR	Begin detailed PDSS planning		X	X	Detailed center & school plans based on guidance to date
7.	APR	Develop First Draft of TRADOC PDSS Regulation		X		First Draft of TRADOC PDSS Regulation
8.	LATE MAY	Distribute first draft of TRADOC PDSS Regulation for review		X		N/A

ACTION/ EVENT NO.	TIME TO BE INITIATED	DESCRIPTION OF ACTION/EVENT	ORGANIZATION(S) INVOLVED			DESCRIPTION OF RESULTS OF ACTION EVENT
			HQ TRADOC	CAC/ CACDA	CENTERS & SCHOOLS	
9.	EARLY JUL	Distribute Draft Implementation Plan for TRADOC Coordination		X		Guidance to all elements relative to the inclusion of critical PDSS requirements in FY83 CBE
10.	EARLY JUN	Issue special budget instructions for PDSS resources	X X			
11.	MID JUL	Submit comments/concurrence on First Draft TRADOC PDSS Regulation			X	Concurrence or comments for revising draft
12.	MID JUL	Review Draft Implementation Plan	X	X	X	Concurrence or comments for revision
13.	MID JUL	Submit Implementation Progress Report				Status of implementation
14.	LATE JUL	Prepare material for the Second Formal TRADOC PDSS Review	X	X		Briefing and discussion material
15.	LATE JUL	Conduct the Second Formal TRADOC PDSS Review	X	X		Approval of actions to date; guidance for future actions

ACTION/ EVENT NO.	TIME TO BE INITIATED	DESCRIPTION OF ACTION/EVENT	ORGANIZATION(S) INVOLVED			DESCRIPTION OF RESULTS OF ACTION EVENT
			HQ TRADOC	CAC/ CACDA	CENTERS & SCHOOLS	
16.	JUL/AUG	Develop Second Draft of TRADOC PDSS Regulation		X		Second Draft of PDSS Regulation
17.	AUG	Prepare final version of Implementation Plan		X		Final Plan for TRADOC approval
18.	JUL	Submit CBE input pertaining to critical PDSS requirements	X	X	X	CBE input
19.	LATE AUG/ EARLY SEP	Distribute approved TRADOC PDSS Implementation Plan	X			Approved plan
20.	LATE AUG/SEP	Distribute Second Draft TRADOC PDSS Regulation for Staffing		X		Second Draft PDSS Regulation
21.	LATE AUG	Submit CBE to HQDA	X			TRADOC CBE
22.	SEP	Develop and submit TDA revisions	X	X	X	Revised TDAs reflecting results of PDSS actions
23.	SEP	Develop input for TRAMIS	X	X	X	Updated TRAMIS data base
24.	LATE SEP/ EARLY OCT	Complete detailed implementation plans		X	X	Center and School PDSS Plans

ACTION/ EVENT NO.	TIME TO BE INITIATED	DESCRIPTION OF ACTION/EVENT	ORGANIZATION(S) INVOLVED			DESCRIPTION OF RESULTS OF ACTION EVENT
			HQ TRADOC	CAC/ CACDA	CENTERS & SCHOOLS	
25.	OCT	Prepare and distribute MRIS instructions	X			Guidance for addressing PDSS resources in the MRIS
26.	EARLY OCT	Submit comments/concurrence on Second Draft TRADOC PDSS Regulation			X	Concurrence or comments for further revision
27.	OCT	Develop final copy of TRADOC PDSS regulation		X		Final copy for approval
28.	OCT	Approve, publish, and distribute the TRADOC PDSS Regulation	X			TRADOC PDSS Regulation
29.	OCT/NOV	Review, approve, and submit TDA revisions	X			VTAADS input to HQDA
30.	NOV	Develop data to initiate the Prioritization and Tasking Control (PTC) Process (TRADOC Reg 11-2)	X	X	X	Workload and priority data to initiate the PTC Process
31.	NOV	Revise mission and functions regulations to reflect PDSS responsibilities and structure	X	X	X	Revised 10-1 series regulations
32.	MID NOV	Submit Implementation Progress Report			X	Status of Implementation

ACTION/ EVENT NO.	TIME TO BE INITIATED	DESCRIPTION OF ACTION/EVENT	ORGANIZATION(S) INVOLVED			DESCRIPTION OF RESULTS OF ACTION EVENT
			HQ TRADOC	CAC/ CACDA	CENTERS & SCHOOLS	
33.	NOV	Prepare material for the Third Formal TRADOC PDSS Review	X	X		Briefing and discussion materials
34.	NOV	Conduct the Third Formal TRADOC PDSS Review	X	X		Approval of actions to date; guidance for future actions
35.	NOV/DEC	Develop MOA with associated materiel/system developers		X	X	MOA to facilitate day-to-day operations
36.	FEB 1982	Develop and submit TRADOC PARR	X			PARR reflecting PDSS resource requirements
37.	MAR	Issue budget instructions	X			Budget instructions including addressal of PDSS resources for FY84

ANNEX IV

GUIDANCE FOR PREPARING

CENTER AND SCHOOL IMPLEMENTATION PLANS

1. GENERAL.

a. Initial Preparation. Each TRADOC center and school involved in the execution of this Implementation Plan will develop a supplemental plan to address additional details not covered in this TRADOC plan and unique requirements that must be considered in local implementation efforts. Center and school plans will be consistent with provisions of this TRADOC plan. Development of the center and school plans will begin following the First Formal TRADOC PDSS Review, scheduled to be held 30 March 1981. Planning will proceed based on guidance resulting from that review which CACDA will forward to each center and school by letter in early April 1981. Documented plans will be completed in late September/early October following issuance of the approved TRADOC plan (this plan) in late August or early September. Copies of the completed center and school plans will be submitted to HQ TRADOC (ATTN: ATCD-C-B) and CACDA (ATTN: ATZL-CAC-IA) not later than 15 Oct 1981.

b. Update of Center and School Plans. The supplemental plans prepared by each center and school will be updated annually, coordinated with CACDA (ATZL-CAC-IA) and other elements of TRADOC affected by the plan. The coordinated plan will be used to guide the implementation effort and as the basis for developing inputs to the TRADOC Resources Management System.

2. STRUCTURE OF PLANS. The center and school PDSS implementation plans will be organized in two parts. The content of each part is described below:

a. Part 1--Management and Operations Plan. This part of the plan developed by each center and school will:

(1) Define and provide a time-phased schedule for the actions that must be accomplished to acquire, install, interface, operate, manage, and maintain the PDSS capability called for in the TRADOC Objective PDSS System.

(2) Describe in detail the resources required, quantity and type of personnel, contractual support, type and quantity of equipment, physical facilities required, and physical and other interfaces with associated MD PDSS center(s), training developer facilities, test activities, and independent user tester(s).

(3) Describe the required analytical and test tools, devices, and models necessary to support new requirements or refinements of software in the BAS within the respective BFAs.

(4) Describe simulation models required, their interfaces or relationships with existing models, and planned steps for acquiring these support tools.

b. Part 2--Fiscal Plan. This part of each plan will contain a projection of funding required by type and amount, by fiscal year, for the current, budget, and program years, to:

(1) Implement the Objective PDSS System at each center and school involved with this system, and

(2) To provide PDSS for the BAS for which each center and school has combat developer proponentcy. This funding projection will include estimates of costs for user tests and other testing for which the combat developer is responsible.

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