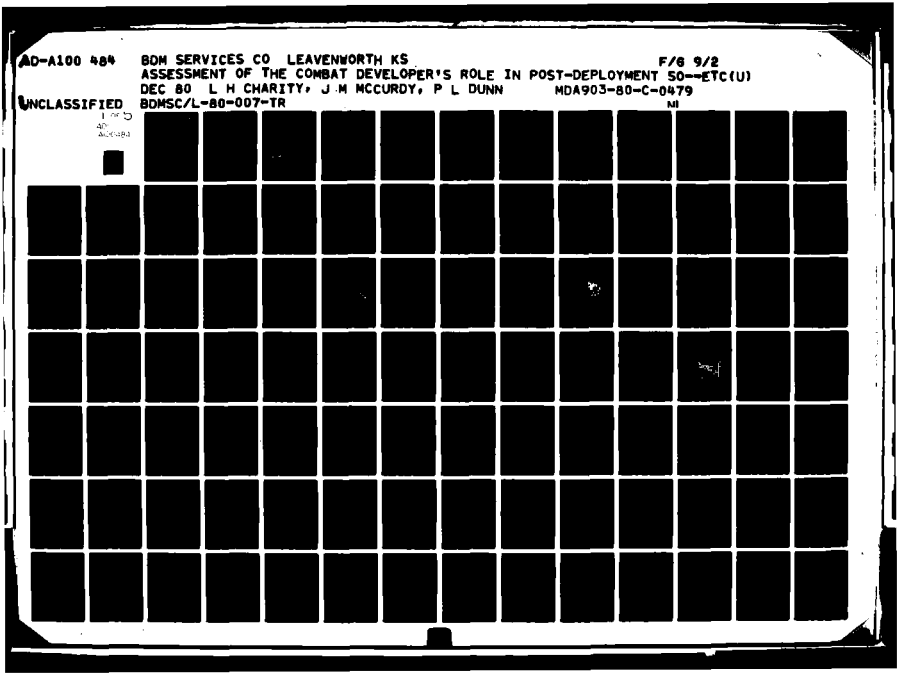
AD-A100 484 BDM SERVICES CO LEAVENWORTH KS F/G 9/2
ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE IN POST-DEPLOYMENT SO--ETC(U)
DEC 80 L H CHARITY, J M MCCURDY, P L DUNN MDA903-80-C-0479
UNCLASSIFIED BDMSC/L-80-007-TR NL



UNCLASSIFIED

16 December 1980

LEVEL III

AD

ACN 52719

ADA100484

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

SECOND INTERIM TECHNICAL REPORT

Volume III

DTIC ELECTE JUN 22 1981 S D E

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

BDM SERVICES COMPANY
LEAVENWORTH, KANSAS 66048

DISTRIBUTION STATEMENT.
Each transmittal of this document outside of the Department of Defense must have prior approval of the United States Army Combined Arms Combat Development Activity.

DISCLAIMER.
The views, opinions, and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other official documentation.

DTIC FILE COPY

...MENT A
... public release;
Distribution Unlimited

81 4 ... 1 2

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
BDMSC/L-80-007-TR	DA-700605	AD-A100 484

4. TITLE (and Subtitle)
Assessment of the Combat Developer's Role in Post-Deployment Software Support (PDSS), Volume III, 30 June 1980 - 28 February 1981

5. TYPE OF REPORT & PERIOD COVERED
Second Interim Technical Report
1 OCT 80 - 16 DEC 80

6. PERFORMING ORG. REPORT NUMBER
CDRL Item Number 0002AC

7. AUTHOR(s)
BDMSC Staff

8. CONTRACT OR GRANT NUMBER(s)
MDA903-80-C-0479 ✓

9. PERFORMING ORGANIZATION NAME AND ADDRESS
BDM Services Company
P. O. Box 456
213 Delaware, Suite 7C
Leavenworth, Kansas 66048

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
ACN 52719

11. CONTROLLING OFFICE NAME AND ADDRESS

12. REPORT DATE
16 December 1980

13. NUMBER OF PAGES
402

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)
Combined Arms Combat Development Activity
ATTN: ATZL-CAC-IA, Mr. R. K. Schwabe
Fort Leavenworth, Kansas 66027

15. SECURITY CLASS. (of this report)
UNCLASSIFIED

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)
Each transmittal of this document outside of the Department of Defense must have prior approval of the United States Army Combined Arms Combat Development Activity.

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

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)
Post-Deployment Software Support (PDSS)
Battlefield Automated System (BAS)
Battlefield Functional Area (BFA)
Combat Developer
Materiel Developer
Functional Proponent
PDSS Center
Combat Development Support Facility (CDSF)
Combat Development System Manager (CDSM)
Proponent Agency

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 Software Support Concept Plan for Battlefield Automated Systems, and the related functional requirements of the Combat Developer. (Continued on next page.)

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

UNCLASSIFIED

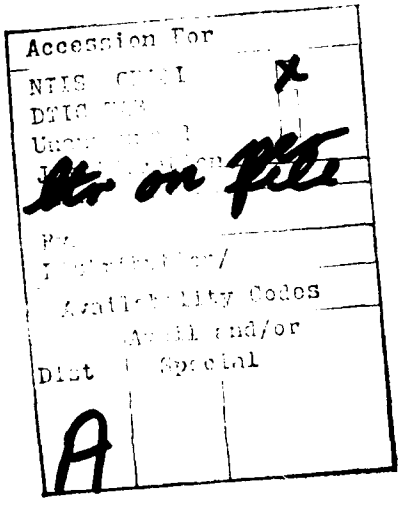
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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, 30 September 1980.

This Second Interim Technical Report documents the results of Phase II. This Phase II effort 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 developed recognizing the realities of current organizational structures and their functional responsibilities.

Following TRADOC's selection of one of these three alternatives, or a variation thereof, Phase III of this study will proceed with the objective of developing an implementation plan which would provide for transitioning from the present capability to that of the selected alternative.



UNCLASSIFIED

14) BDM/SC/L-80-087-TR

L.H./Charity J.M. McCurdy P.L./Dunn
D.L./Jones R.L./Page

UNITED STATES ARMY
COMBINED ARMS COMBAT DEVELOPMENT ACTIVITY

15) DAAG39-80-C-0479

6)

ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE IN POST-DEPLOYMENT SOFTWARE SUPPORT (PDSS)

30 JUNE 1980 - 28 FEBRUARY 1981

Second Interim Technical Report

Volume III

DISTRIBUTION STATEMENT.
Each transmittal of this document outside of the Department of Defense must have prior approval of the United States Army Combined Arms Combat Development Activity.

12) 389

ACN 52719

11) 16 DECEMBER 1980

394329

NOTICES

CONTRACT REQUIREMENT

This document contains the Second 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 second requirement of Contract Data Requirements List (CDRL) Item Number 0002AC.

DISTRIBUTION STATEMENT

Each transmittal of this document outside of the Department of Defense must have prior approval of the United States Army Combined Arms Combat Development Activity.

DISCLAIMER

The views, opinions, and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other official documentation.

ACKNOWLEDGEMENT

This study was initiated and sponsored by the United States Army Combined Arms Combat Development Activity (CACDA), Fort Leavenworth, Kansas 66027, and performed by the BDM Services Company, Leavenworth, Kansas 66048.

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

The BDM Services Company Team includes L. H. Charity, Program Manager; J. M. McCurdy, Deputy Program Manager; and the Program Staff, P. L. Dunn, D. L. Jones, R. L. Page and C. J. Thornton.

CONTENTS

CONTENTS (CONTINUED)

CONTENTS (CONTINUED)

FIGURES

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, 30 September 1980.

This Second Interim Technical Report documents the results of Phase II. This Phase II effort 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 developed recognizing the realities of current organizational structures and their functional responsibilities.

Following TRADOC's selection of one of these three alternatives, or a variation thereof, Phase III of this study will proceed with the objective of developing an implementation plan which would provide for transitioning from the present capability to that of the selected alternative.

SUMMARY

1. INTRODUCTION. 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 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. 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.

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 DARCOM/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. A task force of representatives form 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 was forwarded to Headquarters, Department of the Army (HQDA) on 10 November 1980 for information.

(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 optional 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 on the Assessment of the Combat Developer's Role in PDSS, 30 September 1980.

(3) Phase II. Phase II of the study, documented in this 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 this Phase II effort. These alternatives are to be reviewed by TRADOC so that a final alternative can be derived and, in Phase III, this alternative can be refined and an implementation plan can be formulated for transitioning from the present to the desired capability.

(4) Phase III. Following TRADOC selection or derivation of a final alternative system in Phase II, the Phase III study effort will proceed. During Phase III a plan is to be developed which would provide for transition from the present to implementation of the selected alternative model. This implementation plan is to be documented in the Third Interim Technical Report due on 1 February 1981.

(5) Final Report. A Final Report is to be completed during the last month of the project and submitted on 28 February 1981.

d. Analysis. During this phase of the study, descriptions were developed of the Baseline and two alternative PDSS systems, designed to provide TRADOC an improved capability to fulfill its responsibilities for providing PDSS for BAS. Summaries of these systems and a comparison of associated personnel resource requirements are presented below:

(1) Baseline System. The Baseline System description was developed based primarily on information obtained during Phase I, supplemented by additional research and input from SAG members during Phase II. This system was described within the context of the BFA concept. It identified organizational elements involved with PDSS to the branch or separate office level within each TRADOC functional center and school. Analysis of this Baseline reveals that it is not adequate to permit TRADOC organizations to accomplish those CD PDSS functions for which they are responsible. Based on this analysis, the Study Team developed estimates of additional personnel resources that need to be added to the Baseline to provide a minimally acceptable capability to perform essential PDSS functions. These additional resources are needed to provide a capability to accomplish important CD PDSS functions not presently being performed for BAS already fielded, and to provide PDSS for additional BAS projected for deployment through 1987. Chapter 2 contains this Baseline System description.

(2) Theoretical System. The Study Team's effort then focused on design of a TRADOC Theoretical PDSS System which would, if implemented, provide a capability to accomplish all currently identified CD PDSS functions for all BAS projected for deployment through 1987. This system was also designed within the context of the BFA concept and described to the branch or separate office level of detail. In structuring this system and developing estimated staffing

CHAPTER 1

INTRODUCTION

1-1. STATEMENT OF THE PROBLEM.

a. Need for PDSS. 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 one of increasing concern within the Army. If the full effectiveness of modern battlefield systems is to be realized, a means must be developed and implemented for providing timely and effective PDSS to the BAS that support or are integral parts of these systems.

b. General Roles in Providing PDSS. The User, 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 the overall Army Battlefield System (ABS). This responsibility includes determining what capability is required and when it is required. The magnitude and complexity of fulfilling this responsibility, especially with respect to automated systems, necessitates that the CD maintain close coordination and interface with the User and MD to ensure that capabilities are fully employed and User requirements are realized to the maximum extent possible. This CD responsibility applies to both the 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, initiator, and active representative of all Field Users.

c. 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. As stated, the requirement for a capability to provide timely, effective PDSS to BAS is increasing in both importance and magnitude throughout the Army. Recognizing this requirement, 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. Within DARCOM, the Communications Research and Development Command (CORADCOM) was tasked with primary responsibility for this study. A task force of representatives from the Army staff and several Army commands was formed to assist CORADCOM 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 was forwarded to Headquarters, Department of the Army (HQDA) on 10 November 1980 for information.

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 concept, an approach, called the "hybrid approach", was selected. It 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 optional 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 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.

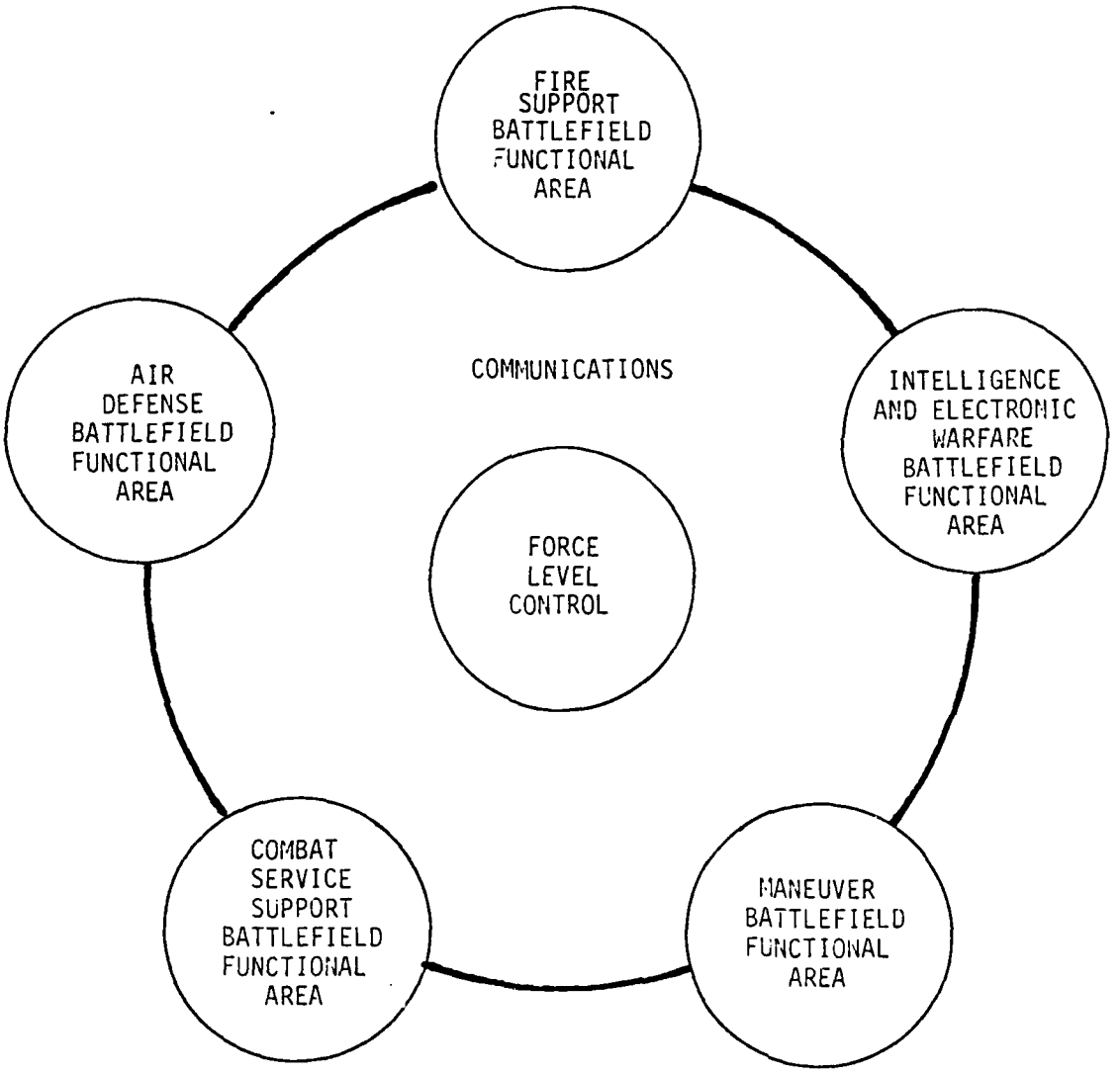


Figure 1-1. Elements of the battlefield functional area concept

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 PDSS centers

(a) Combat Development System Manager (CDSM). The CDSM would be the system/software CD and the principal Field User's representative for a designated system or group of systems within a BFA. He would be responsible for managing and coordinating all software-related actions inherent in the CD mission.

(b) Combat Development Support Facility (CDSF). A CDSF would be a TRADOC facility wherein the CD analytical functions associated with PDSS would be accomplished for BAS in one or more BFA. The concept plan states that these CDSF needs will be met in one or more of the following ways:

1. TRADOC participation in the associated DARCOM PDSS facilities (either physically or electrically).
2. Use of other TRADOC resources.
3. Development of separate CDSF facilities collocated with DARCOM PDSS facilities.
4. Development of separate facilities not associated with DARCOM PDSS facilities.

1-3. OBJECTIVE.

a. Overall Study. The objective of this 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 DARCOM/Army PDSS Concept Plan for BAS and the related functional requirements of the CD. While the PDSS Concept Plan for BAS provides a basic conceptual framework for CD participation in PDSS, the concept must be defined in greater detail to provide a basis for implementation planning. This current study, An Assessment of the Combat Developer's Role in Post-Deployment Software Support, has been initiated by TRADOC as the first step in implementation planning.

b. Phase II. The objective of Phase II, documented in this report, was to develop alternative TRADOC functional and management PDSS systems for fulfilling the Combat Developer's responsibilities for providing PDSS for BAS. These alternatives were to be developed within the framework of the PDSS Concept Plan for BAS, dated May 1980. In pursuit of this objective, the Baseline System and two alternatives were defined in this phase. These alternatives were called the Theoretical System, representing an achievable ideal, and the Hybrid System, based on a comparison of the Theoretical and Baseline Systems. These alternatives are to be reviewed by TRADOC so that a final alternative can be derived and, in Phase III, this alternative can be refined and an implementation plan can be formulated for transitioning from the present to the desired capability.

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 I and II 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) 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.

(2) Battlefield Automated System (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. (Ref 76, Appendix A)

(3) Battlefield Functional Area (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.

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 adopted 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.

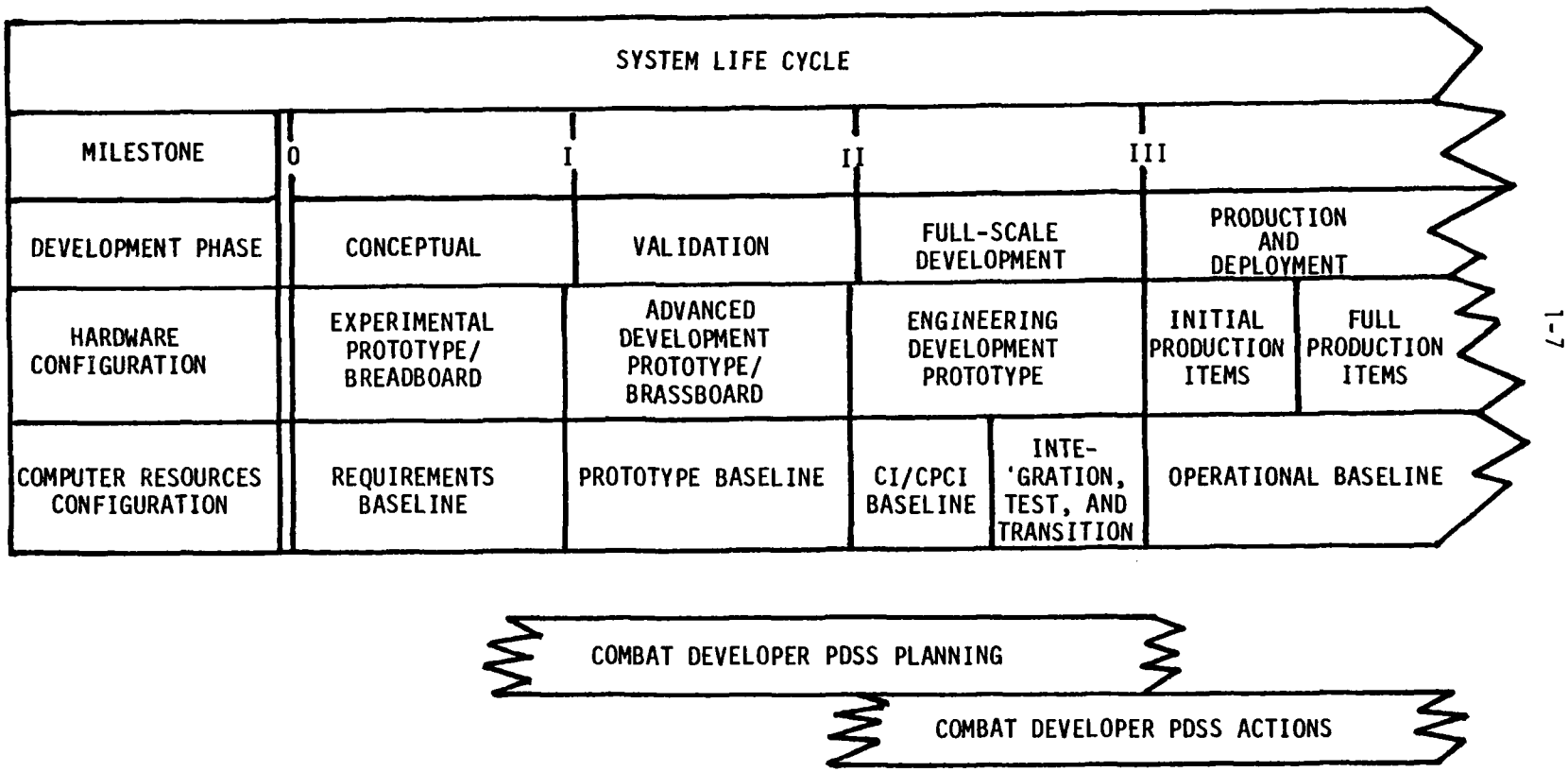


Figure 1-3. Relationship of PDSS to the system life cycle

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. ASSUMPTIONS.

a. Missions and PDSS Roles.

(1) 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.

(2) 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.

(3) 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.

b. 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.

c. 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.

1-6. METHODOLOGY

a. Study Structure. Within the parameters of 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.

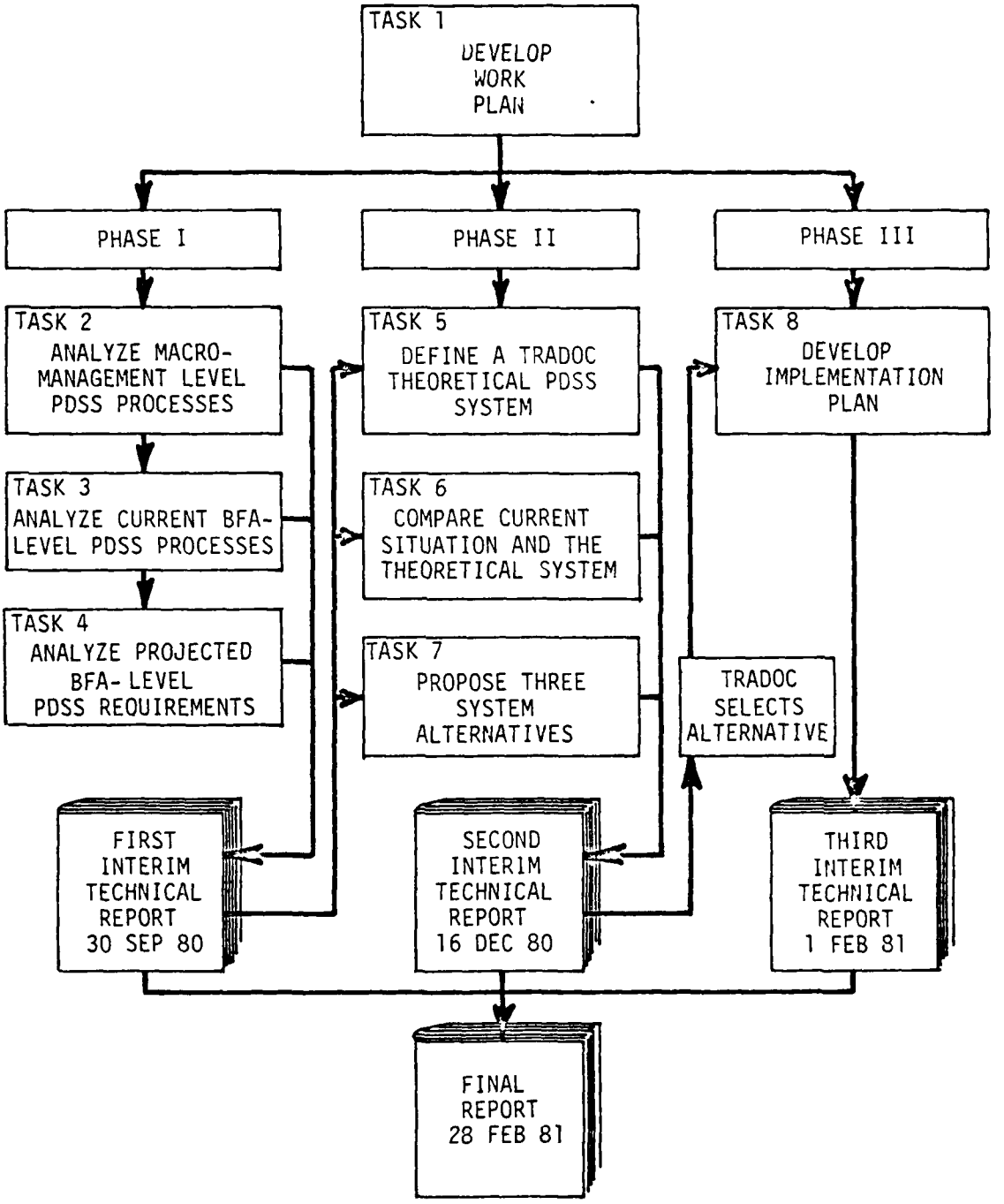


Figure 1-4. PDSS study overview

(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. 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 this 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 this Phase II effort. The methodology followed in this Phase is illustrated in Figure 1-5. As indicated, 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 second of the two alternative systems, called the Hybrid System. Meanwhile, respective sections of the preliminary draft of the Second Interim Report were sent to the SAG members on 28 November preparatory to a SAG meeting on 17, 18, 19 December. The Hybrid System description was finished and the complete Second Interim Report was then distributed to SAG members on their arrival. The principal purpose of the SAG meeting was to review these system descriptions and either select or derive a final alternative system for use in Phase III.

d. Phase III. Following TRADOC selection or derivation of a final alternative system in Phase II, the Phase III study effort will proceed. During Phase III an implementation plan is to be developed which would provide for transition from the present to implementation of the selected alternative model. This implementation plan is to be documented in the Third Interim Technical Report due on 1 February 1981.

e. Final Report. A Final Report is to be completed during the last month of the project and submitted on 28 February 1981.

1-7. ORGANIZATION OF THIS REPORT.

a. General. The remaining chapters, Chapters 2 through 6, of this report are organized first, to present descriptions of the baseline and theoretical systems, secondly, to compare these systems and provide a hybrid

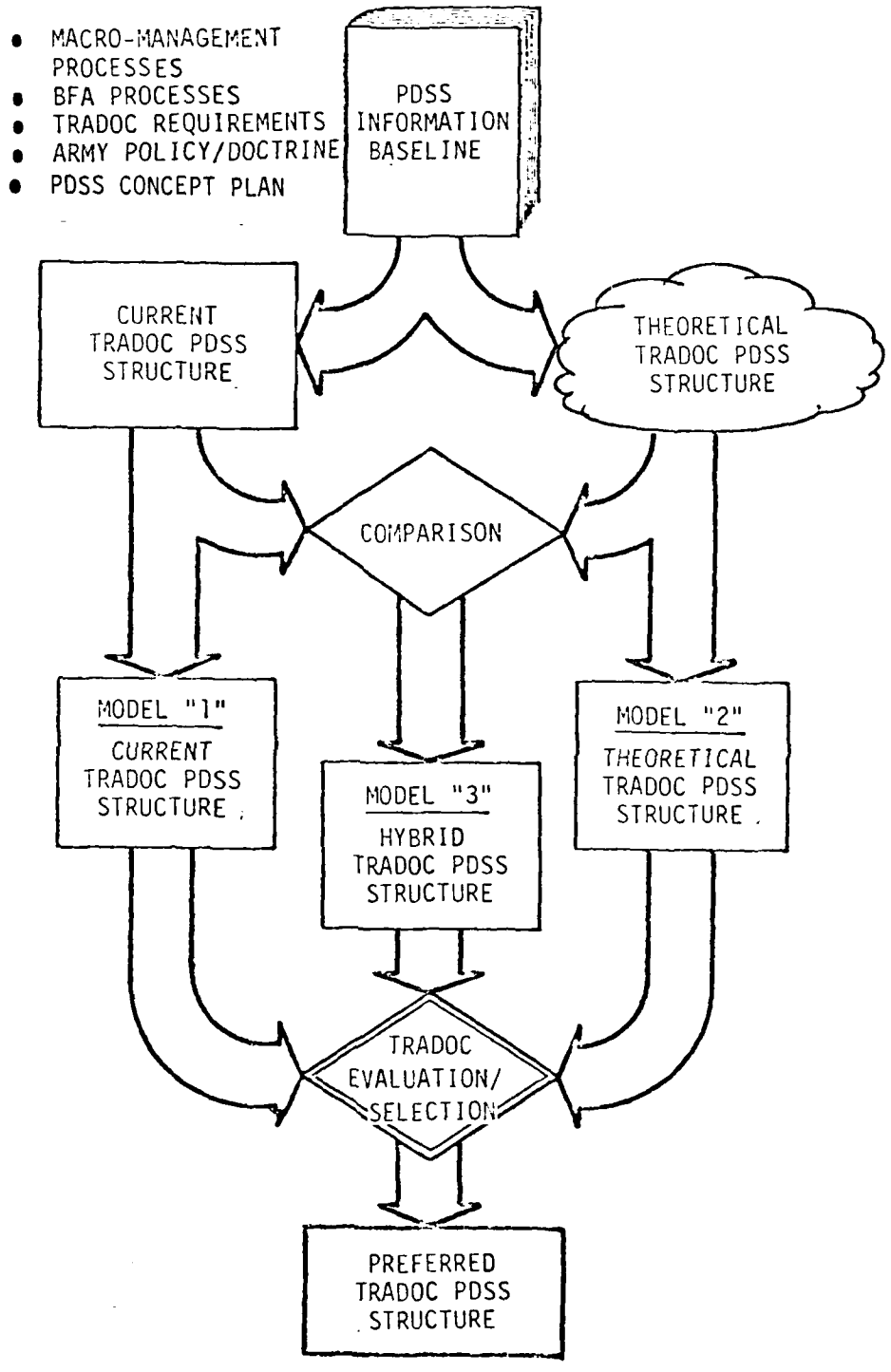


Figure 1-5. Phase II--TRADOC PDSS alternative concept development

system, and lastly, to present analyses and recommendations for TRADOC's use in selecting one of the alternatives for implementation. Detailed description of these three systems may be found in Appendices D, E, and F. Appendices A, B, and C contain, respectively, the References, Glossary, and the Battlefield Automated Systems addressed in this study.

b. Chapter 2. A description of the Baseline System derived during the Phase I effort is presented, to include resources needed to accomplish PDSS under this current functional/management structure.

c. Chapter 3. A theoretical TRADOC PDSS System is defined which accommodates all CD PDSS-related functions which have been identified and which would enable TRADOC and subordinate commands to fulfill their PDSS roles and responsibilities.

d. Chapter 4. A comparison of the Baseline System and the Theoretical TRADOC PDSS System, which were described in Chapters 2 and 3, respectively, is provided.

e. Chapter 5. A Hybrid System is developed recognizing the current organizational constraints, organizational structures, and functional responsibilities in relationship to PDSS.

f. Chapter 6. This chapter includes the Phase II findings, conclusions and recommendations of the Study Team for TRADOC's consideration.

CHAPTER 2

BASELINE SYSTEM

2-1. GENERAL. This chapter describes the Baseline System that exists at present within TRADOC for performing that command's functions in planning and providing post-deployment software support (PDSS) for battlefield automated systems (BAS). This description has been developed to provide a common understanding of the baseline and a basis for conducting a comparative analysis between the Baseline and Theoretical PDSS Systems as required by the Statement of Work (SOW), Task 6, of the contract under which this study is being conducted. This chapter includes an overview of the Baseline System, a description of the concept of operations, and a discussion of resources associated with the current system. A detailed description of each principal component of this system is contained in Appendix D.

2-2. SYSTEM OVERVIEW. TRADOC's mission and major functions, the Battlefield Functional Area (BFA) Concept, and the current TRADOC organizational structure provide the framework for this description of the TRADOC PDSS Baseline System. Each of these aspects of the system are discussed below.

a. Mission and Major Functions. TRADOC is the Army's principal Combat Developer (CD). The command's major functions, established by AR 10-41, and TRADOC Reg. 10-41, are:

- Combat Development
- Training
- Mobilization Planning
- Support Operations.

TRADOC PDSS responsibilities are addressed as an integral part of the total system development and life cycle management process. This process is carried out as part of the combat development mission. Therefore, functionally, PDSS is conducted throughout TRADOC as part of the combat development effort.

b. Organizational Structure. The principal elements or groups of elements in TRADOC's organizational structure are shown in Figure 2-1 and are discussed briefly below. They include:

- TRADOC Headquarters
- Three integrating centers responsible for the systematic integration of combat and training development functions within three broad operational areas--combined arms, logistics, and administration
- Major functional centers and schools e.g., Artillery, Air Defense, Intelligence, Signal, etc., each of which is associated with one or more of the three integrating centers

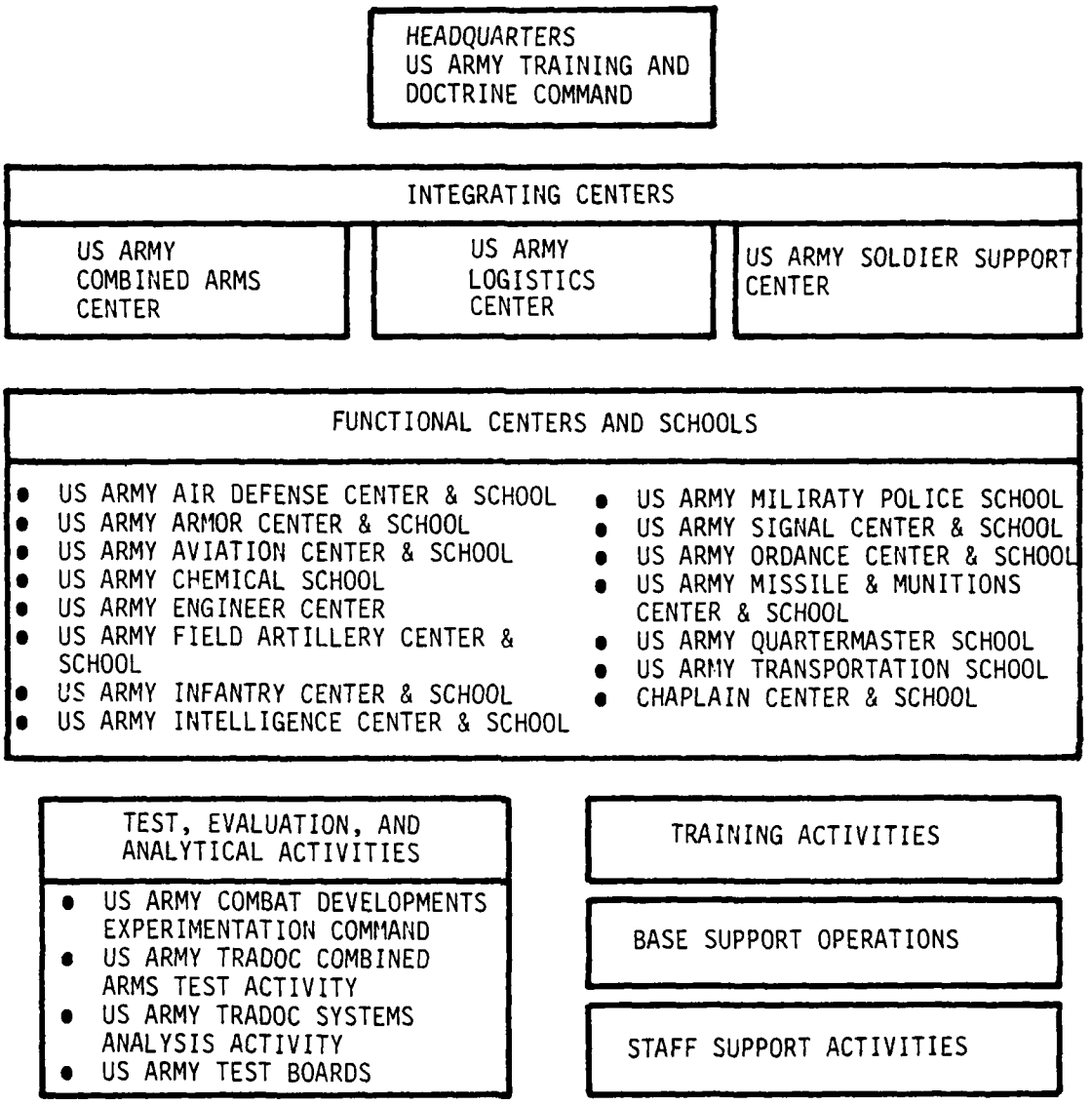


Figure 2-1. Principal elements and groups of elements in the TRADOC organizational structure

- Other training activities to include US Army Training Centers, the US Army Training Support Center, and Reserve Officer Training Corps Regions
- Test, evaluation, and analytical activities to include the US Army TRADOC Combined Arms Test Activity, the US Army TRADOC Systems Analysis Activity, and eight US Army test boards
- Base support operations which provide post, camp, and station support
- Staff support activities.

The elements of this structure can be divided functionally into three major areas--combat development, training, and support operations and mobilization planning--corresponding with the major functions identified in Paragraph 2-2.a. The PDSS Baseline System is comprised primarily of elements in the first of these three major functional areas--combat developments--and to a much lesser extent, elements included in the second major area--training. The organizational elements primarily involved at present with the PDSS Baseline System are shown in Figure 2-2. They include:

- HQ, TRADOC
  - Commanding General
  - Deputy Chief of Staff for Combat Development
- The three integrating centers and their associated activities and functional centers and schools
- US Army Test Boards
- TRADOC System Managers
- TRADOC Combined Arms Test Activity
- US Army Training Support Center.

c. The Battlefield Functional Area (BFA) Concept. A characteristic of the TRADOC organizational structure, of particular significance in this description of the PDSS Baseline System, is the way in which it can be related to the BFA concept. As discussed in Chapter 1, this concept, which provides for the logical grouping of related battlefield systems into homogeneous battlefield functional areas, currently recognizes five BFA and two additional functional areas--Force Level Control and Communications--which are essential to effective operations on the battlefield. The principal elements of this concept were illustrated in Figure 1-1. Major integrating and functional

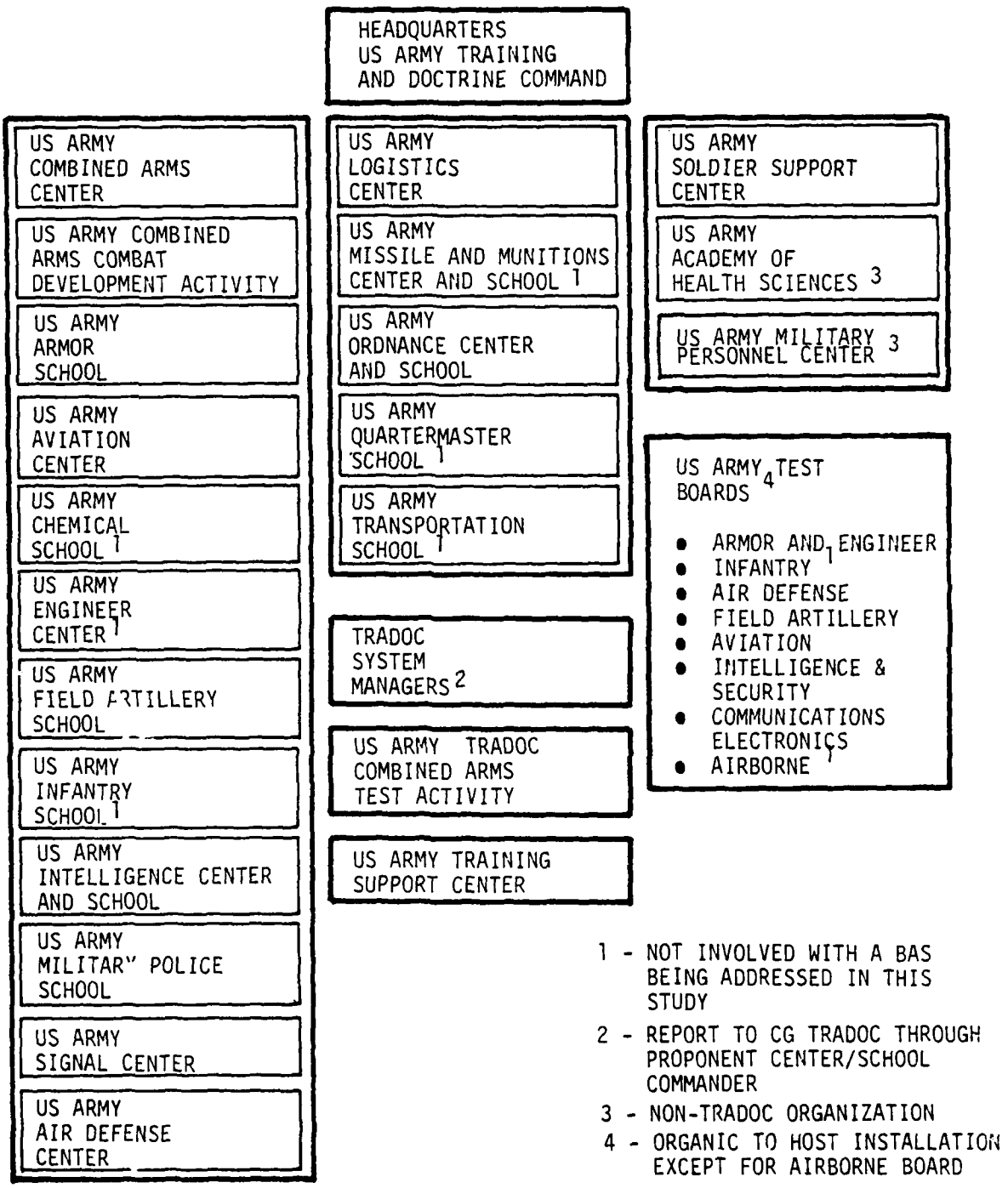


Figure 2-2. Principal TRADOC organizational elements currently involved with the PDSS Baseline System

centers of TRADOC are assigned combat development proponency for one or more of the principal areas of the BFA concept as shown in Figure 2-3. Proponency for the Combat Service Support BFA is divided between the Logistics Center (LOGCEN) and Soldier Support Center (SSC). The detailed discussion of the TRADOC PDSS Baseline System presented in Appendix D is organized in consonance with this BFA proponency responsibility.

2-3. CONCEPT OF OPERATIONS. As noted above, PDSS responsibilities in the Baseline System are addressed as part of the combat development mission within TRADOC. This mission is accomplished through TRADOC functional centers, service schools, and other TRADOC combat development activities, in coordination with other Army commands and agencies. Thus, the concept of operations of the PDSS Baseline System is characterized by the same features as other combat development activities within TRADOC--by centralized management and decentralized operations. To the maximum extent possible, combat development programs are decentralized with programs, priorities, and resources and operational authority passed to the appropriate functional center and school. Key features of this operational concept are discussed below.

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 the PDSS Baseline System in the accomplishment of the overall mission and principal functional responsibilities. Within DCSCD, responsibility for PDSS is assigned to the Director, Telecommunications, Command and Control, and Computer Systems (TC4S). Within this directorate, the Battlefield Systems Integration Branch provides the focal point for coordinating TRADOC PDSS activity and requirements. This branch is responsible for acting on directions or requirements of Headquarters, Department of the Army (HQDA) or requests from other major commands, analyzing and translating these into requirements or instructions for subordinate commands, reviewing the subsequent activity, and acting upon the products of subordinate elements of the system. This branch also provides a principal interface on PDSS matters with HQDA and other major commands. These TRADOC elements are shown in Figure 2-4.

b. Combined Arms Center. The Combined Arms Combat Development Activity (CACDA) of the Combined Arms Center (CAC) exercises a special role in the PDSS Baseline System as the overall PDSS proponent for TRADOC. Within CACDA, the focal point for PDSS is the JINTACCS Office, Army C2/JINTACCS Division, C3I Directorate as shown in Figure 2-5. This role is consistent with CACDA's overall responsibility for coordinating and integrating the products of all three integrating centers in other functional areas.

c. BFA-Level Concept of Operations. At the BFA level, both the integrating centers and the associated functional centers have major roles in the PDSS Baseline System. As noted above, responsibility and authority for PDSS programs are normally passed to the appropriate integrating or

TRADOC CENTER / FUNCTIONAL AREA	FORCE LEVEL CONTROL	COMMUNICATIONS	MANEUVER BFA	FIRE SUPPORT BFA	AIR DEFENSE BFA	INTELLIGENCE AND ELECTRONIC WARFARE BFA	COMBAT SERVICE SUPPORT BFA
COMBINED ARMS COMBAT DEVELOPMENT ACTIVITY	●		●				
US ARMY SIGNAL CENTER AND SCHOOL		●					
US ARMY FIELD ARTILLERY CENTER AND SCHOOL				●			
US ARMY AIR DEFENSE CENTER AND SCHOOL					●		
US ARMY INTELLIGENCE CENTER AND SCHOOL						●	
US ARMY LOGISTICS CENTER							[a]
US ARMY SOLDIER SUPPORT CENTER							[b]

[a] LOGISTICS PORTION OF THIS BFA

[b] PERSONNEL SUPPORT PORTION OF THIS BFA

Figure 2-3. BFA proponency

HEADQUARTERS, US ARMY TRAINING AND DOCTRINE COMMAND

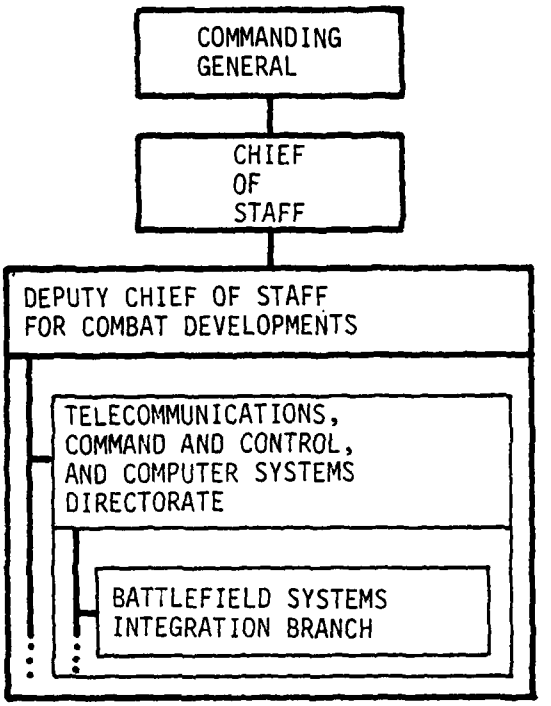


Figure 2-4. HQ TRADOC staff elements with major responsibilities in the PDSS Baseline System

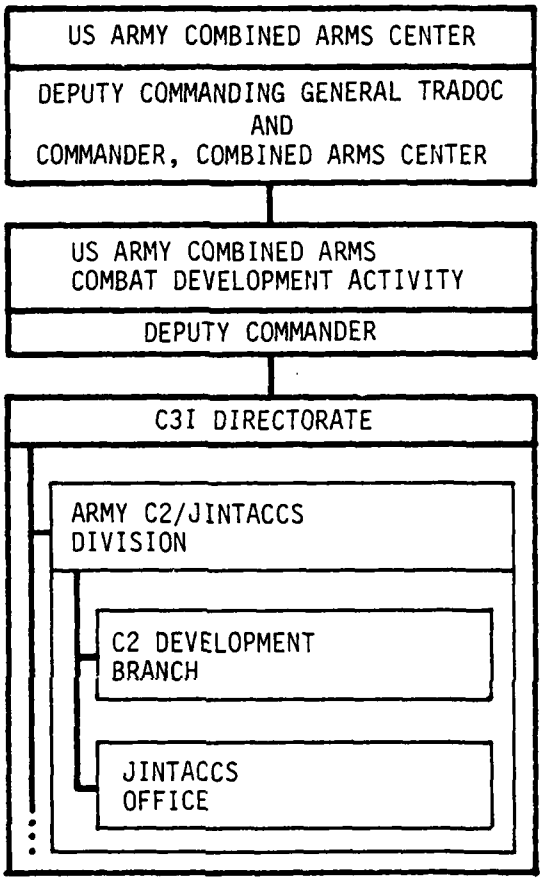


Figure 2-5. Combined Arms Center element with primary responsibilities in the PDSS Baseline System

functional center. Within each of these centers, primary responsibility for PDSS is assigned to a directorate-level staff element, either the Combat Development Directorate or the Management Information Systems Directorate. In all cases PDSS actions for which each center is responsible are conducted as a part of the system development and life cycle management process. PDSS responsibility for individual BAS corresponds with the assignment of TRADOC proponency for each system except for some personnel support systems. MILPERCEN has PDSS responsibility for most of these latter systems. Appendix C lists all BAS addressed in each BFA and identifies the TRADOC proponent for each BAS.

d. Principal Interfaces. In carrying out these PDSS responsibilities, each functional center, except the Soldier Support Center, interfaces and interacts directly with the system Users and Materiel/System Developers as necessary. Figure 2-6 illustrates the principal CD-MD organizational interfaces required in the PDSS Baseline System. MILPERCEN fulfills the CD role for most personnel support systems. Coordination and interaction among TRADOC elements is accomplished in accordance with policy established in TRADOC Reg. 10-41. Further details on the operating procedures and interfaces of the organizational elements involved in this Baseline System and their responsibilities and capabilities are presented in Appendix D.

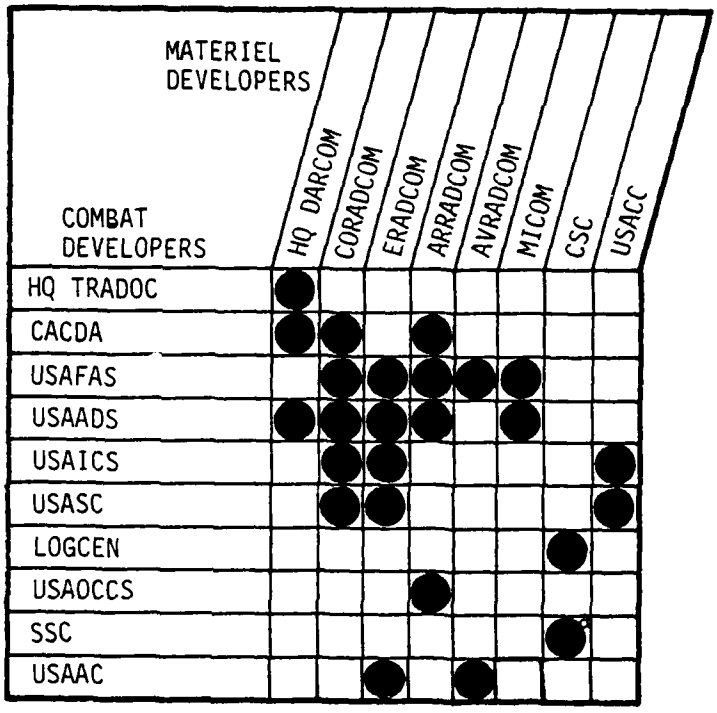
2-4. RESOURCES. Resources currently dedicated to PDSS in the TRADOC Baseline System are very limited. Consequently, many PDSS-related functions that are properly the responsibility of the Combat Developer are not being performed or are accomplished through interaction directly between system Users and Materiel/System Developers or their representatives. This situation is clearly reflected in the detailed discussion of the Baseline System presented in Appendix D. Because of this situation and in an effort to provide a better basis for comparing the Baseline with the Theoretical System, the Study Team developed estimates of personnel requirements needed to enhance the Baseline System to:

- Provide a minimally adequate capability to accomplish essential CD PDSS functions for currently deployed BAS, and

- Provide a capability to perform CD PDSS functions for additional BAS projected for deployment through 1987.

A summary of the estimated personnel requirements resulting from this effort are provided in Figure 2-7. A breakout of these personnel estimates to each component of the Baseline System is presented in Appendix D. With respect to these personnel estimates, as well as those made in connection with the Theoretical and Hybrid Systems presented in Chapters 3 and 5, respectively, it is emphasized that there are many uncertainties regarding the level of effort needed to accomplish Combat Developer PDSS functions. These uncertainties stem from a number of sources but primarily result from the difficulty in projecting:

- How frequently and how extensively BAS that are not yet fielded will have to be changed after deployment in order to remain operationally acceptable to Users, and



a SSC interfaces primarily with MILPERCEN and MILPERCEN with CSC

Figure 2-6. Principal Combat Developer-Materiel Developer interfaces in the PDSS Baseline System

PERSONNEL BY FISCAL YEAR							
PERSONNEL TYPE	FY81	FY82	FY83	FY84	FY85	FY86	FY87
REQUIRED:							
MILITARY	139	151	155	165	168	167	168
CIVILIAN	163	183	193	206	207	209	195
TOTAL	302	334	348	371	375	376	363
AUTHORIZED:							
MILITARY	70	72	73	74	76	78	86
CIVILIAN	91	91	91	92	93	93	94
TOTAL	161	163	164	166	169	171	180
ADDITIONAL NEEDED:							
MILITARY	69	79	82	91	92	89	82
CIVILIAN	72	92	102	114	114	116	101
TOTAL	141	171	184	205	206	205	183

NOTE: THE "AUTHORIZED" PERSONNEL NUMBERS SHOWN ABOVE INCLUDE PERSONNEL PERFORMING PDSS FUNCTIONS ON A PART TIME BASIS; THE "ADDITIONAL NEEDED" NUMBERS REFLECT PERSONNEL WHO WOULD BE DEDICATED TO PDSS FUNCTIONS.

Figure 2-7. Summary of estimated personnel requirements--Baseline System

- The workload that will be imposed on the Combat Developer in connection with required changes to BAS, which may vary widely in urgency and scope.

Another factor which contributes to the difficulty in developing these personnel requirements estimates is the limited experience in performing CD PDSS functions that exists in most BFAs. Thus, while the requirements presented represent the Study Team's best estimate based on currently available information and are considered valid for planning purposes, future experience may require that they be modified to balance CD PDSS capability with workload.

CHAPTER 3

THEORETICAL TRADOC PDSS SYSTEM

3-1. GENERAL. This chapter defines and describes a theoretical TRADOC post-deployment software support (PDSS) functional and management system as required by the Statement of Work (SOW), Task 5, of the contract under which this study is being conducted. All features and provisions of this Theoretical PDSS System are in consonance with relevant Army regulatory policy and the PDSS Concept Plan for BAS, May 1980. The full implementation and effective management of this Theoretical System would accommodate all currently-identified Combat Developer (CD) PDSS-related responsibilities. This includes responsibilities associated with CD involvement in establishing overall PDSS policy and participating in macro-management level matters as well as performing PDSS functions for all battlefield automated systems (BAS) addressed in this study. It would provide HQ TRADOC and subordinate commands the capability needed to fulfill their roles and responsibilities in this critical functional area. This chapter discusses assumptions on which this Theoretical System is based, the principal system design guidelines, and key considerations in the design effort. Provided then is an overview of the structure, organization, and responsibilities of major components of the Theoretical System, a general description of the concept of operations and an estimate of resources required for full implementation. A detailed description of each component of the system is provided in Appendix E.

a. Assumptions. The assumptions on which this Theoretical System is based are those described in Chapter 1, Paragraph 1-5. A change in any of these assumptions could cause a need for a corresponding change in the design of this Theoretical PDSS System.

b. Design Guidelines.

(1) Focus on the future. The focus of the study team in designing this Theoretical System was on the future. This approach was adopted to ensure that appropriate consideration would be devoted to known future PDSS requirements and to allow adequate time for TRADOC to integrate its implementation effort with the Army's Planning, Programming, and Budgeting System (PPBS). Fiscal Year 1987 (FY 87), the last year in the current Five Year Defense Program (FYDP), was chosen as the objective year--the year when implementation of the system should be completed. Resources needed to arrive at full implementation are addressed on a year-by-year basis from FY 81 through FY 87.

(2) Relationship to current Army policy, organization, and concepts. The SOW under which this study is being conducted states that the Theoretical System is to be bounded by Army regulations and the PDSS Concept Plan for BAS. Other related guidelines adopted by the Study Team provide that the system should be in consonance with:

- The TRADOC functional organizational structure described in TRADOC Reg. 10-41
- The TRADOC operational and management concept of centralized management and decentralized control and operations described in AR 10-41 and TRADOC Reg. 10-41

- The missions and principal functions of TRADOC and subordinate commands as set forth in AR 10-41 and TRADOC Regs. 10-5 and 10-41
- The BFA concept described briefly in Chapters 1 and 2
- The Command, Control, and Subordinate System (CCS^2) concept. In support of this concept, it was considered that PDSS organizations of the key TRADOC centers must be interconnected by appropriate means to facilitate the coordination and interaction that must occur among these centers in managing the major command and control BAS.

(3) Resource constraints. The SOW under which this study is being conducted states that resource constraints may be excluded as parameters of the system design but that resource requirements must be identified. Accordingly, no specific resource limitations were imposed on the system design but a degree of "reason" was applied subjectively by the Study Team in scoping the system. Estimates of required resources are provided for each FY from 81 through 87.

c. Other Design Considerations. A number of other key factors were considered by the Study Team in arriving at the overall design of the system as well as in structuring each of the components. Those factors which had a significant influence on the system design are discussed below.

(1) Functional requirements. Under the previously stated assumptions and design guidelines, the Study Team identified where, within TRADOC, requirements for some type of PDSS capability exist. The results of this effort are shown in Figure 3-1, by functional area and TRADOC center. The Study Team then analyzed the nature of the functional requirements in each functional area and at each center in terms of BAS to be supported and functions to be performed as a first step in further determining what capability is needed at each location. The BAS considered, the TRADOC proponent, and other relevant data pertaining to each system are shown in Appendix C. The numbers of BAS, by category, to be supported by each CD organization identified in Figure 3-1 are also shown in the figure. With respect to functions, the CD's PDSS functional responsibilities, defined during Phase I of the study and refined during this Phase, were used as the basis for current functional requirements. However, it was accepted that new or modified functions may be identified in looking ahead toward the objective year. These functions are addressed in detail in Appendix E. Other factors considered with respect to these functional requirements included the stimulators of change in BAS and the CD's response requirements in peacetime and crisis/wartime environments. These areas are discussed in the following paragraphs.

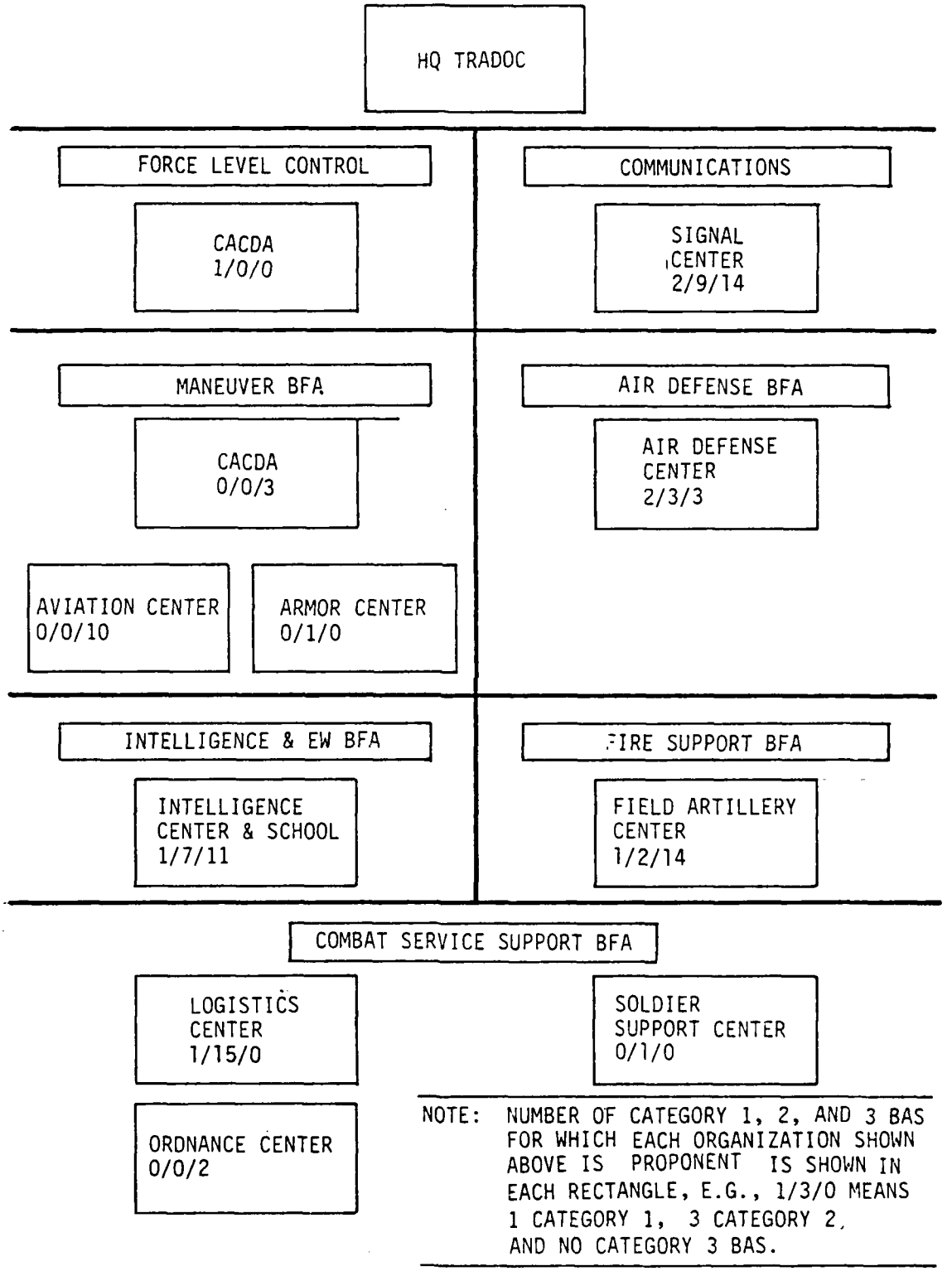


Figure 3-1. TRADOC organizations by BFA which require a PDSS capability

(a) Stimulators of change. As an aid to formulating and analyzing the Theoretical PDSS System, the basic purpose or objective of the system was delineated. The system objective of any PDSS system was taken to be: To respond adequately to the needs for change in the software of BAS. The needs for such changes were seen to emanate from five areas:

- Detection of errors, conflicts, or severe inadequacies in the BAS software
- Addition or deletion of BAS requiring or providing interfaces with existing BAS
- Detection of changes in the threat which require a change in one or more BAS
- Changes made or programmed in friendly doctrine, tactics, or operating procedures, and
- Developments in technology which result in deliberate changes to one or more BAS.

These five basic areas from which the needs for change in BAS software emanate were then analyzed and ranked in terms of several parameters or dimensions. A summary of this analysis is shown in Figure 3-2.

(b) Combat Developer response requirements. The CD's response requirements vary by BFA, by BAS, by System User, and by operating environment. These factors make this a difficult area to address in total. Therefore, the approach taken in this study was to address the CD's PDSS response requirements by system within each BFA, taking into consideration the nature of the BAS and Users in each functional area. With respect to the operating environment, the ultimate test of any PDSS system is whether it can provide required support to BAS in wartime. This subject area was addressed by the Task Force involved in preparing the PDSS Concept Plan for BAS, May 1980. That effort resulted in the development of a generalized software support model for PDSS and a concept for the way in which problems and solutions would flow through the model to include emergency (crisis/wartime) response. Figure 3-3, which shows this flow of problems and solutions, has been reproduced from that study report. In commenting on the process depicted in the figure, that report states:

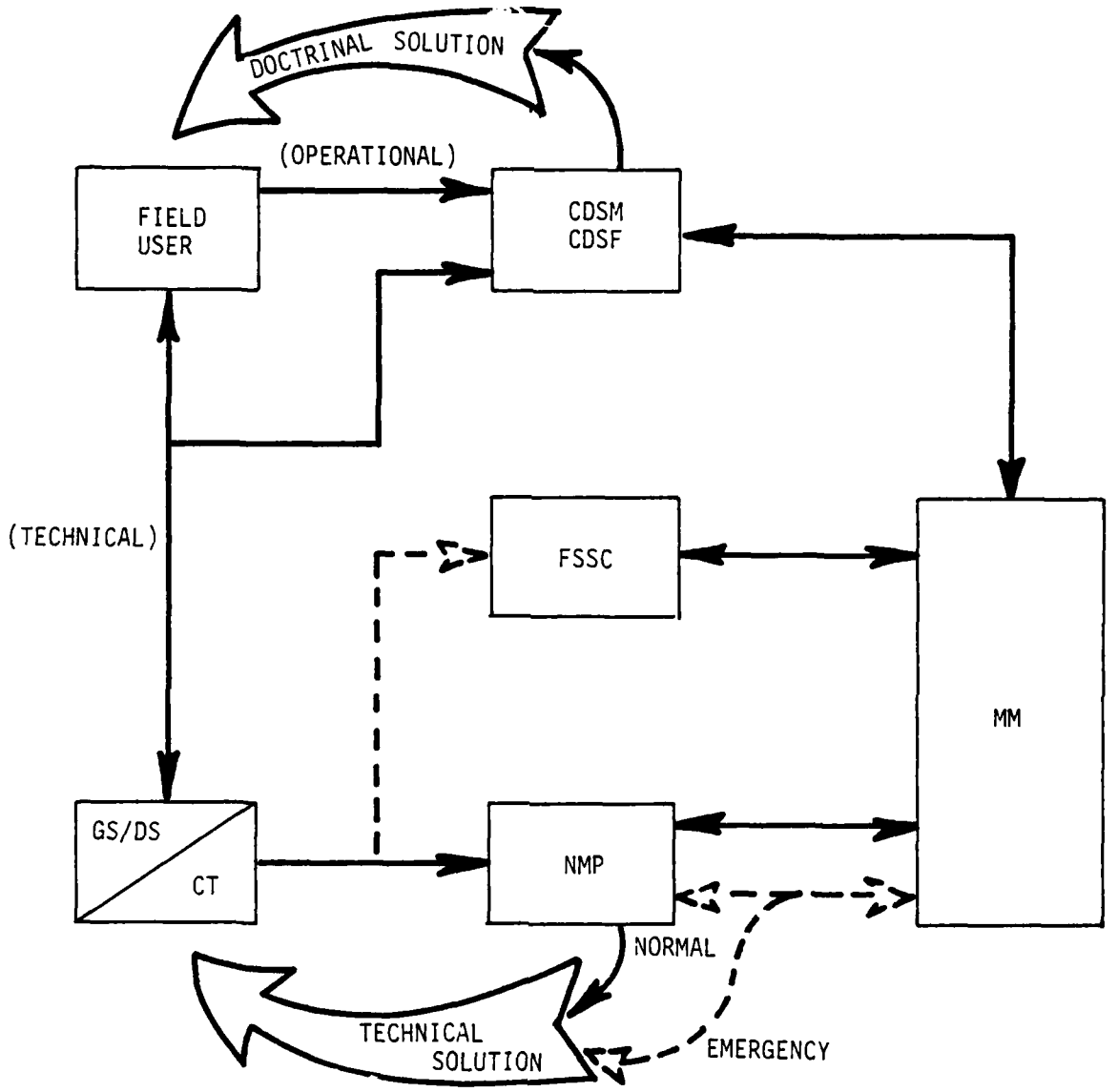
- Generally it is envisioned that procedural workarounds will be used to solve immediate crisis/wartime problems. In such cases, it is imperative that the PDSS Center (Materiel Developer) and the CDSF (Combat Developer), both individually and in conjunction with each other, have the analytical resources (including simulation models with hardware/simulation model drivers) to analyze and resolve solutions to the Field User problems

	PARAMETER OR DIMENSION ANALYZED / STIMULATOR OF CHANGE	DETECTION OF ERRORS, INADEQUACIES	ADDITION OR DELETION OF BAS	DETECTION OF CHANGES IN THREAT	CHANGES IN DOCTRINE, TACTICS, OPERATING PROCEDURES	ADVANCES IN TECHNOLOGY
1	ANTICIPATED FREQUENCY	1	3	4	2	4
2	DEGREE TO WHICH CHANGE CAN BE ANTICIPATED	3	1	3	1	2
3	DEGREE TO WHICH THE CD CAN CONTROL THE CHANGE	3	2	3	1	2
4	TIME URGENCY OF REQUIRED CHANGE	1	2	1	1/2	2
5	RELATIONSHIP TO "TYPE" CHANGES IDENTIFIED IN THE PDSS CONCEPT PLAN FOR BAS	(1)	(2) (3)	(1) (2) (3)	(1) (2) (3)	(2) (3)

NUMBERS IN ROWS 1 THROUGH 4 ARE RANKINGS; 1 IS HIGHEST

NUMBERS IN ROW 5 INDICATE THE TYPE OF CHANGE WHICH COULD RESULT FROM EACH STIMULATOR AS FOLLOWS:
(1) SYSTEM REFINEMENT
(2) NEW REQUIREMENT
(3) INTEROPERABILITY INTERFACE

Figure 3-2. Summary of analysis of stimulators of change



MM = MATERIEL MANAGER
NMP = NATIONAL MAINTENANCE POINT
CT = CONTACT TEAM
GS/DS = GENERAL SUPPORT/DIRECT SUPPORT
FSSC = FIELDED SOFTWARE SUPPORT CENTER
(AN ELEMENT OF THE PDSS CENTER)

Figure 3-3. Response to field problem

- Major system changes, whether anticipated or unanticipated, will require essentially the same technical expertise and the same period of time as the original software development

- There is a need for the joint development (by the Materiel Developer and the Combat Developer) of a process by which BAS can be supported under crisis/wartime conditions.

The Theoretical PDSS System described in this chapter provides for a CD capability in consonance with the concept depicted in Figure 3-3. Results of our research at both CD and Materiel Developer (MD) organizations during Phase I and II of this study reemphasizes the need for joint MD-CD addressal of the crisis/wartime response problem with the objective of developing a long-term solution.

(2) Capability required. Having identified what PDSS requirements must be satisfied, the Study Team then proceeded to determine what capability is needed to meet the requirements. Capability was addressed in terms of organizational elements and their resources. Resources were matched to workload according to the TRADOC 11-series of regulations and pamphlets. This effort focused on tailoring each system component or element to the needs of the local parent center or school organization. Personnel, major equipment, and physical facility requirements were addressed. Six basic terms were adopted to identify PDSS Theoretical System components. These terms, which are used through the remainder of this report, are explained below to facilitate reader understanding:

(a) Combat Developments System Manager (CDSM). A member of a combat development organization who is responsible for managing and coordinating and/or performing all PDSS-related actions inherent in the CD mission, for one or more BAS within a BFA. The CDSM is the system/software CD and the principal Field User's Representative for a designated system or systems. He is responsible for planning, programming, and coordinating those PDSS functions to be performed by the CDSF in support of the systems with which he is involved. CDSM functions identified by the Task Force preparing the PDSS Concept Plan for BAS are listed in Figure 3-4. A more detailed discussion of CDSM responsibilities and functions is included in Appendix E.

(b) Combat Developer Support Facility (CDSF). A facility in the CD organization within which CD PDSS functions for one or more BAS within a single BFA are performed. A CDSF is located at the TRADOC center or school having proponency for the respective BFA(s). The size and composition of each CDSF is tailored to the requirements of the BFA(s) and the proponent CD organization. A CDSF is the counterpart of and has the benefit of a MD PDSS Center (for providing PDSS to one or more BAS within the BFA supported) located at the same TRADOC installation.

1. Determining and providing to the MD system/software change requirements

2. Representing the CD and field users on the applicable system configuration control boards

3. Establishing systems and change priorities and target IOC dates. Conflicts will be resolved first between CDSMs and then within the normal CD command structure

4. Providing user approval for final software release to the field

5. Conducting user acceptance testing (if a CD independent tester is designated, the independent tester will be responsible for conducting user acceptance tests)

6. Preparing user doctrinal/tactical documentation

7. Analyzing doctrinal/tactical documentation

8. Conducting periodic reevaluations of the system or software to assess its tactical suitability, as changes occur, for example, to system mission, threat, doctrine, technology, and areas of employment or deployment

9. Participating in the development and fielding of all system and software changes, as required

10. Conducting and coordinating the analysis of new concepts and proposed software implementations to assess their feasibility and suitability.

Figure 3-4. CDSM responsibilities

(c) Combat Developer Support Element (CDSE). An element, in the CD organization, within which the PDSS functions for which the parent CD organization is responsible are performed. These PDSS functions may range from those associated with a single BAS to those required for all BAS within a BFA. A CDSE is based at the TRADOC center or school having proponency for the BAS and/or BFA supported by the CDSE. The size and composition of each CDSE is tailored to the needs of the parent CD organization. A CDSE does not have the benefit of a collocated MD PDSS center whereas a CDSF does have such an MD PDSS center which supports one or more of the BAS supported by CD elements operating in the CDSF.

(d) Combat Developer PDSS Staff Element. A staff element within a CD organization responsible for PDSS-related actions of a management or administrative nature as opposed to actions pertaining directly to substantive changes in BAS which are generally handled within a CDSF or CDSE.

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

(f) Combat Developer PDSS Forward Support Team (CDFST). An element established on a permanent or temporary basis within the CD organization. The purpose of a CDFST is to maintain liaison with and provide PDSS guidance and support to users of BAS in the respective BFA. As appropriate, a CDFST may be assigned or attached to a specific User Organization for a specified period of continuous duty; or may visit or make contact with the User Organizations on an ad hoc or periodic basis as required. In any case, the CDSFT will possess or have access to communication capabilities allowing rapid and complete interchange of necessary information with its home CDSF under essentially all forseeable circumstances.

3-2. SYSTEM OVERVIEW. Following the assumptions, design guidelines, and other considerations discussed in Paragraph 3-1, the Study Team designed the TRADOC Theoretical PDSS System presented in this report. This system is illustrated in Figure 3-5, 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 Theoretical System consists of:

- A PDSS Staff Element at Headquarters, TRADOC, to provide a PDSS focal point at the major command level and, in conjunction with the HQ TRADOC "hardware directorates," to exercise staff supervision over PDSS matters within TRADOC

- A PDSS Staff Element at CACDA to provide a capability to fulfill assigned responsibilities as the TRADOC PDSS proponent

- Four CDSF at major TRADOC doctrinal centers where the PDSS Concept Plan for BAS provides for the establishment and operation of a MD-managed PDSS Center (One CDSF at CACDA is to support both the Force Level Control Functional Area and the Maneuver BFA.)

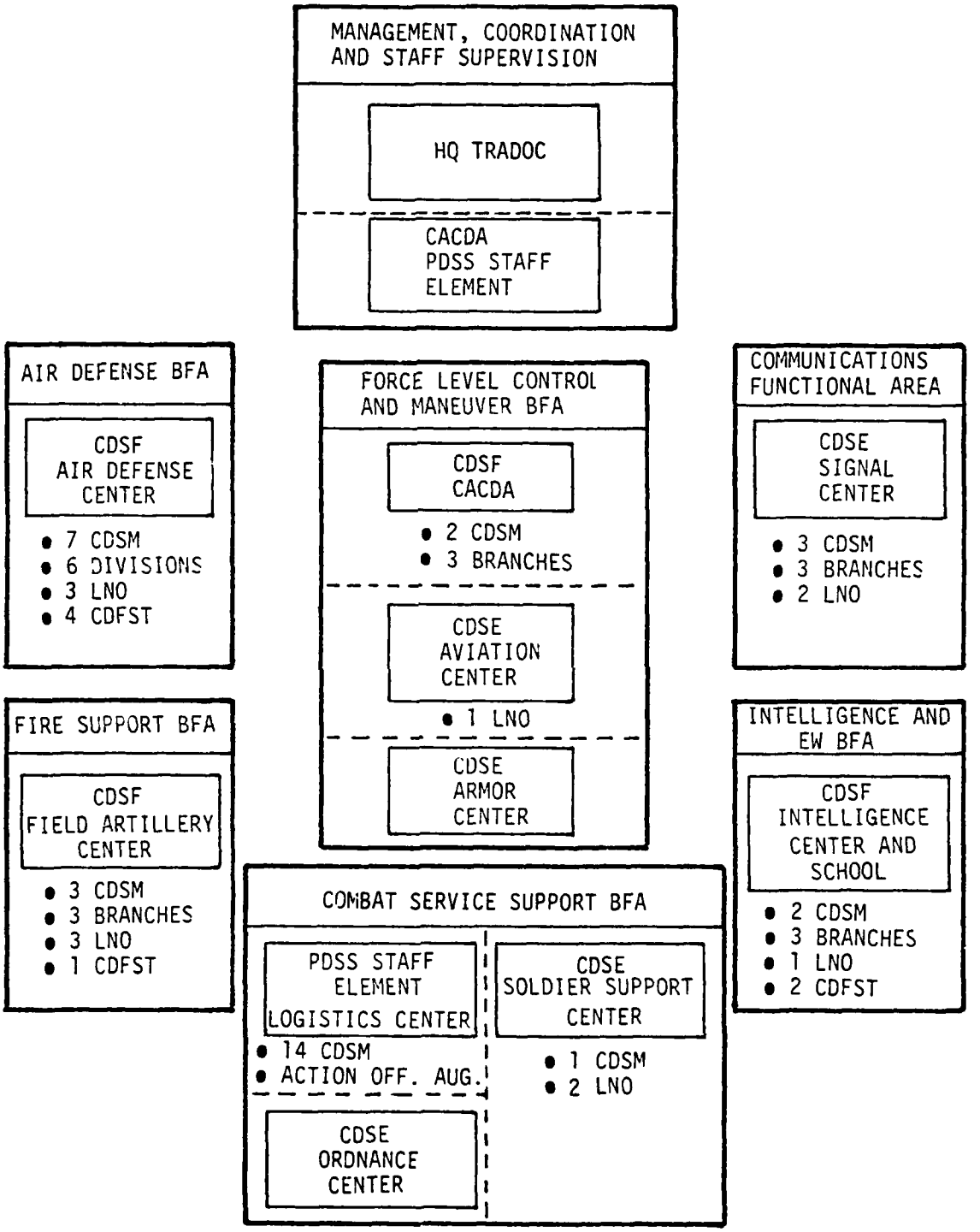


Figure 3-5. Overview of the Theoretical System

- Five CDSE at other TRADOC doctrinal and functional centers where a requirement for a PDSS capability has been identified
- Thirty-two CDSM (These CDSM are proposed based on requirements established as a result of analysis of each system in each functional area. They are subject to change periodically as systems are initiated, modified, or phased out.)
- Twelve CD PDSS Liaison Offices located at 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
- Seven CDFST to satisfy CD requirements for forward support to system Users.

It is emphasized that the composition of this total system as well as each element has been tailored to satisfy TRADOC's functional PDSS requirements. The Study Team considered three approaches in structuring each component of the system. These were by functional area, by BAS, or by some combination of these methods. Figure 3-6 illustrates these three approaches for a system supporting notional BAS A, B, and C by performing 15 theoretical functions. This process contributed to ensuring that the requirements of each Theoretical System component were carefully considered and led to development of the most suitable conizational structure for each of these components. Each component and subordinate element of the Theoretical System is discussed in detail in Appendix E.

3-3. CONCEPT OF OPERATIONS. The concept of operations associated with this Theoretical 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.

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 Theoretical PDSS System in the accomplishment of the overall mission and principal functional responsibilities. Within DCSCD, the Director, Telecommunications, Command and Control, and Computer Systems (TC4S), in conjunction with the HQ TRADOC "hardware directorates," exercises staff supervision over the operation of the total system. Within this Directorate, the Battlefield Systems Integration Branch provides the focal point for coordinating all TRADOC PDSS activity and requirements. In this role, PDSS Action Officers of this branch form the Headquarters TRADOC PDSS Staff Element. Together with action officers in the hardware directorates, they are responsible for receiving and acting 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 the CACDA PDSS Staff Element (discussed below), they analyze and translate these into

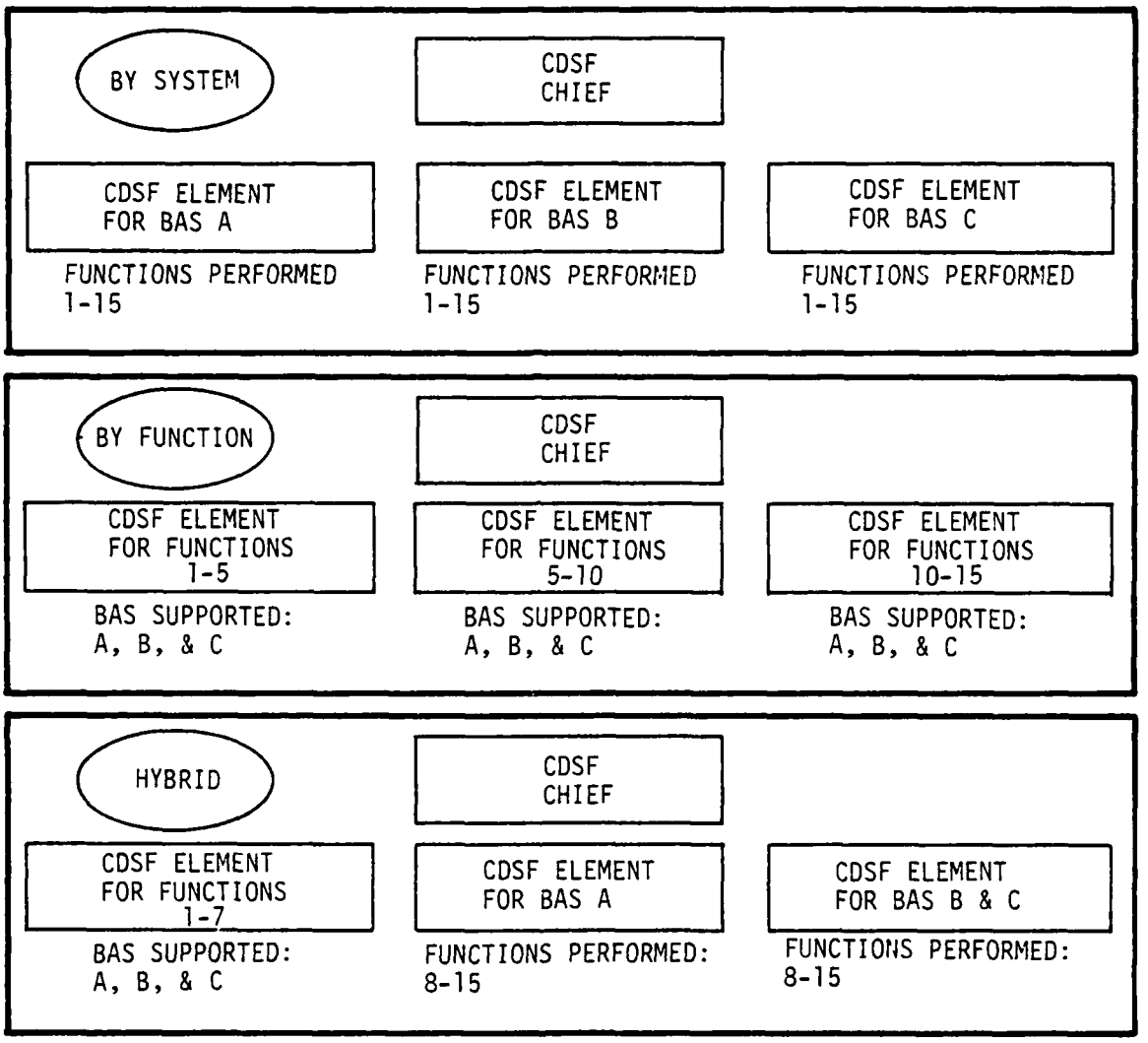


Figure 3-6. Approaches to CDSF structures

requirements or instructions for issuance by Headquarters TRADOC to subordinate commands. Subsequently, they exercise staff supervision and act upon the products of subordinate elements of the system. These Action Officers also serve as the coordination point for PDSS matters within TRADOC and provide a principal interface on PDSS matters with HQDA and organizations at the major command level external to TRADOC.

b. CACDA. CACDA is responsible in this Theoretical 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 Theoretical System provides for the augmentation of the JINTACCS Office, Army C2/JINTACCS Division, C3I Directorate with PDSS Staff Officers. This augmentation will constitute the CACDA PDSS Staff Element.

c. BFA-Level Operations. As noted in the System Overview, this Theoretical TRADOC PDSS System provides for one or more CDSM, CDSF, and CDSE for each of the seven functional areas recognized in the BFA concept. These CDSM and CDSF will operate within the organizational structure and chain of command of the TRADOC center and school at which they are located. They will serve as the focal points for all substantive PDSS activity within each of the seven functional areas and provide the primary interface on PDSS matters at the BFA level with organizations external to TRADOC. Together, these CDSM, CDSF, and CDSE are responsible for planning, organizing, directing, coordinating, and performing all CD PDSS functions for the BAS for which their parent center and school has TRADOC proponency. 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 Liaison Offices included in the Theoretical System are extensions of their respective CDSF or CDSE. 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 Theoretical PDSS system, must interact with both Users and Materiel/System Developers on a continuing basis. The CD PDSS LNO and CDFST shown in Figure 3-5 have been established to facilitate this interface. A summary of the principal interfaces that are seen to be required following implementation of the PDSS Concept Plan for BAS, are shown in Figure 3-7.

3-4. RESOURCES.

a. Personnel. No specific personnel resource constraints were imposed on the design of the Theoretical System. Instead, functional requirements were identified and an effort was then made to develop valid estimates of resources needed to satisfy these requirements regardless of their magnitude.

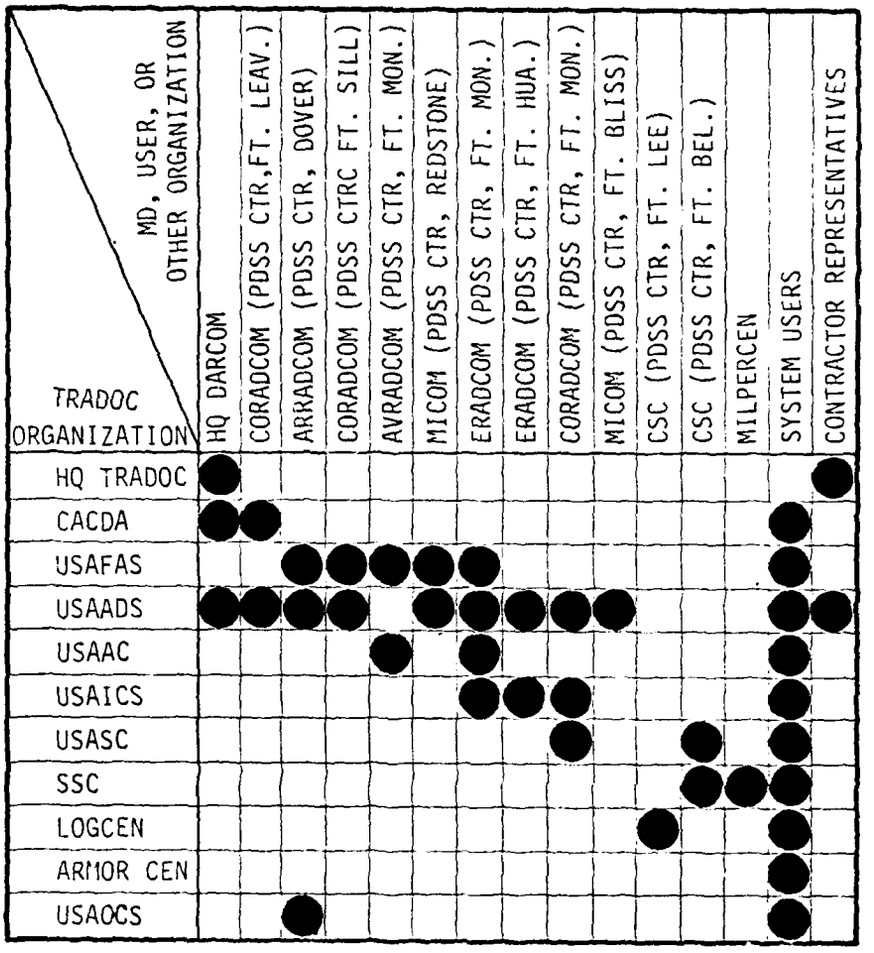


Figure 3-7. Principal CD PDSS interfaces

Notwithstanding this approach, the end result would appear to make the Theoretical System reasonably attainable when projected over the period covered by the FYDP. A summary of these estimated personnel resource requirements is provided in Figure 3-8. A breakout of these personnel requirements to each component of the Theoretical System is provided in Appendix E. The requirements shown in Figure 3-8 provide for a blend of military and civilian expertise throughout the Theoretical System. It is envisioned that the military spaces would be filled by dual trained personnel who hold primary specialties in the various combat arms and combat service and combat service support functional areas of interest, and secondary specialties in the operations research/systems analysis/automatic data processing fields. The civilian spaces would be filled primarily by personnel in the operations research/systems analysis, electronics engineering and automatic data processing career fields. Specific skills and qualifications will be addressed further on a BFA basis as part of implementation planning.

b. Other requirements. The Study Team also considered requirements for other resources to include major items of equipment and physical facilities to house the organizations of the Theoretical System. To the extent that these requirements could be addressed, they are discussed along with each system component in Appendix E. However, the complexity of this subject area, the lack of previous PDSS planning in most BFAs, and the many uncertainties regarding the future capabilities and availability of other existing and evolving TRADOC resources to support PDSS requirements makes this an extremely difficult area to address. Consequently, further detailed study is needed to identify and define specific CD PDSS equipment and facility requirements. This study should address the existing or proposed capability of all other TRADOC organizations that could contribute to fulfilling the role of the CD in PDSS. Specifically, any contribution which the Scenarios and Wargames Directorate of CACDA can appropriately make to solution of CDSF needs should not be overlooked. Similarly, the resources of the Combined Arms Studies and Analysis Activity (CASAA) at Fort Leavenworth, particularly in the area of corps- and division-level modeling, and future exercise of such models, should be considered. The same is true of TRASANA resources in battalion-level modeling and model exercise. Since CASAA has a coordinating responsibility for the Army Models Improvement Program, the resources of Concepts Analysis Agency, at Bethesda, in the theater modeling and model exercise area should also be considered for appropriate contributions to CDSF needs. The planned capability and roles of the new Test and Evaluation Directorate at CACDA, and the Army Automated Systems Test Bed at Fort Hood and the Modular Automated Integrated Systems Interoperability Test and Evaluation capability at Fort Huachuca need to be examined to identify thier potential contribution to the TRADOC PDSS effort. These organizations were discussed in the Army Vice Chief of Staff Memorandum, 18 March 1980, subject: Testing of High Technology Electronic Systems. A study by a Department of the Army (DA) Special Study Group documented in the Review of Army Analysis, April 1979, pointed out that interfaces between Army study agencies are ill-established. That study report proposes improved linkages among these agencies. While that DA study group was addressing the Army-wide analysis effort, the

PERSONNEL BY FISCAL YEAR							
PERSONNEL TYPE	FY81	FY82	FY83	FY84	FY85	FY86	FY87
REQUIRED:							
MILITARY	182	201	220	240	251	259	261
CIVILIAN	176	189	206	241	260	268	272
TOTAL	358	390	426	481	511	527	533
AUTHORIZED:							
MILITARY	70	72	73	74	76	78	86
CIVILIAN	91	91	91	92	93	93	94
TOTAL	161	163	164	166	169	171	180
ADDITIONAL NEEDED:							
MILITARY	112	129	147	166	175	181	175
CIVILIAN	85	98	115	149	167	175	178
TOTAL	197	227	262	315	342	356	353

NOTE: THE "AUTHORIZED" PERSONNEL NUMBERS SHOWN ABOVE INCLUDE PERSONNEL PERFORMING PDSS FUNCTIONS ON A PART TIME BASIS; THE "ADDITIONAL NEEDED" NUMBERS REFLECT PERSONNEL WHO WOULD BE DEDICATED TO PDSS FUNCTIONS.

Figure 3-8. Summary of estimated personnel requirements--Theoretical System

findings noted above are applicable to the analytical resources of concern to TRADOC in establishing its PDSS capability. Finally, TRADOC's equipment and facility requirements to support PDSS are highly dependent on the capabilities of the MD PDSS Centers and the degree to which the equipment and facilities of these Centers could be shared or employed in support of the CD. Further joint MD-CD study and planning is needed to address this subject area specifically. The implementation planning that has been initiated in both DARCOM and TRADOC would provide a basis for this joint study and planning effort. In view of these uncertainties, the equipment and facility requirements discussed in Appendix E should be viewed as preliminary basic requirements, subject to refinement as planning for and implementation of the selected TRADOC PDSS system proceeds.

CHAPTER 4

COMPARISON OF BASELINE AND THEORETICAL SYSTEM

4-1. GENERAL. This chapter contains results of the comparative analysis of the Baseline and Theoretical PDSS Systems described in Chapters 2 and 3, respectively. The results of this analysis provide a basis for designing another alternative, designated the Hybrid PDSS System, which incorporates the desirable features and eliminates or reduces the undesirable aspects of each of the above systems. The Hybrid System, which was derived primarily from this analysis, is discussed in Chapter 5 and Appendix F.

4-2. TASK ACCOMPLISHMENT.

a. Areas of comparison. As the initial step in accomplishing this task, the Study Team examined the Baseline and Theoretical Systems to identify features or characteristics of each system that represented a potential basis for comparison. This initial list was refined through an iterative process to develop the final set of areas on which the two systems were compared. These areas, which address the organizational structure, capabilities, limitations, and resource requirements associated with each system, are listed below:

- Organizational responsibility for PDSS
  - At TRADOC HQ
  - At BFA components
- System control, direction, and coordination
  - Overall system
  - BFA components
- PDSS system contribution to support of the CCS^2 concept
- System capabilities
  - BFAs/Functional Centers supported
  - BAS supported
  - Performance of CD responsibilities
    - Interaction with Users
    - Interaction with Materiel/System Developers
    - Perform analysis of BAS software problem reports
    - Analyze User-stated requirements
    - Analyze functional impact of conceptual changes or systems
    - Develop functional change requirements

Monitor, participate in, or conduct system testing as appropriate
Develop and manage training program required by system changes
Support to contingency planning
Support to crisis/wartime operations
Assessment of continued tactical suitability of BAS.

- Awareness of CD PDSS responsibilities and functions
- Utilization of other resources with potential for supporting PDSS effort
- Resources required.

b. System levels compared. Except in the few cases where an area of comparison clearly pertains to a particular level of organization within the PDSS system, each area of comparison was considered at three levels--total PDSS system, BFA level, and BFA component or element level. This approach resulted in the development of insights into CD PDSS requirements and alternatives for satisfying these requirements that were not apparent during either the development of the description of the Baseline System or design of the Theoretical System. These insights were, however considered in the design of the Hybrid System. The result is that the Hybrid System includes some features that offer an increased capability over those of the Theoretical System. These features and capabilities are discussed in the presentation of the Hybrid System in Chapter 5.

4-3. RESULTS OF THE COMPARISON. Principal results of the comparison of the Baseline and Theoretical Systems are presented in Figure 4-1. In this figure, the first column identifies the area of comparison. These areas correspond with those discussed in Paragraph 4-2.a. The second and third columns contain comments pertaining to the capabilities or limitations of the Baseline and Theoretical Systems, respectively, with respect to the area of comparison being addressed. The fourth column contains comments regarding the significance of the area of comparison being addressed to the accomplishment of Combat Developer's PDSS responsibilities. Where appropriate it also includes comments on the relative effectiveness of each system. The last column contains alternatives or recommendation(s) for consideration in designing the Hybrid System. In examining the results presented, the reader should keep in mind that there are certain exceptions to some of the general statements made in the figure; these exceptions arise because of the major role played by the MILPERCEN as CD for systems in the personnel support area. Figure 4-2 provides further detail on the last area of comparison--resources required. This figure shows, for the Baseline System, personnel currently involved with PDSS on either a full- or part-time basis. Most of the personnel reflected in the Figure are involved with PDSS only on a very limited part-time basis. It also reflects additional personnel estimated to be required in the baseline structure to provide a minimally adequate capability to handle essential CD PDSS functions. The projected increased personnel resources are needed to provide a capability to:

COMPARISON OF THE BASELINE AND THEORETICAL SYSTEMS AND IDENTIFICATION OF ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM				
AREA OF COMPARISON	BASELINE SYSTEM CAPABILITY	THEORETICAL SYSTEM CAPABILITY	COMMENTS/EVALUATION	ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM
1. Organizational Responsibility for PDSS: a. At TRADOC HQ	Functionally Included as Part of Combat Development Mission but with no Resources Dedicated to PDSS Functions.	Retained as Part of Combat Development Mission; Resources Proposed for Handling PDSS Requirements on Dedicated Basis.	Combat Development is Most Appropriate Functional Area for Assignment of PDSS Responsibility; Resources Need to be Identified for PDSS Functions.	Retain as Part of Combat Development; Identify PDSS Resources as a Visable Organizational Element.
b. BFA Components	Functionally Implied as Part of the Combat Development or Management Information System Mission, but with very Limited or no Resources Dedicated to PDSS Functions.	Retained as Part of Combat Development Mission; Resources Proposed for Handling PDSS Requirements on Dedicated Basis.	Combat Development is Most Appropriate Functional Area for Assignment of PDSS Responsibility; Resources Need to be Identified for PDSS Functions.	Retain as Part of Combat Development; Identify PDSS Resources as a Visable Organizational Element.
2. Control, Direction and Coordination of: a. Overall System	Performed as Additional Function of a Staff Element at HQ TRADOC and at CACDA; Limited Overall Control or Direction.	Full Time Staff Elements Located At Both TRADOC and CACDA with Primary Responsibility for PDSS Management and Coordination.	Theoretical System Provides Visable Focal Points for PDSS Management and Coordination within TRADOC and between TRADOC and other Commands.	Retain Staff Elements Created in Theoretical System; Possibly Reduce Resources.
b. BFA Components	Most BFAs have no Capability with Respect to the Total System. Within each BFA, Control and Coordination of PDSS Activities are Acknowledged to be a Staff Responsibility of either the Director of Combat Developments or the Director of Management Information Systems, but with Certain Limitations. Within most BFAs, Specific Resources do not Exist to Perform this Function. Exceptions are the TSM, FAIDS at Ft. Sill, the Combat Systems Software Division at Ft. Bliss, and the Management Information Systems Directorate at LOGCEN.	The Chief of the CDSF or CDSE, Supported by CDSMs, Perform this Function under Staff Supervision of the Director of Combat Developments or Director of Management Information Systems.	This Capability is Essential in all BFAs.	Provide for this Capability.

Figure 4-1. Summary of comparison of the Baseline and Theoretical PDSS Systems

COMPARISON OF THE BASELINE AND THEORETICAL SYSTEMS AND IDENTIFICATION OF ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM				
AREA OF COMPARISON	BASLEINE SYSTEM CAPABILITY	THEORETICAL SYSTEM CAPABILITY	COMMENTS/EVALUATION	ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM
3. PDSS System Contribution to Support of the CCS² concept	Limited, because of Little Formal CD Participation in the Configuration Control Process for Individual BAS Relevant to CCS². Exceptions are Logistics Systems, TACFIRE, AN/TSQ-73, PATRIOT, and SIGMA.	Improved, because of Formal CD Participation in Configuration Control for All BAS. Also, Theoretical System Envisions Linking All Key Combat Developer PDSS Facilities by State-of-the-Art Communications Capabilities.	Effective Coordination and Configuration Control of Major Systems in CCS² Concept is Essential.	Retain Improved Capability Provided by the Theoretical System.
4. System Capabilities: a. BFAs/Functional Centers Supported	HQ TRADOC and 10 Centers in Five BFA and two Additional Functional Areas Need a CD PDSS Capability; The Baseline Capability is Inadequate at All of these Locations.	Provides Adequate CD PDSS Capability at All Locations where a Need Exists.	Theoretical System Provides Independent Capability at Each Location; Some Savings in Resources could be Realized, and Still Satisfy Requirements, through Inter-Center and Inter-BFA Coordination and Sharing of Resources.	Provide for Some Form of Support at Each Location where a Capability is Needed but Economize on Resources through their Efficient Use and Sharing of Capabilities.
b. BAS Supported	CD Involvement is Largely Reactive to Critical Problems.	Provides Capability for Planned Support to All Currently Identified BAS for which TRADOC has CD proponency in All Life [illegible] Stages, through 1987.	CD is Primarily Concerned with Category 1 and 2 BAS. Software in Category 3 BAS is not Expected to Require Frequent Change; When Change is Required, the Change is not Expected to Significantly Impact the CD's Area of Responsibility.	Tailor Capability Primarily to Support Category 1 and 2 BAS Identified through 1987; Provide for Support of Category 3 BAS on An "As Required" Basis.
c. Performance of CD Responsibilities: (1) Interaction with Users	Limited Interaction Between the CD and Users of BAS in most BFAs; Exceptions are the Logistics Functional Area and Two or Three Systems in the Air Defense BFA; Most User Problems in Other Areas Handled through Direct Contact with MD.	Provides Capability for Frequent or, if Required, Continuous Interaction Between CD and User.	CD-User Interaction Important to Both User and to Current and Future CD Effort.	Provide Strong Capability for CD-User Interface. Determine on BFA by BFA Basis if Need Exists for CD Forward Support Teams; If Team is Needed, Possibly Size can be reduced; use of Regional Base(s) and/or ad hoc [illegible] Might Achieve Economies

Figure 4-1. (continued)

COMPARISON OF THE BASELINE AND THEORETICAL SYSTEMS AND IDENTIFICATION OF ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM				
AREA OF COMPARISON	BASELINE SYSTEM CAPABILITY	THEORETICAL SYSTEM CAPABILITY	COMMENTS/EVALUATION	ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM
4. System Capabilities c. Performance of CD Responsibilities (Continued): (2) Interaction with Materiel/System Developers	[illegible] Exceptions, Limited Interaction is Informal and Focuses Primarily on Major Systems; Interaction Greatest where the CD and MD are Collocated; Very Weak in Most Cases, where They are Geographically Separated.	Provides for Interaction through CD PDSS LNO in Those Cases where CD and MD are Geographically Separated.	Interaction is Important and Mutually Beneficial to Both MD and CD; Extent of Interaction at Working Level in Baseline Systems Unsatisfactory in Some Cases where CD and MD are Geographically Separated.	Retain Concept Incorporated into Theoretical System to Provide the Desired Level of Interaction; Consider Reducing Resource Requirements through Sharing Capabilities (e.g., 1 "TRADOC" PDSS LNO at Ft. Monmouth Instead of 1 LNO From 3 or 4 Different TRADOC Centers).
(3) Perform Analysis of BAS Software Problem Reports	Problem Reports not Received by CD in Some BFA; in Most BFA, Limited Analytical Capability Exists to Address those Problem Reports that are Received.	Concept of Operations Provides that All Problem Reports of a Functional Nature be Referred to and Addressed by the CD; Resources Included in the System to Conduct Required Analysis of Problems.	Increased CD Involvement in Addressing User Problems and an Improved Capability to Analyze these Problems is Important.	Retain Concept of Operations and the Analytical Capability Provided in the Theoretical System; Level of Effort and Associated Resources could Possibly be Reduced; Problems may Have to be Prioritized and Addressed as Reduced Resources Permit.
(4) Analyze User-Stated Requirements	Limited Analytical Capability Exists to Address User Requirements in most BFA.	Resources Included in the System to Conduct Analysis of Requirements.	Increased CD Involvement in Addressing User Requirements and an Improved Capability to Analyze these Requirements is Important.	Retain Concept of Operations and the Analytical Capability Provided in the Theoretical System; Level of Effort and Associated Resources could Possibly be Reduced; Problems may Have to be Prioritized and Addressed When Reduced Resources Permit.

Figure 4-1. (continued)

COMPARISON OF THE BASELINE AND THEORETICAL SYSTEMS AND IDENTIFICATION OF ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM				
AREA OF COMPARISON	BASELINE SYSTEM CAPABILITY	THEORETICAL SYSTEM CAPABILITY	COMMENTS/EVALUATION	ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM
4. System Capabilities c. Performance of CD Responsibilities (Continued): (5) Analyze Functional Impact of Conceptual Changes on Systems	Limited Analytical Capability Exists in Most BFA.	Resources Included in the System to Conduct Analysis.	Improved Capability to Analyze Conceptual Changes is Important.	Retain Concept of Operations and the Analytical Capability Provided in the Theoretical System; Level of Effort and Associated Resources could Possibly be Reduced; Problems may Have to be Prioritized and Addressed When Reduced Resources Permit.
(6) Develop Functional Change Requirement	Limited Capability Exists; Requirements Definition Language is Needed, MD-CD Handbook Does not Contain Sufficiently Detailed Guidance on Stating Software Requirements.	Resources Provided in Theoretical System for Improved Capability to Develop Functional System Requirements; The Need for a Requirements Definition Language is not Satisfied.	This is very Important CD Responsibility; Requirements must be Stated Clearly and Correctly, In Terms that MD will Interpret Correctly. MD-CD Handbook should be Improved.	Retain Improved Capability Provided by the Theoretical System; Continue to Highlight the Need for a Requirements Definition Language.
(7) Monitor, Participate in, or Conduct System Testing as Appropriate	Some Capability Exists at Present; Areas of Responsibility not Clearly Defined in all Cases; Existing Test Capabilities may not be Fully Utilized in Some BFA.	Theoretical System Provides CD PDSS Focal Point for Coordinating Testing Requirements, but does not Address Proper Allocation of Testing Responsibilities among Available Agencies.	This is Very Important CD Responsibility. Further Effort should be Devoted to Coordinating the Utilization of Testing Resources.	Provide Focal Point in the CD PDSS Organization for Coordinating Requirements in this Area on a TRADOC-wide Basis.
(8) Develop and Manage Training Program Required by System Change	Capability Varies Among BFA; Handled by Combat Development, Training Development, and Training Staff Elements.	Resources Provided to Serve as Focal Point in Determining and Coordinating Training Requirements; Current Training Organizations would Retain Present Responsibilities.	Training Impact of System Change Must be Identified and Addressed Concurrently with Processing of the System Change.	Retain Focal Point in the CD PDSS Organization for Coordinating Requirements in this Area.

Figure 4-1. (continued)

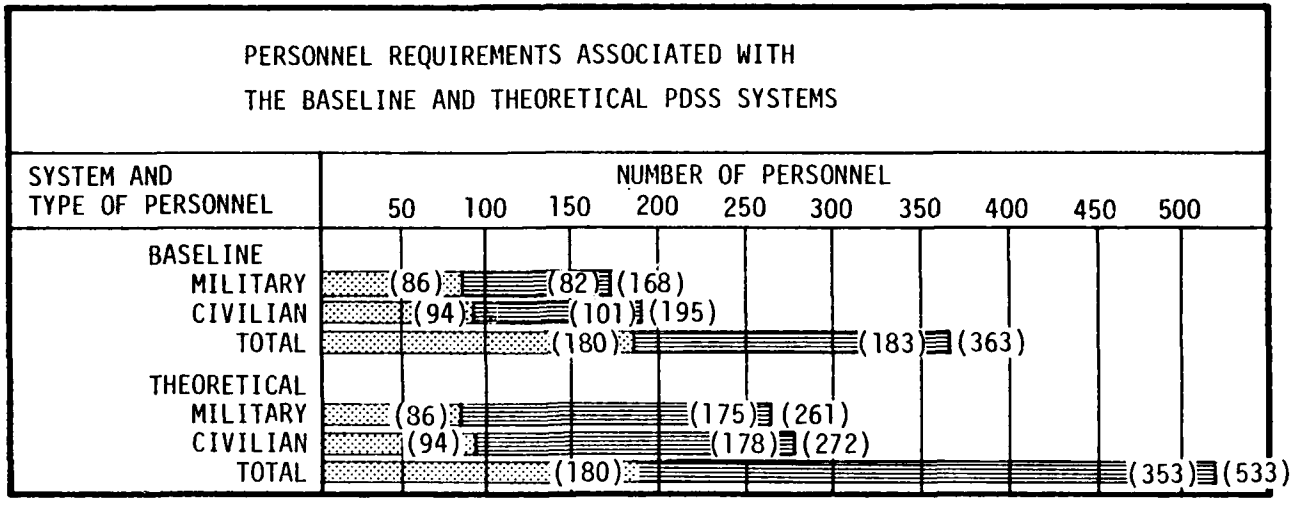
COMPARISON OF THE BASELINE AND THEORETICAL SYSTEMS AND IDENTIFICATION OF ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM				
AREA OF COMPARISON	BASELINE SYSTEM CAPABILITY	THEORETICAL SYSTEM CAPABILITY	COMMENTS/EVALUATION	ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM
4. System Capabilities c. Performance of CD Responsibilities (9) Support to Contingency Planning	Little Attention is Focused on this Area at Present.	Need for Attention to this Area is Emphasized and Responsibility For this Function is Assigned to Elements of the Theoretical System.		Continue to Emphasize and Specify Responsibility for this Area.
(10) Support to Crisis/Wartime Operations	Little Attention is Focused on this Area at Present.	Need For Attention to this Area is Emphasized and Responsibility For this Function is Assigned to Elements of the Theoretical System.	This is the Ultimate Objective of All PDSS Activity.	Continue to Emphasize and Specify Responsibility for this Area.
(11) Assessment of Continued Tactical Suitability of BAS	The Extent to Which this is Done Varies Widely by BAS.	Resources Provided in the Theoretical System to Accomplish this Function on a Continuing Basis For All BAS.	This Function is Critical [illegible] Force [illegible] Force Modernization.	Continue to Emphasize and Specify Responsibility for this Area.
5. Awareness of CD's PDSS Responsibilities and Function	Lack of Common Understanding and Agreement Regarding what CD PDSS Functions Need to be Performed and Who is Responsible for Doing Them.	CD PDSS Functions and the Respon- [illegible] Organizational Element Are [illegible] Identified Except for Some [illegible] with Respect to [illegible] PDSS Responsibilities [illegible] and MILPERCEN.		In Designing the Hybrid System, the Same Basic CD Responsibilities and Functions Should be Addressed *that were Developed During* Design of the Theoretical System; These may be Reallocated and New Functions identified as appropriate.
6. Utilization of Other Resources, e.g., CACDA, CASAA TRASANA, Test and Evaluation Organizations, MD PDSS Centers, etc., with Potential for Supporting the CD PDSS Effort.	Baseline System not Sufficiently *Defined and Operating Procedures* not Sufficiently Formalized to Provide for Using Other Resources, with Potential for Contributing to Resolution of PDSS Problems, on a Regular Basis. Each PDSS Requirement is Handled on a Case by Case Basis.	Study Research Addressed this Area in General Terms but did not Identify All Resources that might be Relevant. Other Resources were Considered to the Extent their Existing or Planned Capability and Availability is Known. However, *Further Comprehensive* Address-al of this Area is Needed.	Use of the Capabilities of Other Resources and Sharing Equipment and Facilities. Offers. Potential for Improved Overall Capability with Reduced Requirement for CD Resources Dedicated to this Effort.	Consider Opportunities for Sharing/Using Other Resources to Improve CD PDSS Capabilities and Reduce Resource Requirements. Provide Capability to Coordinate the Use/Sharing of Resources.

Figure 4-1. (continued)

COMPARISON OF THE BASELINE AND THEORETICAL SYSTEMS AND IDENTIFICATION OF ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM

AREA OF COMPARISON	BASELINE SYSTEM CAPABILITY	THEORETICAL SYSTEM CAPABILITY	COMMENTS/EVALUATION	ALTERNATIVE(S)/RECOMMENDATION(S) FOR THE HYBRID SYSTEM
7. Resource Requirements.	[illegible] Resource Devoted to PDSS are Very Limited. Accomplishment of CE PDSS Functions is Based on/Limited by Available Resources and the Priority of PDSS Tasks Relative to Other Mission Requirements. Additional Resources are Needed to Perform All PDSS Responsibilities and Functions Adequately	Implementation of this System would Require Significantly Greater Resources than are Currently Associated with the Baseline System. Equipment and Facility Requirements to Implement this System are also Significant. The System was Designed to Address Functional Requirements with no Specific Resource Constraints Imposed.	Current Baseline System is not Adequate to Permit TRADOC to Fulfill its Role in Planning and Providing PDSS For BAS. Enhancing this System or Implementing Any Other System with an Adequate Capability will be Costly in Terms of Resources.	Design System without Specific Resource Constraints. Provide Capability to Meet Functional Requirements. Consider Economy of Resources Where Feasible.

Figure 4-1. (concluded)



NOTE: AUTHORIZED NUMBERS SHOWN ABOVE INCLUDE PERSONNEL WHO PERFORM PDSS ONLY ON A PART-TIME BASIS. "ADDITIONAL NEEDED" NUMBERS SHOWN REFLECT PERSONNEL WHO WOULD BE DEDICATED TO CD PDSS FUNCTIONS.

Figure 4-2. Comparison of personnel requirements-- enhanced Baseline and Theoretical Systems

- Perform important CD PDSS functions not currently being performed, and
- Perform CD PDSS functions for additional BAS projected to be fielded by 1987.

With respect to the Theoretical System, Figure 4-2 shows the total personnel resources estimated to be needed to fully implement this system. The significantly higher personnel requirement associated with the Theoretical System provides a substantially greater capability than the Baseline, especially in the areas of:

- Control, direction, and coordination of the total system
- Support of the CCS^2 concept
- The capability to perform CD PDSS responsibilities at all TRADOC functional centers.

CHAPTER 5

TRADOC HYBRID PDSS SYSTEM

5-1. GENERAL. Task 7 of the Statement of Work (SOW) under which this study is being conducted required that a third TRADOC post-deployment software support (PDSS) functional and management system be designed based on the results of the comparative analysis of the Baseline and Theoretical Systems discussed in Chapter 4. This chapter describes the PDSS system that resulted from this effort. This system, called the Hybrid System, incorporates many desirable features of each of the other two systems. All assumptions, design guidelines, and other considerations that were applicable to the Theoretical System, as discussed in Chapter 3, were also applied to the design of this Hybrid System. However, in designing this system, a conscientious effort was made to identify ways of retaining the capabilities of the Theoretical System while reducing resource requirements through increased sharing of capabilities, prioritization of functional requirements, devising alternative approaches to satisfying these requirements, and other measures. Consequently, the resulting Hybrid System provides a Combat Developer (CD) PDSS capability significantly greater than the present Baseline, and equal to the Theoretical System in most PDSS requirement areas. This chapter provides an overview of the Hybrid System and discusses the concept of operations and an estimate of the resources needed for full implementation. A detailed description of each component of the system is provided in Appendix F.

5-2. SYSTEM OVERVIEW. Based on the results of the comparative analysis discussed in Chapter 4, and following the assumptions, design guidelines, and other considerations referred to above, the Study Team designed the TRADOC Hybrid PDSS System presented in this report. This system is illustrated in Figure 5-1. It has been structured within the context of the Battlefield Functional Area (BFA) Concept. This corresponds with the Hybrid Approach adopted by the Task Force that developed the plan for establishing MD-managed PDSS Centers as documented in the PDSS Concept Plan for BAS, May 1980, and discussed briefly in Chapter 1. As shown in Figure 5-1, this Hybrid System consists of:

- A small PDSS Staff Element at Headquarters, TRADOC, to provide a PDSS focal point at the major command level and, in conjunction with the HQ TRADOC hardware directorates, to exercise staff supervision over PDSS matters within TRADOC
- A small PDSS Staff Element at CACDA to provide a capability to fulfill assigned responsibilities as the TRADOC PDSS proponent
- Two resource coordination branch-level staff elements in CACDA to ensure the fullest and most effective use possible of existing TRADOC analytical and test and evaluation resources to support CD PDSS requirements
- Four Combat Developer Support Facilities (CDSF) at major TRADOC doctrinal centers where the PDSS Concept Plan for BAS provides for the establishment and operation of a MD-managed PDSS Center (One CDSF at CACDA is to support both the Force Level Control Functional Area and the Maneuver BFA.)

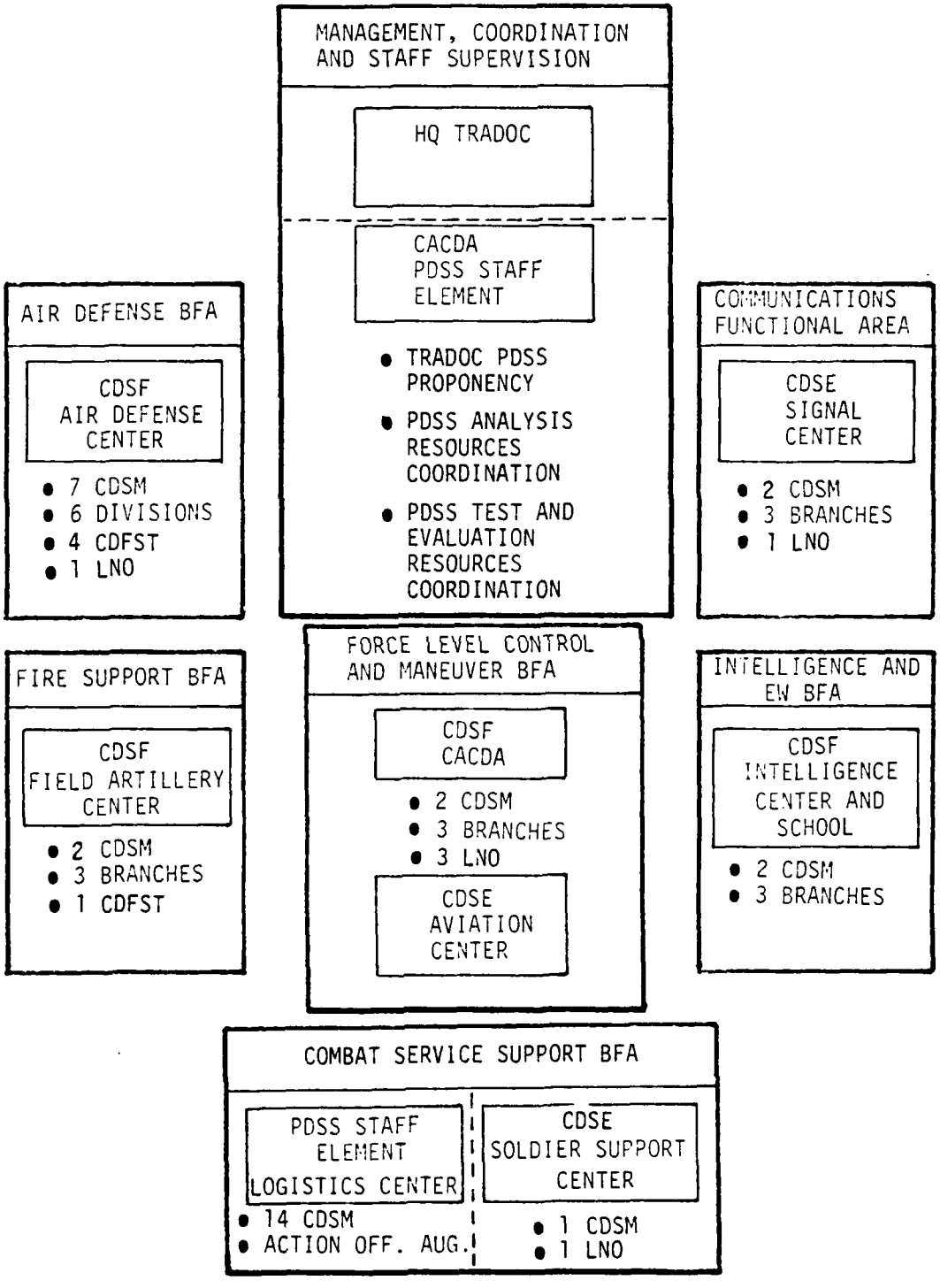


Figure 5-1. Overview of the Hybrid System

- Three Combat Developer Support Elements (CDSE) at other TRADOC doctrinal and functional centers where a requirement for a PDSS capability has been identified

- Thirty Combat Developments System Managers (CDSM) (These CDSM are proposed based on requirements established as a result of analysis of each system in each functional area. They are subject to change periodically as systems are initiated, modified, or phased out.)

- Six CD PDSS Liaison Offices located at those MD installations which have 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

- Five Combat Developer Forward Support Teams (CDFST) to interface with, and provide CD guidance and support to, systems users.

The overall structure of this system is similar in concept to the Theoretical System but it differs from that system in total size as well as in the size and structure of its components. The differences, in terms of resource requirements and capabilities, are evident in the detailed descriptions of the systems in Appendices E and F and in the discussion of resources associated with each system in Paragraphs 3-3 and 5-4, respectively. With respect to capability, the Theoretical System provides for accomplishing all identified CD PDSS functions for all BAS currently projected to require PDSS through 1987. The Hybrid System also provides a capability to accomplish all CD PDSS functions but some less critical actions may have to be accomplished on a prioritized basis.

5-3. CONCEPT OF OPERATIONS. The concept of operations associated with this Hybrid System is essentially the same as that described in Paragraph 3-3 for the Theoretical System. The overall concept for direction and control of the system and the roles of HQ TRADOC and CACDA remain unchanged. Most CD PDSS operations will be decentralized to the BFA level, but there is emphasis on sharing of resources and consolidating responsibilities in fewer PDSS organizational elements within each BFA. CD PDSS Liaison Offices are reduced in number and, in some cases, represent the CD in more than one functional area. CDFST are also reduced in number which will, in turn, reduce direct CD contact with Users. This will require that remaining elements of the Hybrid PDSS System take a more active role in interfacing with system Users. These measures permit a reduction in resource requirements without severely impacting the capabilities of the system. Further details of the concept of operations are incorporated into the discussions of the system components in Appendix F.

5-4. RESOURCES. As in the case of the Theoretical System, no specific personnel resource constraints were imposed on the design of this Hybrid System. All CD PDSS functional requirements were considered. Estimates of resources needed to meet these requirements were than developed within the structure

and operational concept envisioned for the Hybrid System. During this process, an effort was made to identify ways in which resource requirements could be reduced from those in the Theoretical System, without detracting significantly from the system capability. Some reduction in requirements was realized primarily through consolidation of responsibilities and sharing of resources. A summary of the personnel resource requirements resulting from this effort are shown in Figure 5-2. A breakout of these requirements to the Hybrid System component level and a full discussion of their employment is included in Appendix F.

PERSONNEL BY FISCAL YEAR							
PERSONNEL TYPE	FY81	FY82	FY83	FY84	FY85	FY86	FY87
REQUIRED:							
MILITARY	170	179	191	207	214	218	219
CIVILIAN	173	185	196	232	251	257	261
TOTAL	343	364	387	439	465	475	480
AUTHORIZED:							
MILITARY	70	72	73	74	76	78	86
CIVILIAN	91	91	91	92	93	93	94
TOTAL	161	163	164	166	169	171	180
ADDITIONAL NEEDED:							
MILITARY	100	107	118	123	138	140	133
CIVILIAN	82	94	105	140	168	164	167
TOTAL	182	201	223	273	296	304	300

NOTE: THE "AUTHORIZED" PERSONNEL NUMBERS SHOWN ABOVE INCLUDE PERSONNEL PERFORMING PDSS FUNCTIONS ON A PART TIME BASIS; THE "ADDITIONAL NEEDED" NUMBERS REFLECT PERSONNEL WHO WOULD BE DEDICATED TO PDSS FUNCTIONS .

Figure 5-2. Summary of estimated personnel requirements--Hybrid System

APPENDIX A

REFERENCE APPENDIX

1. Integrated Tactical Communications System Plan (INTACS). 1978.

2. US Department of the Army. Headquarters, US Army Materiel Development and Readiness Command. Post-Deployment Software Support Plan for Intelligence/Electronic Warfare (INTEL/EW) Systems. 8 March 1978.

3. _____. Post-Deployment Software Support (PDSS) Concept Plan for Battlefield Automated Systems. Washington D.C.: May 1980.

4. Post-Deployment Management Plan for Fire Direction System Artillery AN/GSG-10(V). (TACFIRE) Draft. 6 December 1976.

5. International Business Machines Corporation, Federal Systems Division. Army Command and Control Master Plan (AC²MP) effort, published under various titles. Arlington: 1 June 1979.

6. ADCCS Directorate and ARTADS. AN/TSQ-73 (Missile Minder) Post-Deployment Management Plan. Huntsville and Fort Monmouth: 19 May 1977.

7. US Department of the Army. Headquarters, Combined Arms Center and Fort Leavenworth. Position Location Reporting System (PLRS) Post-Deployment Support Concepts Presentation. Fort Leavenworth: 11 March 1977.

8. _____. Battlefield Automation Management Program (BAMP). Fort Leavenworth: 1 July 1978.

9. _____. US Army Combined Arms Combat Development Activity. Functional Systems on the Corps Battlefield. US Army Combined Arms Center. Fort Leavenworth: 13 July 1978.

10. _____. Mission Element Needs Statement (MENS) for the Military Computer Family (MCF). Fort Leavenworth: September 1978.

11. Joint Chairmen, Communications Research and Development Command and Center for Systems Engineering and Integration. Army Battlefield Automation Interoperability System Engineering Management Plan. Working Group. Fort Monmouth: 31 January 1979.

12. US Department of the Army. Army Battlefield Interface Concept 80 (U) (Short Title: ABIC 80). Draft. ACN Number 47635. Washington, D.C. (CONFIDENTIAL)

13. CORADCOM. Guidance on Preparing a Product Improvement Proposal. Fort Monmouth: January 1978.

14. Report of the Defense Science Board Task Force on Command and Control Systems Management. July 1978.

15. PATRIOT Software Support Facility Plan. July 1978.

16. Joint Interoperability Tactical Command and Control Systems (JINTACCS) reports, published under various titles.

17. US Department of Defense. Department of Defense Directive 5010.19: Configuration Management. Washington, D.C.: 1 May 1979.

18. _____. Department of Defense Instructions 5010.27: Management of Automated Data System Development. Washington, D.C.

19. _____. Department of Defense Directive 5000.29: Management of Computer Resources in Major Defense Systems. Washington, D.C.: 26 April 1976.

20. _____. Department of Defense Directive 5000.31: Interim List of DOD - Approved High Order Programming Languages (HOL). Washington, D.C.: 24 November 1976.

21. _____. Department of Defense Directive 5000.3: Test and Evaluation. Washington, D.C.: 26 December 1979.

22. _____. Department of Defense Instructions 5000.XXA: Interim List of DOD - Approved Computer Architecture. Washington, D.C.: 19 April 1978.

23. _____. Department of Defense Directive 5000.1: Major System Acquisition. Washington, D.C.: 19 March 1980.

24. _____. Department of Defense Instruction 5000.2: Major System Acquisition Procedures. Washington, D.C.: 19 March 1980.

25. US Department of the Army. Army Regulation 11-28: Economic Analysis and Program Evaluation for Resource Management. Washington, D.C.: 2 December 1975.

26. _____. Army Regulation 15-14: Systems Acquisition Review Council Procedures. Washington, D.C.: 1 April 1978.

27. US Department of the Army. Army Regulation 70-1: Army Research, Development, and Acquisition. Washington, D.C.: 1 February 1977.

28. _____. Army Regulation 70-27: Outline Development Plan/Development Plan/Army Program Memorandum/Defense Program Memorandum/Decision Coordinating Paper. Washington, D.C.: 17 March 1975.

29. _____. Army Regulation 70-37: Configuration Management. Washington, D.C.: 19 July 1976.

30. _____. Army Regulation 71-9: Materiel Objectives and Requirements. Washington, D.C.: 7 February 1975.

31. _____. Army Regulation 700-127: Integrated Logistic Support. Washington, D.C.: 11 April 1975.

32. _____. Headquarters, US Army Materiel Development and Readiness Command. DARCOM Regulation 70-1: Transition of Management Responsibility from a Research and Development Command Manager to a Materiel Readiness Command Manager. Fort Belvoir.

33. _____. Army Regulation 71-1: Force Development, Army Combat Developments. Washington, D.C.: 25 June 1969.

34. US Department of the Air Force. Air Force Regulation 800-14: Volume I: Management of Computer Resources in Systems; Volume II: Acquisition and Support Procedures for Computer Resources in Systems. Washington, D.C.: 26 September 1975.

35. US Department of the Army. Army Regulation 18-1: Management Information Systems, Policies, Objectives, Procedures, and Responsibilities. Washington, D.C.: 22 March 1976. (With TRADOC Supplement 1, 10 September 1976.); Army Regulation 18-1: Army Automation, Army Automation Management. Washington, D.C.: 15 August 1980. (Without accompanying Technical Bulletins.)

36. _____. Headquarters, US Army Materiel Development and Readiness Command. DARCOM Regulation 70-16: Management of Computer Resources in Battlefield Automation Systems. Fort Belvoir: 16 July 1979.

37. _____. Army Regulation 1000-1: Basic Policies for Systems Acquisition. Washington, D.C.: 1 April 1978.

38. _____. Army Regulation 70-61: Type Classification of Army Materiel. Washington, D.C.: 1 August 1978.

39. _____. Army Regulation 70-15: Research and Development, Product Improvement of Materiel. Washington, D.C.: 15 June 1980.

40. US Department of the Army. Army Regulation 380-380: Automated Systems Security. Washington, D.C.: 15 April 1979.

41. _____. Army Regulation 70-10: Test and Evaluation During Development and Acquisition of Materiel. Washington, D.C.: 29 August 1975.

42. _____. Army Regulation 70-17: System/Program/Project/Product Management. Washington, D.C.: 11 November 1976.

43. _____. Army Regulation 10-41: United States Army Training and Doctrine Command. Washington, D.C.: 27 June 1973.

44. _____. Army Regulation 10-11: United States Army Materiel Development and Readiness Command. Washington, D.C.: 9 March 1977.

45. US Department of Defense. Military Standard 483: Configuration Management Practices for Systems, Equipment, Munitions, and Computer Programs. Washington, D.C.: 31 December 1970.

46. _____. Military Standard 490A: Specification Practices. Washington, D.C.: 30 October 1968.

47. US Department of the Air Force. Air Force Systems Command Pamphlet 800-7: Configuration Management. Washington, D.C.: 1 December 1977.

48. US Department of the Army. Headquarters, US Army Development and Readiness Command. DARCOM Circular 702-4: Army Defense Systems Software Control During the Production and Deployment Phase. Fort Belvoir: 28 March 1978.

49. _____. Pamphlet 11-25: Life Cycle System Management Model for Army Systems. Washington, D.C.: 21 May 1975.

50. _____. Pamphlet 70-21: The Coordinated Test Program (CTP). Washington, D.C.: 10 May 1976.

51. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Pamphlet 71-3: Force Development, Combat Developments Study Writing Guide. Fort Monroe: 1 June 1977.

52. _____. Army Regulation AR 10-1: Organization and Functions, Functions of the Department of Defense and Its Major Components. Washington, D.C.: 6 January 1977.

53. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 10-5: Organization and Functions. Fort Monroe: 10 December 1979.

54. US Department of the Army. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 10-41: Organization and Functions, Mission Assignments. Fort Monroe: 1 May 1980.

55. _____. Army Regulation 10-4: Organization and Functions, US Army Operational Test and Evaluation Agency. Washington, D.C.: 30 December 1974.

56. _____. Army Regulation 570-2: Manpower and Equipment Control, Organization and Equipment Authorization tables -- Personnel. Washington, D.C.: 15 September 1978.

57. _____. Headquarters, US Army Training and Doctrine Command. TRADOC REGULATION 71-1: Force Development, US Army Training and Doctrine Command (TRADOC) Management Information System (TRAMIS) (RCS A TRM - 38). Fort Monroe: 1 September 1976. (With CAC and Fort Leavenworth Supplement 1 - 15 June 1978.)

58. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 71-3: Force Development, Acceptance and Assignment of New Combat Development Tasks. Fort Monroe: 2 May 1977.

59. _____. Army Regulation 71-3: Force Development, User Testing. Washington, D.C.: 8 March 1977.

60. _____. 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.

61. _____. Army Regulation 5-5: Management, The Army Study System. Washington D.C.: 15 April 1978.

62. _____. Army Regulation 70-16: Research and Development, Department of the Army System Coordinator (DASC) System. Washington, D.C.: 20 March 1975.

63. _____. Army Regulation 700-129: Integrated Logistics Support Management of Multiservice Communications Electronics Systems and Equipment. Washington, D.C.: 11 January 1980.

64. _____. Army Regulation 70-9: Research and Development, Army Research and Development Information System Planning and On-Going Work Reporting. Washington, D.C.: 22 August 1973.

65. _____. Army Regulation 611-1: Personnel Selection and Classification, Military Occupational Classification Structure Development and Implementation. Washington, D.C.: 27 April 1976.

66. US Department of the Army. Army Regulation 37-200: Financial Administration, Selected Acquisition Information and Management Systems (SAIMS). Washington, D.C.: 1 December 1979.

67. _____. Army Regulation 71-2: Force Development, Basis of Issue Plan. Washington, D.C.: 19 April 1976.

68. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 11-5: Army Programs, Cost Analysis Program, (MOS Training Costs) RCS A TRM - 159. Fort Monroe: 5 September 1975.

69. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 11-12: Army Programs, TRADOC Resource Factors (Requirement Control Symbol ATR M - 54 (R1)). Fort Monroe: 11 January 1980.

70. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 11-2: Army Programs, Priorities and Tasking Control. Fort Monroe: 15 February 1980.

71. _____. Headquarters, US Army Materiel Development and Readiness Command/Headquarters, Army Training and Doctrine Command. DARCOM/TRADOC Materiel Acquisition Handbook. Alexandria/Fort Monroe: 1 January 1980.

72. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Regulation 71-9: Force Development, User Testing and Evaluation. Fort Monroe: 1 October 1978.

73. _____. DA Pamphlet 5-5: Guidance for Study Sponsors and Study Advisory Groups. Washington, D.C.: 18 October 1976.

74. _____. Office of the Assistant Chief of Staff for Automation and Communications. Alignment of Automation and Communications Functions of Army Agencies and Commands (SAACFAAC). Study Final Report. Washington, D.C.: 31 July 1980.

75. _____. Headquarters, US Army Computer Systems Command. USACSC Regulation 18-21: Management Information Systems, Command Customer Assistance Program. Fort Belvoir: 5 December 1979.

76. _____. Office of the Assistant Secretary. Memorandum for Deputy Chief of Staff for Research, Development, and Acquisition. Washington, D.C.: 1 July 1980.

77. _____. Headquarters, US Army Logistics Center. LOGC Regulation 10-1: Organization and Functions. Fort Lee: 1 January 1980.

78. _____. US Army Intelligence Center and School. USAICS Regulation 10-1: Organization and Functions USAICS Organization, Mission, and Functional Manual. Fort Huachuca: 1 October 1979.

79. US Department of the Army. Headquarters, US Army Training and Doctrine Command. TRADOC Circular 351-8: Schools, Individual and Collective Training Plan for Developing Systems Policy and Procedures. Fort Monroe: 1 May 1980.

80. _____. Headquarters, US Army Air Defense Center and Fort Bliss. USAADCENFB Regulation 10-1: Organization and Functions, Manual of Organization, Missions, and Functions. Fort Bliss: 15 September 1980.

81. _____. Headquarters, US Army Computer Systems Command. USACSC Regulation 18-23: Management Information Systems, Automated Data Systems Configuration Management Program. Fort Belvoir: 1 December 1979.

82. _____. Headquarters, US Army Training and Doctrine Command. TRADOC Circular 351-8: Schools, Individual and Collection Training Plan for Developing Systems Policy and Procedures. Fort Monroe: 1 May 1980.

83. United States Army Signal School. USASIGS Regulation 10-2: Organization and Functions Manual. Fort Gordon: 18 May 1977.

84. US Department of the Army. Headquarters, US Army Field Artillery Center and Fort Sill. USAFACFS Regulation 10-1: Organization and Functions, Manual of Organization and Functions. Fort Sill: 11 April 1980.

85. _____. Headquarters, Combined Arms Center and Fort Leavenworth. CAC and Ft LVN Regulation 10-1: Organization and Functions. Fort Leavenworth: 1 August 1980

86. _____. Army Regulation 10-5: Organization and Functions. Washington, D.C.: 1 November 1978.

87. _____. 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.

88. _____. Headquarters, US Army Logistics Center. LOGC Regulation 10-1: Organization and Functions. Fort Lee. 1 January 1980.

89. _____. Office of the Deputy Commanding General, US Army Training and Doctrine Command. Standardization of Embedded Computer Resources. Letter. Fort Leavenworth: 30 July 1980.

90. _____. Headquarters, US Army Communications Research and Development Command. CORADCOM, Master Configuration Management Plan. Fort Monmouth: 11 January 1980.

91. US Department of the Army. Headquarters, US Army Training and Doctrine Command, General Donn A. Starry. Combat Service Support (CSS) Doctrine and Automation and Communications Architecture. Message. Fort Monroe: 23 September 1980.

92. _____. Project Manager, PATRIOT Missile System, DARCOM. Post-Deployment Software Support Implementation Plan. Redstone Arsenal: January 1979.

93. _____. Project Manager, Missile Minder/Air Defense Tactical Data Systems (MM/ADTDS), CORADCOM. AN/TSQ-73 Post-Deployment Management Plan. 2nd Revision. Redstone Arsenal: 25 June 1979.

94. _____. US Army Military Personnel Center. MILPERCEN Supplement 1 to AR 10-5: Organization and Functions. Alexandria: 1 August 1979.

95. _____. Special Study Group. Review of Army Analysis: Volume I; Main Report and Volume II; Appendixes C-M. Washington, DC: April 1979.

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. (Source: Office of the Assistant Secretary of the Army (RDA), Memorandum for Deputy Chief of Staff for Research, Development and Acquisition, 1 July 1980.) (Note: For purposes of this study, software only systems are included as BAS.)

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 Support Element (CDSE)--An element, in the Combat Developer organization, within which the PDSS functions for which the parent CD organization is responsible are performed. These PDSS functions may range for those associated with a single BAS to those required for all BAS within a BFA. A CDSE is based at the TRADOC center or school having proponency for the BAS and/or BFA supported by the CDSE. The size and composition of each CDSE is tailored to the needs of the parent CD organization. A CDSE does not have the benefit of a collocated MD PDSS Center whereas a CDSF does.

Combat Developer PDSS Forward Support Team (CDFST)--An element established on a permanent or temporary basis within the CD organization. The purpose of a CDFST is to maintain liaison with and provide PDSS guidance and support to users of BAS in the respective BFA. As appropriate, a CDFST may be assigned or attached to a specific user organization for a specified period of continuous duty; or may visit or make contact with the user organizations on an ad hoc or periodic basis as required. In any case, the CDFST will possess or have access to communication capabilities allowing rapid and complete interchange of necessary information with its home CDSF under essentially all forseeable circumstances.

Combat Developer PDSS Liasion 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 Developer PDSS Staff Element--A staff element within a Combat Developer organization responsible for PDSS-related actions of a management or an administrative nature as opposed to actions pertaining directly to substantive changes in BAS which are generally handled within a CDSF or CDSE.

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.

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.

Computer Firmware--Programs or instructions that are stored in read-only memory; firmware is software in unalterable form. Firmware is software regardless of the media on which it is stored.

Computer Software--A combination of associated computer programs, documentation, and computer data required to command the computer equipment to perform computational or control functions.

Configuration--The functional and physical characteristics of materiel, as described in technical documents and achieved in a product.

Configuration (Change) Control Board (CCB)--A board composed of representatives from program/project functional areas such as engineering, configuration management, procurement, production, test and logistic support, training activities and using/supporting organizations. This board approves or disapproves proposed change requests with each member recording his organization's official position as regards the CCB Chairman's decision. The program/project manager is normally the board chairman and he makes the final decision on all changes unless otherwise directed by command policy. The board issues a directive to implement its decision.

Configuration Identification--Documents which identify and define the configuration baseline characteristics of an item.

Configuration Item (CI)--An aggregation of hardware/software, or any of its discrete portions, which statisfies an end-use function and is designated by the Government for configuration management. CIs may vary widely in complexity, size, and type, from an aircraft, electronic, or ship system to a test meter or round of ammunition. During development and initial production, CIs are only those specification items that are referenced directly in the contract (or an equivalent in-house agreement). During the operation and maintenance period, any repairable item designated for separate procurement is a CI (DOD Directive 5010.19).

Configuration Management (CM)--A discipline applying technical and administrative direction and surveillance to (1) identify and document the functional and physical characteristics of a configuration item, (2) control changes to those characteristics, and (3) record and report change processing and implementation status. It includes configuration identification, control, status accounting and audits.

Embedded Computer Resources (ECR)--Computer resources dedicated to and essential to the performance of the Army BAS mission when physically incorporated in the system or when separated selection, acquisition, and/or management of the computer resources would not be feasible, or when the computer resources are integral to the BAS from a design, procurement and operations viewpoint.

Engineering Change Proposal (ECP)--A term that includes both a proposed engineering change and the documentation by which the change is described and suggested.

Fielded Software--The software that is deployed in and with the tactical equipments.

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--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.

Interoperability--The capability of a system to receive and process intelligible information between or among other systems regardless of whether the systems perform the same battlefield function.

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.

Product Improvement Proposal (PIP)--A reconfiguration of an end item of Army or multi-Service materiel type-classified standard that is funded, managed, and completed as a single project. The term "PIP" is applied to the project from its start as a proposal through its completion.

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

Support--All the actions and procedures necessary to maintain and sustain a system in an operational condition acceptable to the Combat Developer.

Support Software--The software used to develop and maintain the fielded software.

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

ABS--Army Battlefield System

ADA--Air Defense Artillery

ADDS/MSE--Army Data Distribution System and Mobile Subscriber Equipment

ARRADCOM--US Army Armaments Research and Development Command

ARRCOM--US Army Armaments Readiness Command

ATACS--Army Tactical Communication Systems

AVRADCOM--US Army Aviation Research and Development Command

BAS--Battlefield Automated Systems

BCS--Battery Computer System

BFA--Battlefield Functional Area

C & E--Communications-Electronics

C & S--Concepts and Studies

CAC--US Army Combined Arms Center

CACDA--US Army Combined Arms Combat Development Activity

CCS^2--Command, Control, and Subordinate System

CD--Combat Developer

CC PDSS LNO--Combat Developer PDSS Liaison Office

CDFST--Combat Developer PDSS Forward Support Team

CDSE--Combat Developer Support Element

CDSF--Combat Development Support Facility

CDSM--Combat Development System Manager

CERCOM--US Army Communications and Electronics Readiness Command

CI/CPCI--Configuration Item/Computer Program Configuration Item

COMFAC--Communications Center

CORADCOM--US Army Communications Research and Development Command

PRECEDING PAGE BLANK-NOT FILMED

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

DDCD--Directorate of Doctrine and Combat Development

DMD--Digital Message Device

DTD--Directorate of Training Developments

EAC--Echelon Above Corps

ECP--Engineering Change Proposal

ERADCOM--US Army Electronic Research and Development Command

FATDS--Field Artillery Tactical Data Systems

FC--Force Control

FDS--Fire Direction System

FYDP--Five Year Defense Program

HQDA--Headquarters, Department of the Army

INSCOM--US Army Intelligence and Security Command

IOC--Initial Operating Capability

LOGCEN--US Army Logistics Center

MC--Maneuver Control

MD--Materiel Developer

MICOM--US Army Missile Command

MILPERCEN--US Army Military Personnel Center

MISD--Management Information System Directorate (Division)

MLRS--Multiple Launch Rocket System

ODCSLOG--Office of the Deputy Chief of Staff for Logistics

OMA--Operations and Maintenance Army

PARR--Program Analysis and Resource Review

PDSS--Post-Deployment Software Support

PII--Pershing II

POM--Program Objective Memorandum

PPBS--Planning, Programming, and Budgeting System

SAG--Study Advisory Group

SIDPERS--Standard Installation/Division Personnel System

SSC--US Army Soldier Support Center

TAC AU SW--Tactical Automatic Switches

TACSATCOM--Tactical Satellite Communications

TC4S--Telecommunications, Command and Control, and Computer Systems

TDS--Tactical Data Systems

TMDS--Test Measurement Diagnostic Systems

TRADOC--US Army Training and Doctrine Command

TSARCOM--US Army Troop Support and Aviation Readiness Command

TSM--TRADOC System Manager

TSSG--TACFIRE Software Support Center

USAADCEN--US Army Air Defense Center

USAADS--US Army Air Defense School

USACC--US Army Communications Command

USACSC--US Army Computer Systems Command

USAFACFS--US Army Field Artillery Center and Fort Sill

USAFAS--US Army Field Artillery School

USAICS--US Army Intelligence Center and School

USASC--US Army Signal Center

USASC & FG--US Army Signal Center and Fort Gordon

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), SHORAD C2, and IHAWK.

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	CATE-GORY	PROPONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
SIGMA (Phase I is designated Operations Control and Command Information System)	1	CAC	CORADCOM (FT. MONMOUTH)	CERCOM	FORT LEAVENWORTH	CORADCOM
PLRS Position Location Reporting System*	2	USASC	CORADCOM (FT. MONMOUTH)	CERCOM	FORT MONMOUTH	CORADCOM

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

Figure C-2. Force Level Control System

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

SYSTEM	CATE-GORY	PROPONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
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 METERO-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

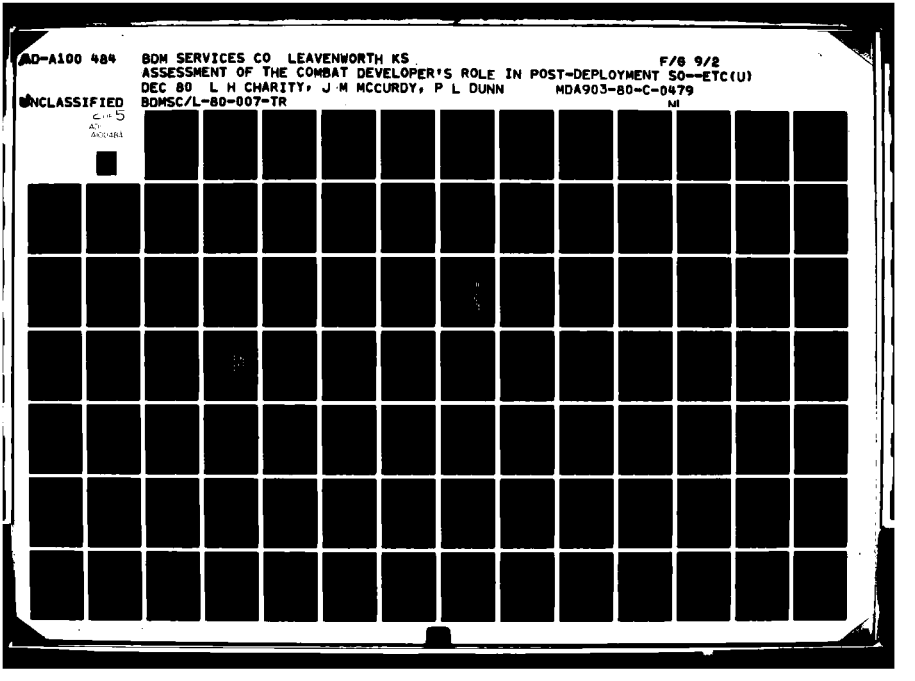
Figure C-5. (continued)

SY	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*)

AD-A100 484 BDM SERVICES CO LEAVENWORTH KS F/G 9/2
ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE IN POST-DEPLOYMENT SO--ETC(U)
DEC 80 L H CHARITY, J M MCCURDY, P L DUNN MDA903-80-C-0479
UNCLASSIFIED BDMSC/L-80-007-TR NL



SYSTEM	CATE-GORY	PROPONENT	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	PROPONENT	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	CATE-GORY	PROPONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
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/ DSCLOG	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	PROPONENT	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 SUBSYSTEM 1: CMM--CARGO MOVEMENT MODULE SUBSYSTEM 2: MPM--MOVE-MENT PLANNING MODULE	*	LOGCEN/ DCSLOG	LOGCEN/CSC	CSC	FT. LEE	CSC
PHOENIX	*	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	PROPONENT	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	PROPONENT	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	PROPONENT	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	CATE-GORY	PROPONENT	DEVELOPMENT COMMAND	READINESS COMMAND	POSS 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	PROPONENT	DEVELOPMENT COMMAND	READINESS COMMAND	PDSS CENTER	
					LOCATION	MANAGED BY
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	USAIMA (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
SINCGARS 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	PROPONENT	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/MSC-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	CATE-GORY	PROPONENT	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

DESCRIPTION OF THE BASELINE SYSTEM

CONTENTS

SECTION I. GENERAL

D-1. INTRODUCTION. This appendix contains a description of the current "Baseline System" within TRADOC for planning, managing, and performing combat development functions associated with providing post-deployment software support (PDSS) to battlefield automated systems (BAS). The major components of this Baseline System are illustrated in Figure D-1. The system is described in the paragraphs that follow in terms of its overall management and functional structure, its components and their organization, responsibilities and relationships, and associated resources.

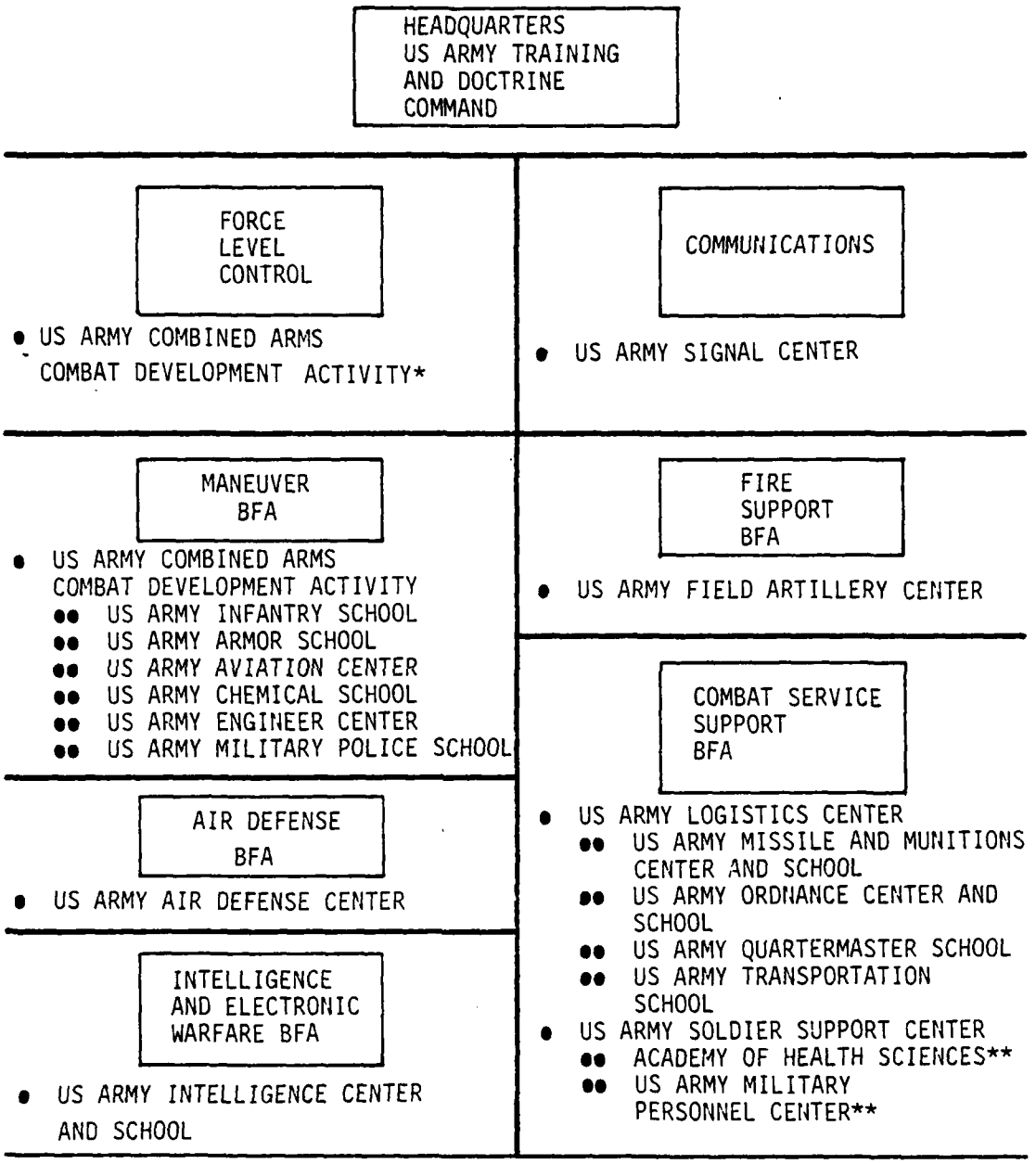
D-2. GENERAL SYSTEM DESCRIPTION.

a. Mission Assignment. As discussed in Chapter 2, within TRADOC, PDSS responsibilities are assigned and functions are conducted as part of the system development and life cycle management process under the TRADOC combat development mission. This TRADOC combat development mission, which is established by AR 10-41, is accomplished through TRADOC functional centers, service schools, and other TRADOC combat development activities in coordination with other Army commands and agencies. CACDA is the overall TRADOC proponent for PDSS. To the maximum extent possible, combat development programs, to include those involving PDSS, are decentralized, with programs, priorities, and resources passed to the appropriate TRADOC functional center or school.

b. Functional Area Concept. The TRADOC functional centers and schools are assigned responsibilities and tasks under TRADOC Reg. 10-41 in consonance with the battlefield functional area (BFA) concept. The seven functional areas currently recognized in this BFA concept are illustrated in Figure D-1. As noted in Chapter 2, within TRADOC, combat development proponency for each of the seven areas is assigned to a TRADOC integrating or functional center. The proponent center for each area is also identified in Figure D-1. As indicated, proponency for the Combat Service Support (CSS) BFA is divided between the Logistics Center (for logistics functions) and the Soldier Support Center (SSC) (for administration functions). In addition to the proponent centers, other associated centers or schools within the Maneuver and Combat Service Support BFA are also identified. Other TRADOC organizations, not shown in Figure D-1, which have key supporting roles in this Baseline System within their areas of responsibility, include the US Army Training Support Center and the TRADOC Combined Arms Test Agency.

c. The Current PDSS System. It is within this general organizational structure and functional area concept that TRADOC responsibilities and functions associated with the development and life cycle management of BAS, to include PDSS, are currently carried out. At Headquarters, TRADOC and at each of the proponent centers, one or more staff elements are assigned responsibility for PDSS functions for the BAS in their respective BFA. These organizational elements and their responsibilities, relationships, operating procedures, and associated resources, which comprise the current TRADOC PDSS Baseline System, are discussed in the sections that follow.

PRECEDING PAGE BLANK-NOT FILMED



• - PROPONENT •• - ASSOCIATED CENTER OR SCHOOL.
* - ALSO FUNCTIONS AS THE TRADOC PROPONENT FOR PDSS.
** - NON-TRADOC ORGANIZATION.

Figure D-1. Major components of the Baseline System

SECTION II. HQ TRADOC

D-3. ROLE. The role of HQ TRADOC in the Baseline PDSS System includes establishing operating policy, determining priorities, allocating resources, and providing the guidance, functional direction and control necessary to accomplish CD responsibilities for planning and providing PDSS for BAS. This role is carried out with support from CACDA, the TRADOC PDSS proponent. As noted previously, operational control over PDSS actions is decentralized to TRADOC functional centers and other combat development activities to the extent possible.

D-4. ORGANIZATION AND RESPONSIBILITIES. To fulfill the role outlined above, responsible staff elements at HQ TRADOC must be cognizant of major PDSS activities within the command. Organizational staff elements principally involved with this effort at present are shown in Figure D-2 and are discussed below.

a. Primary Responsibility. The Deputy Chief of Staff for Combat Developments (DCSCD) has primary staff responsibility for PDSS. This stems from his responsibility for monitoring all user aspects of materiel systems throughout their life cycle to ensure integration of doctrine, tactics, training, personnel, and logistics requirements. Within DCSCD, PDSS staff responsibility is assigned to the Battlefield Systems Integration Branch of the Telecommunications, Command and Control, and Computer Systems (TC4S) Directorate. This branch serves as the focal point for PDSS activity at HQ TRADOC with responsibility for coordinating the associated PDSS activity of other staff elements.

b. Coordinating Responsibility. 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.

D-5. RESOURCES. 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 as shown below.

HEADQUARTERS, US ARMY TRAINING AND DOCTRINE COMMAND

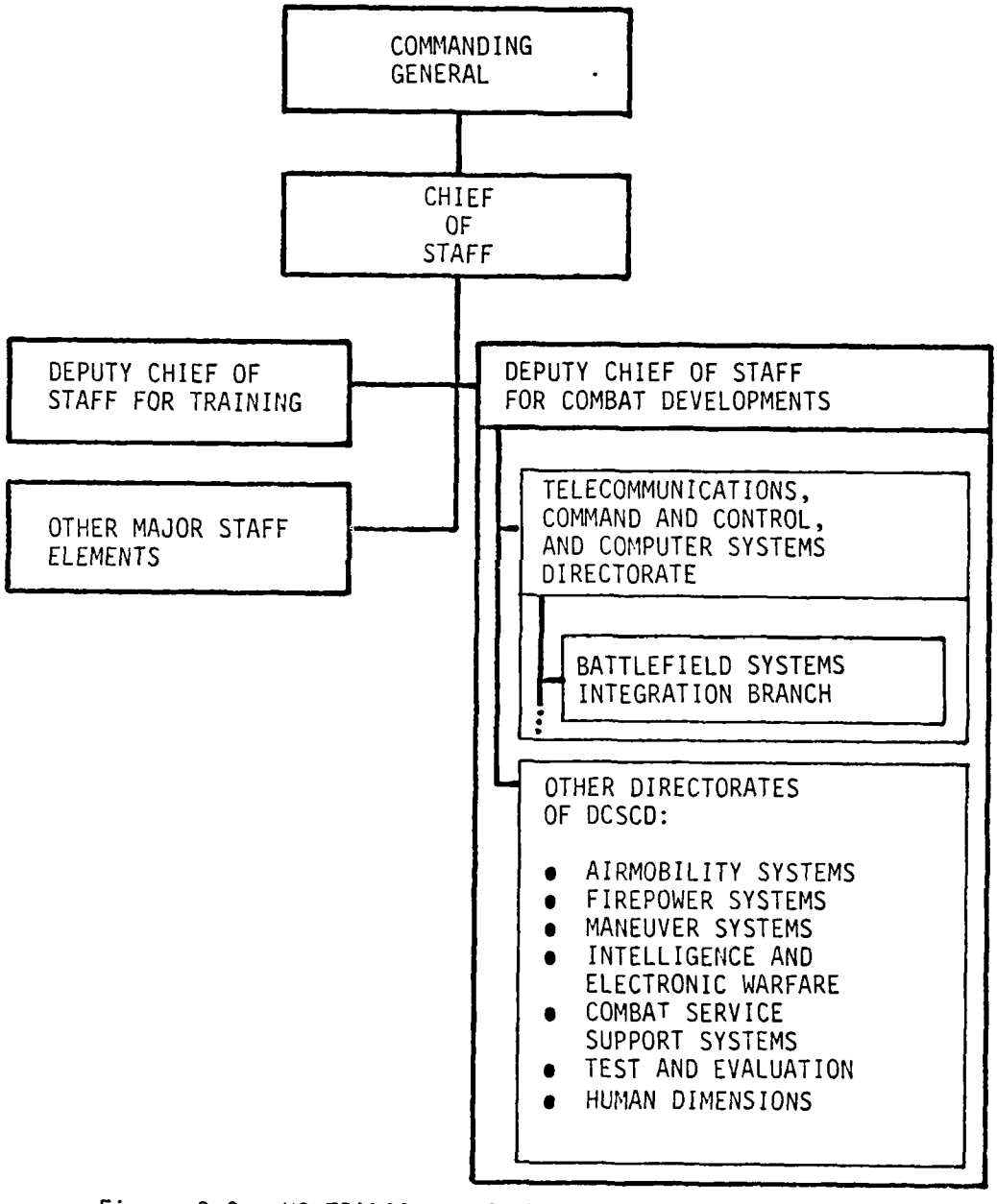


Figure D-2. HQ TRADOC staff elements with major responsibilities in the PDSS Baseline System

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		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		1	1	2	2	2	2
TOTAL	1	2	2	3	3	4	4

The reasons for this increase in personnel resource requirements are TRADOC's expanding role in PDSS and the projected increase in the number and complexity of BAS to be deployed during the years shown. This increase is required to fill the current void in HQ TRADOC staff dedicated to this functional area and provide a gradually increasing capability in consonance with TRADOC's overall involvement in PDSS.

SECTION III. FORCE LEVEL CONTROL FUNCTIONAL AREA

D-6. SYSTEM DESCRIPTION. The TRADOC Baseline System for providing PDSS to BAS in this functional area is centered in the Combined Arms Combat Development Activity (CACDA), the proponent for the Force Level Control Functional Area. The organizational structure of this Baseline System within CACDA is shown in Figure D-3. As illustrated in the figure, the Army C2/JINTACCS Division and the C2 Development Branch and JINTACCS Office of that division form the basic action-level elements of the system. In addition to its other responsibilities, the JINTACCS Office serves as the TRADOC focal point for PDSS matters.

D-7. RESPONSIBILITIES AND RELATIONSHIPS.

a. Responsibilities. TRADOC Reg. 10-41 assigns 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 Command, Control, Communications, and Intelligence (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 (TSM) does not exist at present for SIGMA, the principal system in the Force Level Control Functional Area. Therefore, functions that would normally be performed by a TSM must be accomplished by the Army C2/JINTACCS Division.

b. BAS to be Supported. The BAS to be supported in this functional area are shown in Figure D-4. While the 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 is the proponent and will have the greatest requirement for resources to provide PDSS for this system. As indicated in Figure D-4, 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.

c. Principal Interfaces. Interfaces must be established and maintained among the organizational elements associated with the Force Level Control Baseline PDSS System shown in Figure D-5. The Army C2/JINTACCS Division (CACDA) has primary Combat Developer responsibility for these interfaces. The establishment of a CORADCOM-managed PDSS center at Fort Leavenworth, as proposed in the PDSS Concept Plan for BAS, May 1980, will facilitate the close interface and interaction desirable between the Combat Developer and Materiel Developer organizations involved with systems in this functional area. The interface between the Army C2/JINTACCS Division and other TRADOC functional centers shown in the figure is to ensure that appropriate coordination and configuration management is exercised among the command and control systems within the Command, Control, and Subordinate System (CCS^2) concept.

PRECEDING PAGE BLANK-NOT FILMED

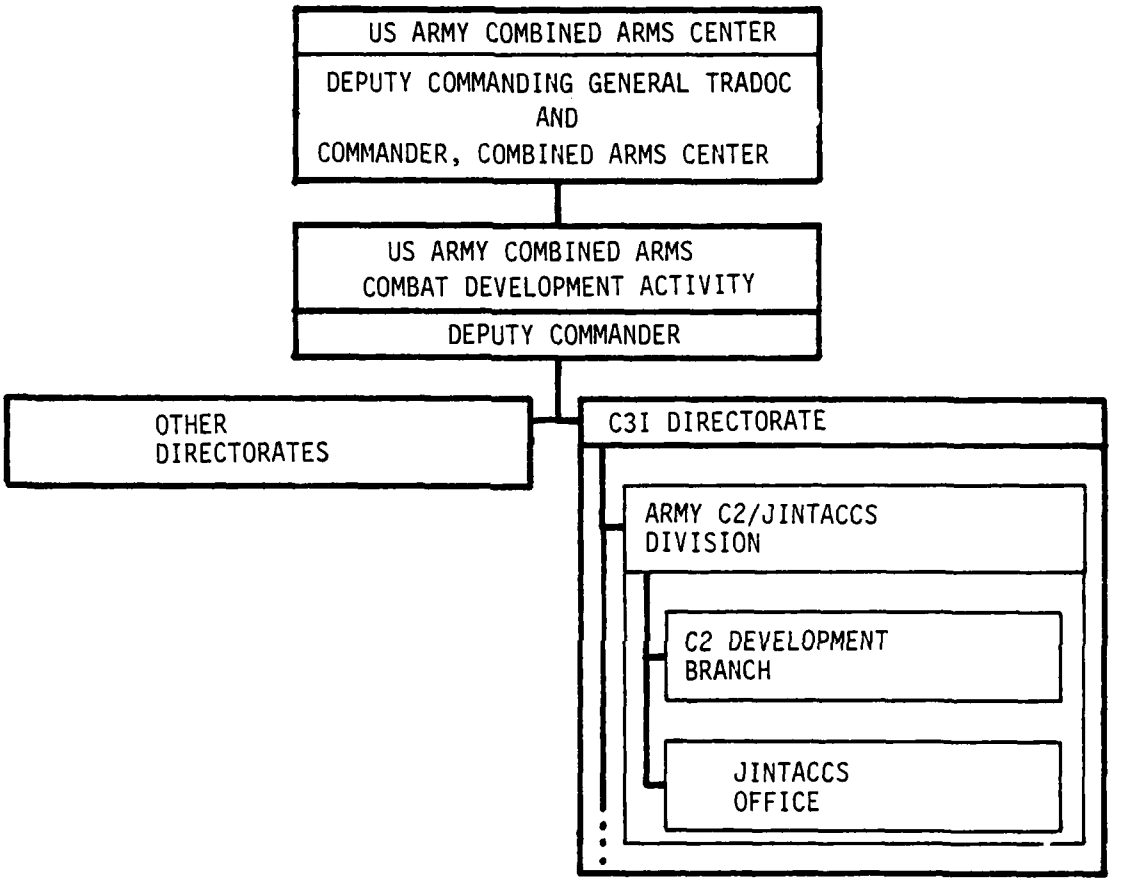


Figure D-3. Combined Arms Center elements with primary responsibilities in the PDSS Baseline System

FORCE LEVEL CONTROL

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
CAC	FORCE LEVEL AND MANEUVER CONTROL (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 D-4. Force Level Control Functional Area Category 1 and 2 BAS

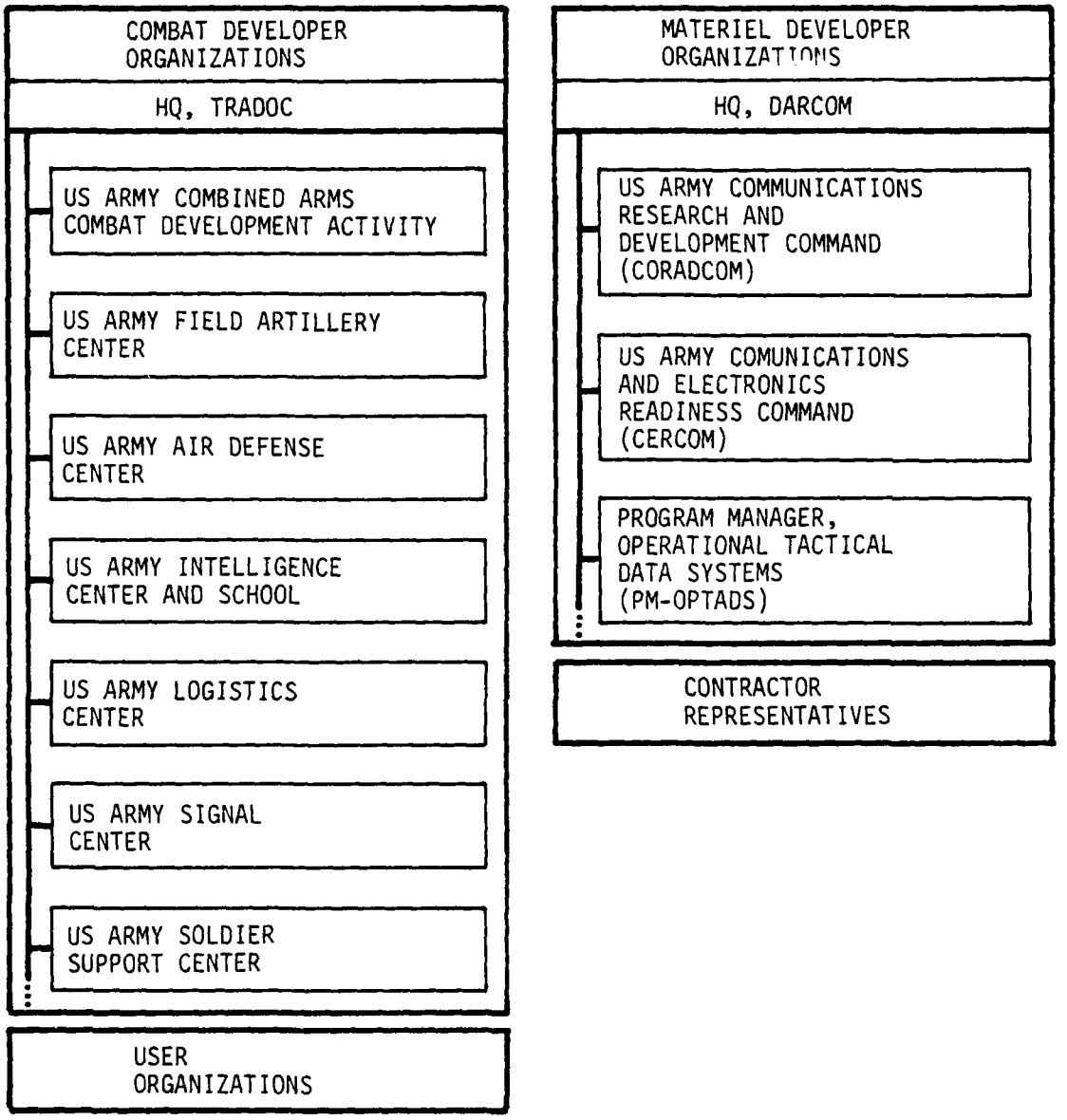


Figure D-5. Principal organizational elements that must interact in the Force Level Control PDSS Baseline System

D-8. SYSTEM CAPABILITIES.

a. PDSS Functions. Combat Developer PDSS responsibilities that were identified during Phase I of this study were used as a basis for describing and analyzing the current capabilities of the Force Level Control Baseline PDSS system. These responsibilities, grouped into six general task areas, are shown in Figure D-6. The six task areas are shown in the first column. The second column identifies PDSS responsibilities in each of these general areas. The third column describes the functions that must be performed to fulfill the responsibility shown in the second column. Information shown in the remaining columns is described below.

(1) Relationships of PDSS functions and the system life cycle. The fourth column contains an entry indicating when each PDSS function will/may have to be performed during the system life cycle. This entry has been developed for each function based on the discussion of the relationship of PDSS and the system life cycle, contained in Chapter 1, Paragraph 1-4.c. Specific entries are further explained by the legend in the figure.

(2) Relationship of PDSS functions and BAS in this BFA. Entries in the fifth column indicate the number of Category 1 and 2 BAS in this functional area deemed to currently require performance of each PDSS function. Entries in the sixth column indicate the number of BAS in this functional area for which each function is currently being performed adequately. In this case, the entries reflect the Phase I SIGMA system, OCCIS (also referred to as the Force Level and Maneuver Control System).

(3) Relationship of PDSS functions and organizational elements. Entries in the seventh and eighth columns identify organizations at the branch or separate office levels, that are currently involved in the PDSS effort within this functional area. The entries under each organizational element indicate whether or not that element is adequately performing each of the functions for which it is responsible. An "X" has been entered whenever an element is deemed to be satisfactorily fulfilling or participating in fulfilling the PDSS function, located to the left, for the relevant currently identified BAS whose stage in the life cycle requires performance of that function. A blank indicates that the function is not being adequately performed by the organizational element identified at the top of the column. An "N" entry indicates that the organizational element is not responsible for performing the PDSS function at this time.

b. Discussion of Capabilities. Review of Figure D-6 reveals that all required PDSS functions are being performed adequately at the present time for the BAS in this BFA. However, these requirements are projected to increase as the evolutionary development and extension of SIGMA continues. As this occurs, a corresponding increase in capability will be needed. This need is discussed further in Paragraph D-9.

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	C2 DEVELOPMENT BRANCH, ARMY C2/JINTACCS DIV	JINTACCS OFFICE, ARMY C2/JINTACCS DIV
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING PDSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	1	1	X	N
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	1	1	X	N
		3. PARTICIPATE IN DESIGNATION OF PDSS CENTER FOR EACH BAS.	1	1	1	X	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	1	1	X	N
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	1	1	X	N
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	1	1	X	N
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS^2 CONCEPT.	1	1	1	X	X
	3. MANAGE CO PDSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	1	1	X	N
		2. PLAN AND PROGRAM FOR RESOURCES.	1	1	1	X	N
		3. ACQUIRE AND MANAGE RESOURCES.	1	1	1	X	N
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	1	1	X	N
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	1	1	X	N
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	1	1	X	N
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	1	1	X	N
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	1	1	X	N
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	1	1	X	N
		2. EXAMINE BASIS FOR REQUIREMENT.	2	1	1	X	N
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	1	1	X	N
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	1	1	X	N
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS.	2	1	1	X	N
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	1	1	X	X

Figure D-6. Baseline requirements and capabilities--Force Level Control
(continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	C2 DEVELOPMENT BRANCH, ARMY C2/JINTACCS DIV	JINTACCS OFFICE, ARMY C2/JINTACCS DIV
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	1	1	X	N
		2. IDENTIFY USER/RESOURCE REQUIREMENT IMPACT.	2	1	1	X	N
		3. IDENTIFY TRAINING IMPACT.	2	1	1	X	N
		4. IDENTIFY LOGISTICAL IMPACT.	2	1	1	X	N
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	1	1	X	N
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	1	1	X	N
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	1	1	X	N
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	1	1	X	N
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	1	1	X	X
		3. PROVIDE REQUIREMENT TO MD.	2	1	1	X	N
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	1	1	X	N
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	1	1	X	N
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	1	1	X	N
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	1	1	X	N
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	1	1	X	N
		4. MONITOR DEVELOPMENT TEST (DT).	2	1	1	X	N
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	1	1	X	N
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	1	1	X	N
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	1	1	X	N
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	1	1	X	N
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	1	1	X	N
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	1	1	X	N
		2. FUNCTION AS USER SURROGATE.	3	1	1	X	N
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	1	1	X	N
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD	3	1	1	X	N

Figure D-6. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	C2 DEVELOPMENT BRANCH, ARMY C2/JINTACCS [illegible]	JINTACCS OFFICE, ARMY C2/JINTACCS 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	1	1	X	N
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	1	1	X	N
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	1	1	X	N
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	1	1	X	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	1	1	X	N
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	1	1	X	N
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	1	1	X	N
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	1	1	X	N
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	1	1	X	N
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	1	1	X	N
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	1	1	X	N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	1	1	X	N
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	1	1	X	N
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	1	1	X	N
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	1	1	X	N
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	1	1	X	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	1	1	X	N
	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	1	1	X	N

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

Figure D-6. (concluded)

D-9. RESOURCES. Currently authorized personnel resources appear to be adequate to handle PDSS requirements in the Force Level Control Functional Area at the present time. Further, the programmed increase in these authorizations also appears to be adequate to handle the anticipated increase in PDSS requirements in this functional area throughout the program years. These current and projected personnel authorizations are shown below.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	1	3	4	5	7	9	17
Civilian	1	1	1	2	3	3	4
TOTAL	2	4	5	7	10	12	21
Authorized							
Military	1	3	4	5	7	9	17
Civilian	1	1	1	2	3	3	4
TOTAL	2	4	5	7	10	12	21
Additional							
Needed	0	0	0	0	0	0	0

This increase in personnel requirements stems primarily from two general responsibilities. First is the evolutionary development of SIGMA and its planned extension to additional users worldwide. Second is the responsibility of this organization to function as the driver of the CCS^2 concept. This includes responsibility for the integration of all control systems and, specifically, the need to closely coordinate and manage the configuration of SIGMA and each of the evolving control systems in the CCS^2 concept throughout their life cycle.

SECTION IV. COMMUNICATIONS

D-10. SYSTEM DESCRIPTION. 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 D-7. 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 D-8 shows the structure of the total TRADOC Baseline PDSS System for the Communications Functional Area.

D-11. RESPONSIBILITIES AND RELATIONSHIPS.

a. Responsibilities. The responsibilities of the organizational elements, shown in Figure D-7, 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-electronics (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.

(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:

PRECEDING PAGE BLANK-NOT FILMED

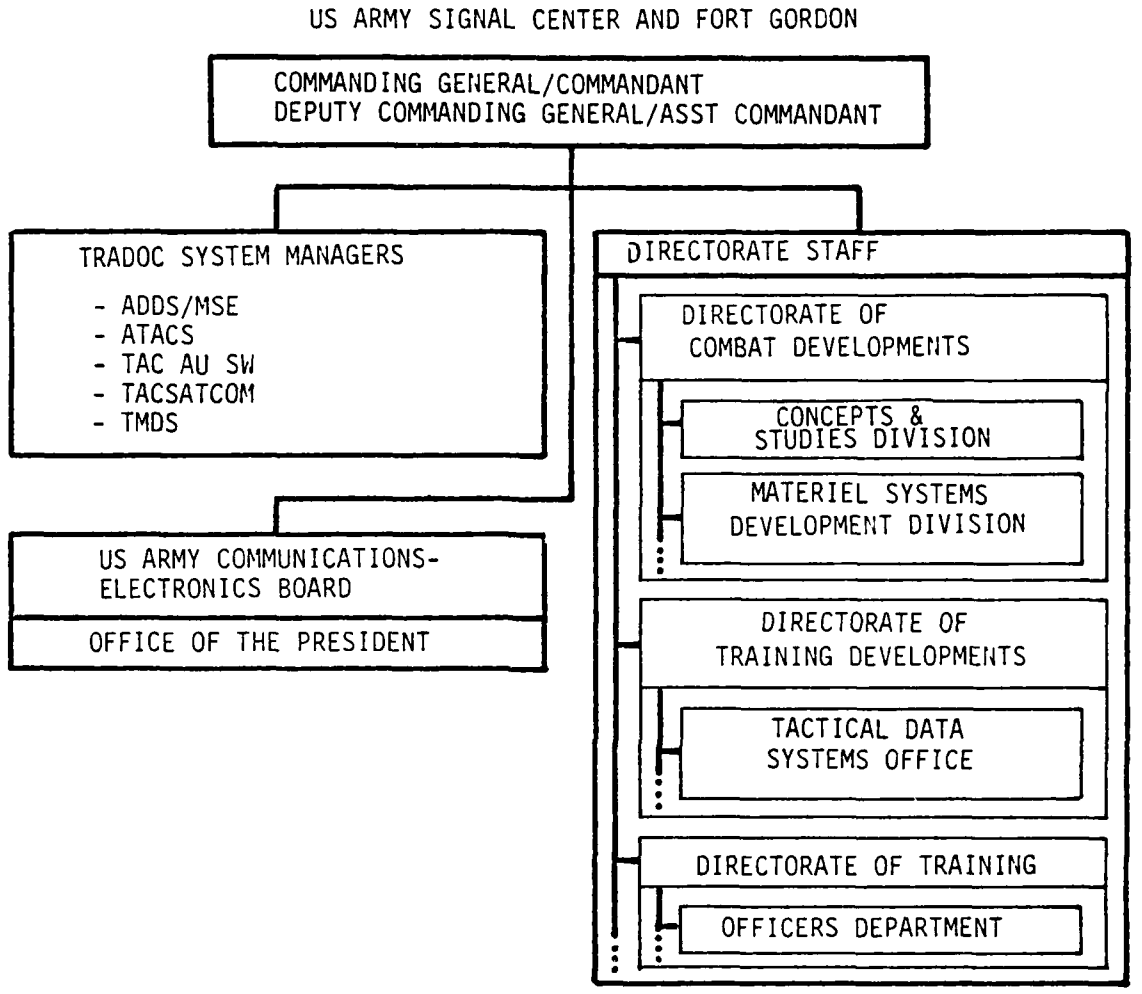


Figure D- 7 . USASC & FG elements with primary responsibilities in the Baseline PDSS System

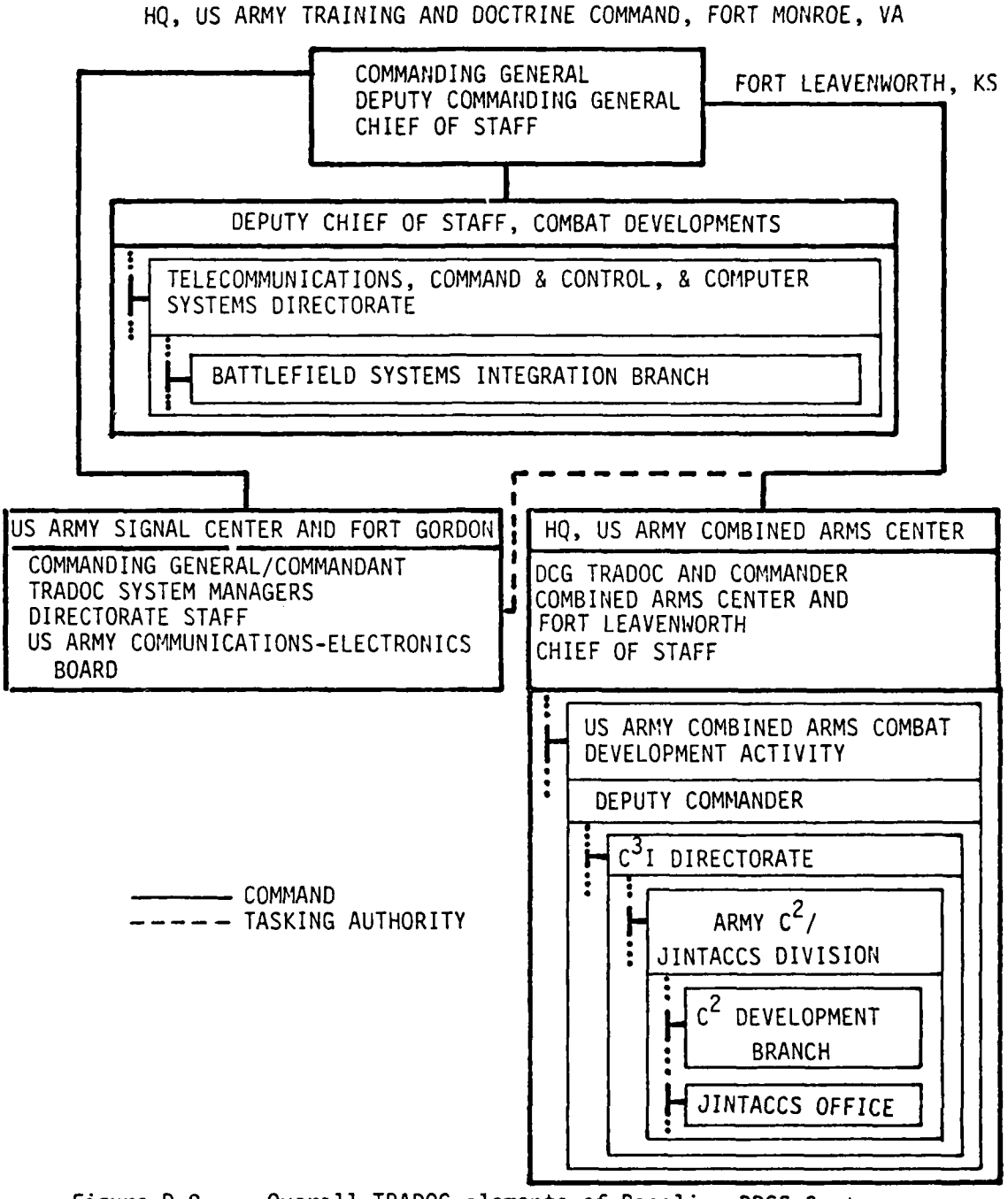


Figure D-8. Overall TRADOC elements of Baseline PDSS System for the Communications Functional Area

- 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 proponency
- 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) Tactical Data Systems Office, 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.

b. BAS to be Supported. The Category 1 and 2 BAS to be supported at USASC & FG are listed in Figure D-9. Included in parentheses behind each system name is the current life cycle status of that system.

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USASC	PLRS--POSITION LOCATION REPORTING SYSTEM (FULL SCALE DEVELOPMENT)
USASC	JTIDS--JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (FULL SCALE DEVELOPMENT)
USASC	PLRS/JTIDS HYBRID (VALIDATION)
USASC	DLDED--DIVISION LEVEL DATA ENTRY DEVICE (CONCEPTUAL)
USASC	AN/TTC-39--AUTOMATIC TELEPHONE 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 TELEPHONE CENTRAL OFFICE (FULLY OPERATIONAL)
USASC	AN/MSM-105--TEST AND AUTOMATIC REPAIR FACILITY (LOW RATE INITIAL PRODUCTION)

Figure D-9. Systems requiring PDSS--Communications Functional Area

c. Principal Interfaces. Figure D-10 shows the principal interfaces which occur between TRADOC organizational elements and other Army elements in fulfilling the PDSS responsibilities within the Communications Functional Area. Not shown in the figure are the many interfaces within DARCOM and between the other Army elements.

D-12. SYSTEM CAPABILITIES. During Phase I of this study, an essentially complete list of TRADOC PDSS responsibilities, based on all BFAs, was developed and refined. This list is organized around six major task areas, with each task area broken down into one or more major responsibilities and with each responsibility requiring one or more functions to be performed. This list is presented in Figure D-11. The fifth and sixth columns in the figure indicate respectively the number of BAS for which the function is currently required and the number for which the function is being satisfactorily performed. Also included in that figure is an indication of the capabilities of the current PDSS system to perform each of these functions. These capabilities are addressed both in terms of the BAS to be supported and in terms of the organizational elements providing the support. An "X" under an organizational element indicates that it is deemed to be satisfactorily fulfilling or participating in fulfilling the PDSS function to the left of the X for all BAS which require the function and which are the responsibility of that element. An "N" indicates that the function is not currently required for any BAS for which that element is responsible. A "blank" indicates that the function is required for at least one BAS for which it is not satisfactorily being performed.

D-13. RESOURCES. The USASC & FG currently does not have sufficient resources to perform all the required PDSS functions. As the table below indicates, they currently need seven additional people and will need 17 by FY 85.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	5	5	5	7	9	9	9
Civilian	2	2	2	7	8	8	8
TOTAL	7	7	7	14	17	17	17
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	5	5	5	7	9	9	9
Civilian	2	2	2	7	8	8	8
TOTAL	7	7	7	14	17	17	17

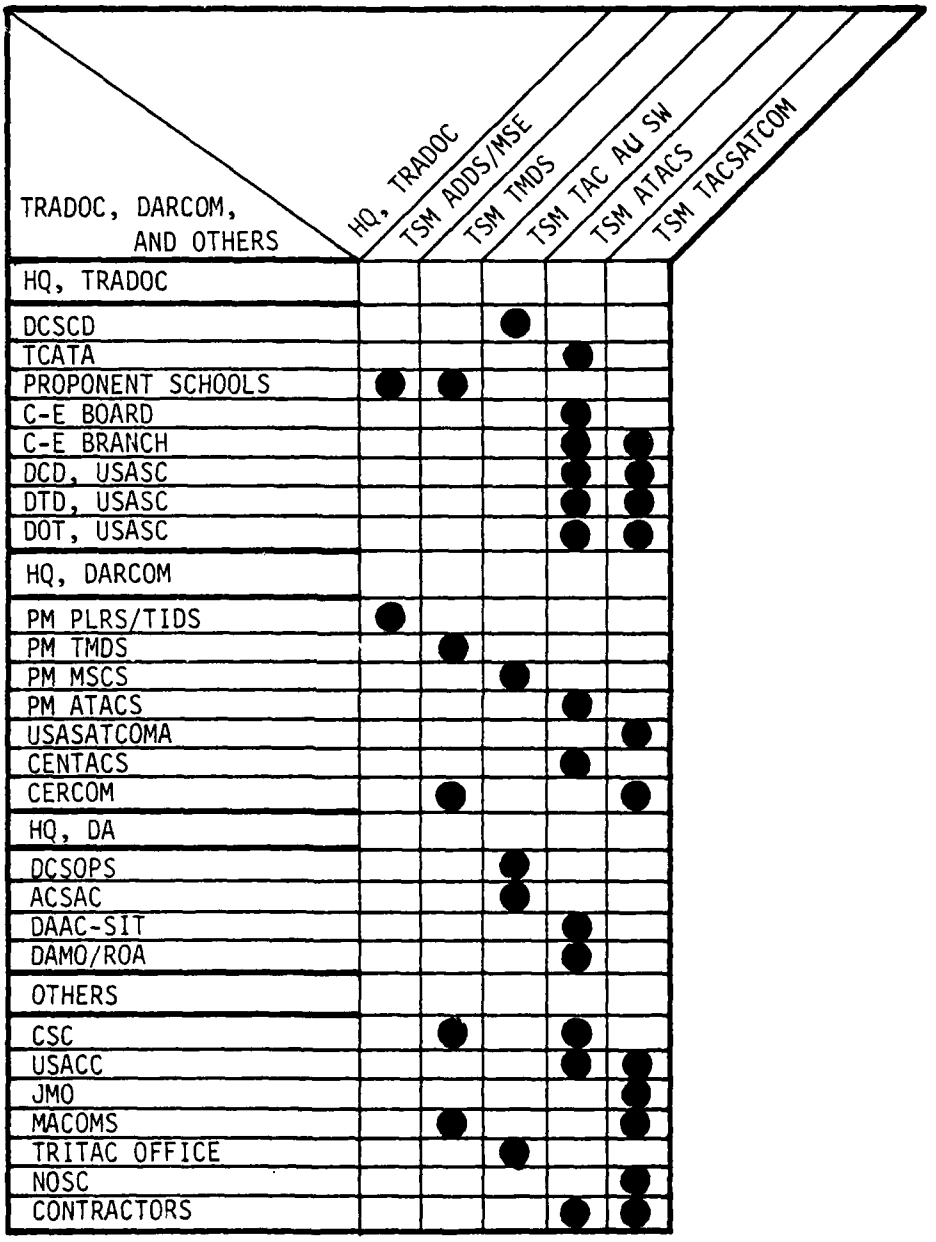


Figure D-10. Principal interfaces between TRADOC elements and other elements involved with PDSS in the Communications Functional Area

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NO. OF BAS REQUIRING FUNCTION	NO. OF BAS ADEQUATELY SUPPORTED	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING PDSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	10	0						
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	9	1						
		3. PARTICIPATE IN DESIGNATION OF PDSS CENTER FOR EACH BAS.	1	9	0						
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	9	6		X		X		
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	3	1	N		N			
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	3	1	N		N			
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[2] CONCEPT.	1	10	0						
	3. MANAGE CD PDSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	9	0						
		2. PLAN AND PROGRAM FOR RESOURCES.	1	9	0						
		3. ACQUIRE AND MANAGE RESOURCES.	1	2	0	N	N	N			
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	2	2	N	N	N	X	X	
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	2	2	N	N	N	X	X	
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	2	2	N	N	N	X	X	
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	2	2	N	N	N	X	X	
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	2	2	N	N	N	X	X	
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	5	3	N	X		X	X	
		2. EXAMINE BASIS FOR REQUIREMENT.	2	5	3	N	X		X	X	
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	5	3	N	X		X	X	
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	5	3	N	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	5	3	N	X		X	X	
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	5	3	N	X		X	X	

Figure D-11. Baseline requirements and capabilities--Communications Functional Area (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	NO. OF BAS REQUIRING FUNCTION	NO. OF BAS ADEQUATELY SUPPORTED	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	5	3	N	X		X	X	
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	5	3	N	X		X	X	
		3. IDENTIFY TRAINING IMPACT.	2	5	3	N	X		X	X	
		4. IDENTIFY LOGISTICAL IMPACT.	2	5	3	N	X		X	X	
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	5	3	N	X		X	X	
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	5	3	N	X		X	X	
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	5	3	N	X		X	X	
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	5	3	N	X		X		
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	5	3	N	X		X		
		3. PROVIDE REQUIREMENT TO MD.	2	5	3	N	X		X		
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	5	3	N	X		X		
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	5	3	N	X		X		
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	5	5	N	X	X	X		X
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	5	5	N	X	X	X		X
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	5	5	N	X	X	X		X
		4. MONITOR DEVELOPMENT TEST (DT).	2	5	5	N	X	X	X		X
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	5	5	N	X	X	X		X
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	5	5	N	X	X	X		X
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	5	5	N	X	X	X		X
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	5	5	N	X	X	X		X
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	2	2	N	N	N	X		
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE, TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	2	2	N	N	N	X		
		2. FUNCTION AS USER SURROGATE.	3	2	2	N	N	N	X		
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	2	2	N	N	N	X		
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	3	2	2	N	N	N	X		

Figure D-11. (continued)

TASK AREA	THADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NO. OF BAS REQUIRING FUNCTION	NO. OF BAS ADEQUATELY SUPPORTED	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD
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	5	2	Z					
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	5	2	Z					
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	5	2	Z					
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	3	2	Z		Z			
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	3	2	Z		Z			
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	3	2	Z		Z			
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	3	2	Z		Z			
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	2	2	Z	Z	Z			
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	10	9	X		X	X		
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	10	9	X		X	X		
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	2	0	Z	Z	Z			
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	2	0	Z	Z	Z			
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	10	1						
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	10	1						
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	10	1						
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	2	0	Z	Z	Z			
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	10	1						
	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	2	2	Z	Z	Z			

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

Figure D-11. (concluded)

SECTION V. FIRE SUPPORT BATTLEFIELD FUNCTIONAL AREA

D-14. SYSTEM DESCRIPTION. The focal point for providing post-deployment software support (PDSS) to the BAS within the Fire Support BFA is the US Army Field Artillery Center and Fort Sill (USAFACFS). The organizational structure of the Baseline System within USAFACFS which provides this PDSS is shown in Figure D-12. As shown there, the TRADOC action-level elements are the Tactical Data Systems Division, Combat Developments Directorate, US Army Field Artillery School (USAFAS); the Computer Test and Technical Support Division of US Army Field Artillery Board (USAFABD); and three TRADOC System Managers. Figure D-13 shows the structure of the total TRADOC Baseline PDSS System for the Fire Support BFA.

D-15. RESPONSIBILITIES AND RELATIONSHIPS.

a. Responsibilities. The responsibilities of the organizational elements shown in Figure D-12 are many and varied. In the paragraphs which follow only those responsibilities which are related to PDSS for BAS within the Fire Support BFA are discussed.

(1) Fort Sill. Included in the responsibilities of Fort Sill are the following:

- Provide personnel, equipment, and facilities in support of test and evaluation of military equipment systems and components conducted by US Government agencies
- Command and exercise staff supervision and provide assistance to Field Artillery School in the areas of troop support, forecasts of personnel and equipment requirements for future instructional and developmental uses, and coordinating the integration of the school support mission with all other units/activities
- Command and exercise staff supervision and provide assistance to the Field Artillery Board in the areas of troop support for ongoing developmental tests, and coordination of future requirements for personnel and equipment.

(2) Commanding General, USAFACFS. The Commanding General has the following responsibilities:

- Commands all elements of the US Army Field Artillery Center, Fort Sill
- Serves as the Commandant of the US Army Field Artillery School (USAFAS).

(3) US Army Field Artillery School (USAFAS). The PDSS related responsibilities of USAFAS include:

PRECEDING PAGE BLANK-NOT FILMED

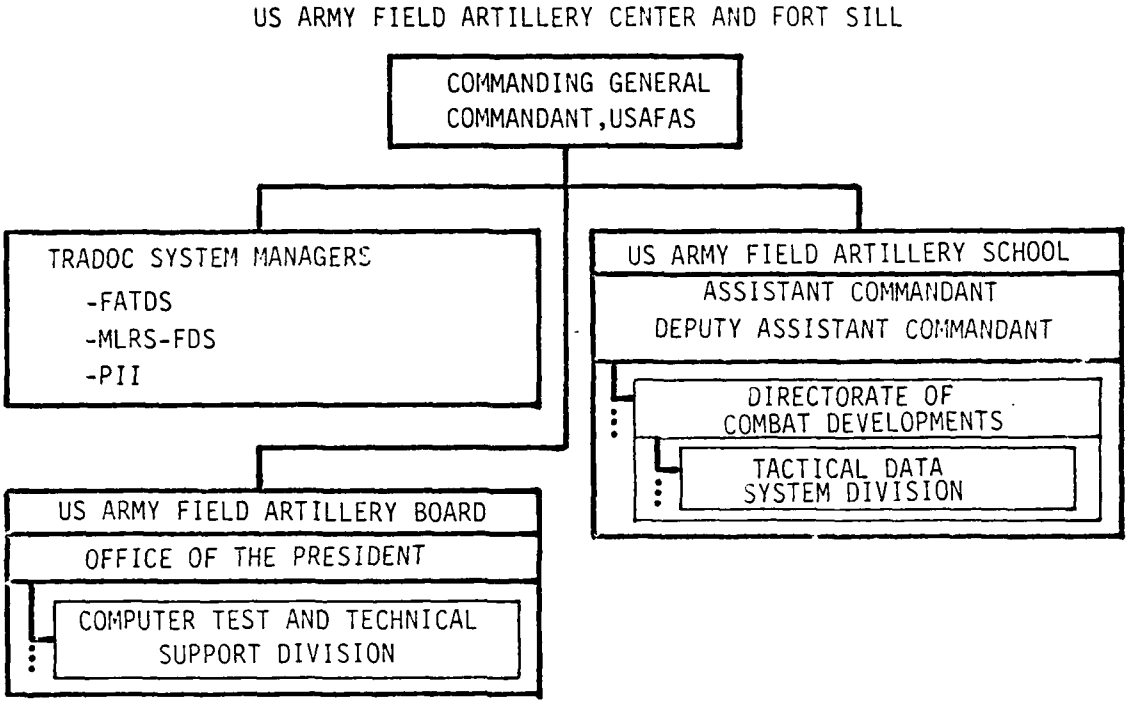


Figure D-12. USAFACFS elements with primary responsibilities in the Baseline PDSS System

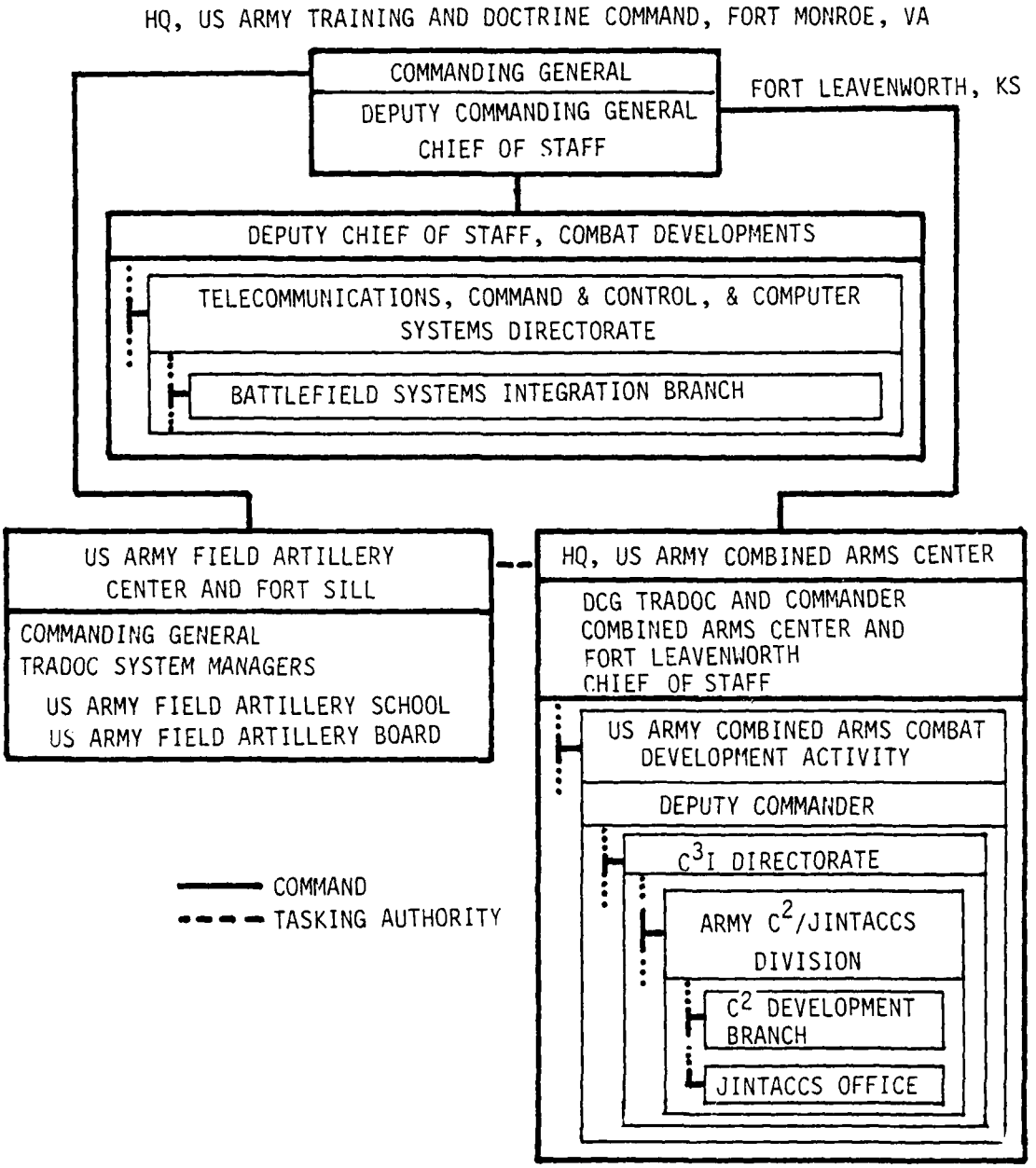


Figure D-13. Overall TRADOC elements of Baseline PDSS System for the Fire Support BFA

- 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

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

(4) 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.

(5) 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.

(6) 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.

(7) 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.

(8) 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 USAFACS are listed in Figure D-14. Included in parentheses behind each system name is the current life cycle status of that system.

c. Principal Interfaces. Figure D-15 shows the principal interfaces which occur between TRADOC organizational elements and other Army elements in fulfilling the PDSS responsibilities within the Fire Support BFA. Not shown in the figure are the many interfaces within DARCOM and between the non-TRADOC elements.

D-16. SYSTEM CAPABILITIES. During Phase I of this study, an essentially complete list of TRADOC PDSS responsibilities, based on all BFAs, was developed and refined. This list is organized around six major task areas, with each task area broken down into one or more major responsibilities and with each responsibility requiring one or more functions to be performed. This list is presented in Figure D-16. The fifth and sixth columns in the figure indicate, respectively, the number of BAS for which the function is currently required and the number for which the function is being satisfactorily performed. Also included in that figure is an indication of the capabilities of the current PDSS system to perform each of those functions. These capabilities are addressed both in terms of the BAS to be supported and in terms of the organiza-

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

Figure D-14. Category 1 and 2 systems requiring PDSS - Fire Support BFA

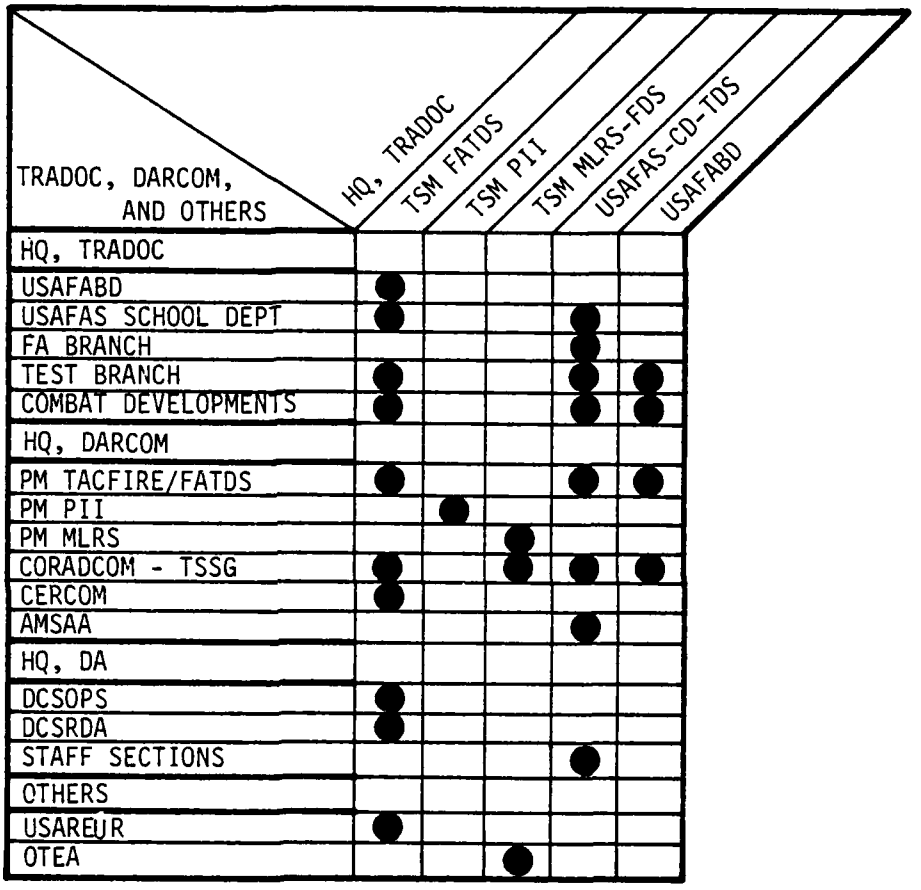


Figure D-15 Principal interfaces between TRADOC elements and other elements involved with PDSS in the Fire Support BFA

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NO. OF BAS REQUIRING FUNCTION	NO. OF BAS ADEQUATELY SUPPORTED	TDS-CD-USAFAS	USAFABD	TSM: FATDS	TSM PERSHING II
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING PDSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	5	0				
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	5	0				
		3. PARTICIPATE IN DESIGNATION OF PDSS CENTER FOR EACH BAS.	1	3	3	X	N	X	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	4	3	X	N	X	
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	1	1	X	N	N	N
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	1	1	X	N	X	N
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS² CONCEPT.	1	1	1	X	N	X	N
	3. MANAGE CD PDSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	3	3	X	X	X	X
		2. PLAN AND PROGRAM FOR RESOURCES.	1	3	3	X		X	X
		3. ACQUIRE AND MANAGE RESOURCES.	1	2	0				N
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	2	0				N
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	2	0				N
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	2	0				N
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	2	1	X		X	N
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	1	1	X	N		N
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	1	0		X		N
		2. EXAMINE BASIS FOR REQUIREMENT.	2	1	0		N		N
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	1	0		N		N
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	1	0		X		N
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS.	2	1	0				N
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	1	0				N

Figure D-16. Baseline requirements and capabilities--Fire Support BFA
(continued on next page)

TASK AREA	TRADOC RESPONSIBILITY:	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NO. OF BAS REQUIRING FUNCTION	NO. OF BAS ADEQUATELY SUPPORTED	TDS-CD-USAFAS	USAFABD	TSM FATDS	TSM PERSHING II
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	2	1		Z	Z	Z
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	2	1		Z		Z
		3. IDENTIFY TRAINING IMPACT.	2	2	2	Z	Z	X	Z
		4. IDENTIFY LOGISTICAL IMPACT.	2	2	1		Z		Z
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	2	2		Z	X	Z
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	2	1		Z		Z
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	2	1		Z		Z
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	2	2	X	Z	X	Z
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	2	2	X	Z	X	Z
		3. PROVIDE REQUIREMENT TO MD.	2	2	2	X	Z	Z	Z
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	2	2	X	Z	X	Z
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	2	2	X	Z	X	Z
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	2	1		X		Z
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	2	2	X	X	X	Z
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	1	1	Z	X	Z	Z
		4. MONITOR DEVELOPMENT TEST (DT).	2	2	2	X	X	X	Z
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	2	2	Z	X	Z	Z
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	2	2	X	X	X	Z
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	2	2	X	X	X	Z
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	2	2	Z	X	Z	Z
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	1	1	X	Z	X	Z
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	1	1		Z		Z
		2. FUNCTION AS USER SURROGATE.	3	1	1	X	Z	X	Z
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	1	1	X	Z	X	Z
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD	3	1	1	X	Z	X	Z

Figure D-16. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NO. OF BAS REQUIRING FUNCTION	NO. OF BAS ADEQUATELY SUPPORTED	TDS-CD-USAFAS	USAFABD	TSM FATDS	TSM PERSHING II
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	2	2	N	N	X	N
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	2	2	N	N	X	N
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	2	2	N	N	X	N
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	1	1	N	N	X	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	2	2	N	N	X	N
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	2	0	N	N		N
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	2	0	N	N		N
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	2	2	N	X	X	N
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	3	2	N	N	X	X
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	3	2	X	N	X	X
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	3	1		N		N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	2	1		N		N
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	3	2	X	N	X	
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	3	0		N		
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	3	2	X	N	X	
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	2	2	X	N	X	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	3	2	X	N		
	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	2	2	X	N	X	N

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

Figure D-16. (concluded)

tional elements providing the support. An "X" under an organizational element indicates that it is deemed to be satisfactorily fulfilling or participating in fulfilling the PDSS function to the left of the X for all BAS which require the function and which are the responsibility of that element. An "N" indicates that the function is not currently required for any BAS for which that element is responsible. A "blank" indicates that the function is required for at least one BAS for which it is not satisfactorily being performed.

D-17. RESOURCES. USAFAS, CD has organized a TDS Division to handle PDSS requirements for the Fire Support BFA. The TDS Division has an approved TDA for 25 spaces with authorized fill to 17 spaces. It is currently operating with only 11 spaces filled. Listed below are the projected personnel requirements for the next seven fiscal years.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	17	17	17	17	17	17	17
Civilian	8	8	12	12	12	12	12
TOTAL	25	25	29	29	29	29	29
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	-4	-4	-4	-4	-4	-4
Civilian	4	4	8	8	8	8	8
TOTAL	0	0	4	4	4	4	4

In order to fulfill its PDSS responsibilities in testing TACFIRE master tapes, the USAFABD will require the following personnel.

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

SECTION VI. AIR DEFENSE BFA

D-18. SYSTEM DESCRIPTION. 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, USAADS. 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 D-17 delineates the organizational structure of the TRADOC elements of the Baseline PDSS System at Fort Bliss. Figure D-18 shows the structure of the total TRADOC Baseline PDSS System for the Air Defense BFA.

D-19. RESPONSIBILITIES AND RELATIONSHIPS. This paragraph addresses responsibilities, BAS involved, and relationships resulting among the elements within the TRADOC Baseline System for providing PDSS in the Air Defense BFA.

a. Responsibilities. Overall responsibilities of USAADS are defined in USAADS Reg. 10-1. Within USAADS, responsibility for representing the User of Air Defense systems, and for developing the detailed doctrine, tactics, and system requirements to be implemented in (or considered for implementation in) BAS software, is focused in the Directorate of Combat Developments (DCD). Responsibilities for developing training materials, devices, and courses of instruction in Air Defense are focused in the Directorate of Training Developments (DTD). Responsibilities related to the development, coordination and review of broad air defense doctrine rest with the Directorate of Training and Doctrine, USAADS. Responsibilities relating to software and PDSS fall primarily upon the Combat Systems Software Division (CSSD) of DCD, and for training devices, the Software Branch, DTD, as indicated in Figure D-17, above. Based on USAADS Reg. 10-1 and additional information, Figure D-19 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. During Phase I of this study, a relatively detailed table of TRADOC responsibilities and functions was developed to define comprehensively those principal functions which fall within the purview of the PDSS process. That table has been refined and will be used as a basis for assessing PDSS system capabilities, in Paragraph D-20, below. Of the 64 principal PDSS functions so identified, some pertain to early planning for PDSS, some to a later stage before fielding of a BAS, and some to the stage after fielding. Therefore, it should be noted, the PDSS functions relevant to a particular BAS depend on the stage in its life cycle which a BAS occupies at any particular time.

b. BAS Addressed. 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 D-20.

PRECEDING PAGE BLANK-NOT FILMED

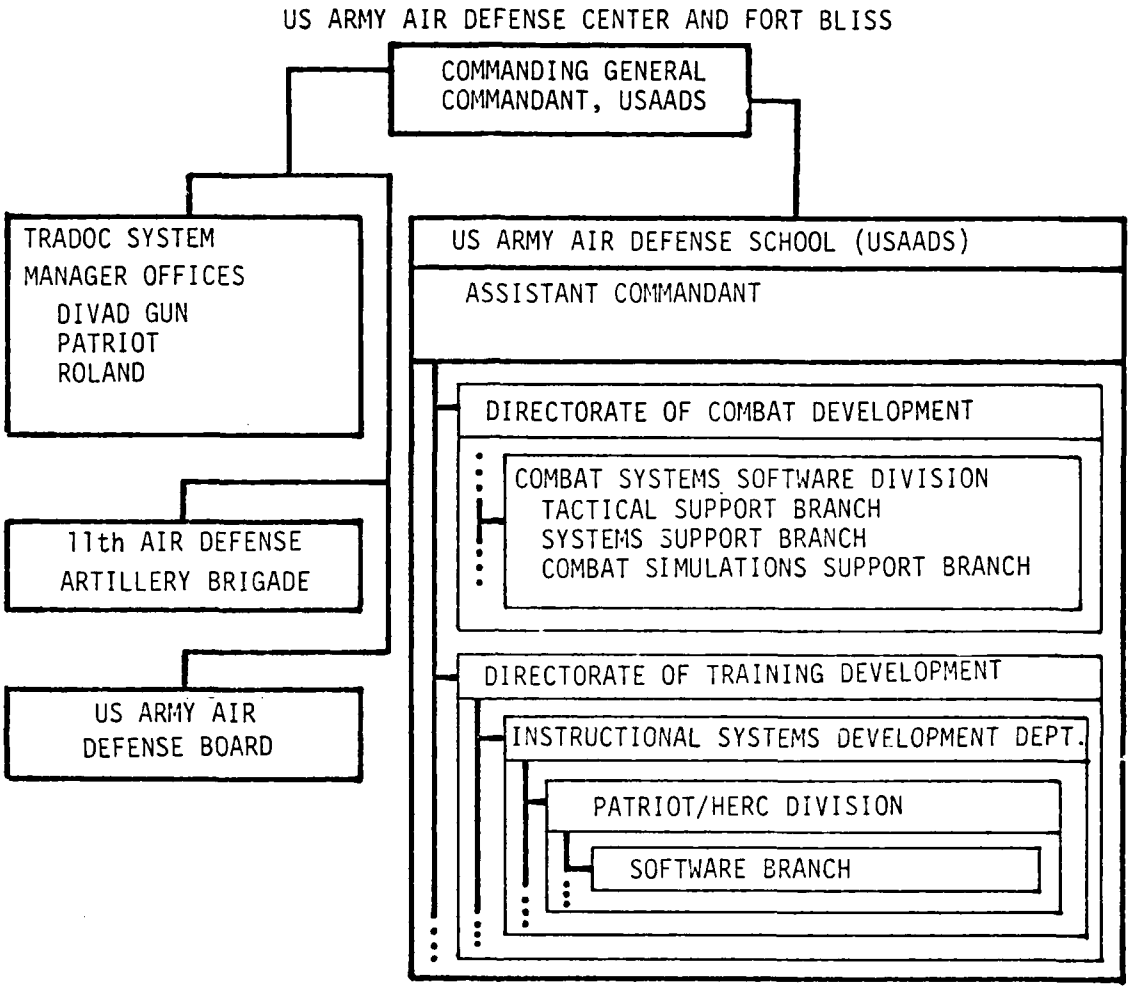


Figure D-17. TRADOC elements of Baseline PDSS System at Ft. Bliss

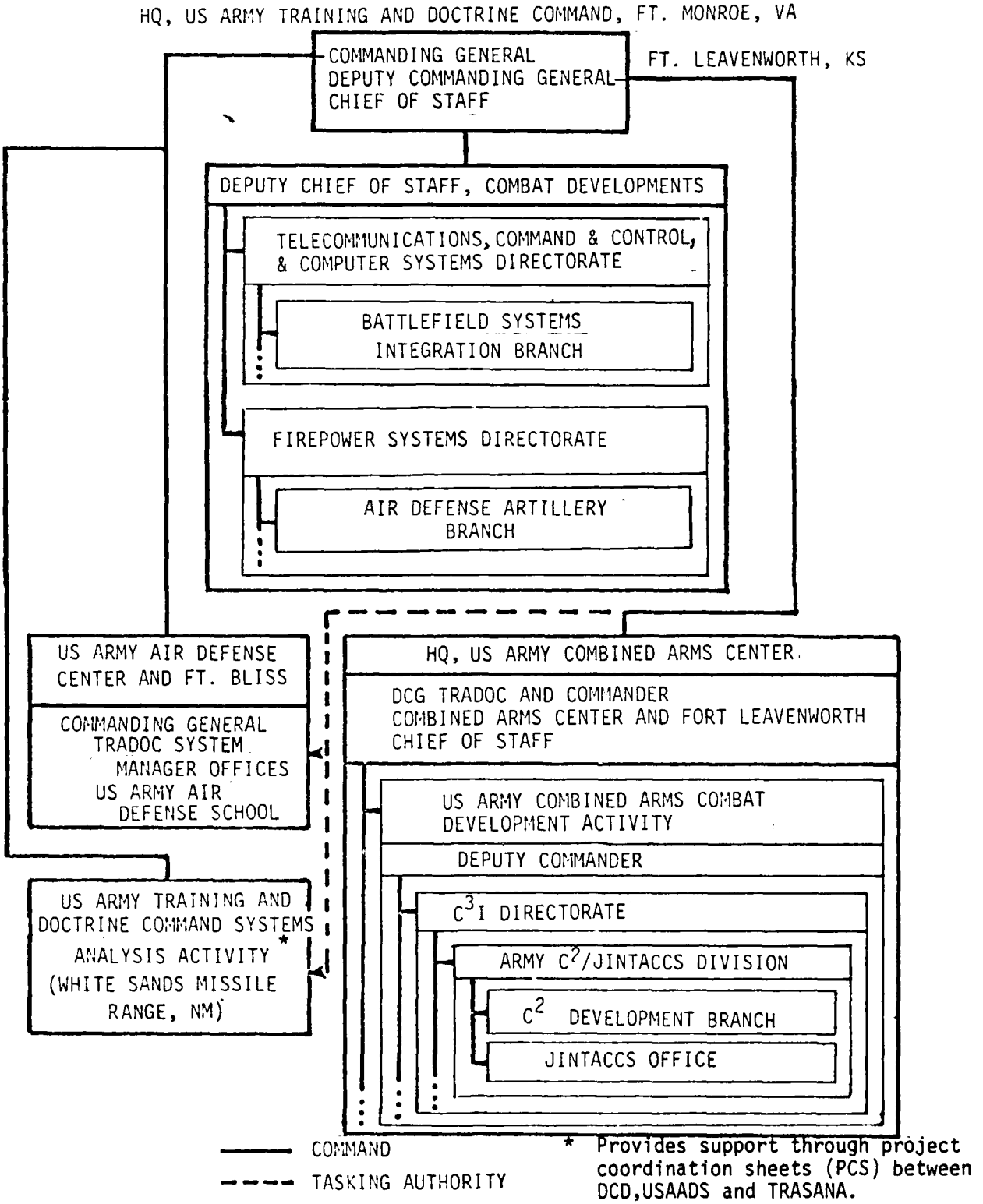


Figure D-18. Overall TRADOC elements of Baseline PDSS System for Air Defense BFA

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 D-19. 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.

D-19. (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 D-20. Systems requiring PDSS--Air Defense BFA

c. Principal Interfaces. As indicated in Figures D-17, and 18, above, and Figure D-21, 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. 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 D-22.

D-20. SYSTEM CAPABILITIES. An assessment of the capabilities of the Baseline PDSS System for the Air Defense BFA is presented in Figure D-23. This figure summarizes the results of considering each of the seven specific BAS to be supported, plus an "other" category, against each of 64 PDSS functions. The assessment involves a judgement as to whether the Baseline PDSS System is now adequately fulfilling a given function now required by a given BAS. Such a judgement was made for each function currently required by each BAS. Figure D-23 begins at the left with six broad task areas: management, analysis, system modification, system (BAS) testing, field support, and other. Each task area is broken down into one to four major TRADOC responsibilities, each of which is broken down in the third column into one to nine more detailed PDSS functions. Immediately to the right of these functions is a column designating in which of three stages of the life cycle of the BAS each PDSS function must be initiated. Next, two columns of numbers appear. In the first of these columns, numbers indicate how many of the seven BAS plus one "other" were deemed to currently require performance of the PDSS function at left. In the second of these columns numbers indicate for how many of those in the first column the PDSS function at left is deemed to be adequately performed now by the Baseline PDSS System. Next appear three columns headed by the identity of existing TRADOC elements which perform PDSS functions. An "X" in these columns indicates that a needed function is adequately performed by a given element. A "blank" indicates that the organization is responsible but is not performing this function adequately for one or more of the BAS currently needing it. An "N" indicates the organization is not now responsible for this function. Thus, Figure D-23 provides a measure of the extent to which the Baseline PDSS System in the Air Defense BFA is deemed to be currently fulfilling perceived PDSS responsibilities.

D-21. SYSTEM RESOURCE REQUIREMENTS. Resources relating to the Baseline PDSS System for the Air Defense BFA need to be viewed from two very different perspectives. The first perspective involves the resources currently on hand and committed, in whole or in part, to performing the PDSS functions and responsibilities now identified. This current set of resources provides the PDSS Baseline System capabilities discussed in the preceding paragraph, where it was shown that current capabilites fall far short of currently perceived needs. The resources currently on hand do not represent resource requirements; they represent only those resources which have been acquired, appropriated, or borrowed. The second perspective from which resources relating to the Baseline need to be viewed involves the currently perceived requirement for resources to fulfill Baseline functions and responsibilities in PDSS. Resources are addressed from each of these perspectives, respectively, in the two paragraphs below.

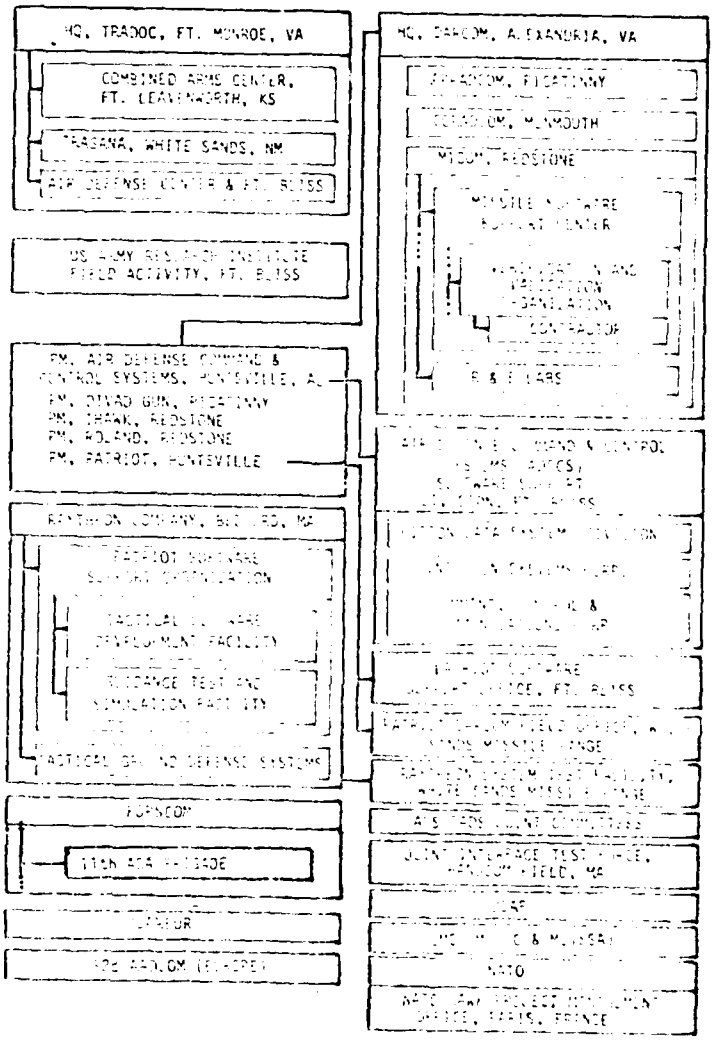


Figure D-21. Principal TRADOC and other elements in Baseline PDSS System for Air Defense BFA

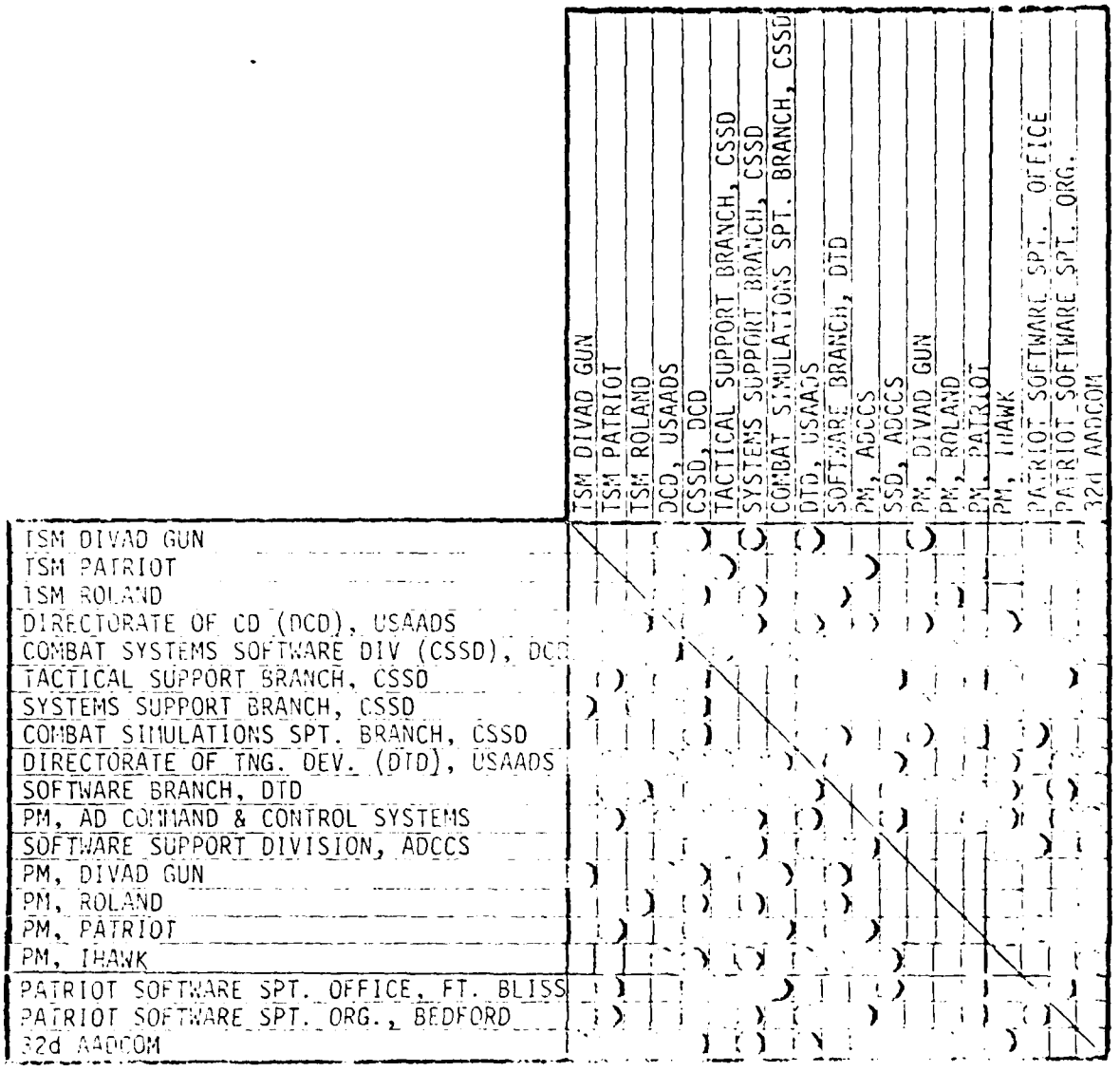


Figure D-22. Principal interfaces, Baseline PDSS System, ADA BFA

TASK AREA	TRADOC RESPONSIBILITY:	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION.	NUMBER OF SYSTEMS BEING ADEQUATELY SUPPORTED	COMBAT SYSTEMS SOFTWARE DIVISION (CSSD)	DIRECTORATE OF TRAINING DEVELOPMENT (DTD)[e]	TSMS (PATRIOT, DIVAD, ROLAND)
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	7	2			X
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	7	2		X	X
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	7	4	X	X	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	7	2		X	X
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	6	0		X	X
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	6	2		X	X
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[2] CONCEPT.	1	2	1		X	X
	3. MANAGE CO POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	8	3			X
		2. PLAN AND PROGRAM FOR RESOURCES.	1	7	2			X
		3. ACQUIRE AND MANAGE RESOURCES.	1	7	0			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	3	0			X
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	3	0			X
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	3	1			X
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	2	0			X
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	3	1			X
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	6	4			X
		2. EXAMINE BASIS FOR REQUIREMENT.	2	5	0			X
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	5	0			X
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	5	0			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	8	0			X
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	8	0			X

Figure D-23. Baseline requirements and capabilities--Air Defense BFA
(continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED[a]	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF SYSTEMS BEING ADEQUATELY SUPPORTED	COMBAT SYSTEMS SOFTWARE DIVISION (CSSD)	DIRECTORATE OF TRAINING DEVELOPMENT (DTD)	TSMS (PATRIOT, DIVAD, ROLAND)
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	7	0			Z
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	7	0			Z
		3. IDENTIFY TRAINING IMPACT.	2	7	0			Z
		4. IDENTIFY LOGISTICAL IMPACT.	2	7	0			Z
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	7	0			Z
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	7	0			Z
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	7	0			
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	7	0			Z
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	7	0			Z
		3. PROVIDE REQUIREMENT TO MD.	2	7	4			X[b,c]
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	7	4			X[b,c]
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	7	0			X[b,c]
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	7	0			Z
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	7	0			Z
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	7	0			Z
		4. MONITOR DEVELOPMENT TEST (DT).	2	7	0			Z
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	7	0			Z
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	7	0			Z
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	5	0			Z
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	5	0			Z
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	2	8	8	X[c]	X[c]	Z
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	2	3	0			Z
		2. FUNCTION AS USER SURROGATE.	2	3	0			Z
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	2	8	0			Z
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	2	3	1			Z

Figure D-23. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF SYSTEMS BEING ADEQUATELY SUPPORTED	COMBAT SYSTEMS SOFTWARE DIVISION (CSSD)	DIRECTORATE OF TRAINING DEVELOPMENT (DTD)	TSMS (PATRIOT, DIVAD, ROLAND)
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	8	0			X
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	8	0			Z
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	8	0			Z
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	8	0			Z
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	8	0			Z
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	5	0			Z
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	5	0			Z
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	3	0			Z
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	3	0			Z
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	8	0			X
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	2	8	0			X
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	2	8	0			Z
	3. SUPPORT TO CRISIS/WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	7	0			Z
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	8	0			Z
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	6	2			Z
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	7	0			Z
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	8	0			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	7	0			Z

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

a - FOR TRAINING SYSTEMS, SIMULATORS AND DEVICES ONLY
b - DURING DEVELOPMENT PRIOR TO FIELDING
c - REQUIRED IN ANALYSIS PHASE

Figure D-23. (concluded)

a. Current Resources. TRADOC resources currently on hand and committed or otherwise available, in whole or in part, for PDSS functions or responsibilities in the Air Defense BFA are very limited. Accordingly, the following estimates of current USAADS PDSS resources are provided here for completeness of the presentation:

PERSONNEL (total complement; only a part is available for PDSS alone):
Combat Systems Software Division,
Directorate of Combat Development -- Military 5
Civilian 3 1/2

Software Branch, Patriot/Hercules Division,
Instructional Systems Development Dept,
Directorate of Training Development -- Civilian 7

Other elements of USAADS -- Military and Civilian 3

FACILITIES:
Combat Systems Software Division, DCD
Office areas: about 1500 sq ft
Simulator, computer, and experimental areas: about 3000 sq ft

Software Branch, DTD
Office areas: ?
Other areas: ?

EQUIPMENT:
CSSD:
Secure terminal to TRADOC computer at Fort Leavenworth Data Processing Field Office (DPFO) (Shared by DCD)
One single-console PATRIOT Tactical Operations Simulator (TOS-T), with mini-computer (use shared by CSSD, Software Branch (DTD), and ARI)

(Note: Upgrade of TOS-T simulator to a two-station TOS is underway. Also, a new, four-console Patriot simulator is to be delivered in early 1981.)

Software Branch, DTD:
Two DEC 1160 Computers (from Sanders) for PATRIOT Operator Tactics Trainer (Prototype)
One Graphic 7
One Disk unit
Two VT-100 IO devices w/keyboard

b. Resource Requirements. The requirement for resources to fulfill PDSS functions and responsibilities at USAADS has been addressed in detail at USAADS over the past two years or more. During that time, two program request packages have been submitted to TRADOC, for the TRADOC Program Analysis and Resource Review (PARR) (81-85 PARR and 82-86 PARR). Essential portions of the proposed DCD program were entered in the DA Program Objective Memorandum

(POM) for 82-86. In October, 1980, USAADS prepared additional estimates of PDSS resource requirements, based primarily on the earlier estimates, for use in the next cycle of DA review of Army-wide PDSS requirements. When the original edition of this report was prepared, in December 1980, although the available detail on these various USAADS estimates had been examined by this Study Team, and an effort had been made to formulate independent estimates, no compelling reason was seen to present other than the current USAADS estimates here. Accordingly, Figure D-24 was a summary of USAADS estimates of personnel requirements. Similar rationale prevails at this time (February 1981). However, Figure D-24, and also Figure D-25 on costs, have been updated to reflect data made available to the study team in January 1981. The military and civilian personnel shown as required in Figure D-24 represent that core complement of in-house personnel necessary and desirable to guide and direct the program with the help of an appropriate mix of contractor support to augment and extend the skills and capability of the in-house core. These contractor personnel are not included in this figure, but are included as contractual costs under both the Development (RDT&E) and Operations and Maintenance (OMA) categories in Figure D-25, which covers DCD only.

	FY81	FY82	FY83	FY84	FY85	FY86	FY87
REQUIRED *							
MILITARY	41	41	-50	53	53	53	53
CIVILIAN	48	48	48	48	48	48	48
TOTAL	89	98	89	101	101	101	101
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	22	22	31	34	34	34	34
CIVILIAN	34	34	34	34	34	34	34
TOTAL	56	56	65	68	68	68	68

* Includes personnel in both mission-oriented and facility support functions of combat development area. Does not include requirement within the Directorate of Training Development for about 32 people in FY 81 and subsequent years to support planning for and providing PDSS for training devices.

Figure D-24. Personnel required, Baseline PDSS System, ADA BFA

CONSTANT FY 81 K$							
	Fiscal Year						
	81	82	83	84	85	86	87
Development (RDT&E) Contracts	830	550	2030	1760	1400	200	200
Procurement (PA)	-	-	2700	-	-	-	-
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	0
TDY	150	150	298	314	264	264	264
Communications	50	50	50	50	50	50	50
Other	500	500	400	400	450	450	450
TOTAL	3888	7008	11266	8572	7992	6852	6602

Figure D-25. Funding required, Baseline PDSS System, ADA BFA

SECTION VII. INTELLIGENCE AND ELECTRONIC WARFARE BFA

D-22. SYSTEM DESCRIPTION. As indicated by Figure D-1, the US Army Intelligence Center and School (USAICS) is the proponent for this BFA. This proponency 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 in the current Baseline System are shown in Figure D-26. While these functions are concentrated in the Directorate of Combat Developments, other organizational elements 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. These elements are all identified in Figure D-26. This organization and its functional responsibilities, relationships, capabilities and associated resources are discussed in the paragraphs that follow.

D-23. RESPONSIBILITIES AND RELATIONSHIPS.

a. 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.

(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 specific 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 proponency for the ASAS and related systems/test bed (i.e., TCAC, ADM/SEWS, and BETA. It supports as required the TRADOC System Manager for ASAS (TSM-ASAS) (located at CACDA).

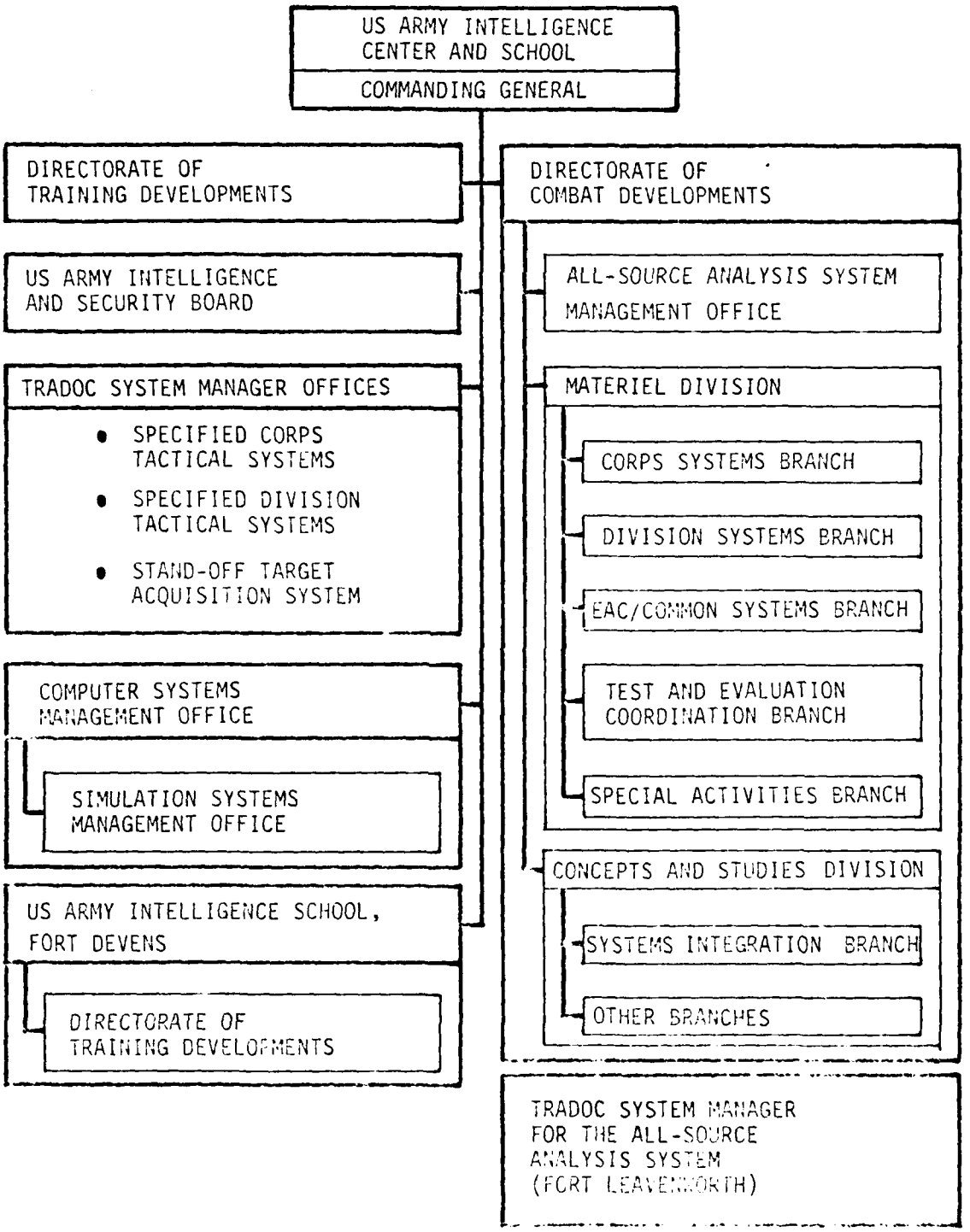


Figure D-26. Organizational elements with major responsibilities in the PDSS Baseline System for the Intelligence and EW EFA

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

- The TSMs for Corps, Division, and EAC/Common EW/Intelligence 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
- 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 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 addressed in this study are shown in Figure D-27. The stage of each system in the life cycle is also shown in the figure. In addition, there are 11 Category 3 systems which will also require some CD participation in the effort devoted to their PDSS.

c. Principal Interfaces. Interfaces, both internal and external to TRADOC, must be established and maintained by organizational elements involved with the PDSS Baseline System for the Intelligence and Electronic Warfare BFA shown in Figure D-28. The Combat Developments Directorate, USAICS, and each TSM have primary responsibility for these interfaces within their respective functional areas.

(1) Interface with Materiel Developer Organizations. The establishment of an ERADCOM-managed PDSS facility at Fort Huachuca for the ASAS, as proposed in the PDSS Concept Plan for BAS, May 1980, will facilitate the close interface and interaction needed between the Combat Developer and Materiel Developer organizations involved with this major system. Similarly the collocation at Fort Huachuca of the USACC organization tasked with developing the AN/MSC-67 Communications Center (COMFAC) facilitates close CD-MD interaction on this system during its development. USAICS organizations must interface with ERADCOM or CORADCOM PDSS Center elements, as appropriate, at Fort Monmouth on PDSS actions involving all other systems.

INTELLIGENCE/EW BFA

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USAICS*	AN/MSC-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 D-27. Intelligence and Electronic Warfare Category 1 and 2 BAS

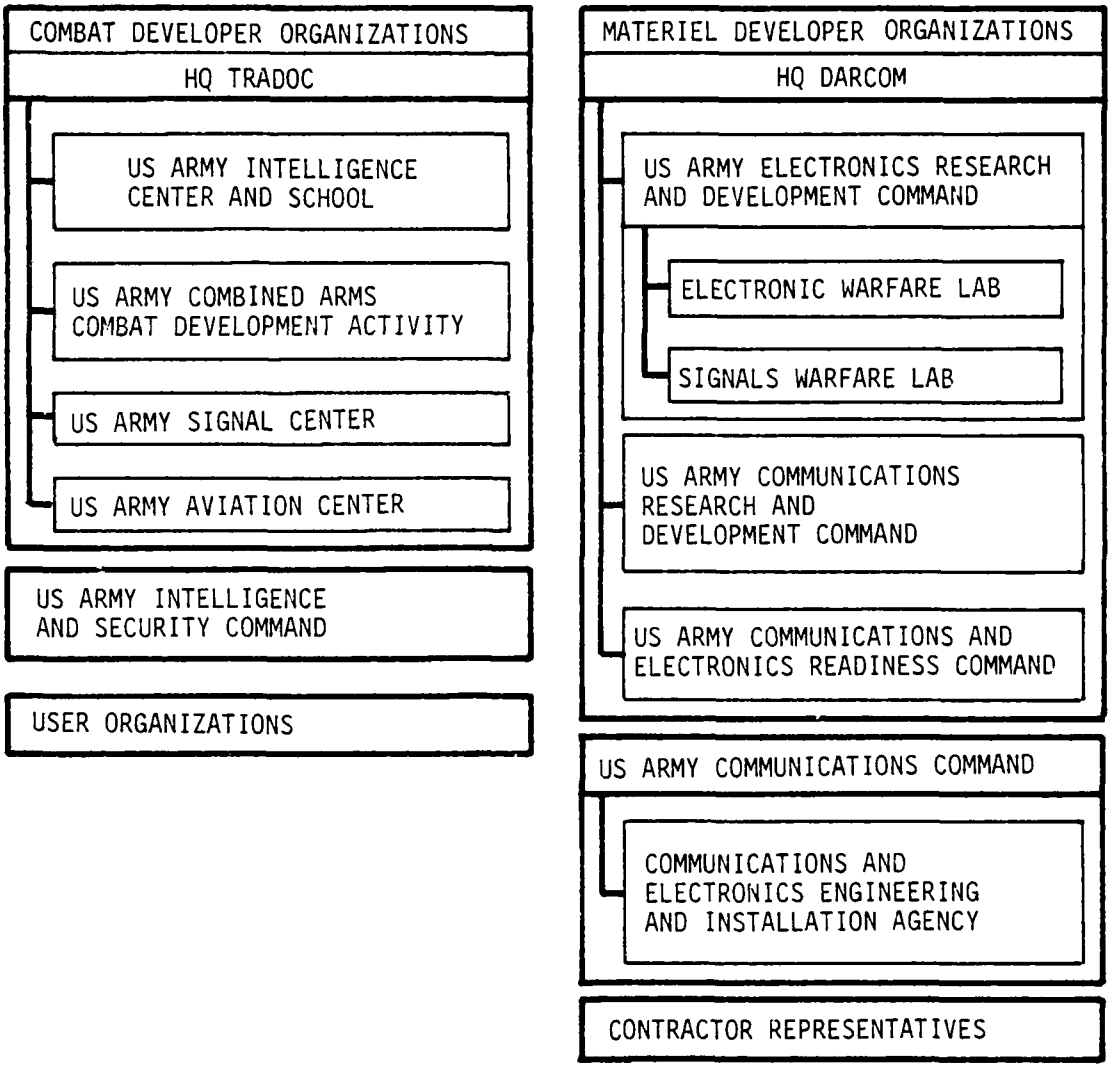


Figure D-28. Principal organizational elements that must interact in the Intelligence and Electronic Warfare BFA PDSS Baseline System

(2) Interface with Intelligence and Security Command (INSCOM). USAICS must coordinate closely with the INSCOM on certain intelligence systems because of the relationships between some of these systems within the corps area, at echelons above corps, and at the strategic level.

D-24. SYSTEM CAPABILITIES.

a. PDSS Functions. Combat Developer PDSS responsibilities that were identified during Phase I of this study were used as a basis for describing and analyzing the current capabilities of the Intelligence and Electronic Warfare Baseline PDSS system. These responsibilities, grouped into six general task areas are shown in Figure D-29. The six task areas are shown in the first column. The second column identifies PDSS responsibilities in each of these general areas. The third column describes the functions that must be performed to fulfill the responsibility shown in the second column. Information shown in the remaining columns is described below.

(1) Relationship of PDSS functions and the system life cycle. The fourth column contains an entry indicating when each PDSS function will/may have to be performed during the system life cycle. This entry has been developed for each function based on the discussion of the relationship of PDSS and the system life cycle, contained in Chapter 1, Paragraph 1-4.c. Specific entries are further explained by the legend in the figure.

(2) Relationship of PDSS functions and BAS in this BFA. Entries in the fifth column indicate the number of Category 1 and 2 BAS in this BFA deemed to currently require performance of each PDSS function. This entry varies among the functions because of the unique relationship between each PDSS function and the system life cycle stage a system is in, as discussed in Paragraph (1), above. Entries in the sixth column indicate the number of BAS in this BFA for which each function is currently being performed adequately. A lower number in column 6 than in column 5 indicates a shortfall in the capability of the baseline system.

(3) Relationship of PDSS functions and organizational elements. Entries in the seventh through the eleventh columns identify organizations at the directorate, division, branch, or separate office levels, that are currently involved in the PDSS effort within this BFA. The entries under each organizational element indicate whether or not that element is adequately performing each of the functions for which it is or should be responsible. An "X" has been entered whenever an element is deemed to be satisfactorily fulfilling or participating in fulfilling the PDSS function, located to the left, for the relevant currently identified BAS whose stage in the life cycle requires performance of that function. A blank indicates that the function is not being performed adequately by the organizational element identified at the top of the column. An "N" entry indicates that the organizational element is not responsible for performing the PDSS function at this time.

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	DIRECTORATE OF COMBAT DEVELOPMENTS	DIRECTORATE OF TRAINING DEVELOPMENTS	TSMS (CORPS, DIVISION, SOTAS, AND ASAS)	COMPUTER SYSTEMS MANAGEMENT OFFICE	INTELLIGENCE AND SECURITY BOARD
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	1	1	X	N	X	N	N
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	1	1	X	N	X	N	N
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	8	8	X	N	X	N	N
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	8	8	X	N	X	N	N
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	6	6	X	N	N	N	N
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	6	6	X	N	N	N	N
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS² CONCEPT.	1	1	1	X	N	X	N	N
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	8	8	X	N	X	X	N
		2. PLAN AND PROGRAM FOR RESOURCES.	1	8	8		N			N
		3. ACQUIRE AND MANAGE RESOURCES.	1	8	8		N			N
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	6	0		N		N	N
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	6	0		N		N	N
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	3	0		N		N	N
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	3	0		N		N	N
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	6	0		N		N	N
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	6	0		N		N	N
		2. EXAMINE BASIS FOR REQUIREMENT.	2	6	0		N		N	N
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	6	0		N		N	N
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	6	0		N		N	N
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS.	2	6	6	X	N	N		N
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	6	6	X	N	N		N

Figure D-29. Baseline requirements and capabilities--Intelligence and EW BFA (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY.	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	DIRECTORATE OF COMBAT DEVELOPMENTS	DIRECTORATE OF TRAINING DEVELOPMENTS	TSMS (CORPS, DIVISION, SOTAS, AND ASAS)	COMPUTER SYSTEMS MANAGEMENT OFFICE	INTELLIGENCE AND SECURITY BOARD
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	6	6	X	N	X		N
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	6	6	X	N	X		N
		3. IDENTIFY TRAINING IMPACT.	2	6	6	X	X	X		N
		4. IDENTIFY LOGISTICAL IMPACT.	2	6	6	X	N	X		N
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	6	6	X	N	X		N
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	6	6	X	N	X		N
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	6	6	X	N	X		N
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	6	6	X	N	X	N	N
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	6	6	X	N	X	N	N
		3. PROVIDE REQUIREMENT TO MD.	2	6	6	X	N	X	N	N
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	6	6	X	N	X	N	N
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	6	0		N	X	N	N
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	6	6	X	N	X	N	X
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	6	6	X	N	X	N	X
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	6	6	X	N	X	N	X
		4. MONITOR DEVELOPMENT TEST (DT).	2	6	6	X	N	X	N	X
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	6	6	X	N	X	N	X
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	6	6	X	N	X	N	X
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	6	6	X	N	X	N	X
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	6	6	X	N	X	N	X
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	3	3	X	N	X	N	N
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	3	3		N		N	N
		2. FUNCTION AS USER SURROGATE.	3	3	3	X	N	X	N	N
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	3	3	X	N	X	N	N
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	3	3	0		N		N	N

Figure D-29. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	DIRECTORATE OF COMBAT DEVELOPMENTS	DIRECTORATE OF TRAINING DEVELOPMENTS	TSMS (CORPS, DIVISION, SOTAS, AND ASAS)	COMPUTER SYSTEMS MANAGEMENT OFFICE	INTELLIGENCE AND SECURITY BOARD
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	6	6	X	X	X	Z	Z
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	6	6	X	X	X	Z	Z
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	6	6	X	X	X	Z	Z
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	3	3	X	X	Z	Z	Z
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	6	6	X	X	X		Z
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	6	6	X	X		Z	Z
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	6	6	X	X	X	Z	Z
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	3	3	X	X	Z	Z	Z
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	0	N/A	X	Z	X	Z	Z
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	0	N/A	X	Z	X	Z	Z
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED PDSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	3	0		Z	Z	Z	Z
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	3	0		Z	Z	Z	Z
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.,	1. SPECIFY PDSS RESPONSE REQUIREMENTS.	1	8	0		Z		Z	Z
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE PDSS UNDER VARIOUS SCENARIOS.	1	8	0		Z			Z
		3. COORDINATE WITH THE MD IN PLANNING PDSS SUPPORT.	1	8	0		Z		Z	Z
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	3	0		Z	Z	Z	Z
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	8	0		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	3	3	X	Z	Z		X

* 1 = ANYTIME AFTER PDSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

Figure D-29. (concluded)

b. Discussion of capabilities. Examination of Figure D-29 reveals that while most CD PDSS functions are presently being performed for the BAS that require them, there are shortfalls in the current capability in several areas. The most important of these areas are discussed below.

(1) Directorate of Combat Developments. Figure D-29 indicates a need for an improved capability devoted to functions under Responsibilities 2.1, 2.2, 6.2, and 6.3. The first two sets of these functions involve interface with System Users to address system problem reports and User-stated system change requirements. Phase I research revealed that there is little CD involvement in this area at present. Software problems and corrective actions are handled primarily through interaction between the User and the MD.

(2) Computer Systems Management Office. Figure D-29 also indicates several functional areas in which support from the Simulation Systems Management Office, an element of the Computer Systems Management Office, is needed in order to enhance the PDSS capability of the system action officers in the Directorate of Combat Developments. These functional areas are those involving analysis of PDSS requirements and alternatives in which computer-assisted analyses and simulations would be very beneficial.

D-25. RESOURCES. Research conducted during Phase I of this study and the data presented in Paragraph D-24 reveals that additional emphasis needs to be devoted to certain aspects of PDSS by combat development personnel in the Intelligence and Electronic Warfare BFA. No personnel are assigned PDSS responsibilities full-time and there are only two systems for which an action officer reported devoting a portion of his duty time to PDSS on a regular basis. This can be attributed to Army regulatory policies and workload priorities which have resulted in organizations, not only in this BFA but elsewhere as well, placing insufficient emphasis on PDSS in the past. However, the Phase I research did reveal a growing awareness of the importance of PDSS at USAICS. It also revealed a concern (held by both Combat and Materiel Developers) over the need for closer working-level interaction between Combat Developer and Materiel Developer personnel involved with BAS in this BFA. As a result of this situation and the projected increase in PDSS requirements for BAS in this BFA, an estimate of personnel resource requirements to provide needed improvements in PDSS capabilities at USAICS has been developed and is shown below. The resources shown are considered to be those required, in the current Baseline Structure, to provide a minimal capability to accomplish all PDSS functions identified in Figure D-29, for the BAS identified in Figure D-27.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Authorized[1]							
Military	0	0	0	0	0	0	0
Civilian	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0
Required							
Military	3	5	7	9	9	9	9
Civilian	3	5	7	9	9	9	9
TOTAL	6	10	14	18	18	18	18
Additional Needed							
Military	3	5	7	9	9	9	9
Civilian	3	5	7	9	9	9	9
TOTAL	6	10	14	18	18	18	18

This estimate of combat development personnel requirements has been developed on the assumptions that:

- US Army Intelligence and Security Board staffing will be adequate to monitor, plan, program, and conduct those system tests, required as a result of PDSS actions, for which it is assigned responsibility
- The Directorate of Training Developments is adequately manned to provide training development support required as a result of PDSS actions
- The Computer Systems Management Office will acquire, in conjunction with the planned expansion of that office, the resources and capability necessary to provide the required automated support to PDSS analysis being conducted by USAICS combat development personnel.

The personnel acquired to fulfill the requirements stated above should be primarily functionally oriented and trained personnel with secondary skills/expertise in appropriate automatic data processing areas.

---

[1] There are no personnel assigned PDSS responsibilities on a full time basis. Action officers devote time to accomplishment of PDSS actions as required.

SECTION VIII. COMBAT SERVICE SUPPORT BFA--US ARMY LOGISTICS CENTER

D-26. SYSTEM DESCRIPTION.

a. General. As discussed previously, proponency for this BFA is divided between the US Army Logistics Center (LOGCEN), for logistics functions, and Soldier Support Center (SSC), for personnel support functions. Separate descriptions are provided, in this Section and in Section IX, of the Baseline Systems that exist in each of these organizations for providing PDSS to BAS in their respective portions of this BFA.

b. Logistics Baseline PDSS System. 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 Baseline System are shown in Figure D-30. As indicated by the figure, these functions are concentrated in the Management Information Systems Directorate and the Concepts and Doctrine Directorate of the LOGCEN.

D-27. RESPONSIBILITIES AND RELATIONSHIPS.

a. 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. The elements of the directorate involved in carrying out these responsibilities are shown in Figure D-30. Designated staff officers assigned to branches of the Field Systems and Supply Systems Divisions, are assigned as action officers 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

PRECEDING PAGE BLANK-NOT FILMED

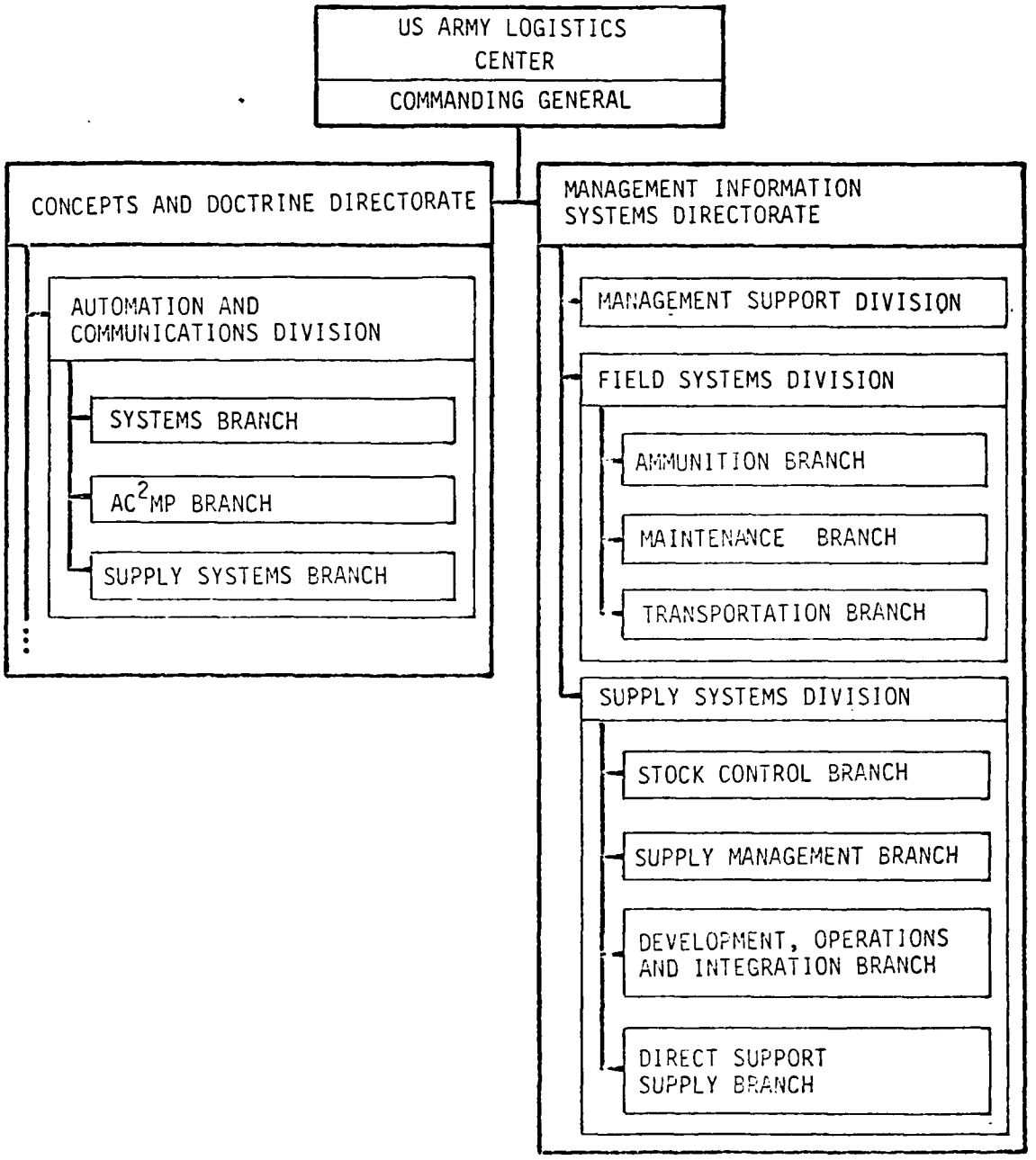


Figure D-30. Organizational elements with major responsibilities in the PDSS Baseline System for the logistics portion of the CSS BFA

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 systems in the logistics portion of the CSS BFA requiring PDSS are shown in Figure D-31. The stage of each system in the life cycle is also shown.

c. Principal Interfaces. Interfaces must be established and maintained among organizational elements of the LOGCEN and other organizations identified in Figure D-32. The collocation of the US Army Computer Systems Command Support Group, Ft. Lee, with the LOGCEN Management Information Systems Directorate and Concepts and Doctrine Directorate facilitate the close interface and interaction needed between these organizations. The LOGCEN must maintain an interface with CACDA, the SSC, and the other TRADOC integrating centers, to assure consistency and integration of the efforts and products of all associated functional centers. Centers associated with the LOGCEN include the Ordanance and Chemical Center, the Transportation School, the Missile and Munitions Center, and the Quartermaster School. Contact with Users is maintained to address User-reported system problems and system change requirements, and to provide assistance as required. Close coordination must also be maintained with the Office of the Deputy Chief of Staff for Logistics (ODCSLOG), the functional proponent for most logistics systems in the CSS BFA.

D-28. SYSTEM CAPABILITIES.

a. PDSS Functions. Combat Developer PDSS responsibilities that were identified during Phase I of this study were used as a basis for analyzing the logistics portion of the CSS Baseline System. These responsibilities, grouped into six general task areas, are shown in Figure D-33. The six task areas are shown in the first column. The second column identifies PDSS responsibilities in each of these general areas. The third column describes the functions that must be performed to fulfill the responsibilities shown in the previous column. Information shown in the remaining columns is described below.

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
LOGCEN/ DCSLOG	DSU/GSU--DIRECT SUPPORT UNIT GENERAL SUPPORT UNIT (OPERATION)
USASC	DLDED (DEFINITION/DESIGN)
LOGCEN/ DCSLOG	SAMS--STANDARD ARMY MAINTENANCE 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	DAMMS--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)

Figure D-31. Logistics systems

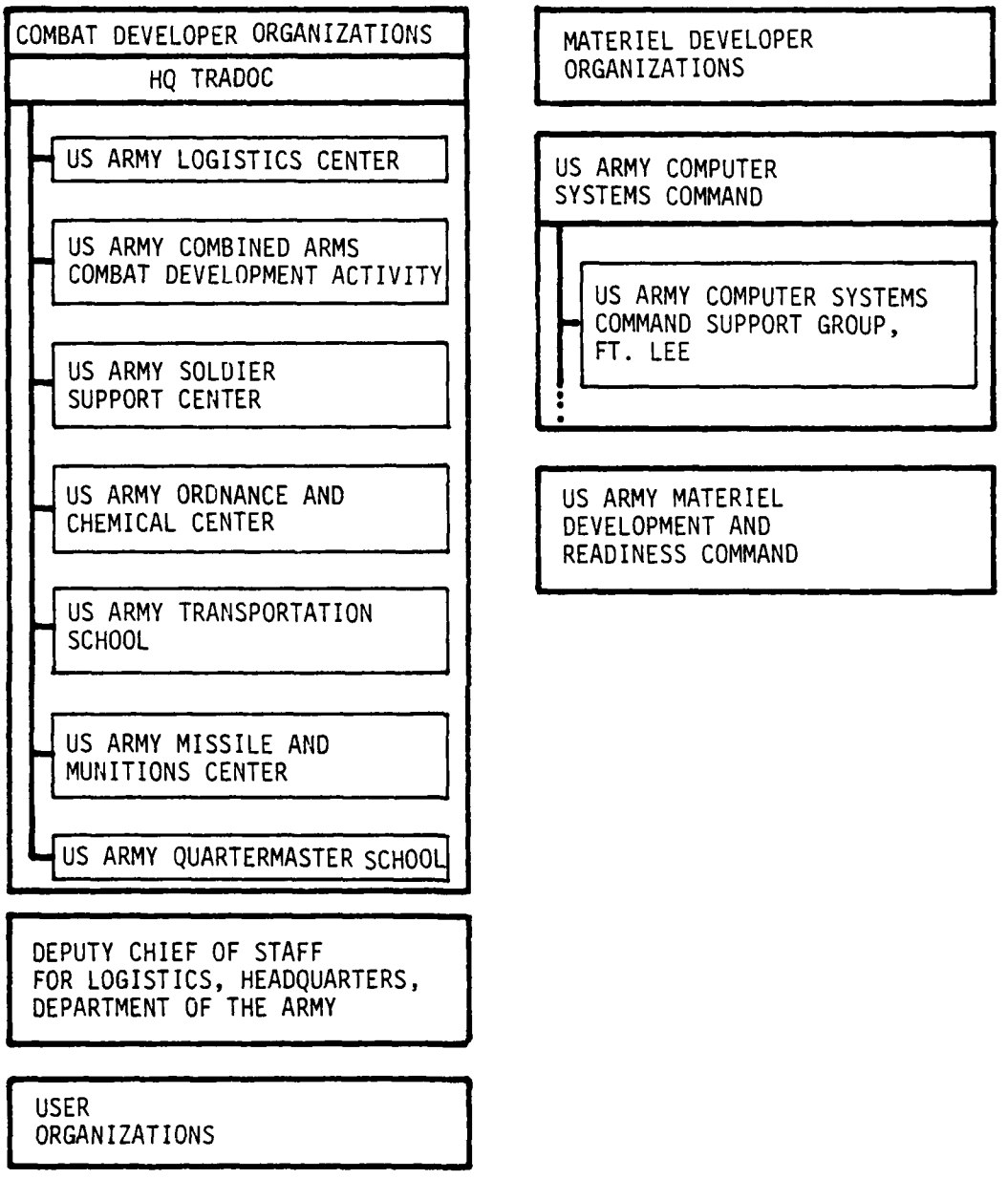


Figure D-32. Principal organizations that must interact in the logistics portion of the CSS 3FA PDSS Baseline System

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	FIELD SYSTEMS DIVISION, MIS DIRECTORATE	SUPPLY SYSTEMS DIVISION, MIS DIRECTORATE	MANAGEMENT SUPPORT [illegible]	AUTOMATION & COMMUNICATIONS DIV, C&D DIR
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	0	N/A	N	N	N	N
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	0	N/A	N	N	N	N
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	16	16	X	X	X	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	16	16	X	X	X	X
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	9	9	X	X	X	X
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	9	9	X	X	X	X
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS^2 CONCEPT.	1	1	1	N	N	X	X
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	16	16	X	X	X	X
		2. PLAN AND PROGRAM FOR RESOURCES.	1	16	16	X	X	X	X
		3. ACQUIRE AND MANAGE RESOURCES.	1	16	16	X	X	X	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	9	9	X	X	N	N
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	9	9	X	X	N	N
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	8	8	X	X	N	N
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	8	8	X	X	N	N
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	9	9	X	X	N	N
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	9	9	X	X	N	N
		2. EXAMINE BASIS FOR REQUIREMENT.	2	9	9	X	X	N	N
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	9	9	X	X	N	N
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	9	9	X	X	N	N
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS.	2	9	9	X	X	X	X
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	9	9	X	X	X	X

Figure D-33. Baseline requirements and capabilities--CSS BFA, Logistics Center (continued on next page)

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

Figure D-33. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	FIELD SYSTEMS DIVISION, MIS DIRECTORATE	SUPPLY SYSTEMS DIVISION, MIS DIRECTORATE	MANAGEMENT SUPPORT	AUTOMATION & COMMUNICATIONS DIV, C&D DIR
5. FIELD SUPPORT (CONTINUED)	2. DEVELOP AND [illegible]E TRAINING PR[illegible] RE-QUIRED BY SYSTEM CHANGE (EXCEPT FOR NEW EQUIPMENT TRAINING (NET)).	1. DETERMINE TRAINING/RETRAINING DEVELOPMENT REQUIREMENTS.	2	9	9	X	X	Z	Z
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	9	9	X	X	Z	Z
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	9	9	X	X	Z	Z
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	8	8	X	X	X	Z
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	9	9	X	X	Z	Z
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	9	9	X	X	Z	Z
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	9	9	X	X	Z	Z
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	8	8	X	X	X	Z
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	0	N/A	Z	Z	Z	Z
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	0	N/A	Z	Z	Z	Z
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	8	8	X	X	X	Z
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	8	8	X	X	X	Z
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	16	16	X	X	X	Z
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	16	16	X	X	X	Z
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	16	16	X	X	X	Z
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	8	8	X	X	Z	Z
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	16	16	X	X	X	X
	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	8	8	X	X	X	Z

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

Figure D-33. (concluded)

(1) Relationship of PDSS functions and the system life cycle. The fourth column contains an entry indicating when each PDSS function will/may have to be performed during the system life cycle. This entry has been developed for each function based on the discussion of the relationship of PDSS and the system life cycle, contained in Chapter 1, Paragraph 1-4.c. Specific entries are further explained by the legend in the figure.

(2) Relationship of PDSS functions and BAS in this BFA. Entries in the fifth column indicate the number of BAS in this BFA deemed to currently require performance of each PDSS function. This entry varies among the functions because of the unique relationship between each PDSS function and the system life cycle stage a system is in, as discussed in Paragraph (1), above. Entries in the sixth column indicate the number of BAS for which each function is currently being performed adequately. A lower number in column 6 than in column 5 indicates a shortfall in the capability of the baseline system.

(3) Relationship of PDSS functions and organizational elements. Entries in the seventh through the tenth columns identify organizations at the directorate, division, or separate office levels, that are currently involved in the PDSS effort within this BFA. The entries under each organizational element indicate whether or not that element is adequately performing each of the functions for which it is responsible. An "X" has been entered whenever an element is deemed to be satisfactorily fulfilling or participating in fulfilling the PDSS function, located to the left, for the relevant currently identified BAS whose stage in the life cycle requires performance of the function. A blank indicates that the function is not being performed adequately by the organizational element identified at the top of the column. An "N" entry indicates that the organizational element is not responsible for performing the PDSS function at this time.

b. Discussion of Capabilities. Examination of Figure D-33 reveals no significant short falls in the capability of the current Baseline PDSS System to support BAS in the logistics portion of the CSS BFA at this time. However, the current capability does not appear to be adequate to handle increased PDSS requirements associated with new systems or the continued extension of existing systems. The requirement for resources to provide the capability to meet this projected increase in workload is discussed in the following paragraph.

D-29. RESOURCES. The LOGCEN has many years of experience in providing PDSS to fielded systems and well established procedures for providing this support. Excellent relationships exist with the logistics systems developer, the CSC Support Group, Ft. Lee, and activities of both organizations are closely coordinated to provide the most effective and responsive support possible to the User. This support ranges from emergency customer assistance, to

scheduled installation of system changes designed to improve a system's capability to satisfy important user requirements. These PDSS functions are conducted as integral parts of the total system development and system life cycle management effort for which the LOGCEN is responsible. No system action officers are assigned exclusively to PDSS functions. Instead, they perform PDSS functions along with all other system development and management actions for which they are responsible. Consequently, it has not been possible to identify personnel resources committed solely to PDSS at the LOGCEN. However, with all Management Information Systems Directorate personnel fully committed on present systems, it is clear that additional personnel are needed to handle the projected increase in PDSS requirements. These requirements arise from the scheduled development and deployment of new systems including the CSS Control System, the further extension of existing systems to additional Users, and the need for an organizational element to serve as a focal point for coordinating LOGCEN PDSS activity. An estimate of additional personnel resources needed to satisfy these requirements is shown below.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required[1]							
Military	33	33	33	35	35	35	35
Civilian	77	77	77	79	79	79	79
Total	110	110	110	114	114	114	114
Authorized[1]							
Military	30	30	30	30	30	30	30
Civilian	72	72	72	72	72	72	72
TOTAL	102	102	102	102	102	102	102
Additional Needed							
Military	3	3	3	5	5	5	5
Civilian	5	5	5	7	7	7	7
TOTAL	8	8	8	12	12	12	12

[1] Not limited to PDSS personnel; includes all personnel in Management Information Systems Directorate directly involved in systems development and life cycle management.

SECTION IX. COMBAT SERVICE SUPPORT BFA--US ARMY SOLDIER SUPPORT CENTER

D-30. SYSTEM DESCRIPTION. The current, TRADOC Baseline System for providing PDSS to the personnel portion of the Combat Service Support (CSS) BFA has its focal point in the US Army Soldier Support Center (SSC), at Fort Benjamin Harrison, Indiana. The principal action-level element for PDSS at SSC is 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. The Directorate of Training Developments, of that Institute, is also involved, secondarily, in the Baseline PDSS System, as are TRADOC elements at other installations. Outside of TRADOC, elements of Deputy Chief of Staff, Personnel (DCSPER), Military Personnel Center (MILPERCEN) Computer Systems Command, Health Services Command, and Users are also involved in the Baseline. Figure D-34 shows the organizational structure of the TRADOC elements of the Baseline at SSC. Figure D-35 shows, in less detail, the structure of the total TRADOC Baseline PDSS System for the personnel portion of the CSS BFA.

D-31. RESPONSIBILITIES AND RELATIONSHIPS. This paragraph reviews the responsibilities, BAS involved, and relationships resulting among the elements within the TRADOC Baseline System for providing PDSS in the personnel portion of the CSS BFA.

a. Responsibilities. A relatively detailed discussion of the evident responsibilities of SSC and MILPERCEN, as they pertain to PDSS in the personnel portion of the CSS BFA, was provided in Paragraph 2-4.g.(2)(c) and following paragraphs of the First Interim Technical Report, pages 2-56 through 2-62, and 3-32. It was pointed out in that discussion that the relevant charters and responsibilities have recently been undergoing significant changes, that some areas remained ill-defined, and that further changes were probably needed. It was also pointed out in that report that substantial overlap in responsibilities between SSC and MILPERCEN was apparent. Since no significant changes are known to have occurred since that report, that discussion will not be repeated here. Nevertheless, although a lack of formalization is evident, principal PDSS responsibilities within SSC appear to fall within the MISD and other elements of the DDCD, as identified in Figure D-34, above. Responsibility for, at least, training materials pertaining to PDSS should logically fall 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 Standard Installation Division Personnel Systems (SIDPERS). A table of 64 TRADOC PDSS functions which are generally applicable, dependent on the life cycle stage of the relevant BAS, will be used as a basis for assessing PDSS system capabilities, for this portion of the CSS BFA, in Paragraph D-32, below.

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

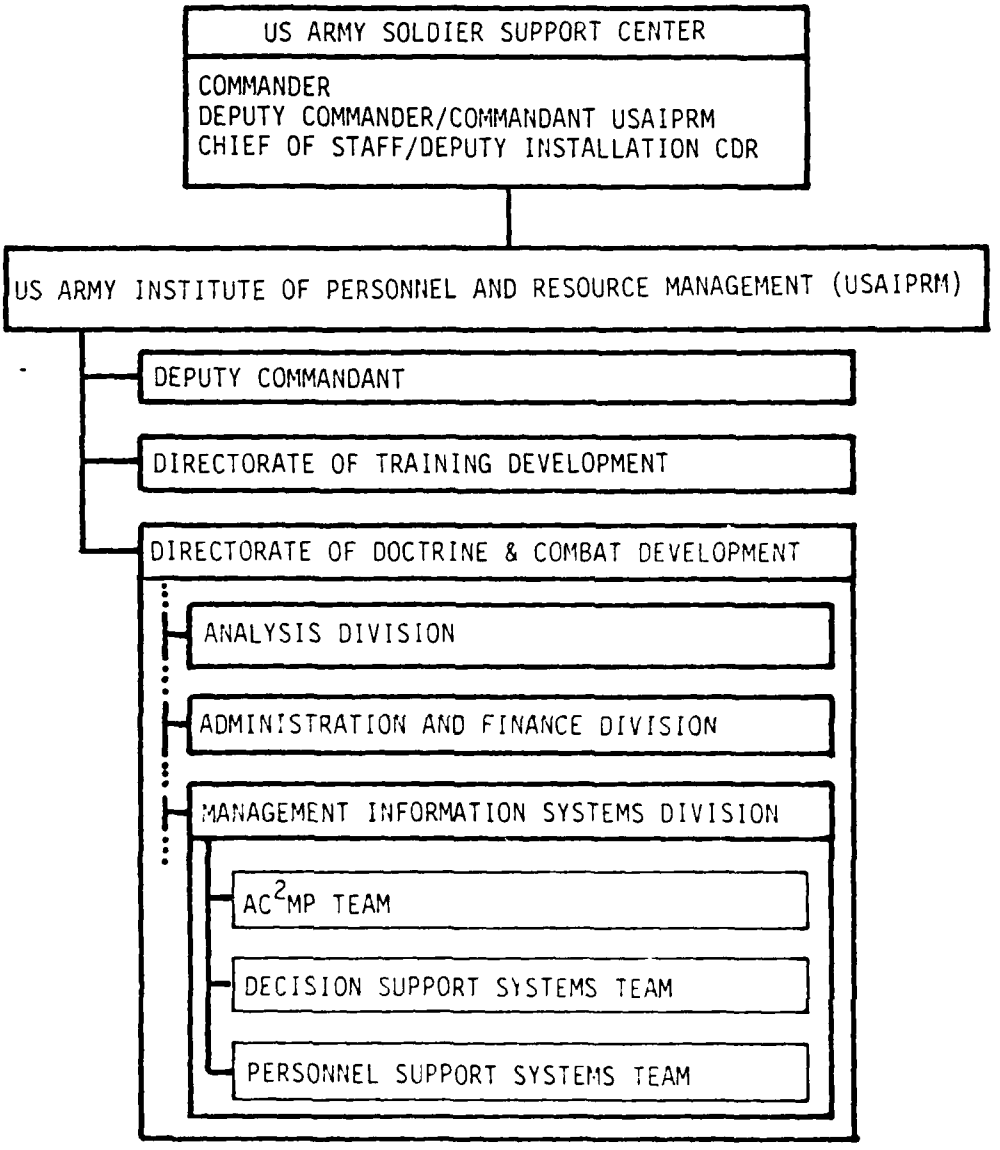


Figure D-34. TRADOC elements of Baseline PDSS System at SSC

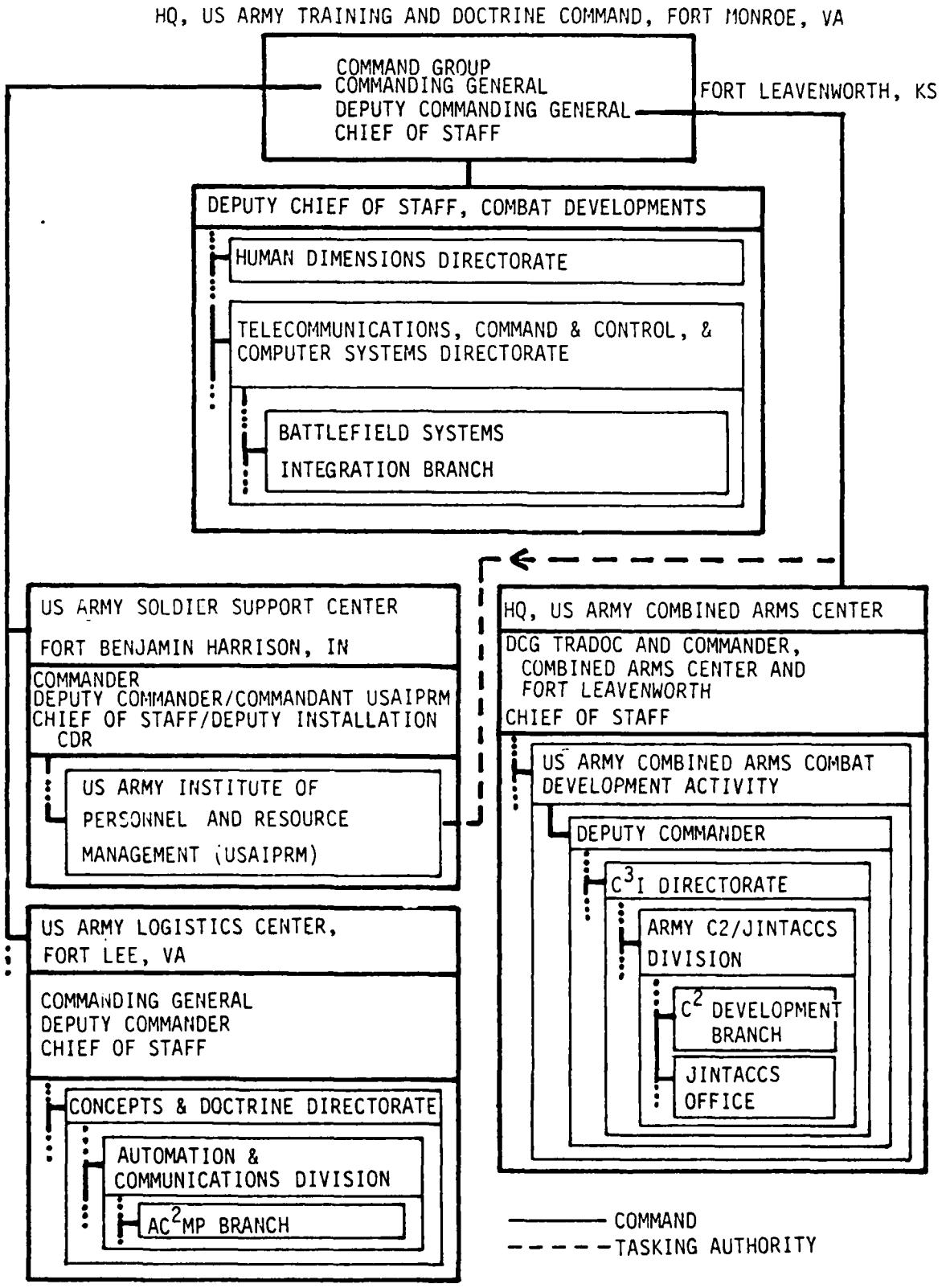


Figure D-35. Overall TRADOC Elements of Baseline PDSS System for personnel portion of CSS BFA

or coordination responsibilities by SSC, that list of ten was consolidated into five categories for this report. Of these five, one is a specific BAS which will require significant PDSS, the New Personnel System or PERMIS Future. Another one of the five which may present a significant PDSS requirement is the Personnel Support Subsystem for the CSS Control System for the Command, Control and Subordinate Systems (CCS^2) 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 D-36.

c. Principal Interfaces. Figures D-34 and D-35, above, identified the TRADOC elements involved in the Baseline PDSS System for the SSC portion of the CSS BFA. Figure D-37 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 Baseline PDSS System, center around the MISD of the DDCD at SSC. Such principal interfaces are indicated in Figure D-38.

D-32. SYSTEM CAPABILITIES. An assessment of the capabilities of the current Baseline PDSS System for the personnel portion of the CSS BFA is presented in Figure D-39. This figure summarizes the results of considering each of the five BAS categories (Figure D-36) against each of 64 PDSS functions. The assessment involves a judgement as to whether the Baseline PDSS System is now adequately fulfilling a given function now required by a given BAS category. Such a judgement was made for each function currently required by each BAS category. In Figure D-39, each of six broad task areas, on the left, are broken down into major TRADOC responsibilities, which are then divided into more detailed PDSS functions. To the right of these PDSS functions is a column designating in which of three stages of the BAS life cycle each PDSS function must be initiated. In the next column, a number appears, for each function, indicating the number of BAS categories deemed to currently require performance of the PDSS function to the left. In the next column, a number indicates for how many of those BAS categories requiring it the PDSS function at left is deemed to be adequately performed now by the Baseline PDSS System. Next appear three columns headed by the identity of existing TRADOC elements which perform PDSS functions. An "X" in these columns indicates that a given element is judged to have the capability to adequately perform a needed function; an "N" indicates that a given element does not currently need to perform that function; while a blank indicates that a needed function is not being performed adequately. This figure thus provides a measure of the extent to which the Baseline System is deemed to be fulfilling current PDSS responsibilities. It can be seen in this figure that zeroes appear on the first seven lines, for the number of BAS or BAS groups requiring performance of these functions. These zeroes result from a perception by SSC regarding TRADOC responsibilities for the BAS involved. SSC now conceives MILPERCEN to have, under current regulations and agreements, principal CD responsibilities for most of these systems, especially in those portions of the system life cycle where PDSS functions impose most of their requirements for resources.

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 CCS^2 (CONCEPTUAL) 3. NEW PERSONNEL 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; VFDMIS; 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 D-36. Systems requiring PDSS--Soldier Support Center

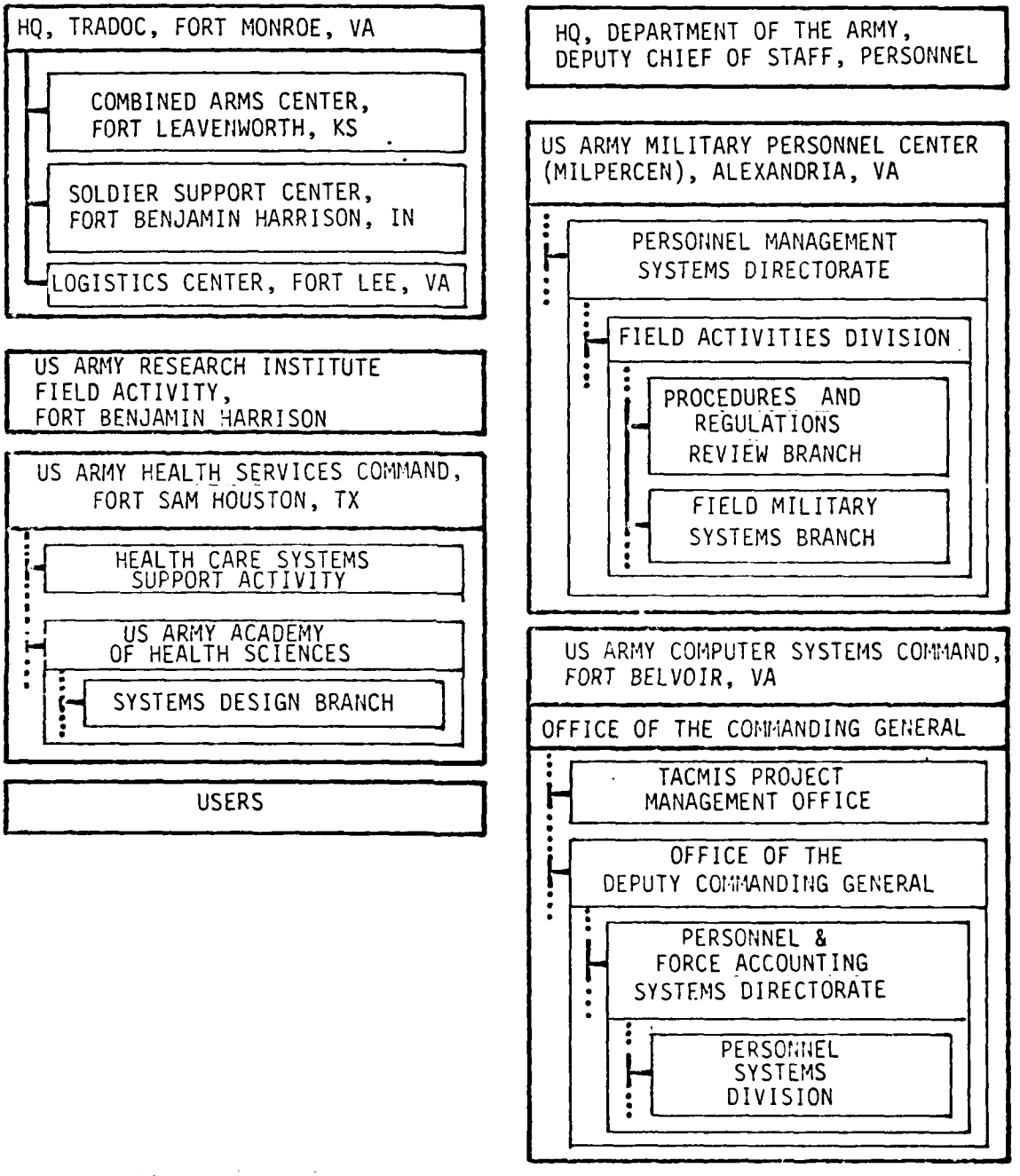


Figure D- 37. Principal TRADOC and other elements in Baseline PDSS System for personnel portion of CSS BFA.

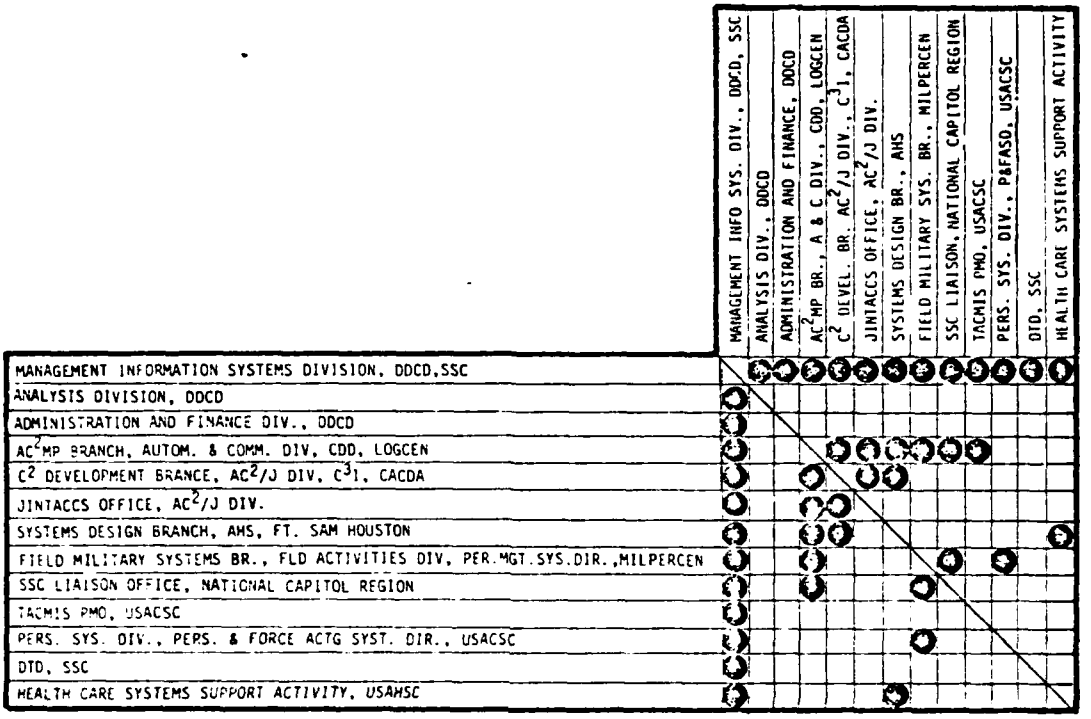


Figure D-38. Principal interfaces, Baseline PDSS System, SSC portion of CSS BFA

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	MGT INFO SYS DIV, IN DIR OF DOC & CD (DDCD)	RM&IN & FINANCE DIV. IN DDCD	DIRECTORATE OF TRAINING DEVELOPMENTS
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	0	0	X	Z	Z
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	0	0	X	Z	Z
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	0	0	X	Z	Z
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	0	0	X	Z	Z
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	0	0	X	Z	Z
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	0	0	X	Z	Z
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[2] CONCEPT.	1	0	0	X	Z	Z
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	2	2	X	Z	Z
		2. PLAN AND PROGRAM FOR RESOURCES.	1	3	3	X	Z	Z
		3. ACQUIRE AND MANAGE RESOURCES.	1	3	3	X	Z	Z
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	1	1	X	Z	Z
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	1	1	X	Z	Z
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	1	1	X	Z	Z
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	1	1	X	Z	Z
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	1	1	X	Z	Z
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	1	1	X	Z	Z
		2. EXAMINE BASIS FOR REQUIREMENT.	2	1	1	X	Z	Z
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	1	1	X	Z	Z
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	1	1	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.	1	2	2	X	Z	Z
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	1	2	2	X	Z	Z

Figure D-39. Baseline requirements and capabilities--CSS BFA, Soldier Support Center (continued on next page)

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

Figure D-39. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	MGT INFO SYS DIV, IN DIR OF DOC & CD (DSCD)	?COMIN & FINANCE DIV, IN DOCD	DIRECTORATE OF TRAINING DEVELOPMENTS
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	2	2	X	N	N
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	1	1	X	N	N
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	1	1	X	N	N
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	1	1	X	N	X
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	1	1	X	N	X
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	1	1	X	N	N
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	1	1	X	N	X
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	1	1	X	N	N
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	2	2	X	N	N
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	2	2	X	N	N
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	1	0	X	N	N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	0	0	N	N	N
	3. SUPPORT TO CRISIS/WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	4	4	X	N	N
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	4	4	X	N	N
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	4	4	X	N	N
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	0	0	N	N	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	4	4	X	N	N
	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	2	2	X	N	N

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

Figure D-39. (concluded)

For these same lines, however, under the organizational element column for SSC's Management Information Systems Division (MISD), Xs have been entered. These Xs are to indicate that MISD does have the capability to perform those seven functions, should it be deemed necessary. In fact, Xs appear in the MISD column for almost all functions, indicating that MISD has, with current resources, an adequate capability to meet its current requirements. This assessment by SSC reflects both MILPERCEN's principal role and also that the BAS involved are limited in number and extent and thereby tend to present a very modest workload. It should be emphasized, however, that requirements upon SSC's MISD may not remain as limited as they are at present. Should any system change involving over $100,000 be identified by MILPERCEN, according to the MOU of 5-7 August 1980, then MISD would not have adequate capability with current resources.

D-33. SYSTEM RESOURCE REQUIREMENTS. Resources currently on hand in the Baseline PDSS System and the currently perceived requirement for resources to fulfill Baseline functions and responsibilities in PDSS, are addressed in the following two paragraphs.

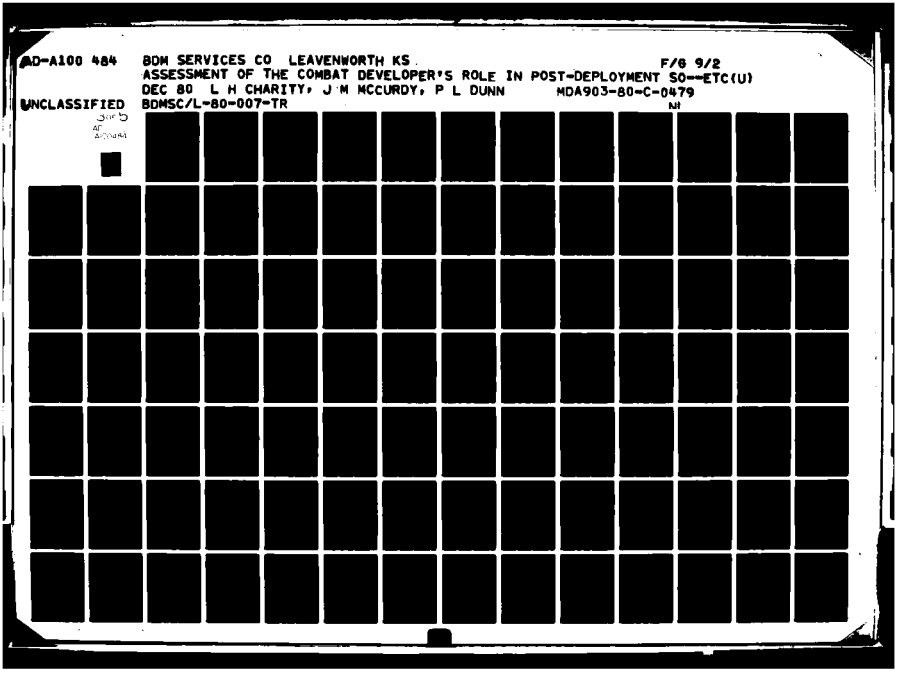
a. Current Resources. TRADOC resources currently assigned or available to perform PDSS functions in the personnel portion of the CSS BFA are reflected in the capability assessment of the Baseline System presented above. The amount of resources currently available is estimated below:

PERSONNEL:

Management Information System Div, DDCD, SSC	
Total on hand (3 Sep 80)	18
Estimated Available for PDSS	4
Other SSC Elements	
Estimated Available for PDSS	1

b. Resource Requirements. Preliminary estimates were made at SSC on 3 September 1980 of the personnel resources required for performance of PDSS and related functions, with respect to BAS for which SSC could be envisioned to have either direct or indirect responsibilities. These estimates, for seven BAS categories and fiscal years 80-86, were presented as Figure 3-13 in the First Interim Technical Report of this study effort. Subsequently, in early October, SSC prepared a new set of estimates for both personnel and funding requirements, for use in the next cycle of DA review of Army-wide PDSS requirements. In mid-October, these estimates were further revised by SSC. Based on examination of all of these estimates, Figure D-40 summarizes anticipated personnel requirements and Figure D-41 summarizes anticipated funding requirements. These numbers can be characterized as reflecting SSC's perception of what is required to fulfill SSC's envisioned responsibilities and functions in the general area of PDSS. These numbers, however, may not fall totally within the confines of the current Baseline PDSS System; some system improvements are probably reflected, and a commonly understood set of functions and system boundaries was not input to the estimation process. Nevertheless, these numbers give some indication of the resources that may be required to fulfill current responsibilities.

AD-A100 484 BDM SERVICES CO LEAVENWORTH KS F/6 9/2
ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE IN POST-DEPLOYMENT SO--ETC(U)
DEC 80 L H CHARITY, J M MCCURDY, P L DUNN MDA903-80-C-0479
UNCLASSIFIED BDMSC/L-80-007-TR NL



	FY						
	81	82	83	84	85	86	87
REQUIRED							
MILITARY	3	3	5	8	8	6	6
CIVILIAN	0	0	2	4	2	2	2
TOTAL	3	3	7	12	10	8	8
AUTHORIZED	(PDSS PORTION)						
MILITARY	6	6	6	6	6	6	6
CIVILIAN	0	0	0	0	0	0	0
TOTAL	6	6	6	6	6	6	6
ADDITIONAL NEEDED							
MILITARY	-3	-3	-1	2	2	0	0
CIVILIAN	0	0	2	4	2	2	2
TOTAL	-3	-3	1	6	4	2	2

Figure D-40. Personnel required, Baseline PDSS System, SSC portion of CSS BFA *

* Assuming no change in current SSC/MILPERCEN division of responsibilities.

Constant FY81 K$

	FY81	FY82	FY83	FY84	FY85	FY86	FY87
DEVELOPMENT (RDT&E)	—	—	—	—	—	—	—
PROCUREMENT (PA	—	—	—	—	—	—	—
CONSTRUCTION (MCA)	—	—	—	—	—	—	—
OPERATIONS & MAINTENANCE (OMA)							
CIVILIAN SALARIES			63	126	63	63	63
TRAVEL	12	12	30	61	43	34	34
TOTAL	12	12	93	187	106	97	97

Figure D-41. Funding required, Baseline PDSS System, SSC portion of CSS BFA*

* Assuming no change in current SSC/MILPERCEN division of responsibilities.

SECTION X. MANEUVER BFA

D-34. SYSTEM DESCRIPTION. 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 proponency for the Maneuver BFA. Within the Combined Arms Center (CAC), the Combined Arms Combat Development Activity (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 D-42. Of the associated centers and schools shown in the figure only the US Army Armor Center and the US Army Aviation Center are proponents for BAS being addressed in this study. The Armor Center is proponent for the Advanced Attack Helicopter, a Category 2 BAS, while the Aviation Center is proponent for 10 Category 3 BAS in this BFA. TRADOC System Managers (TSM) involved with BAS in this BFA include:

- The TSM, Advanced Attack Helicopter (AAH), located at the Aviation Center
- 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
- 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 D-42 are the subordinate elements of CACDA that are involved in the development and life cycle management of BAS in this BFA, in the current Baseline System. 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.

D-35. RESPONSIBILITIES AND RELATIONSHIPS.

a. Responsibilities. CACDA acts as the TRADOC proponent for integration of all tactical automated systems and coordinates and integrates the tactical data and associated communications system requirements of all combat, combat support, and combat service support systems. With respect to BAS in the Maneuver BFA, three directorates of CACDA have responsibilities as discussed below.

PRECEDING PAGE BLANK-NOT FILMED

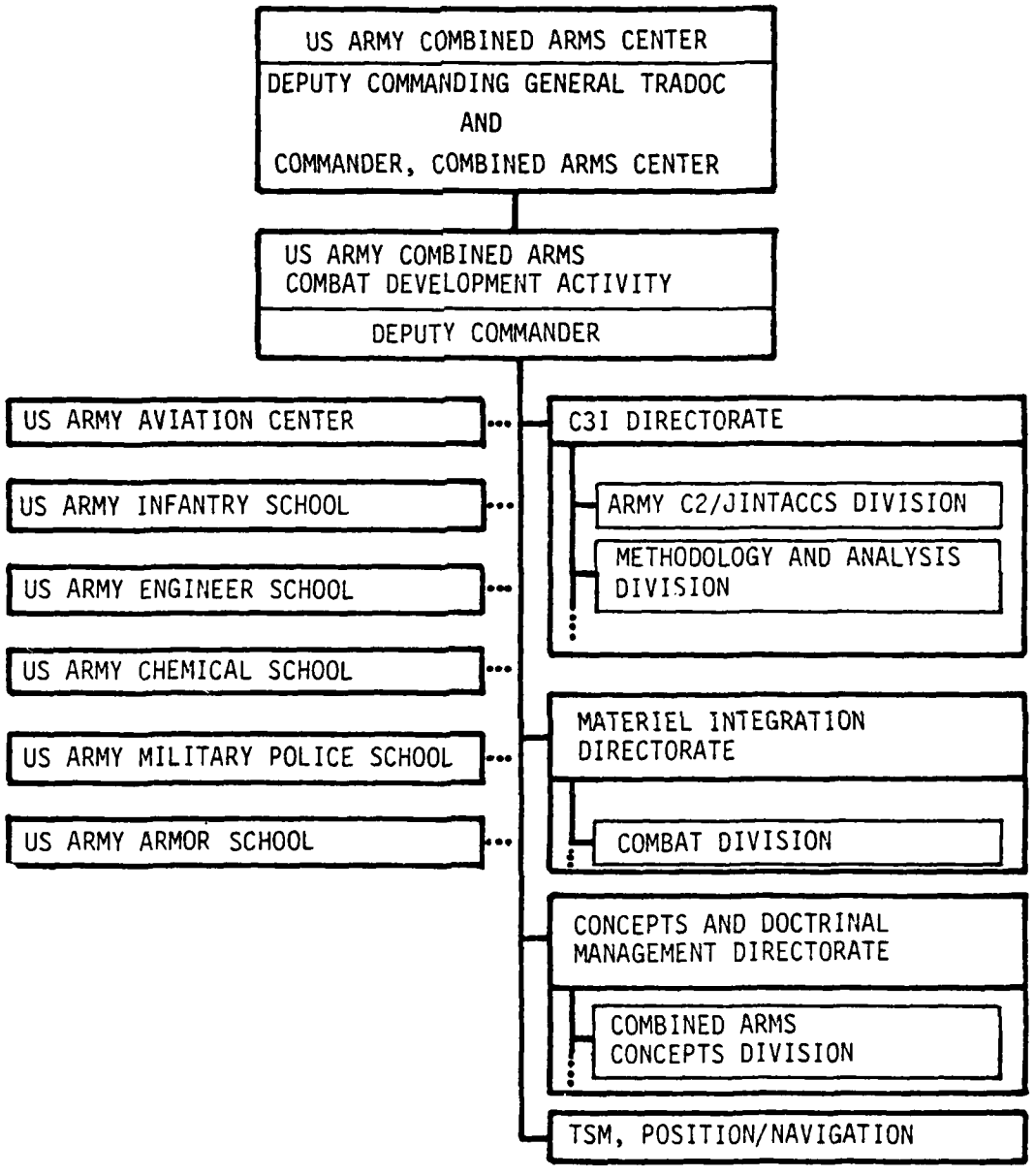


Figure D-42. Organizations with major responsibilities in the PDSS Baseline System for Maneuver BFA BAS

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

(2) 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.

(3) C3I Directorate. This directorate serves as the TRADOC proponent for the Command Control System, for Battlefield Automation 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.

b. 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 less extensive 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 two, and the TSM Position/Navigation is proponent for one. 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 Communications Functional Areas, respectively, since it is in those areas that the greatest requirement for PDSS resources to support these systems will exist.

c. Principal Interfaces. Interfaces, within and external to TRADOC, must be established and maintained by organizations involved with PDSS for BAS in the Maneuver BFA shown in Figure D-43. Primary responsibility for these interfaces rests with the proponent Combat Developer organization and the TSM for those systems for which a TSM has been established. With respect to the one Category 2 system in this BFA (i.e., the Advanced Attack Helicopter), development is proceeding under the PM Advanced Attack Helicopter, St. Louis. CERCOM, TSARCOM, ARRCOM, and MICOM may each be involved to some extent as the DARCOM readiness command for this system. No PDSS Center has been designated at this time to support this system. The Armor Center, as the proponent, and CACDA, as the integrating center, must coordinate with the system developer, at the appropriate time in the life cycle, in designating a PDSS Center for this system. Other CACDA and Aviation Center interfaces with ARRADCOM, AVRADCOM, and ERADCOM are required in connection with Category 3 BAS in this BFA.

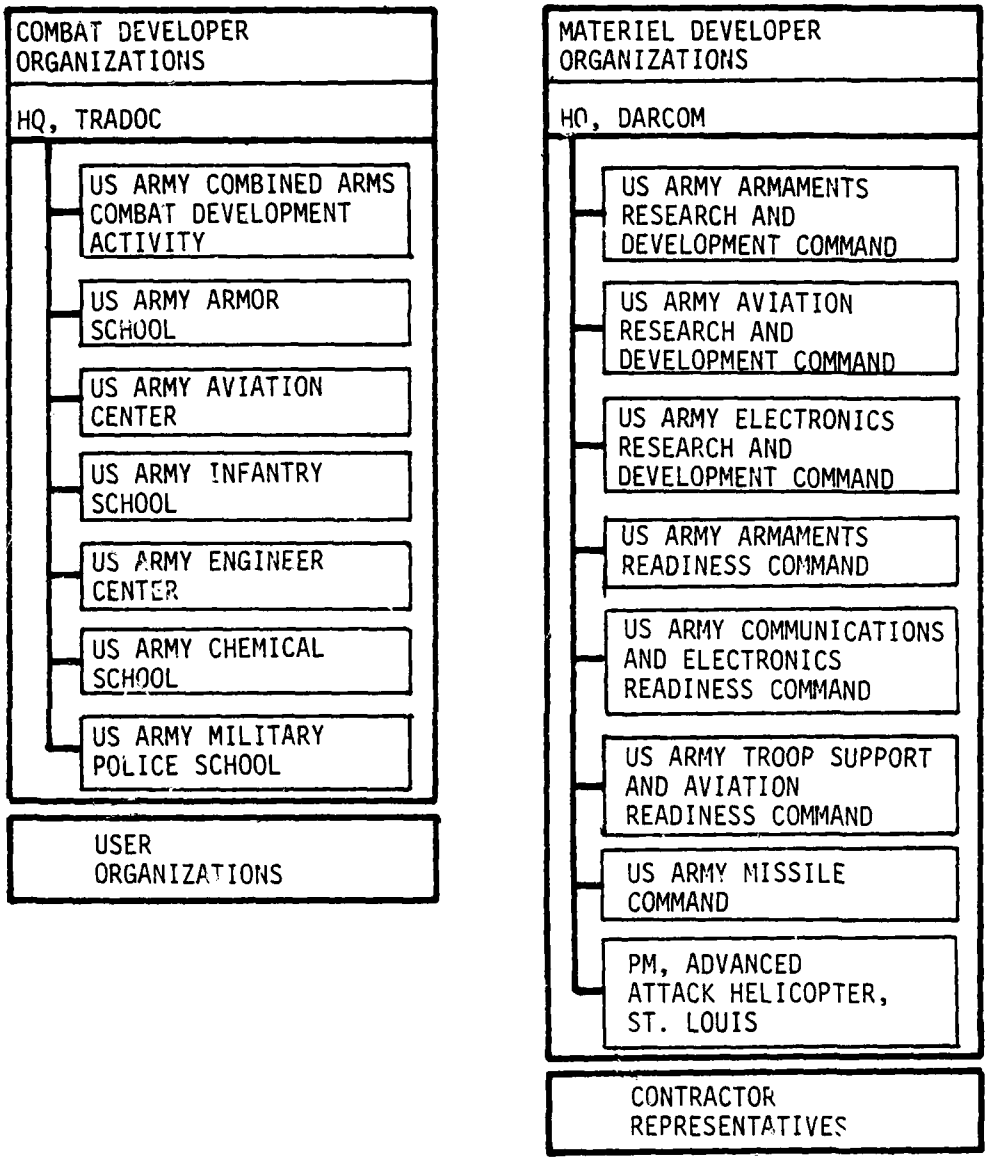


Figure D-43. Principal organizations that must interact in the Maneuver BFA PDSS Baseline System

D-36. SYSTEM CAPABILITIES.

a. PDSS Functions. Combat Developer PDSS responsibilites that were identified during Phase I of this study were used as a basis for describing and analyzing the current capabilities of the Maneuver BFA Baseline PDSS System. These responsibilities are shown in Figure D-44. Six task areas are shown in the first column. The second column identifies PDSS responsibilities in each of these general areas. The third column describes the functions that must be performed to fulfill the responsibility shown in the second column. Information shown in the remaining columns is described below.

(1) Relationship of PDSS functions and the system life cycle. The fourth column contains an entry indicating when each PDSS function will/may have to be performed during the system life cycle. This entry has been developed for each function based on the discussion of the relationship of PDSS and the system life cycle, contained in Chapter 1, Paragraph 1-4.c. Specific entries are further explained by the legend in the figure.

(2) Relationship of PDSS functions and BAS in this BFA. Entries in the fifth column indicate the number of Category 1 and 2 BAS in this BFA deemed to currently require performance of each PDSS function. This entry varies among the functions because of the unique relationship between each PDSS function and the system life cycle stage a system is in, as discussed in Paragraph (1), above. Entries in the sixth column indicate the number of BAS in this BFA for which each function is currently being performed adequately. In this case the entries reflect the AAH.

(3) Relationship of PDSS functions and organizational elements. Entries in the seventh through the thirteenth columns identify organizations at the directorate, division, or separate office levels, that are currently involved in the PDSS effort within this BFA. The entries under each organizational element indicate whether or not that element is adequately performing each of the functions for which it is responsible. An "X" has been entered whenever an element is deemed to be satisfactorily fulfilling or participating in fulfilling the PDSS function, located to the left, for the relevant currently identified BAS whose stage in the life cycle requires performance of that function. A blank indicates that the function is not being performed by the organizational element identified at the top of the column. An "N" entry indicates that the organizational element is not responsible for performing the PDSS function at this time.

b. Discussion of Current Capabilities. A review of Figure D-44 reveals no significant shortfalls in the capabilities to support the AAH at this time.

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	DIRECTORATE OF COMBAT DEV., ARMOR CENTER	DIRECTORATE OF TRAINING DEV., ARMOR CENTER	TSM, AAH	ARMOR & ENGINEER BOARD	C3I DIRECTORATE, CACDA**	MATERIEL INTEGRATION DIR., CACDA**	CONCEPTS AND DOCTRINAL MGMT DIR, CACDA**
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	1	1	X	Z	X	Z			
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	1	1	X	Z	X	Z			
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	1	1	X	Z	X	Z			
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	1	1	X	Z	X	Z			
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	1	1	X	Z	Z	Z			
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	1	1	X	Z	Z	Z			
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS² CONCEPT.	1	0	0	Z	Z	Z	Z			
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	1	1	X	Z	X	Z			
		2. PLAN AND PROGRAM FOR RESOURCES.	1	1	1	X	Z	X	Z			
		3. ACQUIRE AND MANAGE RESOURCES.	1	1	1	X	Z	X	Z			
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	1	1	X	Z	X	Z			
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	1	1	X	Z	X	Z			
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	0	0	Z	Z	Z	Z			
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	0	0	Z	Z	Z	Z			
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	1	1	X	Z	X	Z			
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	0	0	X	Z	X	Z			
		2. EXAMINE BASIS FOR REQUIREMENT.	2	0	0	X	Z	Z	Z			
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	0	0	X	Z	Z	Z			
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	0	0	X	Z	X	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	1	1	X	Z	X	Z			
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	1	1	X	Z	X	Z			

Figure D-44. Baseline requirements and capabilities--MANEUVER BFA
(continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	DIRECTORATE OF COMBAT DEV., ARMOR CENTER	DIRECTORATE OF TRAINING DEV., ARMOR CENTER	TSM, AAH	ARMOR & ENGINEER BOARD	C31 DIRECTORATE, CACDA**	MATERIEL INTEGRATION DIR, CACDA**	CONCEPTS AND DOCTRINAL MGMT DIR, CACDA**
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	1	1	X	Z	X	Z			
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	1	1	X	Z	X	Z			
		3. IDENTIFY TRAINING IMPACT.	2	1	1	X	X	X	Z			
		4. IDENTIFY LOGISTICAL IMPACT.	2	1	1	X	Z	X	Z			
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	1	1	X	Z	X	Z			
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	1	1	X	Z	X	Z			
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	1	1	X	Z	X	Z			
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	1	1	X	Z	X	Z			
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	1	1	X	Z	X	Z			
		3. PROVIDE REQUIREMENT TO MD.	2	1	1	X	Z	X	Z			
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	1	1	X	Z	X	Z			
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	1	1	X	Z	X	Z			
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	1	1	X	Z	X	X			
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	1	1	X	Z	X	X			
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	1	1	X	Z	X	X			
		4. MONITOR DEVELOPMENT TEST (DT).	2	1	1	X	Z	X	X			
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	1	1	X	Z	X	X			
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	1	1	X	Z	X	X			
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	1	1	X	Z	X	X			
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	1	1	X	Z	X	X			
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	0	0	Z	Z	Z	Z			
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	0	0	Z	Z	Z	Z			
		2. FUNCTION AS USER SURROGATE.	3	0	0	Z	Z	Z	Z			
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	0	0	Z	Z	Z	Z			
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD	3	0	0	Z	Z	Z	Z			

Figure D-44. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	NUMBER OF BAS REQUIRING FUNCTION	NUMBER OF BAS ADEQUATELY SUPPORTED	DIRECTORATE OF COMBAT DEV., ARMOR CENTER	DIRECTORATE OF TRAINING DEV., ARMOR CENTER	TSM, AAH	ARMOR & ENGINEER BOARD	C3I DIRECTORATE, CACDA**	MATERIEL INTEGRATION DIR. CACDA**	CONCEPTS AND DOCTRINAL MGMT DIR, CACDA**
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	1	1	X	X	X	N			
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	1	1	X	X	X	N			
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	1	1	X	X	X	N			
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	0	0	N	N	N	N			
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	1	1	X	X	X	N			
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	1	1	X	X	X	N			
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	1	1	X	X	X	N			
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	0	0	N	N	N	N			
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	0	0	N	N	N	N			
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	0	0	N	N	N	N			
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED PDSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	0	0	N	N	N	N			
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	0	0	N	N	N	N			
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY PDSS RESPONSE REQUIREMENTS.	1	1	1	X	N	X	N			
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE PDSS UNDER VARIOUS SCENARIOS.	1	1	1	X	N	X	N			
		3. COORDINATE WITH THE MD IN PLANNING PDSS SUPPORT.	1	1	1	X	N	X	N			
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	0	0	N	N	N	N			
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	1	1	X	N	X	N			
	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	0	0	N	N	N	N			

* 1 = ANYTIME AFTER PDSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

**FULFILL INTEGRATING CENTER RESPONSIBILITIES FOR ALL FUNCTIONS IN ACCORDANCE WITH CAC AND FT. LVN. REG. 10-1

Figure D-44. (concluded)

D-37. RESOURCES. The results of the Phase I effort of this study did not indicate a requirement for Combat Developer PDSS resources in the Maneuver BFA at this time. However, the projected deployment of the AAH does create the need for additional personnel to handle PDSS requirements as shown below. These personnel should be located at either the Armor Center where proponency for the system is assigned or at the Aviation Center where the TSM for this system is located.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
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
Required							
Military	0	1	1	1	1	1	1
Civilian	0	1	1	1	1	1	1
TOTAL	0	2	2	2	2	2	2
Additional Needed							
Military	0	1	1	1	1	1	1
Civilian	0	1	1	1	1	1	1
TOTAL	0	2	2	2	2	2	2

This resource estimate for the Maneuver BFA is based on the assumption that personnel at CACDA and at the Aviation Center, currently involved in the development of other (Category 3) BAS in this BFA, will be adequate to handle future system requirements in their areas of responsibility.

APPENDIX E

DESCRIPTION OF THE THEORETICAL SYSTEM

CONTENTS

PRECEDING PAGE BLANK-NOT FILMED

SECTION I. GENERAL

E-1. INTRODUCTION. This appendix contains a description of a TRADOC Theoretical PDSS System for planning, managing, and performing those functions, associated with PDSS for BAS, that are the responsibility of the combat developer. This system, if implemented, would provide TRADOC the capability to fulfill all currently identified Combat Developer responsibilities in this important functional area, for all BAS projected to be in any life cycle phase requiring PDSS, through 1987. This section contains a general description of the Theoretical System. Subsequent sections of this appendix contain more detailed descriptions of each component of the Theoretical System to include their organization, responsibilities and relationships, and estimates of resources that would be required to implement the system.

E-2. GENERAL SYSTEM DESCRIPTION.

a. Structure. This TRADOC Theoretical PDSS System has been conceived under the assumptions listed in Chapter 1, and the design guidelines and other considerations discussed in Chapter 2. The result of this effort is a Theoretical System which provides a PDSS capability, tailored to the needs of HQ TRADOC and each of its functional centers that have or will have PDSS responsibilities by 1987. Figure E-1 provides an overview of this Theoretical System, structured in accordance with the BFA concept. (This figure is repeated from Chapter 3 for the readers convenience in referring to it while reviewing this appendix.) The system depicted provides for:

- PDSS Staff Elements at HQ TRADOC and at the US Army Combined Arms Combat Development Activity (CACDA) to plan, program, and coordinate the system.
- A Combat Developments System Manager (CDSM) for each Category 1 BAS and for all other BAS as required based on analysis of requirements in each BFA.
- Combat Developer Support Facility (CDSE), or PDSS augmentation of an existing major software organization, at each TRADOC functional center having a collocated MD PDSS Center.
- A Combat Developer Support Element (CDSE) at each TRADOC functional center lacking a collocated MD PDSS Center but still having need for a significant PDSS capability.
- Combat Developer PDSS Liaison offices (CD PDSS LNO) as needed to provide the required level of interaction with Materiel/System Developer PDSS Centers that are geographically separated from the CD location.
- Combat Developer PDSS Forward Support Teams (CDFST) as needed to: provide CD interface with system Users to assist in the identification, isolation, and reporting of system problems; the development and implementation of functional work around procedures; participate in User training; and provide other support and assistance as required.

PRECEDING PAGE BLANK-NOT FILMED

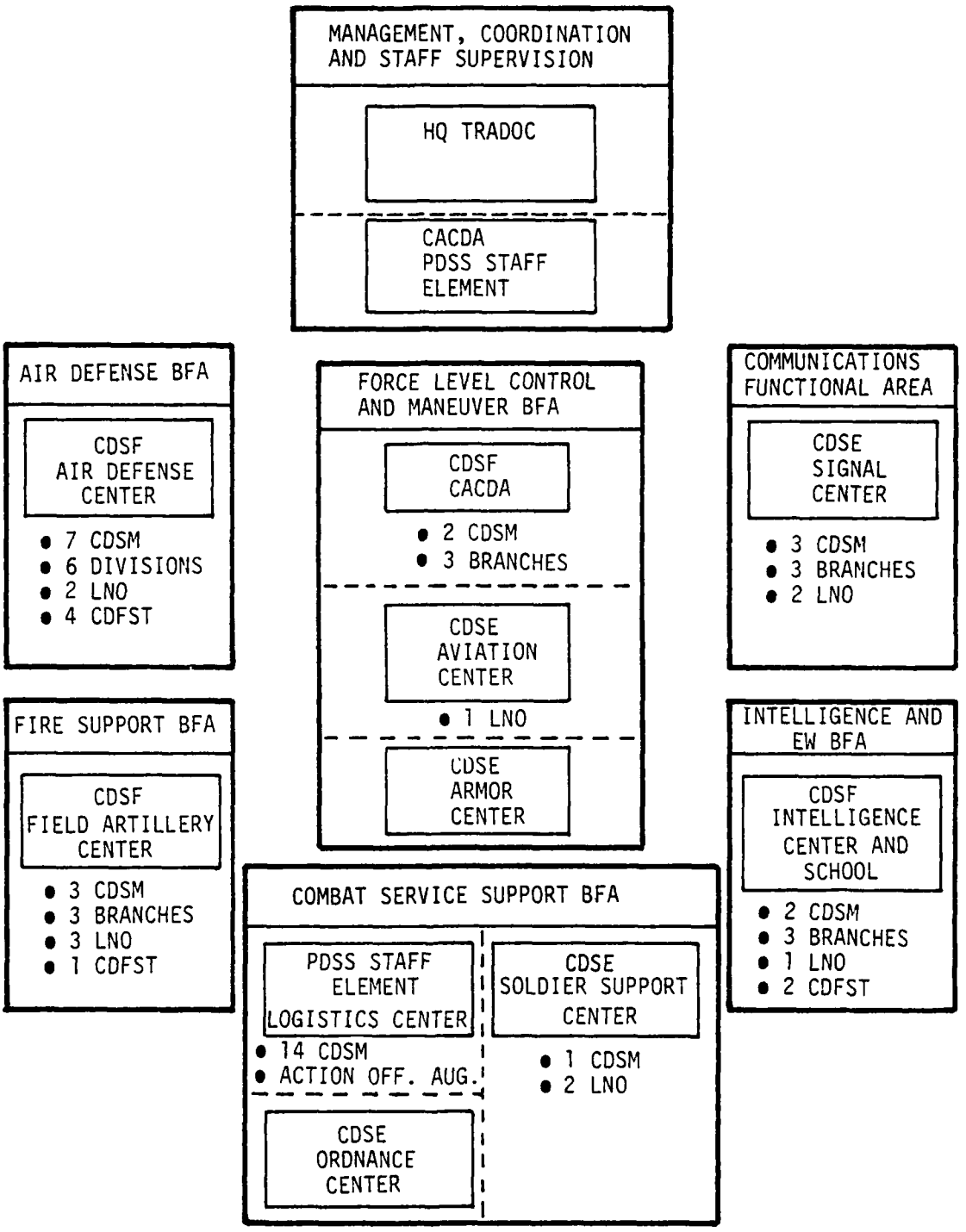


Figure E-1. Overview of the Theoretical System

This total system and each of its components has been designed to provide TRADOC and subordinate commands a capability to address all CD PDSS requirements foreseen at this time, through 1987.

b. Operational Concept. The operational concept associated with this Theoretical System does not differ markedly from TRADOC's present concept of operations. In the Theoretical System, it is envisioned that PDSS will continue to be performed as an integral part of the CD's system development and life cycle management functions under the TRADOC combat developments mission. Overall direction and control of the system will be exercised by HQ TRADOC, supported by CACDA functioning as the TRADOC PDSS proponent. PDSS responsibilities for BAS and the resources needed to carry out these responsibilities are allocated to the TRADOC functional centers, in consonance with the BFA Concept and other functional responsibilities of each center. The activity of key centers involved with command and control BAS is closely coordinated under the CCS^2 Concept.

c. System Components. Each component of the Theoretical System shown in Figure E-1 is discussed in terms of its structure, responsibilities, relationships, and resource requirements in Sections II through X of this appendix.

SECTION II. HEADQUARTERS TRADOC

E-3. ROLE. The role and responsibilities of HQ TRADOC in this Theoretical PDSS System are seen to be essentially the same as in the current Baseline System. This role is basically one of establishing policy, allocating responsibility and 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. Most PDSS requirements and operations are assigned to BFA-level components of this Theoretical System for planning, programming, and execution.

E-4. ORGANIZATION. As discussed in both Chapters 2 and 3, PDSS is accomplished within TRADOC, as a part of the combat developments mission directed by the Deputy Chief of Staff for Combat Developments (DCSCD). This Theoretical PDSS System is based on continuation of this overall operating concept. For fulfilling the HQ TRADOC role, the system provides for the establishment of a PDSS Staff Element within the Systems Integration Branch of the Telecomunications, Command and Control, and Computer Systems Directorate of DCSCD. This element would provide the focal point for coordination of all TRADOC PDSS requirements 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 school(s), described in Chapters 2 and 3, would not be changed by the implementation of this Theoretical PDSS System. However, coordination of the total TRADOC PDSS effort would be improved by this system.

E-5. 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 Theoretical System. One of these personnel is needed in FY 81 and one each in FY 82, 84, and 86. It is proposed that two of these staff members be military officers with combat arms backgrounds and secondary specialties in operations research/systems analysis and automatic data processing. The other members should be civilians in the operations research/systems analysis, electronic engineer, and automatic data processing career field. This will provide a desirable blend of knowledge and expertise and should also provide a means of maintaining the long term continuity needed in this functional area.

SECTION III. COMBINED ARMS COMBAT DEVELOPMENT ACTIVITY

E-6. ROLE. This section addresses CACDA's special role in the Theoretical PDSS System as the TRADOC PDSS Proponent. CACDA also has a major role in that portion of the Theoretical PDSS System designed to support the Force Level Control Functional Area and the Maneuver BFA, but that role is discussed in Section IV. CACDA's role in the Theoretical PDSS System, as the TRADOC PDSS proponent, is envisioned to be essentially the same as that performed at present by CACDA in the Baseline system except that it is expected to increase significantly in magnitude and scope as more BAS are fielded and the CCS^2 concept becomes a reality. Both of these developments will require increased Combat Developer participation in $PDSS_2$ in general and in support of the major command and control systems of the CCS^2 concept in particular. This will necessitate that CACDA play a very active role in coordinating and integrating the various elements of TRADOC's PDSS involvement.

E-7. ORGANIZATION. Within CACDA, the focal point for PDSS in the Baseline System is the JINTACCS Office, Army C2/JINTACCS Division, C3I Directorate. This Theoretical System requires no change in this current assignment of responsibility. However, it does propose a personnel augmentation in the JINTACCS office to provide the capability for handling the anticipated increase in functional requirements. This personnel augmentation is discussed below.

E-8. RESOURCE REQUIREMENTS. It is estimated that the increased workload associated with fulfilling responsibilities as TRADOC PDSS proponent will require two staff officers in the JINTACCS office. One of these personnel is needed in FY 81 and one in FY 83. These personnel, one military and one civilian, would serve on a dedicated basis to fulfill CACDA's role of assisting HQ TRADOC in planning, coordinating, and integrating all PDSS activity within TRADOC and providing an interface with other commands and agencies on PDSS matters. The civilian member of this two-person staff element should be in the operations research/systems analysis or automatic data processing career field. The military member should be a combat arms officer with a secondary speciality in operations research/systems analysis or automatic data processing. This combination will provide a desirable blend of knowledge and expertise relative to the CD PDSS requirements and will facilitate maintaining the degree of continuity needed in this staff element.

PRECEDING PAGE BLANK-NOT FILMED

SECTION IV. FORCE LEVEL CONTROL FUNCTIONAL AREA AND MANEUVER BFA

E-9. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. Both the Force Level Control Functional Area and the Maneuver BFA are supported by the component of the Theoretical PDSS System discussed in this section.

b. TRADOC Centers and Schools Involved. TRADOC Centers and Schools involved with this component of the Theoretical System include CACDA, the US Army Aviation Center, and the US Army Armor Center. No requirement has been identified for active involvement in the system by other centers at this time. The structure of this component of the system and its relationship to the current organization of each of the TRADOC centers involved are discussed below.

c. Organizational Structure of the System. That portion of the Theoretical PDSS System responsible for supporting Force Level Control and the Maneuver BFA is shown in Figure E-2. It consists of:

- A CDSF and two CDSMs, one for the Force Level and Maneuver Control system and one for Maneuver BFA BAS, subordinate to CACDA at Fort Leavenworth
- A CDSE at the Aviation Center, Fort Rucker, and a PDSS Liaison Office from that CDSE to be located at Fort Monmouth to facilitate Combat Developer interaction with the ERADCOM and AVRADCOM PDSS Centers
- A CDSE at the Armor Center, Fort Knox.

Each of these system elements is discussed further in the paragraphs that follow.

E-10. RESPONSIBILITIES AND RELATIONSHIPS.

a. CACDA. As proponent for Force Level Control and the Maneuver BFA, CACDA has a prominent role in all combat development actions associated with BAS in both of these functional areas. CACDA is proponent for SIGMA, the Force Level and Maneuver Control System, and for coordinating and exercising configuration control over the required interfaces between SIGMA and all other control systems of the CCS^2 concept. CACDA is also proponent for three Category 3 BAS in the Maneuver BFA (as shown in Appendix C) and for coordinating and integrating activity of all TRADOC centers involved with other BAS in this BFA. In addition, the PDSS Concept Plan for BAS, May 1980, provides for the establishment of a PDSS Center at Fort Leavenworth, to be managed by CORADCOM. In view of these and other factors, the TRADOC Theoretical PDSS System design provides for the establishment of a CDSF and two CDSMs at Fort Leavenworth as mentioned above. The CDSF organization and

PRECEDING PAGE BLANK-NOT FILMED

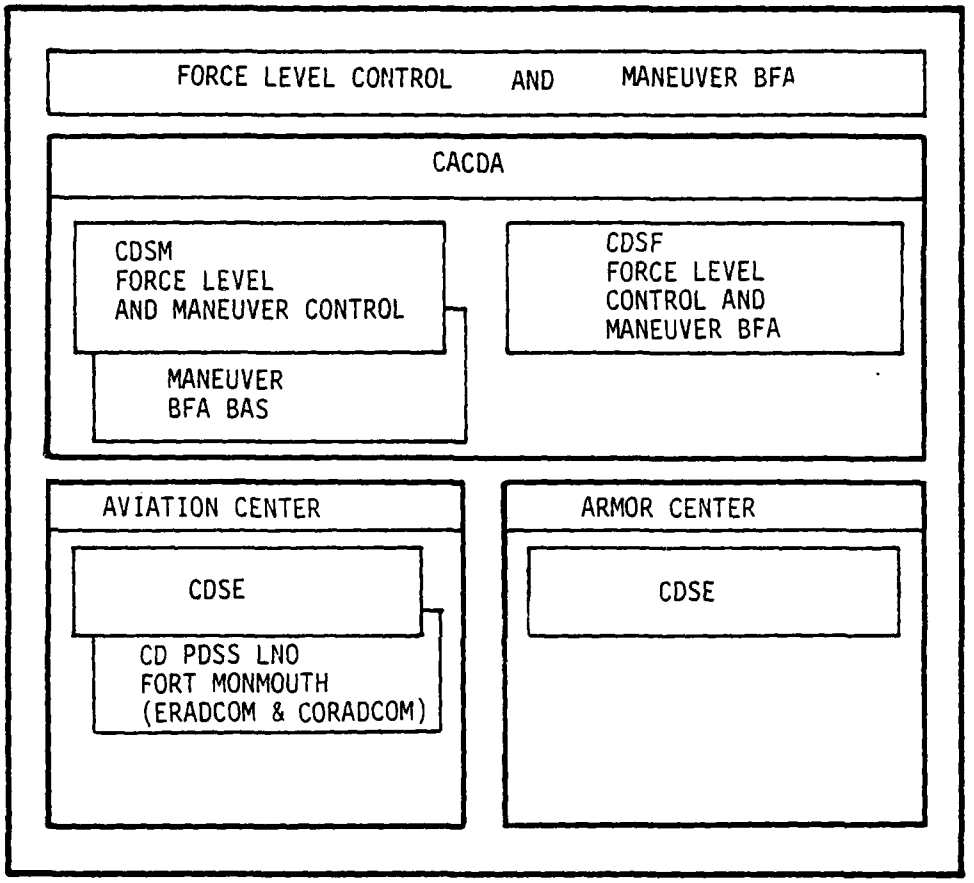


Figure E-2. Overview of the Theoretical PDSS System--
Force Level Control and Maneuver BFA

its relationship to other elements of CACDA are shown in Figure E-3. As shown, the CDSF represents a division level element in the C3I directorate. It is organized along functional lines and consists of a CDSF Chief, two CDSMs, and three branch level elements. Responsibilities and functions of each element are discussed below.

(1) Chief, CDSF. The Chief, CDSF, Fort Leavenworth, plans, directs, and supervises the operation of the CDSF in accomplishing all responsibilities for PDSS to BAS in the Force Level Control and Maneuver functional areas. In conjunction with the CDSM, Force Level and Maneuver Control System, and CDSM, Maneuver BFA Systems, he establishes priorities and allocates resources to address requirements for support of systems in both areas. He serves as the primary point of contact with the MD-managed PDSS Centers supporting BAS in both of these functional areas. The principal functions performed by the Chief, CDSF, in either a supervisory, coordination, or action role, are shown in Figure E-4. An "X" entry in the column headed Chief, CDSF indicates that he is involved directly with the function shown to the left of the X. An "N" entry indicates that he is not directly involved with the function. These same entries are used to show the functional responsibilities of each of the remaining CDSF elements discussed below.

(2) 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 plans, programs, and coordinates those software support tasks which the CDSF must perform in support of 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 E-4.

(3) CDSM, Maneuver BFA Systems. The CDSM, Maneuver BFA System, serves as the CD for software associated with systems in the Maneuver BFA. As such, he is responsible for planning, programming, and coordinating those software support tasks which the CDSF must perform in support of the BAS associated with this BFA. He also serves as the principal field user's representative and as the primary point of contact with the MD on PDSS matters concerning these BAS. Specific functions with which he is involved in either a management, coordination, or performance role are shown in Figure E-4.

(4) Branch level CDSF elements. As mentioned above, this CDSF is organized functionally with three branches. All CD PDSS functions to be performed by the CDSF for all BAS in both the Force Level Control and Maneuver functional areas are allocated among these branches in a logical manner as discussed below. The names used in this report to identify the branches have been selected to be descriptive of responsibilities of each branch. Specific functions of each branch are shown in Figure E-4.

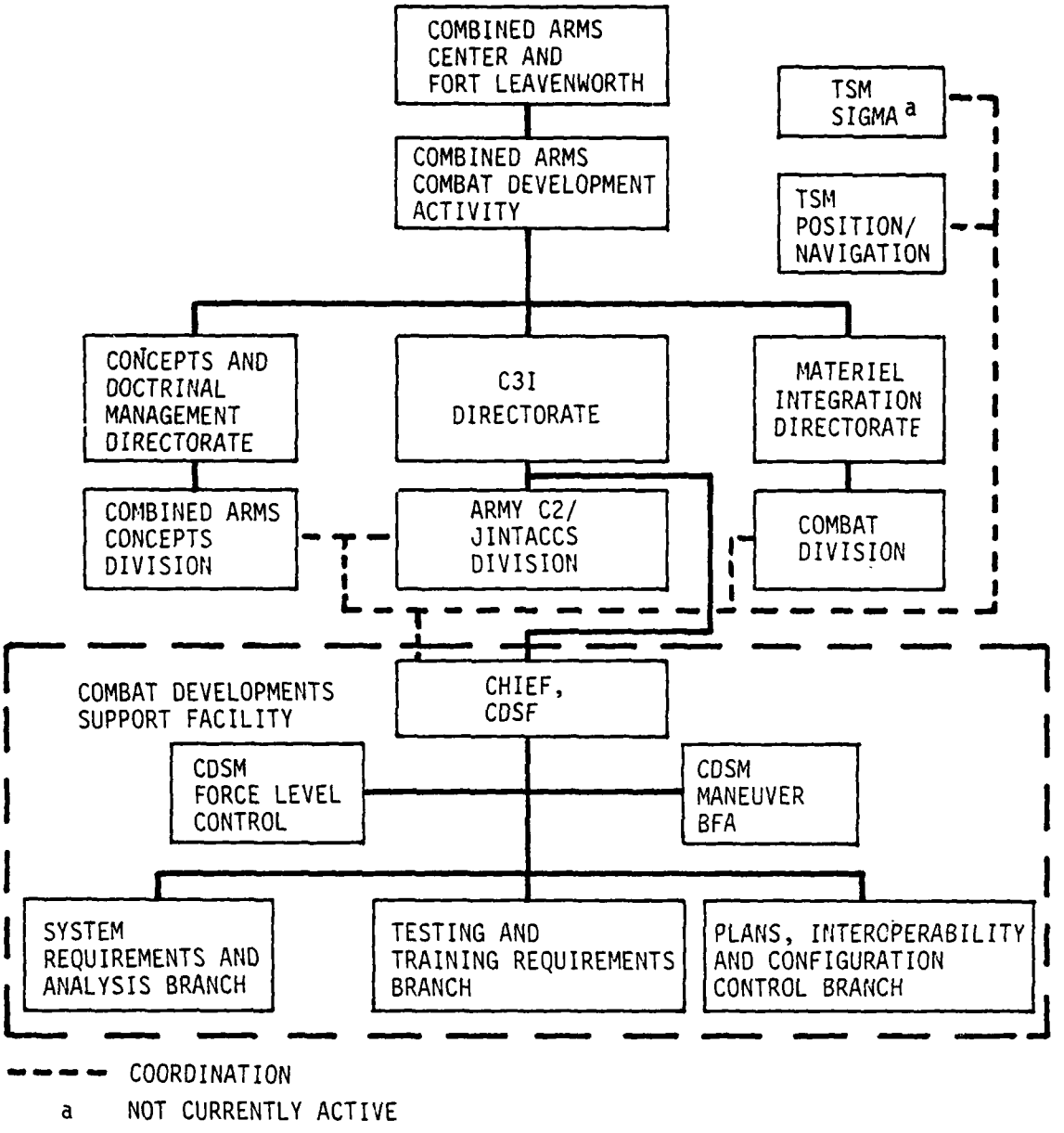


Figure E-3. Organizational structure, CDSF Fort Leavenworth

TASK AREA	TRADOC RESPONSIBILITY.	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSF	CDSM, FORCE LEVEL AND MANEUVER CONTROL SYSTEM	CDSM, SPECIFIED MANEUVER BFA BAS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH	PLANS, INTEROPERABILITY, & CONFIGURATION CONTROL BR.
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	X	X	X	Z	Z	X
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	X	X	X	Z	Z	X
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X	X	Z	Z	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	Z	X	X	Z	Z	X
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	Z	X	X	Z	Z	X
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	Z	X	X	Z	Z	X
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[2] CONCEPT.	1	Z	X	Z	Z	Z	X
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	Z	Z	X
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	Z	Z	X
		3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	X	Z	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	Z	X	X	X	Z	Z
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	Z	X	X	X	Z	Z
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	Z	X	X	X	Z	Z
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	Z	X	X	X	Z	Z
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	Z	X	X	X	Z	Z
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	Z	X	X	X	Z	Z
		2. EXAMINE BASIS FOR REQUIREMENT.	2	Z	X	X	X	Z	Z
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	Z	X	X	X	Z	Z
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	Z	X	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	Z	X	X	X	Z	Z
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	Z	X	X	X	Z	X

Figure E- 4. Assignment of functions, Theoretical System--Force Level Control and Maneuver BFA (continued on next page)

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

Figure E- 4. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSF	CDSM, FORCE LEVEL AND MANEUVER CONTROL SYSTEM	CDSM, SPECIFIED MANEUVER BFA BAS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH	PLANS, INTEROPERABILITY, & CONFIGURATION CONTROL BR.
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	N	X	X	N	X	N
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	N	X	X	N	X	N
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	N	X	X	N	X	N
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	N	X	X	N	X	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	N	X	X	X	X	N
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	N	X	X	X	X	N
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	N	X	X	X	X	N
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	N	X	X	N	X	N
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	N	X	X	X	N	X
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	N	X	X	X	N	X
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	N	X	X	N	N	X
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	N	X	X	N	N	X
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	N	X	X	X	N	N
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	N	X	X	X	N	N
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	N	X	X	X	N	X
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	N	X	X	X	N	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	N	X	X	X	N	N
	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	N	X	X	X	N	N

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

X = Element is responsible and capable
N = Element is not responsible

Figure E-4. (concluded)

(a) Plans, Interoperability, and Configuration Control Branch. This branch supports the Chief, CDSF in all actions related to planning, administering, and managing the CDSF operation. It supports both the CDSM, Force Level and Maneuver Control System and the CDSM, Maneuver BFA Systems, in all actions associated with planning PDSS support for BAS in their respective areas 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 branch 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 branch coordinates with the CDSM in authorizing release of system change packages to the field.

(b) System Requirements and Analysis Branch. This branch is responsible for all actions involving identification, analysis, and development of system functional change requirements and, in coordination with the CDSM, stating these requirements to the MD. The source of these requirements may be any system User or cognizant CD organization. They may result from any of the stimulators of change discussed in Chapter 3. Analyses conducted by the branch 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.

(c) Testing and Training Requirements Branch. As suggested by its title, responsibilities of this branch fall generally into two functional areas. With respect to testing, the branch is responsible for supporting the CDSM in planning, coordinating, and monitoring or conducting, all assigned CD actions associated with testing changes to BAS. Accomplishment of these responsibilities involves working closely with the MD, OTEA, the appropriate US Army Test Board, TCATA, and/or other designated test activities, as appropriate. The branch 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.

b. US Army Aviation Center. The Aviation Center is proponent for 10 Category 3 BAS as shown in Appendix C. Although the primary focus of effort during this study was directed to be on Category 1 and 2 systems, the CD PDSS responsibilities and workload associated with these 10 BAS were considered to be of sufficient significance to warrant some attention. PDSS support for eight of these BAS is scheduled to be provided by the AVRADCOM PDSS Center at Fort Monmouth. Support for the other two is to be provided by the ERADCOM PDSS Center, also at Fort Monmouth. To provide the desired CD PDSS capability to interact with Users and the MD in support of these systems, the Theoretical PDSS System proposes the establishment of a small CDSE at the Aviation Center and a CD PDSS Liaison Office at Fort Monmouth as shown in Figure E-2. It is envisioned that the CDSE would be established as a section within the Systems Branch, Materiel Developments Division, Directorate of Combat Developments. Resources associated with these Aviation Center PDSS elements are discussed in Paragraph E-11.

c. US Army Armor Center. The Armor Center is proponent for one Category 2 BAS, the Advanced Attack Helicopter. No PDSS Center has been designated at this time for supporting this system. However, to accomplish PDSS planning and, eventually, CD PDSS actions for this BAS, the Theoretical TRADOC PDSS System provides for the establishment of a small CDSE at the Armor Center as shown in Figure E-2. This CDSE should be established as a staff element in the Materiel Systems Division of the Directorate of Combat Developments or in the Materiel Systems Division, Directorate of Armor Aviation. Resources associated with this CDSE are discussed in Paragraph E-11.

E-11. ESTIMATE OF RESOURCE REQUIREMENTS. Time phased estimates of resouces needed to establish the Theoretical System CD PDSS elements supporting Force Level Control and the Maneuver BFA are shown below.

a. CDSF, Fort Leavenworth.

(1) Personnel. The following estimate includes four administrative personnel spaces. The "Authorized" spaces reflect an assumption that personnel authorized in the C^2 Development Branch, Army C2/JINTACCS Division, would be assigned to this CDSF.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	6	7	9	11	11	11	11
Civilian	9	11	12	14	16	17	17
TOTAL	15	18	21	25	27	28	28
Authorized							
Military	1	3	4	5	7	9	17
Civilian	1	1	1	2	3	3	4
TOTAL	2	4	5	7	10	12	21
Additional Needed							
Military	5	4	5	6	4	2	-6
Civilian	8	10	11	12	13	14	13
TOTAL	13	14	16	18	17	16	7

A breakout of these personnel requirements (based on FY 86-87 needs) by organizational element are shown below:

ELEMENT	TECHNICAL		ADMINISTRATIVE		TOTAL
	MIL	CIV	MIL	CIV	
OFFICE OF THE CHIEF	0	1	0	1	2
CDSM, FORCE LEVEL CONTROL	1	0	0	0	1
CDSM, MANEUVER BFA	1	0	0	0	1
SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	4	4	0	1	9
TESTING AND TRAINING REQUIREMENTS BRANCH	2	4	0	1	7
PLANS, INTEROPERABILITY, AND CONFIGURATION MANAGEMENT BRANCH	3	4	0	1	8
TOTALS	11	13	0	4	28

(2) Major Items of Equipment. The Fort Leavenworth CDSF 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 by the CDSF. This computer access is also required to facilitate interaction with other CDSFs which support one or more control systems in the CCS^2 concept. Specific equipment required to provide this access and the capability required must be determined through further study.

(3) Facilities. Physical facility requirements include office space for assigned personnel, a computer terminal area, and a simulation/test/analysis area that would accommodate 10 to 12 personnel working simultaneously. It would be desirable to collocate this CDSF with the CORADCOM-managed PDSS Center at Fort Leavenworth. If collocation is not feasible, other suitable space should be selected for the CDSF that will facilitate interaction with the PDSS Center as well as other elements of CACDA.

(4) Funds. An estimate of funds required for the CDSF civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars. It is based on an average annual cost of $31.6K for one technical level civilian and $16.0K for each administrative-level civilian.

	FUNDS REQUIRED ($000)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	268.8	332.0	348.0	411.2	458.8	474.8	474.8

Funds needed for equipment and physical facilities are dependent upon development of specific requirements and plans addressing these areas.

b. US Army Aviation Center. Estimates of personnel resources needed to establish the CDSE at the Aviation Center and the Aviation Center's CD PDSS LNO at Fort Monmouth are shown below. No other resources, except administrative space for these elements, are required.

(1) CDSE Personnel.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	1	1	1	1	1	1	1
Civilian	1	1	2	2	2	2	2
TOTAL	2	2	3	3	3	3	3

None of these personnel are currently authorized; all would be new requirements.

(2) CD PDSS LNO, Fort Monmouth

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	1	1	1	1	1	1	1
Civilian	0	0	0	0	0	0	0
TOTAL	1	1	1	1	1	1	1

This space is not currently authorized; it represents a new requirement. One space is considered sufficient for this office. Office coverage during periods of absence of the person occupying this space can be provided by other CD PDSS LNO personnel at Fort Monmouth, included in the Theoretical PDSS System. The CD PDSS LNO should also share administrative space at Fort Monmouth.

c. US Army Armor Center. Personnel estimated to be required to establish the CDSE at the Armor Center are shown below. These are new requirements.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	1	1	1	1	1	1	1
Civilian	0	0	1	1	1	1	1
TOTAL	1	1	2	2	2	2	2

SECTION V. COMMUNICATIONS FUNCTIONAL AREA

E-12. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. The component of the TRADOC Theoretical PDSS System described in this section is designed to provide a capability to adequately fulfill all Combat Developer (CD) PDSS responsibilities for battlefield automated systems (BAS) in the Communications Functional Area through 1987.

b. Organizations Involved. The US Army Signal Center (USASC) is the principal TRADOC organization involved with this component of the Theoretical System. Principal elements of USASC involved with PDSS at the USASC are identified in Figure E-5. Within this structure, the focal point for handling all CD PDSS responsibilities and functional requirements would be the new division level element identified within the Directorate of Combat Developments, the Combat Development Support Element (CDSE).

c. CDSE Structure. The structure of the USASC CDSE, which is the central element in the Communications Functional Area component of the TRADOC Theoretical PDSS system is shown to the branch level in Figure E-6. As indicated, the CDSE organization consists of:

- A Chief of the CDSE
- A CDSM for ground communication systems
- A CDSM for satellite communication systems
- A CDSM for position location, navigation, and control systems
- A CD PDSS LNO at Fort Monmouth
- A System Requirements and Analysis Branch
- An Interoperability Branch
- A Testing and Training Requirements Branch.

E-13. RESPONSIBILITIES AND RELATIONSHIPS. The CDSE depicted in Figure E-6 has overall responsibility for CD PDSS functions associated with all BAS for which the US Army Signal Center is proponent. These BAS include two Category 1 systems and eight Category 2 systems shown in Figure E-7, and seven Category 3 systems identified in Appendix C. In addition, USASC becomes proponent for the AN/MSC-67 Communications Center (COMFAC), a Category 2 BAS, upon its deployment. (The US Army Intelligence Center and School is proponent for COMFAC during its development.) Outlined below are responsibilities related to PDSS for BAS within the communications functional area. The following discussion begins with addressal of the US Army Signal Center, as a whole, and its principal elements. Then, the CDSE and its Fort Gordon elements, designed to fulfill specific PDSS functions, are addressed. TSMs

PRECEDING PAGE BLANK-NOT FILMED

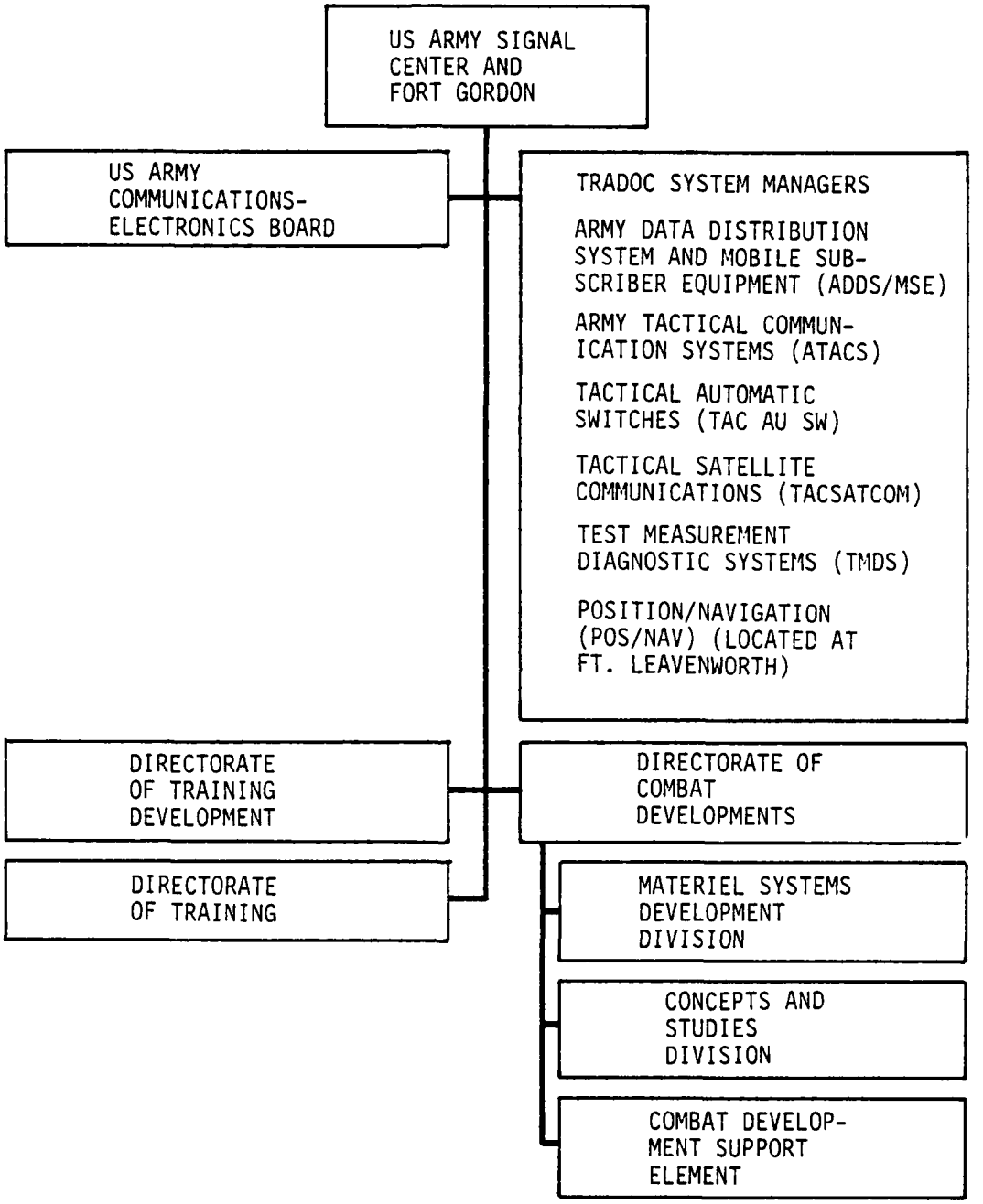


Figure E-5. Principal elements involved with the Theoretical PDSS System--Communications Functional Area

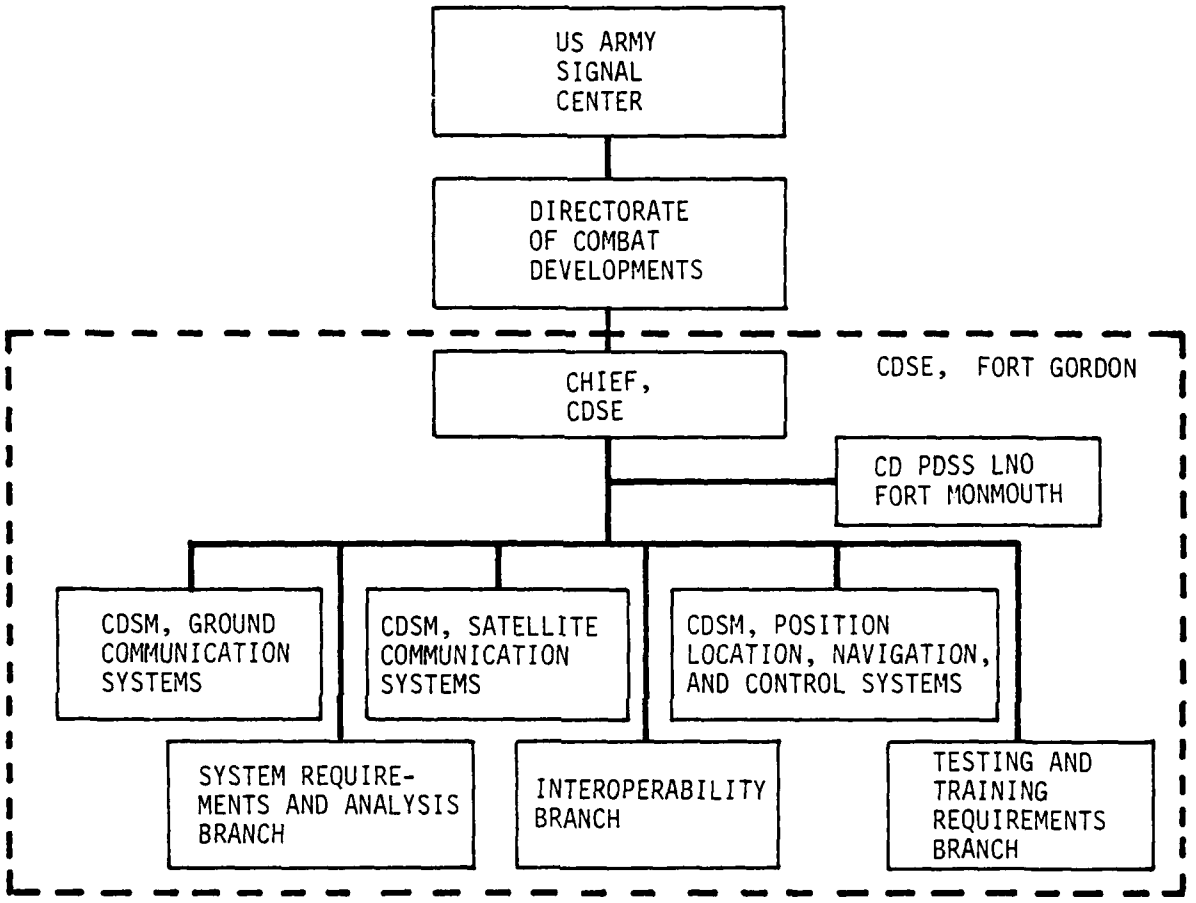


Figure E-6. CDSE Structure, Theoretical PDSS System--
Communications Functional Area

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USASC	PLRS--POSITION LOCATION REPORTING SYSTEM (FULL SCALE DEVELOPMENT)
USASC	JTIDS--JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (FULL SCALE DEVELOPMENT)
USASC	PLRS/JTIDS HYBRID (VALIDATION)
USASC	DLDED--DIVISION LEVEL DATA ENTRY DEVICE (CONCEPTUAL)
USASC	AN/TTC-39--AUTOMATIC TELEPHONE 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 TELEPHONE CENTRAL OFFICE (FULLY OPERATIONAL)
USASC	AN/MSM-105--TEST AND AUTOMATIC REPAIR FACILITY (LOW RATE INITIAL PRODUCTION)

Figure E-7. Systems requiring PDSS--Communications Functional Area

and other elements are then addressed. The CDSE PDSS Liaison office, to be located at Fort Monmouth, is addressed last. The functions of each CDSE element are also shown in Figure E-8.

a. 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-electronics requirements for communications doctrine, equipment and materiel.
- Acts as the US Army Communications-Electronics 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 communications-electronics doctrine, communications systems, equipment and materiel
- Evaluates the life-cycle assessment of all proponent materiel and training systems to insure that optimum training, doctrinal and organizational concepts are being used.

b. 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 the Commandant for the USASC training activities.

c. 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 proponency
- Develops maintenance concepts and reviews the maintenance test package

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD	CHIEF, COSE	CDSM, GROUND COMMUNI-CATION SYSTEM	CDSM, SATELLITE COMMUNI-CATION SYSTEMS	CDSM, POSITION LOCATION, NAVIGATION, & CONTROL SYS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY BRANCH	TESTING AND TRAINING RE-QUIREMENTS BRANCH			
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	X	X	X	X	X	X	X	Z	Z	Z	X	Z	Z			
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	X	X	X	X	Z	X	X	Z	Z	Z	X	Z	Z			
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X	X	X	X	Z	X	Z	Z	Z	Z	Z	Z			
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	X	X	X	X	Z	Z	Z	X	X	X	Z	Z	Z			
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	Z	Z	Z	Z	Z	Z	Z	X	X	X	Z	Z	Z			
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	Z	Z	Z	Z	Z	Z	Z	X	X	X	Z	Z	Z			
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS^2 CONCEPT.	1	Z	Z	Z	Z	X	Z	X	Z	Z	Z	Z	Z	Z			
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	X	X	X	X	X	X	X	X	X	X			
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	X	Z	X	X	X	X	X	X	Z	Z			
		3. ACQUIRE AND MANAGE RESOURCES.	1	Z	Z	Z	Z	Z	X	X	X	X	X	X	Z	Z			
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	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	X	Z	Z			
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	Z	Z	Z	Z	X	Z	X	Z	Z	Z	X	Z	Z			
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	Z	Z	Z	Z	X	Z	X	X	X	X	Z	Z	Z			
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	Z	Z	Z	Z	X	Z	X	X	X	X	Z	Z	Z			
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	Z	Z	Z	Z	X	Z	X	Z	Z	Z	Z	Z	Z			
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	X	X	X	X	X	Z	Z	X	X	X	Z	Z	Z			
		2. EXAMINE BASIS FOR REQUIREMENT.	2	X	X	X	X	X	Z	Z	X	X	X	Z	Z	Z			
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	Z	Z	Z	Z	X	Z	X	Z	Z	Z	Z	Z	Z			
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	X	X	X	X	X	Z	Z	X	X	X	Z	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	X	X	X	X	X	Z	Z	X	X	X	X	Z	Z			
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	X	X	X	X	X	Z	Z	X	X	X	Z	X	Z			

Figure E-8. Assignment of functions, Theoretical System-- Communications Functional Area (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD	CHIEF, CDSE	CDSM, GROUND COMMUNICATION SYSTEMS	CDSM, SATELLITE COMMUNICATION SYSTEMS	CDSM, POSITION LOCATION, NAVIGATION & CONTROL SYS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH			
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	X	X	Z			
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	X	Z	Z			
		3. IDENTIFY TRAINING IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	X	Z	X			
		4. IDENTIFY LOGISTICAL IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	X	Z	Z			
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	X	Z	X			
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	Z	Z	X			
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT	2	Z	Z	Z	Z	X	Z	Z	X	X	X	Z	X	Z			
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X	Z	Z			
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X	X	Z			
		3. PROVIDE REQUIREMENT TO MD.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	X	Z	Z			
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	Z			
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	X	Z	Z			
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	Z	Z	Z	Z	Z	X	X	Z	Z	Z	Z	Z	X			
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	Z	Z	Z	Z	Z	X	X	Z	Z	Z	Z	Z	X			
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	Z	Z	Z	Z	Z	X	X	Z	Z	Z	Z	Z	X			
		4. MONITOR DEVELOPMENT TEST (DT).	2	Z	Z	Z	Z	Z	X	X	Z	Z	Z	Z	Z	X			
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	X			
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	X			
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	X			
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	X			
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	Z			
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	Z	Z	Z	Z	Z	Z	X	X	X	X	Z	Z	Z			
		2. FUNCTION AS USER SURROGATE.	3	Z	Z	Z	Z	Z	Z	X	X	X	X	Z	Z	Z			
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	Z	Z	Z	Z	Z	Z	X	X	X	X	Z	Z	X			
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	3	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	Z			

Figure E- 8. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD	CHIEF, CDSE	CDSM, GROUND COMMUNICATION SYSTEMS	CDSM, SATELLITE COMMUNICATION SYSTEMS	CDSM, POSITION LOCATION, NAVIGATION, & CONTROL SYS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH			
6. 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	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	Z	Z	Z	Z	Z	Z	Z	X	X	X	Z	Z	X			
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	Z	Z	Z	Z	Z	Z	Z	X	X	X	Z	Z	X			
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	X	X	X	X	Z	Z	Z	Z	Z	Z	Z	X	Z			
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	X	X	X	X	Z	Z	Z	Z	Z	Z	Z	X	Z			
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z	Z			
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	X	Z	Z			
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	X	X	X	X	Z	Z	X	Z	Z	Z	X	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	Z	X	Z	Z			
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	X	Z	Z			
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	Z	Z	Z	Z	Z	Z	Z	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	X	X	X	X	Z	Z	Z	X	X	X	X	X	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	Z	Z	X	Z	Z	Z	X	X	X	X	X	Z			

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING.

X = Element is responsible and capable
N = Element is not responsible

Figure E-8. (concluded)

- Maintains cognizance of computer simulation models used by communication system analyses in CE system design, engineering, and evaluation.

d. 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.

e. Chief, CDSE. The Chief, CDSE plans, directs, and supervises the operation of the CDSE in accomplishing all CD responsibilities for PDSS to BAS in the Communications Functional Area. He establishes priorities and plans, programs, and allocates resources to address requirements. He serves as the primary point of contact on PDSS matters with other elements of USAICS and TRADOC, and with the Materiel/System Developers of communications BAS. He interacts with other USASC elements who have responsibilities associated with these BAS to include the five TSMs identified in Figure E-5, above, the Communications-Electronic Board, and the Directorate of Training Developments.

f. CDSM, Ground Communication Systems. This CDSM serves as the CD manager for all PDSS activities associated with ground communication systems. Included in this group are one category 1 system (AN/MSM-105(V)), three Category 2 systems (AN/TTC-39 , AN/TYC-39, AN/UGC-74), and two category 3 systems. The CDSM, Ground Communication Systems 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 E-8.

g. CDSM, Satellite Communication Systems. This CDSM serves as the CD manager for all PDSS activities associated with satellite communication systems. Included in this group are four category 3 systems. The PDSS responsibilities and functions of the CDSM, Satellite Communication Systems are the same as those described previously for the CDSM, Ground Communication Systems except that the systems supported tend to require less PDSS activity. Specific functions of this CDSM are shown in Figure E-8.

h. CDSM, Position Location, Navigation, and Control Systems. This CDSM serves as the CD manager for all PDSS activities associated with position location, navigation, and control systems. Included in these three groups are one Category 1 system (PLRS/JTIDS Hybrid), four category 2 systems (PLRS, JTIDS, DLDED, AN/TSQ-111(V)), and one category 3 system. The PDSS responsibilities and functions of this CDSM are the same as those described previously for the CDSM, Ground Communication Systems except for variations imposed by differences in system types and quantities. Specific functions of this CDSM are shown in Figure E-8.

i. System Requirements and Analysis Branch. This branch of the CDSE is responsible for all actions involving identification, analysis, and development of system functional change requirements and, in coordination with the three CDSMs, stating these requirements to the MD. The source of these requirements may be any system User or cognizant CD organization. They may result from any of the stimulators of change discussed in Chapter 3. 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 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 E-8.

j. Interoperability Branch. This branch of the CDSE is responsible for all PDSS actions which deal with the interoperability of communication systems with each other and with other BAS. This branch analyzes the impact of functional changes on the interoperability of each system. It identifies interoperability change requirements which result from either changes to a communication system or to a BAS with which the communication system must interoperate. Functions of this branch are shown in Figure E-8.

k. Testing and Training Requirements Branch. As suggested by its title, responsibilities of this branch fall generally into two functional areas. With respect to testing, the branch is responsible for supporting the CDSMs in planning, coordinating, and monitoring or conducting, all assigned CD actions associated with testing changes to communication systems. Accomplishment of these responsibilities involves working closely with the MD, the TRITAC Office, the US Army Communications-Electronics Board, and/or other designated test activities, as appropriate. The branch 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. Functions of this branch are shown in Figure E-8.

l. Tactical Data Systems Office, Directorate of Training Developments, USASC. This office is responsible for the development of training materials which deal with tactical data systems.

m. 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 (ADPE).

n. US Army Communications-Electronics Board. The Communications-Electronics (C-E) Board at Fort Gordon is one of eight US Army test boards and as such is assigned the following missions under TRADOC Regulation 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 specific evaluations as directed by CG TRADOC.

o. 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.

p. 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 Army Tactical Communication Systems within TRADOC. For these systems, TSM-ATACS is ensuring that User requirements are being satisfied in terms of O&O concepts, hardware, software, training, fielding, and ILS support.

q. 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).

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

s. 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 Test Measurement Diagnostic Systems.

t. 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 Lightweight 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.

u. CD PDSS LNO. This office, which will be located at Fort Monmouth, will be responsible for interfacing directly with the CORADCOM PDSS Center at Monmouth which is tasked to provide PDSS for all BAS for which USASC is proponent except the DLDED which will be supported by the Computer Systems Command (CSC) at its Fort Belvoir PDSS Facility. The liaison office will coordinate PDSS requirements and interact with the MD as appropriate in all phases of the PDSS effort.

E-14. ESTIMATE OF RESOURCE REQUIREMENTS. Time phased estimates of resources needed to establish the Theoretical System CD PDSS component supporting the Communications Functional Area are shown below.

a. Personnel.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	19	22	26	28	33	36	37
Civilian	13	13	15	16	18	20	20
TOTAL	32	35	41	44	51	56	57
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	19	22	26	28	33	36	37
Civilian	13	13	15	16	18	20	20
TOTAL	32	35	41	44	51	56	57

A breakout of these personnel by CDSE element is shown below:

ELEMENT	PERSONNEL MANAGERIAL/ TECHNICAL MIL	MANAGERIAL/ TECHNICAL CIV	ADMINISTRATIVE/ TECHNICIAN MIL	ADMINISTRATIVE/ TECHNICIAN CIV	TOTAL
Chief, CDSE	3	1	0	1	5
CDSM, Ground Communications Systems	9	3	0	1	13
CDSM, Satellite Communications Systems	4	0	0	1	5
CDSM, Position Location Navigation, and Control Systems	12	6	0	1	19
System Requirements and Analysis Branch	4	2	0	0	6
Interoperability Branch	3	2	0	0	5
Testing and Training Requirements Branch	2	2	0	0	4
TOTALS	37	16	0	4	57

b. Funds. An estimate of funds required for the CDSE civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars. It is based on an estimated average cost of $31.6K per technical manyear (including 10 percent loading), and $16.0K per administrative manyear.

	FUNDS REQUIRED ($000)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	348.4	348.4	411.6	443.2	506.4	569.6	569.6

SECTION VI. FIRE SUPPORT BFA

E-15. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. The Fire Support BFA is the major contributor of fire support to maneuver forces. Included in this BFA are systems which support missile artillery, artillery fire control, and target acquisition.

b. TRADOC Centers and Schools Involved. The focal point for providing PDSS to the BAS within the Fire Support BFA is the US Army Field Artillery Center and Fort Sill (USAFACFS).

c. Organizational Structure of the System. That portion of the Theoretical PDSS System which supports the Fire Support BFA is shown in Figure E-9. It consists of:

- A CDSF and three CDSMs, one for artillery fire control systems, one for target acquisition systems, and one for missile artillery systems, subordinate to USAFAS at Fort Sill
- A CD PDSS LNO at Redstone Arsenal to facilitate combat developer interaction with the MICOM PDSS Center
- A CD PDSS LNO at Picatinny Arsenal to facilitate combat developer interaction with the ARRADCOM PDSS Center
- A CD PDSS LNO at Fort Monmouth to facilitate combat developer interaction with the AVRADCOM and ERADCOM PDSS Centers
- One or more Combat Developer Forward Support Teams (CDFST) to facilitate combat developer interaction with the User in the field wherever TACFIRE is deployed.

Each of these system elements is discussed further in the paragraphs which follow.

E-16. RESPONSIBILITIES AND RELATIONSHIPS.

a. BAS to be Supported. The primary BAS to be supported by the CDSF at Fort Sill are those listed in Figure E-10. In addition to these primary BAS, there are 14 category 3 BAS (as shown in Appendix C) to be supported to a lesser degree.

b. Responsibilities and Functions to be Performed. Figure E-9 (presented earlier) gave an overview of the Theoretical PDSS System for the Fire Support BFA. Figure E-11 (presented here) gives a more detailed view of those organizational elements which are at Fort Sill. In the paragraphs which follow, the PDSS responsibilities and functions of each organizational element shown in those figures are described in detail.

PRECEDING PAGE BLANK-NOT FILMED

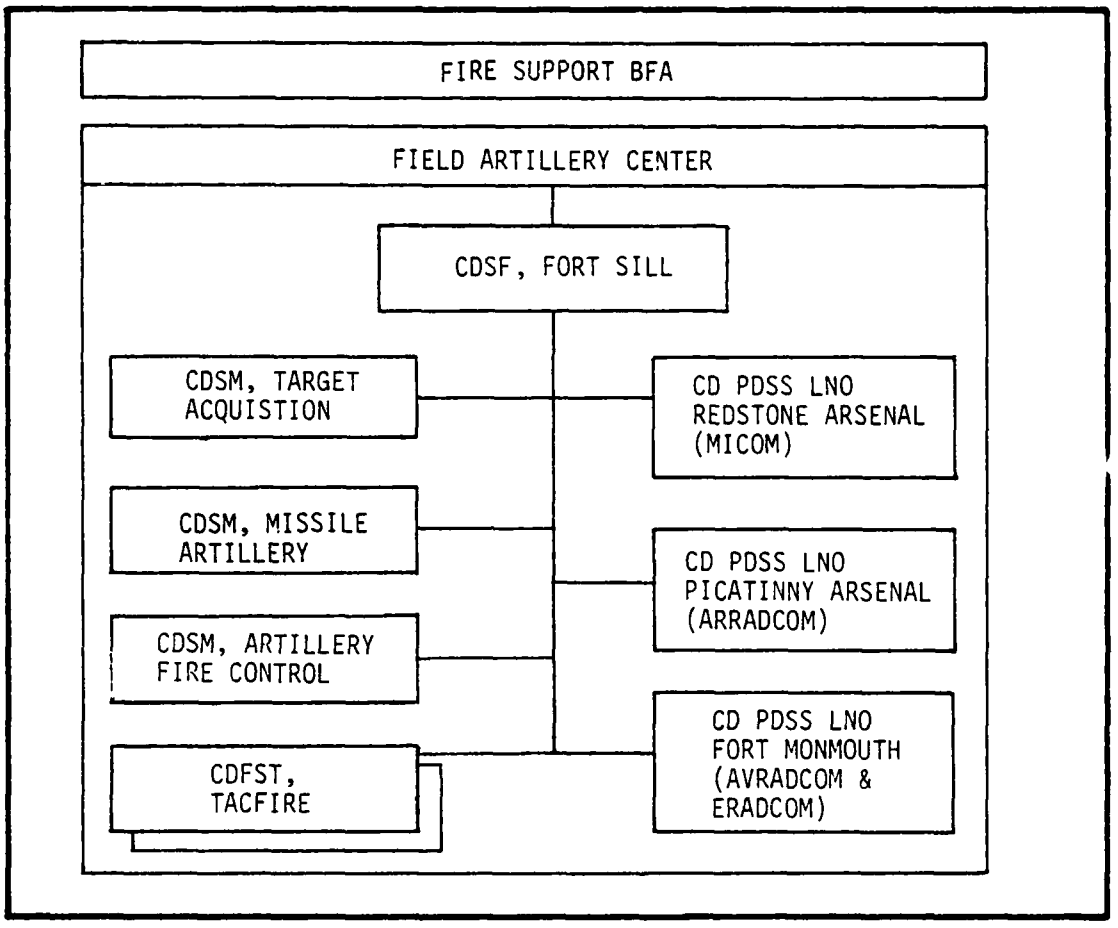


Figure E-9. Overview of the Theoretical PDSS System-Fire Support BFA

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

Figure E-10. Category 1 and 2 systems requiring PDSS - Fire Support BFA

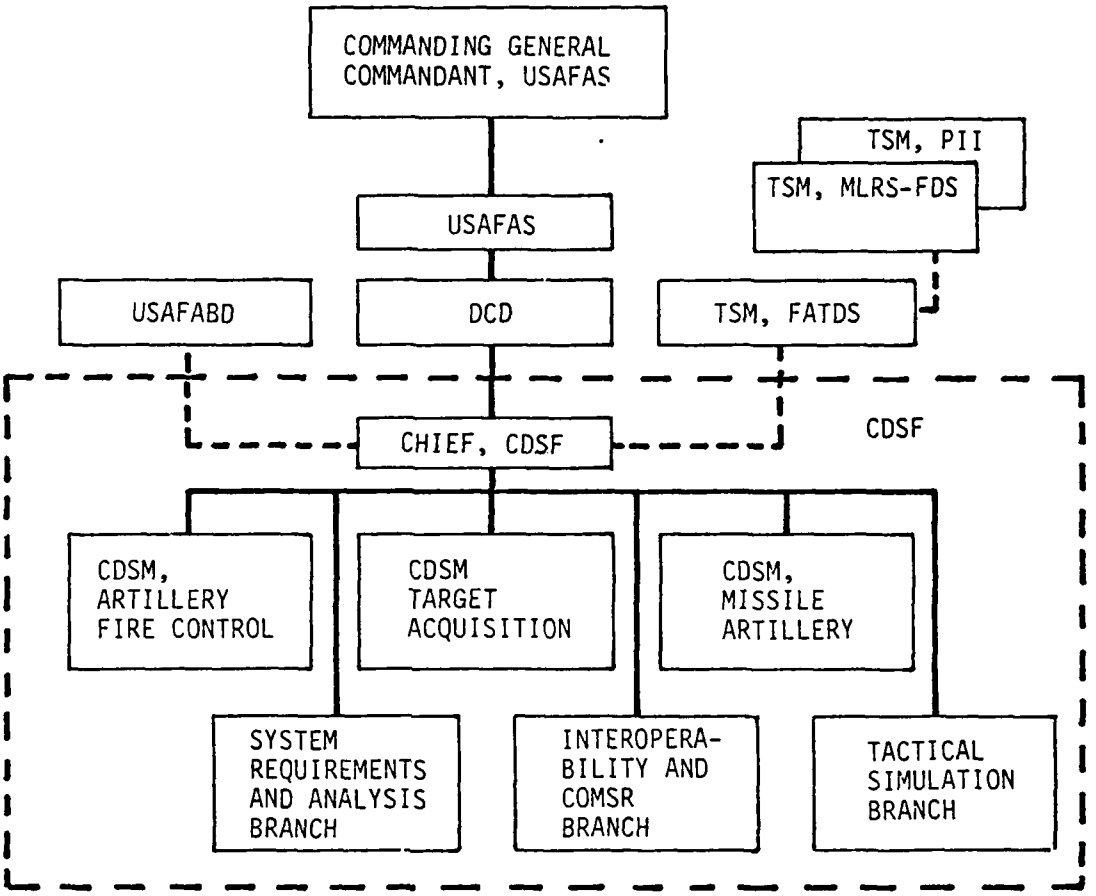


Figure E-11. PDSS organizational structure, USAFACFS

(1) Fort Sill. Included in the responsibilities of Fort Sill are the following:

- Provide personnel, equipment, and facilities in support of test and evaluation of military equipment systems and components conducted by US Government agencies
- Command and exercise staff supervision and provide assistance to Field Artillery School in the areas of troop support, forecasts of personnel and equipment requirements for future instructional and developmental uses, and coordinating the integration of the school support mission with all other units/activities
- Command and exercise staff supervision and provide assistance to the Field Artillery Board in the areas of troop support for ongoing developmental tests, and coordination of future requirements for personnel and equipment.

(2) Commanding General, USAFACFS. The Commanding General has the following responsibilities:

- Commands all elements of the US Army Field Artillery Center, Fort Sill
- Serves as the Commandant of the US Army Field Artillery School.

(3) US Army Field Artillery School (USAFAS). The PDSS related responsibilities of USAFAS include:

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

(4) Combat Developments Directorate (CD), USAFAS. The PDSS activities of the Combat Developments Directorate, USAFAS include:

- Evaluate the effects of new or revised doctrine, tactics, and techniques upon existing or developmental BAS
- Serve as the User proponent for Field Artillery BAS.

(5) Chief, CDSF, Fort Sill. The chief of the CDSF at Fort Sill plans, directs, and supervises the operation of the CDSF in accomplishing its PDSS responsibilities for BAS in the Fire Support BFA In conjunction with the CDSM, Artillery Fire Control, the CDSM, Target Acquisition, and the CDSM, Missile Artillery, he establishes priorities and allocates CDSF resources to address requirements for support of systems in each area. He serves as the primary point of interface with the Chief, TACFIRE/FATDS Software Support Group, with the President, US Army Field Artillery Board, and with the TRADOC System Manager, FATDS. Specific functions of the Chief, CDSF are shown in Figure E-12.

(6) 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), 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 E-12.

(7) CDSM, Target Acquisition. This CDSM serves as the CD manager for all PDSS associated with target acquisition systems. Included in this group are six category 3 systems. The PDSS responsibilities and functions of the CDSM, Target Acquisition 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 E-12.

(8) CDSM, Missile Artillery. This CDSM serves as the CD manager for all PDSS associated with missile artillery systems. Included in this group are one category 2 system (Pershing II) and three category 3 systems. The PDSS responsibilities and functions of the CDSM, Missile Artillery are the same as those described previously for the CDSM, artillery Fire Control except that the systems supported tend to contain less software. Specific functions of this CDSM are shown in Figure E-12.

(9) 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 three CDSMs, stating these requirements to the MD. The source of these requirements may be any system User or cognizant CD organization. They may result from any of the stimulators of change discussed in Chapter 3. Analyses

TASK AREA	TRADOC RESPONSIBILITY!	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSS, FORT SILL	CDSM, ARTILLERY FIRE CONTROL	CDSM, TARGET ACQUISITION	CDSM, MISSILE ARTILLERY	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 PDSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	X	Z	Z	Z	X	Z	X	X	X	X
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	X	Z	Z	Z	X	Z	X	X	X	X
		3. PARTICIPATE IN DESIGNATION OF PDSS CENTER FOR EACH BAS.	1	X	Z	Z	Z	Z	Z	Z	Z	X	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	Z	X	X	X	Z	Z	Z	Z	X	X
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	Z	X	X	X	Z	Z	Z	Z	X	Z
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	Z	X	X	X	Z	Z	Z	Z	X	Z
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS² CONCEPT.	1	X	Z	Z	Z	Z	Z	Z	Z	X	Z
	3. MANAGE CD PDSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES; SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	X	X	X	X	X	X	X
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	X	Z	Z	Z	X	X	X
		3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	X	X	Z	Z	Z	X	X	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	Z	Z	Z	Z	X	Z	Z	Z	X	Z
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	X	Z	Z	Z	X	Z	Z	Z	X	Z
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	X	X	X	X	Z	Z	Z	Z	X	Z
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	X	X	X	X	Z	Z	Z	Z	X	Z
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	X	Z	Z	Z	Z	Z	Z	Z	Z	Z
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	Z	X	X	X	Z	Z	Z	Z	X	Z
		2. EXAMINE BASIS FOR REQUIREMENT.	2	Z	X	X	X	Z	Z	Z	Z	X	Z
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	X	Z	Z	Z	Z	Z	Z	Z	Z	Z
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	Z	X	Z	X	Z	Z	Z	Z	X	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	Z	X	X	X	X	Z	Z	Z	Z	Z
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	Z	X	X	X	Z	X	Z	Z	Z	Z

Figure E-12. Assignment of functions, Theoretical System--Fire Support BFA (continued of next page)

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

Figure E-12. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSS, FORT SILL	CDSM, ARTILLERY FIRE CONTROL	CDSM, TARGET ACQUISITION	CDSM, MISSILE ARTILLERY	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 REQUIRED BY SYSTEM CHANGE (EXCEPT FOR NEW EQUIPMENT TRAINING (NET)).	1. DETERMINE TRAINING/RETRAINING DEVELOPMENT REQUIREMENTS.	2	N	N	N	N	N	N	N	N	X	N
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	N	N	N	N	N	N	N	N	X	N
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	N	N	N	N	N	N	X	N	X	N
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	N	X	X	X	N	N	N	N	X	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	N	N	N	N	N	N	X	N	X	N
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	N	N	N	N	N	N	X	N	X	N
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	N	N	N	N	N	N	X	N	X	N
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	N	X	X	X	N	N	N	N	X	N
6. USMKI	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	N	N	N	N	N	X	N	N	X	X
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	N	N	N	N	N	X	N	N	X	X
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	N	N	N	N	N	N	N	X	N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	X	N	N	N	N	N	N	N	N	N
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	N	X	X	X	N	N	N	N	X	N
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	X	N	N	N	X	N	N	N	X	N
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	X	N	N	N	X	N	N	N	X	N
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	N	X	X	X	N	N	N	N	N	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	N	X	X	X	X	X	X	N	N	X
	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	N	X	X	X	X	X	N	N	X	N

* 1 = ANYTIME AFTER PDSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

X = Element is responsible and capable
N = Element is not responsible

Figure E-12. (concluded)

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 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 E-12.

(10) 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.

(11) 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 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 either direct or remote access to computer resources.

(12) 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 evaluations 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 (TSSG). 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 OT, DT, or command post exercise oriented. In addition to its testing responsibilities, this organization is also a member of the local Software Configuration Control Board.

(13) TRADOC System Manager, 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.

(14) TRADOC System Manager, 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 insures User participation in all ECP's. In addition, the TSM-MLRS participates as a principal member on the TACFIRE/MLRS Executive Committee dealing with all aspects of TACFIRE-FDS interoperability.

(15) TRADOC System Manager, 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.

(16) CD PDSS Liaison Office (LNO). The Theoretical PDSS System for the Fire Support BFA includes three CD PDSS Liaison Offices. Each one is an extension of the CDSF at Fort Sill. These offices 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.

(a) CD PDSS LNO, Redstone Arsenal. This LNO provides the principal user representation to the MICOM PDSS Center for the four missile artillery systems listed in Appendix C.

(b) CD PDSS LNO, Picatinny Arsenal. This LNO provides the principal user representation to the ARRADCOM PDSS Center for three artillery fire control systems listed in Appendix C.

(c) CD PDSS LNO, Fort Monmouth. This LNO provides the principal user representation to the ERADCOM PDSS Center for 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.

(17) Combat Developer Forward Support Team (CDFST) TACFIRE. The CDFST, TACFIRE is subordinate to the CDSF at Fort Sill and has the responsibility for maintaining liaison with and providing PDSS guidance to Users of TACFIRE. The number of such teams at any given time will depend upon the number and geographic dispersion of TACFIRE Users.

E-17. ESTIMATE OF RESOURCE REQUIREMENTS. Estimates of the resources required to establish the Theoretical PDSS System in support of the Fire Support BFA are presented below.

a. CDSF, Fort Sill.

(1) Personnel. The personnel estimates presented here are based on the total set of Fire Support BAS listed in Appendix C. The "authorized" spaces shown reflect an assumption that the personnel currently authorized for the Tactical Data Systems Division, Combat Developments Directorate, USAFAS would be assigned to the CDSF, Fort Sill.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	21	26	28	32	32	33	33
Civilian	14	15	15	16	16	16	16
TOTAL	35	41	43	48	48	49	49
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	0	5	7	11	11	12	12
Civilian	10	11	11	12	12	12	12
TOTAL	10	16	18	23	23	24	24

A breakout of the personnel requirements by organizational element for FY 87 is shown below.

ELEMENT	MANAGERIAL AND TECHNICAL MIL	MANAGERIAL AND TECHNICAL CIV	CLERICAL AND TECHNICIANS MIL	CLERICAL AND TECHNICIANS CIV	TOTAL
Chief, CDSF	3	1	0	1	5
CDSM, Artillery Fire Control	10	3	0	1	14
CDSM, Target Acquisition	6	0	0	1	7
CDSM, Missile Artillery	5	1	0	1	7
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
TOTALS	32	11	1	5	49

(2) 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 CCS^2 concept. Specific items of equipment required to provide this access must be determined through further study.

(3) Facilities. Physical facility requirements include office space for assigned personnel and floor space for a computer and/or remote computer terminals. It would be desirable to collocate this CDSF with the CORADCOM-managed PDSS Center at Fort Sill. If collocation is not feasible, other suitable space should be selected for the CDSF which will facilitate close interaction with the PDSS Center.

(4) Funds. An estimate of funds required for the CDSF civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars. It is based on an estimated average cost of $31.6K per technical man year and $16.0K per administrative man year.

	FUNDS REQUIRED (THOUSANDS) FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	364.4	396.0	396.0	427.6	427.6	427.6	427.6

Funds needed for equipment and facilities are dependent upon development of specific requirements and plans addressing these areas.

b. CD PDSS LNO. Each of the three liaison offices described in Paragraph E-16.b.(16) would have the following personnel requirements:

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	1	1	1	1	1	1	1
Civilian	0	0	0	0	0	0	0
TOTAL	1	1	1	1	1	1	1

The only other requirement for each liaison office is floor space for one desk with appropriate accompanying equipment (e.g., file cabinet, bookcase, etc.).

c. US Army Field Artillery Board (USAFABD).

(1) Personnel. In order to fulfill its PDSS responsibilities in testing TACFIRE update master tapes, the USAFABD will require the following additional personnel:

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

(2) 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.

(3) Funds. An estimate of funds required for the USAFABD personnel identified above is as follows:

	FUNDS REQUIRED (THOUSANDS)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	63.2	63.2	63.2	63.2	63.2	63.2	63.2

SECTION VII. AIR DEFENSE BFA

E-18. SYSTEM DESCRIPTION.

a. System Purpose and Scope. The Theoretical 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 Theoretical PDSS System has been structured without reference to resource constraints. This system, while somewhat ideal in nature, should nevertheless represent a potentially achievable target, and therefore a useful point of reference for consideration of other system alternatives. This system is basically a TRADOC system, although it must interact with, and is heavily dependent on, many non-TRADOC elements.

b. Principal System Features. This Theoretical System for providing PDSS in the Air Defense BFA is centered on what would be a new element, the Combat Developer Support Facility (CDSF), within the existing Directorate of Combat Development (DCD), of the US Army Air Defense School (USAADS), at Fort Bliss, Texas. Based on the existing Combat Systems Software Division (CSSD), the term CDSF, as used broadly in this Theoretical System, would encompass both the concept of an organizational element with overall responsibility for PDSS and the concept of a physical facility in which equipment and personnel resources could be assembled as necessary to address software issues of USAADS. This CDSF is based on the CDSF model in the PDSS Concept Plan for BAS, of May 1980, and serves as the CD facility which is to be the focal point for interaction with MD PDSS Centers such as that maintained at Fort Bliss by MICOM. This CDSF, under the management of the Directorate of Combat Developments, is the center for performance of CD software functions, which differ significantly from MD functions. In this Theoretical System, the CDSF operates in close coordination with other CDSFs. It is closely linked by special communications with the CCS^2 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 CDSF in this Theoretical System for providing PDSS in the Air Defense BFA includes elements whose principal mission is to serve the concepts analysis, 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 simulators and devices in the Air Defense BFA. Other TRADOC elements, both at Fort Bliss and at other installations, are active parts of this Theoretical System. Outside of TRADOC, there are elements of DARCOM, the Users of Air Defense systems, the Army Research Institute, and various contractors which are involved in the Theoretical 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. Accordingly, the CDSF at Fort Bliss, in this Theoretical System, maintains a liaison element at this Raytheon center to facilitate interchange of information, and coordination and execution of necessary PDSS functions. The CDSF and this liaison element are linked with special communications capabilities. A second liaison element is located at Redstone Arsenal, Alabama, where MICOM maintains its missile Software Support Center, which serves as the MD PDSS Center for I-Hawk, Roland, and limited

portions of Patriot. Other elements of the CDSF have specific responsibilities for maintaining liaison with and providing guidance and support to Users. These elements, called Combat Developer PDSS Forward Support Teams (CDFSTs), provide liaison and/or delivery of forward support to User organizations such as the 32d AADCOM. These CDFSTs also possess special communications capabilities linking them directly with the CDSF at Fort Bliss, and other key elements, as necessary.

c. Principal Elements Involved. Principal elements involved in the Theoretical PDSS System for the Air Defense BFA are identified in Figure E-13. This figure also indicates some of the principal interfaces involved, thus providing a type of system overview. Structure within the CDSF is addressed below. Other DARCOM elements are also involved, but are not shown here in Figure E-13. 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, at least in theory, should be considered as potential contributors to the overall PDSS mission. It must be understood, however, that most of the analysis of ADA systems software, as needed in performance of PDSS functions, requires high-resolution, high-fidelity system simulations and simulators of a type which do not (and would not be expected to) exist at locations other than USAADS and the Army Materiel Systems Analysis Agency (AMSAA), Aberdeen, MD. Also not shown in Figure E-13 are various testing organizations and user units that may become heavily involved from time to time. Examples are the Air Defense Board, the 11th Airborne Brigade at Fort Bliss, ARMTE at White Sands Missile Range, the Tactical Interoperability Support Element (TISE) and TCATA at Fort Hood, the Joint Test Element and MAINSITE at Fort Huachuca, OTEA, NTC (Fort Irwin), and ad hoc field test activities. In this connection, 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 environments, inabilities 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.

d. CDSF Structure. The structure of the CDSF which is central to this Theoretical PDSS System is outlined down to the branch level in Figure E-14. This CDSF is seen as a mission-oriented organizational entity subordinate to the Director of Combat Developments, within the US Army Air Defense School. Although this CDSF is seen as a separate organizational entity within the Directorate of

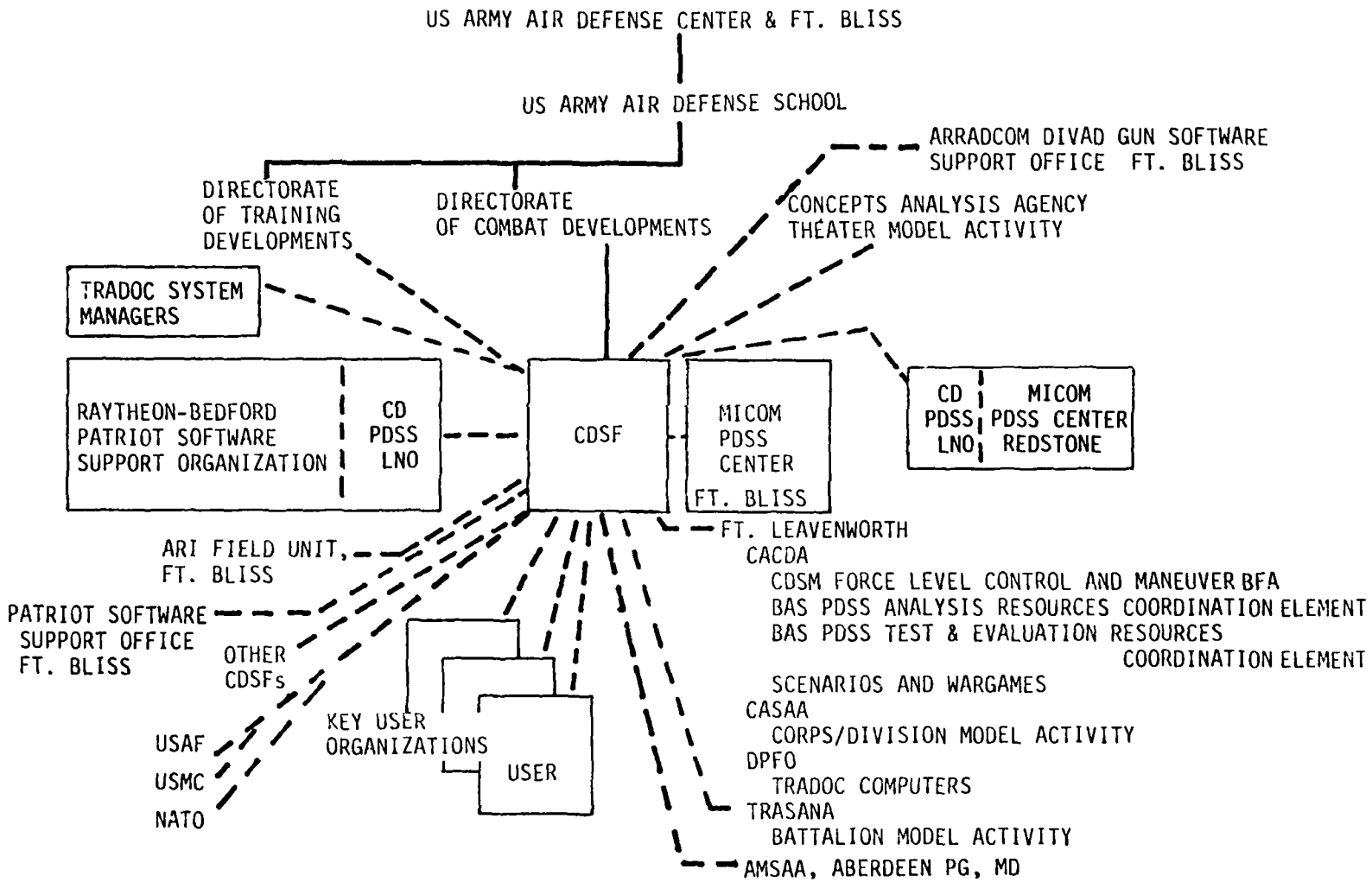
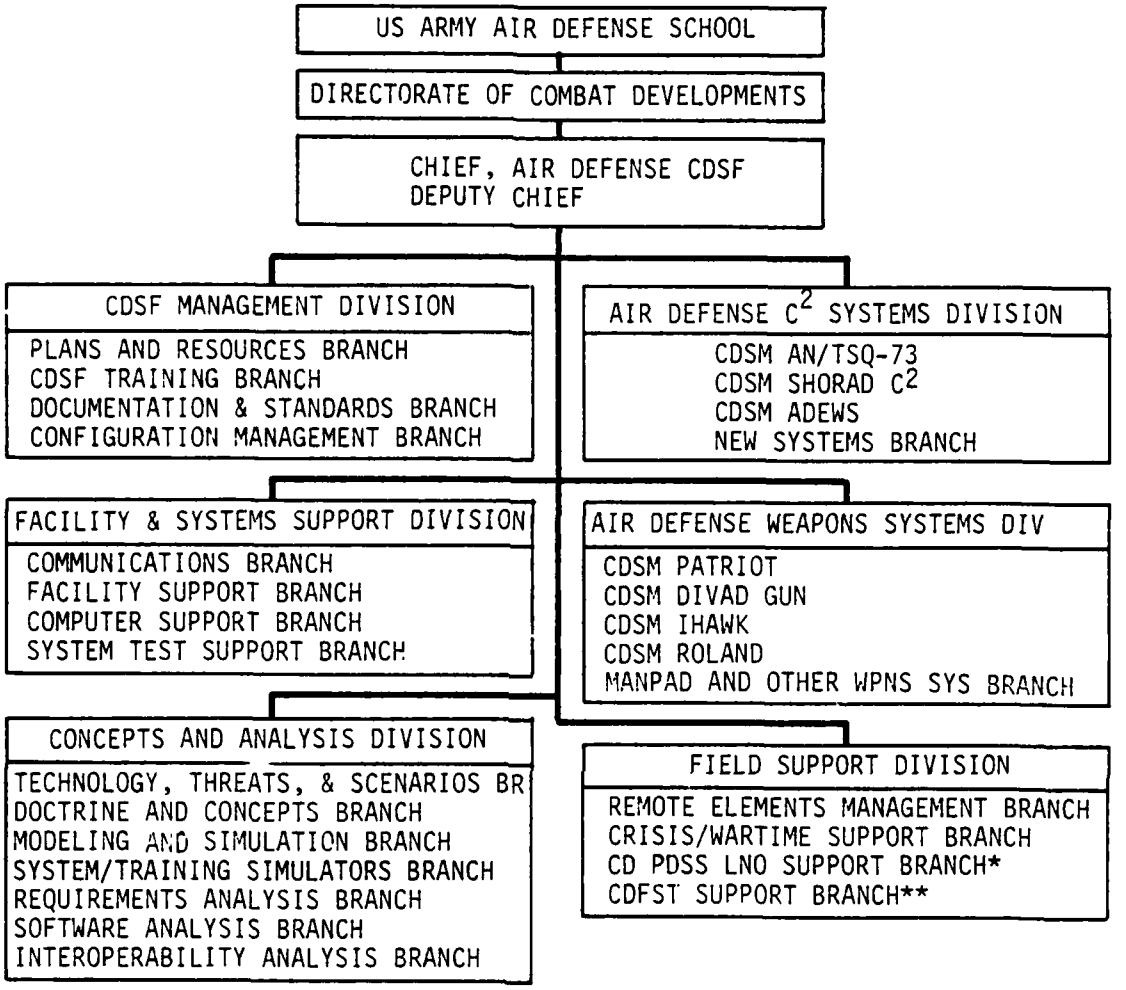


Figure E-13. Principal elements, Theoretical PDSS System for Air Defense BFA



* CD PDSS LNO LOCATED AT:
(1) RAYTHEON-BEDFORD PDSS CENTER
(2) MICOM PDSS CENTER, REDSTONE

** CDFSTs LOCATED AT MAJOR USER UNITS AS NEEDED

Figure E-14. CDSF structure, Theoretical PDSS System--Air Defense BFA

Combat Developments (DCD), the subordinate portions of the CDSF, which reports through the Chief, Air Defense CDSF, or his deputy, must operate in close coordination with other elements of DCD. The basic structure of the CDSF involves six divisions, based primarily on functional lines. These divisions are:

- CDSF Management
- Facility & Systems Support
- Concepts and Analysis
- Air Defense C^2 Systems
- Air Defense Weapons Systems
- Field Support.

Within these six divisions, structure is again based primarily on functional lines, except in the Air Defense C^2 and Weapons Systems Divisions, where the branch level breakdown is according to principal system, and where the CDSMs for these principal systems serve as branch managers. The content of branches and the responsibilities of the elements within the CDSF are discussed in paragraph E-19, below.

e. Operating Concept. The operating concept for this Theoretical system involves CD performance of CD functions, but in conjunction with MD performance of MD functions. In fact, the basic mission of this Theoretical 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. Containing the analytical tools, devices, documentation, 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 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.

E-19. RESPONSIBILITIES AND RELATIONSHIPS.

a. CDSF. The overall mission of the Air Defense CDSF is to ensure that all CD PDSS responsibilities and functions are adequately fulfilled for the entire Air Defense BFA. The responsibilities and functions of the elements of this CDSF are outlined below.

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

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

(3) CDSF Management Division. The CDSF Management Division provides staff support for the Chief and Deputy Chief and is responsible for a group of functions pertaining largely to management, management policies, and management support of the CDSF. These functions are performed within four branches: Plans and Resources, CDSF Training, Documentation & Standards, and Configuration Management.

(a) Plans and Resources Branch. The Plans and Resources Branch is the focal point for the determination of CDSF workload requirements, and the preparation and maintenance of plans and policies for acquisition, separation, and effective use of all resources within the CDSF. This function is performed in coordination with superior elements as well as the elements within the CDSF.

(b) CDSF Training Branch. The CDSF Training Branch participates in determining CDSF 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 CDSF personnel. A section within this branch 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 CDSF.

(c) Documentation & Standards Branch. The Documentation & Standards Branch maintains the official, central, up-to-date documentation on all software of all systems under the purview of the CDSF, in appropriate form by appropriate means. Also maintained by this branch will be all appropriate official correspondence and standards and regulations pertaining to the systems under CDSF 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. For instance, if the MD PDSS Center maintains locally an appropriate, accessible repository of software documentation, there should be no need to duplicate that in the CDSF.

(d) Configuration Management Branch. The Configuration Management Branch is responsible for ensuring that basic configuration management policies are understood and adhered to throughout the CDSF, and assists in the development of detailed procedures for configuration management of individual BAS under purview of the CDSF. The documentation maintained by the Documentation and Standards Branch is a requisite of this branch.

(4) Facility and Systems Support Division. The Facility and Systems Support Division is responsible for a group of common benefit functions involving the physical plant, equipment, and related technology and expertise, as well as serving as a common focal point for system test activities.

(a) Communications Branch. The Communications Branch 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.

(b) Facility Support Branch. The Facility Support Branch 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 CDSF mission. This branch will participate in the preparation and maintenance of resource plans for the CDSF.

(c) Computer Support Branch. The Computer Support Branch 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 branch will include a Model Development and Maintenance Section, which will assist in the writing and modification/maintenance of needed models/simulations, and a Support Software Branch, which will provide expertise, software utilities, and other items of software which may be needed to support the work of the CDSF.

(d) System Test Support Branch. The System Test Support Branch provides a common focal point for coordination of necessary CDSF participation in testing of BAS within the purview of the CDSF. 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 CDSF participation in planning, observation, and analysis of system tests. This branch also provides advice and assists in tests that may be conducted with CDSF resources.

(5) Concepts and Analysis Division. The Concepts and Analysis Division provides, under the control of the CDSF but also available as appropriate to support other DCD needs, a broad capability for the intensive, sophisticated, computer-supported, and system-technically-oriented research and analysis necessary to effective fulfillment of the CDSF mission. It is intended that this division 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. This division contains the following seven branches:

- Technology, Threats, & Scenarios
- Doctrine and Concepts
- Modeling and Simulation
- System/Training Simulators
- Requirements Analysis
- Software Analysis
- Interoperability Analysis.

(a) Technology, Threats, & Scenarios Branch. The Technology, Threats, & Scenarios Branch is responsible for acquiring, maintaining, and analyzing current information in the areas of technology and threat 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.

(b) Doctrine and Concepts Branch. The Doctrine and Concepts Branch provides a local center of expertise and information on both general Army doctrinal concepts and organization and also the detailed 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. 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 of this division.

(c) Modeling and Simulation Branch. The Modeling and Simulation Branch 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 analysis branches in this division. Skills required in this branch will include operations research/systems analysis, computer programming, understanding of the scientific and engineering principles and characteristics of air defense C^2 and weapons systems, and also an understanding of air defense system doctrine and tactics. Personnel in this branch will be sufficient to support the simultaneous analysis requirements of all the BAS in the purview of the CDSF. A section in this branch will be devoted to anticipating analysis requirements and recommending analysis approaches and techniques to the CDSMs and others.

(d) System/Training Simulators Branch. The System/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 distrinction 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 CDSF mission. A section in this branch will be a focal point for identifying the requirements for training simulators and their use, as an adjunct to the Directorate of Training Developments.

(e) Requirements Analysis Branch. The Requirements Analysis 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 documented 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.

(f) Software Analysis Branch. The Software Analysis Branch is responsible for performing or effecting necessary detailed examination and analysis of software in or pertaining to BAS and simulators under the purview

of the CDSF. Such detailed 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 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.

(g) Interoperability Analysis Branch. The Interoperability Analysis 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 CDSF. This branch will maintain a detailed and up-to-date awareness of the interoperability requirements and characteristics of all BAS with which the CDSF 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 accomodated, 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.

(6) Air Defense C^2 Systems Division. The Air Defense C^2 Systems Division is the focal point for CDSF activities pertaining to the air defense C^2 systems functional area. Within this division are CDSMs for AN/TSQ-73 (Missile Minder), SHORAD C^2, and Air Defense Electronic Warfare System (ADEWS), as well as a branch responsible for other/new air defense systems. The overall responsibilities of CDSMs have been defined in general in Chapter 3 of this report. In this CDSF, each CDSM is a focal point for all CDSF activities pertaining to his particular BAS, and is also the interface point for all external and internal communication regarding that BAS. The CDSM maintains a limited staff who are specialized in their knowledge of that particular BAS. Members of his staff individually are further responsible for key functional areas, including software requirements, configuration control, software analysis, interoperability analysis, testing, training requirements, and field support, for that BAS. The CDSM and his staff call upon the resources of other CDSF divisions to assist in performing necessary analysis and field support functions, and to advise or assist in participation in system testing. The New Systems Branch within this division performs analogously for other or new systems as a group until such stage is reached where assignment of a dedicated CDSM is appropriate.

(7) Air Defense Weapons Systems Division. The Air Defense Weapons Systems Division is the focal point for CDSF activities pertaining to the air defense weapons system functional area. Within this division are CDSMs for Patriot, DIVAD Gun, I-Hawk, and Roland, with also a branch covering MANPAD and other AD weapons systems. The responsibilities of these CDSMs and the additional branch are analogous to those discussed in the preceding paragraph.

(8) Field Support Division. The Field Support Division is responfor providing resources, and management and coordination of those resources, for field support and other remote elements, as required to support effectively the overall CDSF mission. The four branches within this division are: Remote Elements Management, Crisis/Wartime Support, CD PDSS LNO Support, and CDFST Support. Resource elements provided by this division will be considered organic to this division, while operational control will normally reside with the CDSM for which the element is functioning at the particular time. Some elements or personnel may acquire specialized knowledge of particular BAS and it may be desirable to preserve that specialization in the interest of efficient interaction with certain users or other elements. Need, travel, and other factors, however, may motivate for diversification of personnel or elements over several BAS. The Remote Elements Management Branch will coordinate with CDSMs and others, and weigh such factors, as appropriate, in the interest of best fulfilling the overall CDSF mission. The Crisis/Wartime Support Branch is responsible for developing, coordinating, and maintaining plans for support under crisis or wartime conditions. The CD PDSS LNO Branch provides essential travel, logistical, and other necessary support, maintains contact with the counterpart facility and serves as coordination point in such matters for CD PDSS LNOs that may be needed. A CD PDSS LNO is known to be needed at the Raytheon PDSS Center (Patriot Software Support Organization) at Bedford, Mass., and the MICOM PDSS Center at Redstone Arsenal. The CDFST Support Branch provides, as appropriate, necessary travel, logistical, and other support, and maintains contact, as appropriate, with served facilities where CDFSTs are required on permanent, semi-permanent, temporary, periodic, or ad hoc visits basis. CD PDSS LNOs and CDFSTs maintain appropriate communication channels (through support by the Communications Branch) with the CDSM, or the CDSM staff, for the particular BAS being addressed. CDSM staff members and others, such as MD representatives, may accompany CDFSTs routinely on visits to Users.

b. Other Elements. The responsibilities of the USAADS Directorate of Combat Developments and the Directorate of Training Developments remain, in this Theoretical System, essentially the same as in the Baseline System. At Fort Leavenworth, responsibilities of CACDA are consistent with those enunciated in Sections III and IV, involving the Force Level Control System and the JINTACCS Office. Any contribution, however, which the Scenarios and Wargames Directorate of CACDA can appropriately make to solution of CDSF needs should not be overlooked. Similarly, the resources of the Combined Arms Studies and Analysis Activity (CASAA) at Fort Leavenworth, particularly in the area of corps- and division-level modeling, and future exercise of such models, should be considered. CASAA should be kept aware of CDSF activities and should be available to contribute as appropriate. The same is true of TRASANA resources in battalion-level modeling and model exercise. Since CASAA has a coordinating responsibility for the Army Models Improvement Program, the resources of Concepts Analysis Agency, at Bethesda, in the theater modeling and model exercise area should also be considered for appropriate contributions to CDSF needs. Since theater-through-battalion level models do not possess high enough resolution and fidelity to address the types of analysis issues involved in most ADA software investigations, those models themselves have extremely limited applicability to USAADS PDSS. Exceptions might occur in weighing some effectiveness considerations in a combined arms context, or in very specialized side-analyses. Some of the personnel resources, however, at these other analytical

facilities do possess skills applicable to USAADS PDSS problems. The resolution level of the types of models developed and maintained at Army Materiel Systems Analysis Agency (AMSAA), Aberdeen Proving Grounds, MD, is more in tune with USAADS needs, but few, if any, AMSAA models are directly applicable, although personnel expertise there remains a potential resource. The limitations of various testing resources, for USAADS software issues, were discussed in Paragraph E-18c, above. Those limitations apply here also.

E-20. SYSTEM CAPABILITIES. The Theoretical PDSS System is designed to be capable of adequately fulfilling all CD PDSS responsibilities into at least the late 1980's for the entire Air Defense BFA. Accordingly, Figure E-15, which lists the 64 TRADOC principal PDSS functions, is used here only to show, by "X" entries, which elements in the Theoretical System are responsible for fulfilling these functions. Since the format of such a matrix could not legibly accommodate all of the CDSF and other elements involved, only the major divisions within the CDSF are identified in column headings. The Directorate of Training Developments is also identified because it carries a key responsibility.

E-21. SYSTEM RESOURCE REQUIREMENTS.

a. Personnel. Personnel needed to staff the Air Defense CDSF for the Theoretical PDSS System have been estimated by the study team. These estimated personnel requirements are based on a consideration of the responsibilities and functions of each of the elements within the CDSF, through branch and section level, and include all field support and other remote personnel of the CDSF. Not included in these estimates are requirements for the Theoretical System within the USAADS Directorate of Training Developments, or other TRADOC elements, since those requirements are seen to be negligible if CDSF requirements are fulfilled. The estimates were made without reference to any resource constraints. The estimates were, however, subjected to review-for-reasonableness and some adjustments in initial figures were made. The estimates are based on fulfilling the identified functions and responsibilities delineated above. The estimates are total requirements without consideration of the issue of in-house and contractual components. The resulting requirements figures are shown by fiscal year in the top portion of Figure E-16. These requirements are seen to grow from a total of 114 in 1981 to a total of 199 in 1987. The authorized numbers in the middle of that figure assume that the existing Combat Systems Software Division of DCD is incorporated in the CDSF. A breakout of these personnel requirements estimates, for the FY 1986/87 time frame is shown, by CDSF division, in Figure E-17.

b. Civilian Personnel Costs. The costs of the civilian personnel portion of the estimated personnel requirements are further estimated, in constant FY 81 K dollars, based on an assumed cost of $31.6K per technical/managerial and $16.0K per clerical/technician man-year, including 10% overhead loading, as shown below:

	CONSTANT FY 81 $000						
	FY 81	FY 82	FY 84	FY 84	FY 85	FY 86	FY 87
CIVILIAN PERSONNEL COSTS	1156.4	1320.0	1539.9	2200.1	2587.2	2673.0	2786.8

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CDSF MGT DIV, CDSF, DCD	FACIL. & SYST SPT DIV, CDSF, DCD	CONCEPTS & ANALYSIS DIV, CDSF, DCD	AD-C SYSTEMS DIV, CDSF, DCD	AD WPNS SYST DIV, CDSF, DCD	FIELD SPT DIV, CDSF, DCD	CD POSS LNOs	CDFST, CDSF, DCD	DIRECTORATE OF TRAINING DEVELOPMENTS
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1				X	X				
		2. PROVIDE REPRESENTATION ON THE CRWG.	1				X	X				
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X			X	X				
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1				X	X				
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2				X	X				
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2				X	X				
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS^2 CONCEPT.	1				X					
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X		X						
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	X	X	X			
		3. ACQUIRE AND MANAGE RESOURCES.	1	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			X	X	X				
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2				X	X		X		
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3				X	X		X		
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3				X	X		X		
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2				X	X				
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2				X	X			X	
		2. EXAMINE BASIS FOR REQUIREMENT.	2				X	X				
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2				X	X		X		
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2				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			X	X	X				
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2			X	X	X				

Figure E-15. Assignment of functions, Theoretical System-- Air Defense BFA (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CDSF MGT DIV, CDSF, DCD	FACIL. & SYST SPT DIV, CDSF, DCD	CONCEPTS & ANALYSIS DIV, CDSF, DCD	AD C² SYSTEMS DIV, CDSF, DCD	AD WPNS SYST DIV, CDSF, DCD	FIELD SPT DIV, CDSF, DCD	CO POSS LNOs	CDFST, CDSF, DCD	DIRECTORATE OF TRAINING DEVELOPMENTS
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2			X	X	X				
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2			X	X	X			X	
		3. IDENTIFY TRAINING IMPACT.	2			X	X	X				
		4. IDENTIFY LOGISTICAL IMPACT.	2			X	X	X				
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	X		X	X	X				
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	X		X	X	X				
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2			X	X	X				
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2			X	X	X				
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2			X	X	X				
		3. PROVIDE REQUIREMENT TO MD.	2				X	X		X		
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2				X	X		X		
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2				X	X		X		
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2		X	X	X	X				
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2		X		X	X				
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2			X	X	X				
		4. MONITOR DEVELOPMENT TEST (DT).	2		X		X	X				
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2		X		X	X				
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2		X		X	X				
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2		X		X	X			X	
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2		X		X	X			X	
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3				X	X				
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3				X	X			X	
		2. FUNCTION AS USER SURROGATE.	3				X	X				
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3			X	X	X			X	
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD	3				X	X		X		

Figure E-15. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CDSF MGT DIV, CDSF, DCD	FACIL. & SYST SPT DIV, CDSF, DCD	CONCEPTS & ANALYSIS DIV, CDSF, DCD	AD C² SYSTEMS DIV, CDSF, DCD	AD WPNS SYST DIV, CDSF, DCD	FIELD SPT DIV, CDSF, DCD	CD POSS LNOs	CDFST, CDSF, DCD	DIRECTORATE OF TRAINING DEVELOPMENTS
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			X	X	X				
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2			X	X	X				
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2				X	X				X
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3				X	X			X	X
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2			X	X	X				X
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2			X	X	X				
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2			X	X	X				
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3				X	X			X	
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1			X	X	X				
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1			X	X	X				
	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		
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3			X	X	X			X	
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1			X	X	X			X	
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1			X	X	X				
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1				X	X		X		
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3			X	X	X				
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1			X	X	X			X	
	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	

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

Figure E-15. (concluded)

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
REQUIRED							
MILITARY	70	77	84	90	94	95	96
CIVILIAN	44	50	58	82	96	99	103
TOTAL	114	127	142	172	190	194	199
AUTHORIZED							
MILITARY	12	12	12	12	12	12	12
CIVILIAN	2	2	2	2	2	2	2
TOTAL	14	14	14	14	14	14	14
ADDITIONAL NEEDED							
MILITARY	58	65	72	78	82	83	84
CIVILIAN	42	48	56	80	94	97	101
TOTAL	100	113	128	158	176	180	185

Figure E-16. Personnel required, Theoretical PDSS System, ADA BFA

	MANAGERIAL AND TECHNICAL		CLERICAL AND TECHNICIAN		TOTAL
	MIL	CIV	MIL	CIV	
OFFICE OF THE CHIEF	2	0	1	1	4
CDSF MANAGEMENT DIVISION	9	16	4	7	36
FACILITY AND SYSTEMS SUPPORT DIVISION	7	11	7	7	32
CONCEPTS AND ANALYSIS DIVISION	18	26	5	8	57
AIR DEFENSE C^2 SYSTEMS DIVISION	10	6	1	1	18
AIR DEFENSE WEAPONS SYSTEMS DIVISION	10	7	1	1	19
FIELD SUPPORT DIVISION	14	7	7	5	33
TOTALS	70	73	26	30	199

Figure E-17. CDSF 1987 personnel requirements breakdown, Theoretical PDSS System, Air Defense BFA

SECTION VIII. INTELLIGENCE AND ELECTRONIC WARFARE BFA

E-22. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. The Intelligence and Electronic Warfare BFA is supported by the component of the TRADOC Theoretical PDSS System discussed in this section.

b. TRADOC Centers and Schools Involved. The US Army Intelligence Center and School is the primary TRADOC organization involved with this component of the Theoretical System. However, close coordination is required with the Force Level Control and Maneuver BFA component of the Theoretical System, discussed in Section IV, to ensure appropriate interface and interaction under the CCS^2 concept.

c. Organizational Structure of the System. An overview of that portion of the Theoretical System designed for supporting the Intelligence and Electronic Warfare BFA is shown in Figure E-18. This component consists of:

- A CDSF at USAICS
- A CDSM for ASAS who also serves as Chief of the CDSF
- A CDSM for other BAS in this BFA
- A CD PDSS LNO from the USAICS CDSF to ERADCOM, Fort Monmouth, to facilitate the required degree of interaction with the ERADCOM PDSS Center at that installation
- A Combat Developer PDSS Forward Support Team (CDFST) at each deployed US Corps.

E-23. RESPONSIBILITIES AND RELATIONSHIPS. USAICS is proponent for the Intelligence and EW BFA and for most of the BAS in this BFA that are addressed in this study. These BAS include the ASAS and seven Category 2 systems shown in Figure E-19, and 10 Category 3 systems which are identified in Appendix C. The Intelligence and EW BFA component of the TRADOC Theoretical PDSS System illustrated in Figure E-18, has been designed to provide USAICS a capability to accomplish all CD PDSS actions associated with these BAS. Figure E-20 shows the organization of this Theoretical System component in greater detail and illustrates its relationship to other elements of USAICS and TRADOC. As shown, the CDSF represents a division level element of the Directorate of Combat Developments. It is organized functionally rather than by system, although some system orientation will be necessary among individual members of the CDSF to provide specific system expertise as required. The size and structure of the CDSF is based on the assumptions that:

- Primary responsibility for CD actions associated with the development of Intelligence and EW BFA BAS, prior to their deployment will remain with the Materiel Division, Directorate of Combat Developments. PDSS for these systems is the responsibility of the CDSF

PRECEDING PAGE BLANK-NOT FILMED

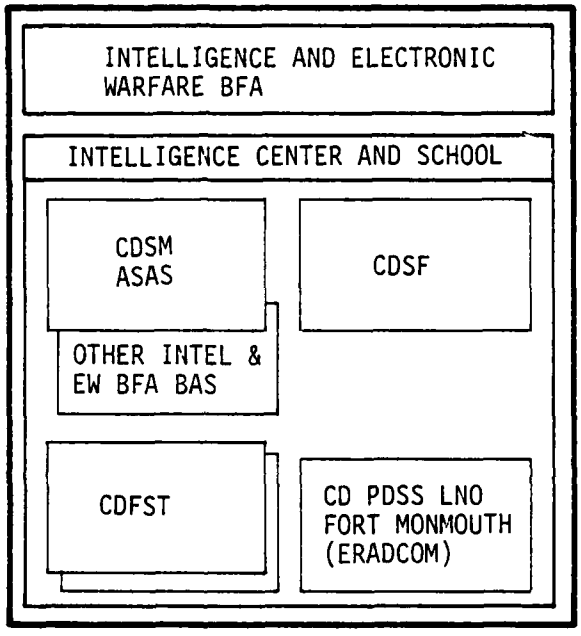


Figure E-18. Overview of the Theoretical PDSS System-- Intelligence and EW BFA

INTELLIGENCE/EW BFA	
FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USAICS	ASAS--ALL SOURCE ANALYSIS SYSTEM (CONCEPTUAL PHASE)
USAICS	AN/MSC-67--COMMUNICATIONS CENTER (COMFAC) * (VALIDATION 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 E- 19. Intelligence and Electronic Warfare Category 1 and 2 BAS

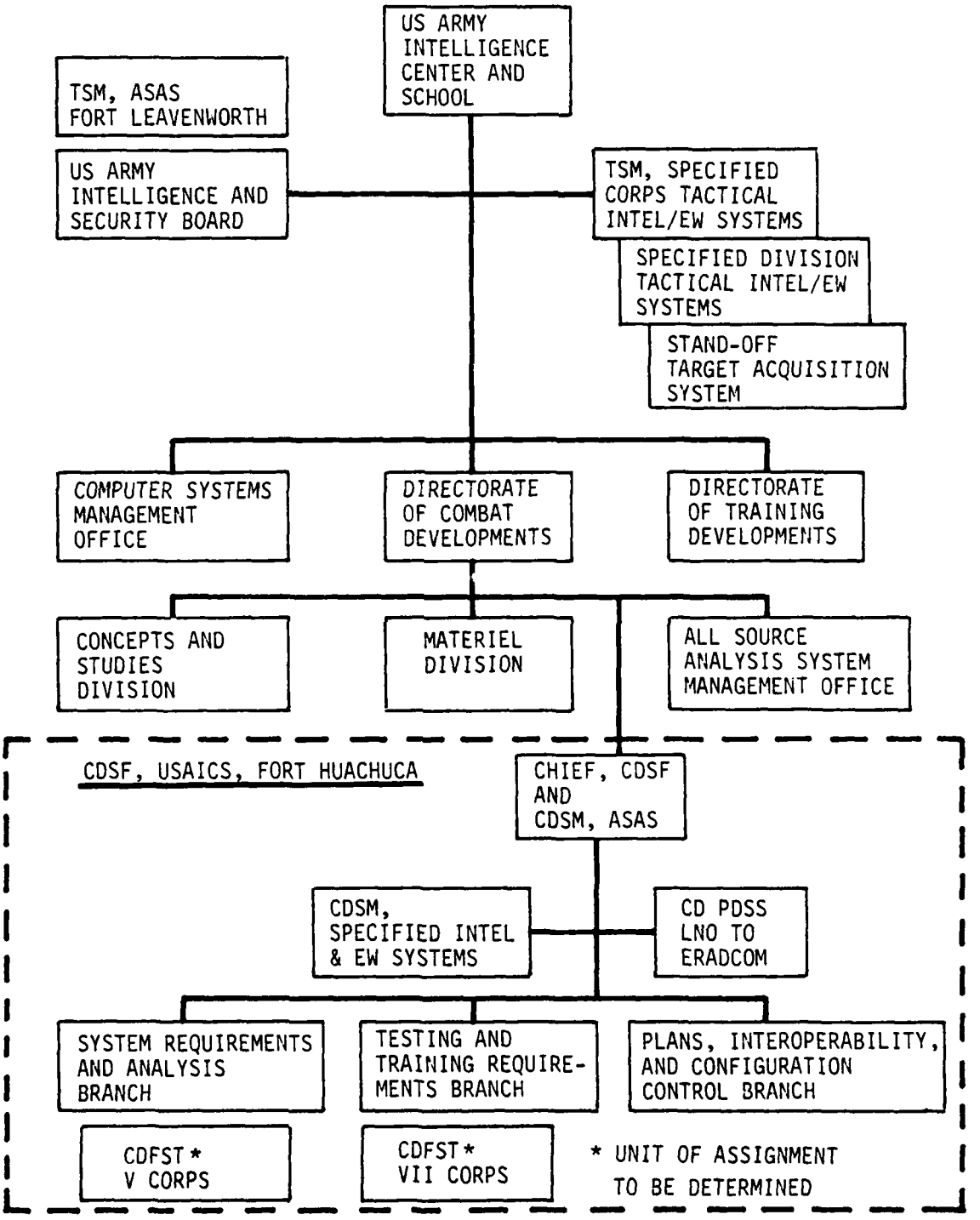


Figure E-20. Organization structure, CDSF, Fort Huachuca

- ERADCOM-managed PDSS Centers will be established at Fort Huachuca and Fort Monmouth as provided in the PDSS Concept Plan for BAS

- The Simulation Systems Management Office of the Computer Systems Management Office will acquire a capability to provide automated support to simulations and analyses conducted by the CDSF to examine functional problems associated with deployed BAS and the effects of potential or proposed system changes

- The Directorate of Training Developments will have the capability to handle, in coordination with the CDSF, training development requirements resulting from CD PDSS actions involving intelligence and EW BAS

- The US Army Intelligence and Security Board will have the capability to support the CDSF in addressing testing requirements resulting from PDSS actions involving intelligence and EW BAS.

Responsibilities and functions to be performed by each element of the CDSF are discussed below.

a. Chief, CDSF and CDSM, ASAS. One person holds both of these positions. As Chief, CDSF, he plans, directs, and supervises the operation of the CDSF in accomplishing all CD responsibilities for PDSS to BAS in the Intelligence and Electronic Warfare BFA. He establishes priorities and plans, programs, and allocates resources to address requirements. He serves as the primary point of contact on PDSS matters with other elements of USAICS and TRADOC, and with the ERADCOM-managed PDSS Centers at both Fort Huachuca and Fort Monmouth. He interacts with other USAICS elements who support the CDSF in various areas. These include:

- The Directorate of Training Developments on training requirements resulting from PDSS

- The US Army Intelligence and Security Board on system testing required as a result of PDSS actions

- The Simulation Systems Management Office of the Computer Systems Management Office in arranging automated support to simulations and the various analyses conducted by the CDSF

- The TSMs for ASAS, corps systems, division systems, and SOTAS on matters within the scope of their respective charters.

He exercises staff supervision over the CD PDSS LNO at Fort Monmouth. He provides guidance and assistance to each CDFST. In his role as CDSM, ASAS, he serves as the CD for software associated with this system. He is responsible for managing and coordinating or performing all software-related actions within the CD PDSS role. 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 E-21.

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSF AND CDSM	CDSM, SPECIFIED INTEL & EW SYSTEMS	SYSTEM ROMTS, AND ANALYSIS BRANCH	TESTING & TRAINING REQUIREMENTS BR.	PLANS, INTEROPERABILITY, & CONFIG. CONTROL BR.	CD POSS LNO	CD POSS FORWARD SUPPORT TEAM	DIRECTORATE OF TRAINING DEVELOPMENTS	COMPUTER SYSTEMS MANAGEMENT OFFICE	ARMY INTELLIGENCE AND SECURITY BOARD	TSMS (CORPS, DIVISION, SOTAS, AND ASAS)
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	X	X	N	N	X	N	N	N	N	N	X
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	X	X	N	N	N	N	N	N	N	N	X
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X	N	N	X	N	N	N	N	N	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	X	X	N	N	N	N	N	N	N	N	X
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	N	N	N	N	X	N	N	N	N	N	N
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	N	N	N	N	X	N	N	N	N	N	N
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS² CONCEPT.	1	X	N	N	N	N	N	N	N	N	N	X
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	X	X	N	N	N	X	N	X
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	N	N	X	N	N	N	X	N	X
		3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	N	N	X	N	N	N	X	N	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	X	X	X	N	N	X	X	N	N	N	N
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	X	X	X	N	N	X	X	N	N	N	N
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	X	X	X	N	N	X	X	N	N	N	N
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	X	X	X	N	X	X	X	N	N	N	N
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	X	X	X	N	N	X	N	N	N	N	N
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	X	X	X	N	N	N	X	N	N	N	N
		EXAMINE BASIS FOR REQUIREMENT.	2	X	X	X	N	N	N	X	N	N	N	N
		COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	X	X	X	N	N	X	X	N	N	N	N
		INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	X	X	N	N	N	N	X	N	N	N	N
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	IFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES	2	X	X	X	N	N	N	N	N	X	N	N
		AMINE THEIR IMPACT ON AFFECTED SYSTEMS.												
		MINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	X	X	X	N	X	N	N	N	X	N	N

Figure E-21. Assignment of functions, Theoretical System--Intelligence and EW BFA (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	CHIEF, CDSF AND CDSM ASAS	CDSM, SPECIFIED INTEL & EW SYSTEMS	SYSTEM RQMTS. AND ANALYSIS BRANCH	TESTING & TRAINING REQUIREMENTS BR.	PLANS, INTEROPERABILITY, & CONFIG. CONTROL BR.	CD PDSS LNO	CD PDSS FORWARD SUPPORT TEAM	DIRECTORATE OF TRAINING DEVELOPMENTS	COMPUTER SYSTEMS MANAGEMENT OFFICE	ARMY INTELLIGENCE AND SECURITY BOARD	TSMS (CORPS, DIVISION, SOTAS, AND ASAS)
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	X	X	X	Z	X	Z	Z	Z	X	Z	X
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	X	X	X	Z	Z	Z	Z	Z	X	Z	X
		3. IDENTIFY TRAINING IMPACT.	2	X	X	Z	X	Z	Z	Z	X	X	Z	X
		4. IDENTIFY LOGISTICAL IMPACT.	2	X	X	X	Z	Z	Z	Z	Z	X	Z	X
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	X	X	X	X	Z	Z	Z	Z	X	Z	X
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	X	X	X	Z	Z	Z	Z	Z	X	Z	X
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	X	X	Z	Z	X	Z	Z	Z	X	Z	X
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	X	X	X	Z	Z	Z	Z	Z	Z	Z	X
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	X	X	Z	Z	X	Z	Z	Z	Z	Z	X
		3. PROVIDE REQUIREMENT TO MD.	2	X	X	Z	Z	Z	X	Z	Z	Z	Z	X
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	X	X	Z	Z	Z	X	Z	Z	Z	Z	X
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	X	X	Z	Z	Z	X	Z	Z	Z	Z	X
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	X	X	Z	X	Z	Z	Z	Z	Z	X	X
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	X	X	Z	X	Z	Z	Z	Z	Z	X	X
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	X	X	Z	X	Z	Z	Z	Z	Z	X	X
		4. MONITOR DEVELOPMENT TEST (DT).	2	X	X	Z	X	Z	Z	Z	Z	X	X	X
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	X	X	Z	X	Z	Z	Z	Z	Z	X	X
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	X	X	Z	X	Z	Z	Z	Z	Z	X	X
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	X	X	Z	X	Z	Z	Z	Z	Z	X	X
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	X	X	X	Z	Z	Z	Z	Z	Z	X	X
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	X	X	Z	Z	Z	Z	X	Z	Z	Z	X
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	X	X	Z	Z	Z	Z	Z	Z	Z	Z	X
		2. FUNCTION AS USER SURROGATE.	3	X	X	X	Z	Z	Z	Z	Z	Z	Z	X
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	X	X	X	Z	Z	Z	Z	Z	Z	Z	X
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD	3	X	X	Z	Z	Z	X	Z	Z	Z	Z	X

Figure E-21. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSF AND CSSM ASAS	CDSM, SPECIFIED INTEL & EW SYSTEMS	SYSTEM ROMTS, AND ANALYSIS BRANCH	TESTING & TRAINING REQUIREMENTS BR.	PLANS, INTEROPERABILITY, & CONFIG. CONTROL BR.	CD PDSS LNO	CD PDSS FORWARD SUPPORT TEAM	DIRECTORATE OF TRAINING DEVELOPMENTS	COMPUTER SYSTEMS MANAGEMENT OFFICE	ARMY INTELLIGENCE AND SECURITY BOARD	TSMS (CORPS, DIVISION, SOTAS, AND ASAS)
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	X	X	N	X	N	N	X	X	N	N	X
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	X	X	N	X	N	N	N	X	N	N	X
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	X	X	N	X	N	N	N	X	N	N	X
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	X	X	N	X	N	N	N	X	N	N	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	X	X	X	X	N	N	N	X	X	N	X
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	X	X	X	X	N	N	N	X	N	N	X
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	X	X	N	X	N	N	N	X	N	N	X
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	X	X	N	X	N	N	X	X	N	N	N
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	X	X	X	N	X	N	N	N	N	N	X
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	X	X	X	N	X	N	N	N	N	N	X
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED PDSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	X	N	N	X	X	N	N	N	N	N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	X	X	N	N	X	X	N	N	N	N	N
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY PDSS RESPONSE REQUIREMENTS.	1	X	X	X	N	N	N	N	N	N	N	X
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE PDSS UNDER VARIOUS SCENARIOS.	1	X	X	X	N	N	N	N	N	X	N	X
		3. COORDINATE WITH THE MD IN PLANNING PDSS SUPPORT.	1	X	X	N	N	N	X	N	N	N	N	X
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	X	X	X	N	X	N	X	N	N	N	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	X	X	X	N	N	N	N	N	X	N	X
	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	N	N	N	N	N	X	X	N

* 1 = ANYTIME AFTER PDSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

X = Element is responsible and capable
N = Element is not responsible

Figure E-21. (concluded)

b. CDSM, Specified Intel/EW Systems. This CDSM has responsibility for all Intelligence and EW BFA BAS addressed in this study except the ASAS. He is responsible for managing and coordinating or performing all software-related actions within the CD PDSS role for these BAS. This includes planning and coordinating the activity of the CDSF in supporting these systems. He is the primary point of contact with the MD on PDSS matters involving any of these systems. Specific functions with which he is involved in either a management, coordination, or performance role are shown in Figure E-21.

c. Branch level CDSF elements. As mentioned above, this CDSF is organized functionally with three branches. All CD PDSS functions to be performed by the CDSF for all BAS in the Intelligence and Electronic Warfare BFA are allocated among these branches in a logical manner as discussed below. The names used in this report to identify the branches have been selected to be descriptive of responsibilities of each branch. These responsibilities are discussed below. Specific functions are shown in Figure E-21.

(1) Plans, Interoperability, and Configuration Control Branch. This branch supports the Chief, CDSF in all actions related to planning, administering, and managing the CDSF operation. It supports both CDSM in all actions associated with planning PDSS support for BAS in their respective areas 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 branch 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 branch coordinates with the CDSM in authorizing release of system change packages to the field.

(2) System Requirements and Analysis Branch. This branch is responsible for all actions involving identification, analysis, and development of system functional change requirements and, in coordination with the CDSM, stating these requirements to the MD. The source of these requirements may be any system User or cognizant CD organization. They may result from any of the stimulators of change discussed in Chapter 3. Analyses conducted by the branch 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.

(3) Testing and Training Requirements Branch. As suggested by its title, responsibilities of this branch fall generally into two functional areas. With respect to testing, the branch is responsible for supporting the CDSM in planning, coordinating, and monitoring or conducting, all assigned CD actions associated with testing changes to BAS. Accomplishment of these responsibilities involves working closely with the MD, OTEA, the US Army Intelligence and Security Board, TCATA, and/or other designated test activities, as appropriate. The branch 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.

d. CD PDSS LNO. This office, which will be located at Fort Monmouth, will be responsible for interfacing directly with the ERADCOM PDSS Center at Monmouth which provides PDSS for all Intelligence and EW BFA BAS except ASAS. The office will coordinate PDSS requirements and interact with the MD as appropriate in all phases of the PDSS effort.

e. Combat Developer Field Support Team. This Theoretical PDSS System provides for the establishment of a CDFST to be located with each deployed US Army corps. It is envisioned that these teams would be located permanently with the corps they support. They could either be assigned to the CDSF and attached to the CEWI Group of the supported corps or assigned as an organic element of the CEWI Group. These teams would:

- Provide on-site technical assistance to Users in identifying, isolating, and examining system problems
- Provide technical expertise in reporting the problem and discussing it with the USAICS CDSF facility and with MD Contact Teams or Direct Support/General Support elements
- Assist in developing work-around procedures pending problem resolution
- Assist in on-site staff and operator training and retaining.

E-24. ESTIMATE OF RESOURCE REQUIREMENTS. *Time phased estimates of resources* needed to establish the Theoretical System CD PDSS component supporting the Intelligence and Electronic Warfare BFA are shown below.

a. Personnel.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	6	9	12	16	18	18	18
Civilian	3	5	7	9	10	10	10
TOTAL	9	14	19	25	28	28	28
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	9	12	16	18	18	18
Civilian	3	5	7	9	10	10	10
TOTAL	9	14	19	25	28	28	28

A breakout of these personnel by CDSF element is shown below:

ELEMENT	PERSONNEL TECHNICAL MIL	TECHNICAL CIV	ADMINISTRATIVE MIL	ADMINISTRATIVE CIV	TOTAL
OFFICE OF THE CHIEF, CDSF AND CDSM, ASAS	1	0	0	1	2
CDSM, SPECIFIED INTEL/EW SYSTEMS	1	0	0	0	1
SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	3	3	0	1	7
TESTING AND TRAINING REQUIREMENTS BRANCH	2	2	0	0	4
PLANS, INTEROPERABILITY, AND CONFIGURATION CONTROL BRANCH	2	2	0	1	5
CD PDSS LNO	1	0	0	0	1
CDSFT					
#1	4	0	0	0	0
#2	4	0	0	0	0
TOTAL	18	7	0	3	28

b. Major Items of Equipment. This CDSF requires interactive access to the computer (to be acquired) at the Computer Systems Management Office to conduct simulations and support tests and other analyses conducted by elements of the CDSF. Computer access is also required to provide linkage with the CDSF, Fort Leavenworth and other CDSFs which support one or more control systems in the CCS^2 concept. Specific equipment required to provide this access and the capability required must be determined through further study.

c. Facilities. Physical facility requirements include office space for assigned personnel, a computer terminal area, and a simulation/test/analysis area that would accommodate 6 to 8 personnel working simultaneously. It would be desirable to collocate this CDSF with the ERADCOM-managed PDSS Center at Fort Huachuca. If collocation is not feasible, other suitable space should be selected for the CDSF that will facilitate interaction with the PDSS Center as well as other elements of USAICS.

d. Funds. An estimate of funds required for the CDSF civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars.

	FUNDS REQUIRED ($000) FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	79.2	142.4	205.6	253.2	269.2	269.2	269.2

Funds needed for equipment and physical facilities are dependent upon development of specific requirements and plans addressing these areas.

SECTION IX. COMBAT SERVICE SUPPORT BFA--US ARMY LOGISTICS CENTER

E-25. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. The component of the TRADOC Theoretical PDSS System described in this section is designed to provide an improved PDSS capability for that part of the Combat Service Support BFA for which the US Army Logistics Center (LOGCEN) is responsible.

b. TRADOC Centers and Schools Involved. The LOGCEN and the US Army Ordnance Center and School, over which the LOGCEN exercises an integrating center role, are directly involved with this component of the Theoretical PDSS System. In addition, close coordination is required between this Theoretical System component and other components of the system supporting the Combined Arms Center and the Soldier Support Center described in Sections IV and X, respectively. This coordination is required for a number of reasons but in particular to ensure appropriate interface and interaction among these organizations in managing the command and control systems under the CCS^2 Concept. No requirement exists for a PDSS capability, at other centers and schools (Missile and Munitions, Transportation, and Quartermaster) associated with the LOGCEN in the CCS BFA at this time.

c. Organizational Structure of the System. An overview of that portion of the Theoretical System addressed in this section is shown in Figure E-22. As shown, this component consists of:

- A CD PDSS Staff Element at the LOGCEN
- A CDSM for each logistics system addressed in this study
- An augmentation to the Management Information Systems Directorate for handing PDSS functions
- A CDSE at the Ordnance Center.

This system and each of its elements is discussed in further detail in the paragraphs that follow.

E-26. RESPONSIBILITIES AND RELATIONSHIPS.

a. LOGCEN.

(1) System Responsibilities. The LOGCEN is the TRADOC proponent for all logistics systems addressed in this study. These systems are shown in Figure E-23. Included among these systems is 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 CCS^2 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 actions associated with all aspects of the Combat Developer's role in all phases of the system life

PRECEDING PAGE BLANK-NOT FILMED

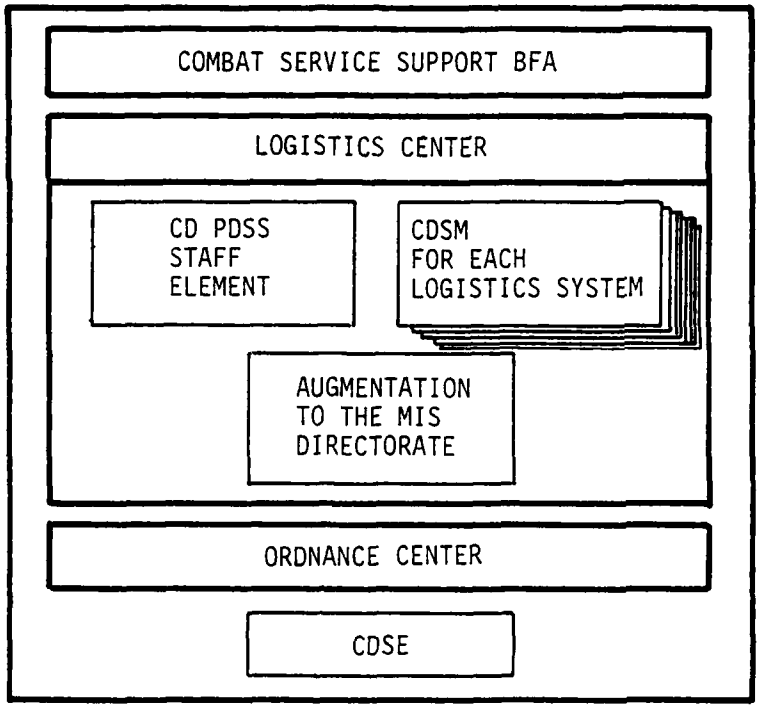


Figure E-22. Overview of the Theoretical PDSS System-CSS BFA--logistics area

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
LOGCEN/ DCSLOG	DSU/GSU--DIRECT SUPPORT UNIT GENERAL SUPPORT UNIT (OPERATION)
USASC	DLDED (DEFINITION/DESIGN)
LOGCEN/ DCSLOG	SAMS--STANDARD ARMY MAINTENANCE 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	DAMMS--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)

Figure E-23. Logistics systems

cycle including PDSS. While 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 Theoretical PDSS System illustrated in Figure E-22, has been designed to provide the needed enhancement in the LOGCEN's current PDSS capability.

(2) Theoretical System design and responsibilities of organizational elements. 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 Theoretical System shown in Figure E-22 resulted from this design effort. The elements of this Theoretical System and their relationship to the existing organizational structure are shown in more detail in Figure E-24. This structure and the responsibilities and functions of each element are discussed in the following paragraphs.

(a) 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 a separate office 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 with the CSC-managed PDSS Center at Fort Lee. 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 as a separate office will relieve the Management Support Division MISD, of its PDSS responsibilities and permit it to concentrate on other essential functions. Specific functions of this staff element are shown in Figure E-25.

(b) 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 Theoretical 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 the MD on PDSS matters affecting his system. Specific functions for which each CDSM is responsible in either a management, coordination, or performance role are shown in Figure E-25.

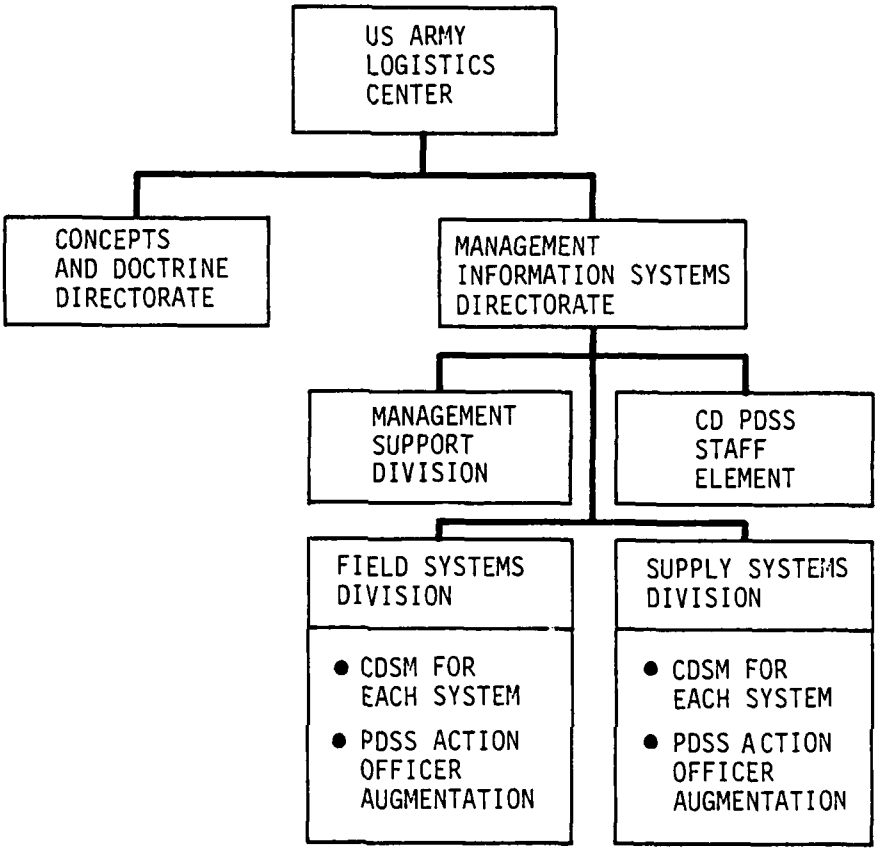


Figure E-24 . Elements of the Theoretical PDSS System--LOGCEN

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 DIR.
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING PDSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	Z	Z	Z	Z
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	Z	Z	Z	Z
		3. PARTICIPATE IN DESIGNATION OF PDSS CENTER FOR EACH BAS.	1	X	X	X	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	Z	X	X	Z
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	Z	X	X	Z
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	Z	X	X	Z
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS^2 CONCEPT.	1	X	Z	Z	X
	3. MANAGE CD PDSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	X
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	Z
		3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	X	Z
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	Z	X	X	Z
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	Z	X	X	Z
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	X	X	X	Z
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	X	X	X	Z
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	Z	X	X	Z
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	X	X	X	Z
		2. EXAMINE BASIS FOR REQUIREMENT.	2	Z	X	X	Z
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	X	X	X	Z
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	X	X	X	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	Z	X	X	Z
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	Z	X	X	X

Figure E-25. Assignment of functions, Theoretical System--CSS BFA, Logistics Center (continued on next page)

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

Figure E-25. (continued)

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 DIR.
15. 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	N	X	X	N
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	N	X	X	N
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	N	X	X	N
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	X	X	X	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	N	X	X	N
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	N	X	X	N
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	N	X	X	N
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	X	X	X	N
16. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	N	N	N	N
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	N	N	N	N
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED PDSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	X	X	N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	X	X	X	N
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY PDSS RESPONSE REQUIREMENTS.	1	X	X	X	N
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE PDSS UNDER VARIOUS SCENARIOS.	1	X	X	X	N
		3. COORDINATE WITH THE MD IN PLANNING PDSS SUPPORT.	1	X	X	X	N
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	N	X	X	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	N	X	X	X
	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	N

* 1 = ANYTIME AFTER PDSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

X = Element is responsible and capable
N = Element is not responsible

Figure E-25. (concluded)

(c) PDSS staff augmentation to the Field Systems and Supply Systems Divisions. This Theoretical 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. They would be accomplished 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 Theoretical System provides for a personnel augmentation 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 E-25. No requirement for a personnel augmentation to the Concepts and Doctrine Directorate for handling PDSS actions is foreseen or provided for in this Theoretical System. Except for PDSS planning during system design, it is assumed that PDSS for all systems will be the responsibility of MISD.

b. US Army Ordnance Center and School. The Ordnance Center is proponent for two Category 3 BAS, the Biological Detector (XM-19-XM-2) and the Chemical Agent Alarm Remote Sensing (XM-21). PDSS for these two BAS is to be provided by the ARRADCOM PDSS Center at Picatinny Arsenal. Although the primary focus of effort in this study is on Category 1 and 2 BAS, it is considered that the importance of these two systems justifies the establishment of a CD PDSS capability at the Ordnance Center. This Theoretical PDSS System provides for a two-person CDSE at the Ordnance Center to satisfy this requirement.

E-27. RESOURCES. Time-phased estimates of resource needed to establish this Theoretical PDSS System component for support of the logistics portion of the CSS BFA are shown below.

a. LOGCEN.

(1) Personnel.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required[1]							
Military	33	33	34	36	36	38	38
Civilian	78	78	79	83	83	85	85
TOTAL	111	111	113	119	119	123	123
Authorized[1]							
Military	30	30	30	30	30	30	30
Civilian	72	72	72	72	72	72	72
TOTAL	102	102	102	102	102	102	102
Additional Needed							
Military	3	3	4	6	6	8	8
Civilian	6	6	7	11	11	13	13
TOTAL	9	9	11	17	17	21	21

1. Not limited to PDSS personnel; includes all personnel in MISD directly involved in systems development and life cycle management.

A breakout of these additional personnel requirements by organizational element is shown below:

ELEMENT	PERSONNEL TECHNICAL MIL	TECHNICAL CIV	ADMINISTRATIVE MIL	ADMINISTRATIVE CIV	TOTAL
CD PDSS STAFF ELEMENT	2	2	0	1	5
FIELD SYSTEMS DIVISION	4	6	0	0	10
SUPPLY SYSTEMS DIVISION	2	4	0	0	6
TOTAL	8	12	0	1	21

(2) Facilities. Physical facility requirements include office space for the five member CD PDSS Staff Element and the PDSS personnel augmentations to the Supply Systems and Field Systems Divisions.

(3) Major Equipment. A terminal is needed to the TRADOC Data Processing Field Office computer at Fort Leavenworth to facilitate interaction with the CACDA CDSF in designing, managing, and exercising configuration control over the major command and control BAS under the CCS^2 Concept.

(4) Funds. An estimate of funds required for the additional civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars and is based on an average cost of $31.6 K for technical-level personnel and $16.0 K for administrative personnel.

	FUNDS REQUIRED ($000) FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	189.6	189.6	221.2	332.0	332.0	395.2	395.2

b. Ordnance Center. For the CDSE proposed for the Ordnance Center, it is estimated that two persons are needed, one military and one civilian. This will permit a desirable blend of expertise and provide for long term continuity in this functional area.

SECTION X. COMBAT SERVICE SUPPORT BFA--US ARMY SOLDIER SUPPORT CENTER

E-28. SYSTEM DESCRIPTION.

a. System Purpose and Scope. The Theoretical PDSS System described in this section is intended to adequately fulfill all Combat Developer PDSS functions for the Soldier Support Center, into at least the late 1980's. This Theoretical PDSS System has been structured without reference to resource constraints. While somewhat ideal in nature, this system should nevertheless represent a potentially achievable target, and therefore a useful point of reference for consideration of other system alternatives. This system is basically a TRADOC system, although it must interact with, and is heavily dependent on, non-TRADOC elements.

b. Principal System Elements and Features. This Theoretical System for providing PDSS in the Soldier Support Center portion of the Combat Service Support BFA is centered on a new element. This element, a Combat Developer Support Element (CDSE), would assume all PDSS responsibilities of the existing Management Information Systems Division within the Directorate of Doctrine and Combat Developments at Fort Benjamin Harrison, Indiana. The new element (CDSE) would also be subordinate to that directorate, in the US Army Institute of Personnel and Resource Management. The new element is termed a CDSE, rather than a Combat Developer Support Facility, since it is not anticipated that any Materiel Developer (MD) PDSS Center will be located at Fort Benjamin Harrison. Such a PDSS Center will instead be located at US Army Computer Systems Command facilities at Fort Belvoir, VA. Accordingly, a Combat Developer PDSS Liaison Office (CD PDSS LNO) from the CDSE at Soldier Support Center will be located at the Fort Belvoir PDSS Center of the MD, in this Theoretical System. This Liaison Office will interface and coordinate interaction with both the TACMIS Project Office (MD for DLDED, DAS3, and related systems) and the Personnel Systems Division, Personnel and Force Accounting Directorate (MD for SIDPERS, VFDMIS, etc.), of Computer Systems Command. A second Liaison Office (CD PDSS LNO) from the CDSE at Soldier Support Center will be located at the US Army Military Personnel Center (MILPERCEN) facilities in Alexandria, VA. This Liaison Office (a similar element already exists) will coordinate interaction with the Field Military Systems Branch, Field Activities Division, Personnel Management Systems Directorate, MILPERCEN. The Field Military Systems Branch is the proponent agency for SIDPERS and has responsibility for its functional design, development, implementation, and maintenance, for all changes which are anticipated not to exceed a cost of $100K. The Theoretical PDSS System for the Soldier Support Center portion of the CSS BFA is organized to permit additional liaison offices to be established as necessary, and for growth to occur in the CDSE and its remote elements in the event that Soldier Support Center responsibilities for PDSS should increase. Such increases may occur as a result of potential charter adjustments vis-a-vis MILPERCEN, or through events which may evolve within the existing charters. Relationships between the CDSE at Soldier Support Center and the CDSM for Force Level and Maneuver Control at CACDA, Fort Leavenworth, and with the AC-MP Branch within the Automation and Communications Division of the Concepts and Doctrine Directorate

at the Logistics Center, are seen to require special communications capabilities, but not remote liaison offices. Normal communications and travel are seen as adequate for relationships between the CDSE and the Systems Design Branch of the Academy of Health Sciences, and other interfacing elements. A need is not seen for the CDSE to dispatch Combat Developer PDSS Forward Support Teams (CDFSTs) to User units, unless the responsibilities of Soldier Support Center are considerably broadened. Normal communications and occasional travel of selected members of the CDSE staff should suffice. The principal elements and interfaces involved in the Theoretical PDSS System are outlined in Figure E-26, which also provides a type of system overview.

c. CDSE Structure. The structure of the CDSE which is central to this Theoretical PDSS System is outlined in Figure E-27. This is a relatively simple and rudimentary structure which reflects the rather limited PDSS responsibilities currently borne by the Soldier Support Center (SSC). This structure does provide, however, a nucleus which could be expanded rapidly in response to any significant increase in SSC PDSS responsibilities. The structure consists of a Chief, Soldier Support CDSE, reporting to the Directorate of Doctrine and Combat Development. Under the Chief are three functionally-oriented branches-CDSE Management, Facility Support and Analysis, and CD PDSS LNO Support--which are primarily embryonic elements in which planning and anticipating possible future needs is a principal current function. The CDSM, Personnel Systems is also Deputy Chief of the CDSE, but is largely free of such administrative burdens and concentrates on operating what is essentially a fourth branch. Within this branch are focal points for PDSS activities relating to four BAS or BAS groups in which Soldier Support Center currently has a limited degree of responsibility. The first of these, Software Conversion, involves a degree of CD participation, from a PDSS viewpoint, in conversion of several fielded personnel software elements to operate on new hardware. The second item, CCS^2 Subsystem, involves PDSS aspects of development of the Personnel Subsystem for the CSS Control System for the CCS^2 concept under the Force Level Control System, whose CDSM is at Fort Leavenworth. The third item, New Personnel System, involves PDSS aspects of a system being conceived to replace SIDPERS. The New Personnel System will interface with the Theater Army Medical Management Information System (TAMMIS), which is in the conceptual stage. The fourth and last item, other systems, involves monitoring and coordinating responsibilities pertaining to several BAS, including SIDPERS, SIDPERS Wartime, a related Personnel Software Package for DLDED, the Prisoners of War Information System (PWIS), VFDMIS, TAPER and TAPER Wartime, VTAADS, and OESS. Any changes to SIDPERS software which are anticipated to cost over $100K would be a responsibility of SSC under this fourth item. The functions of the elements of this structure are discussed further in the next paragraph.

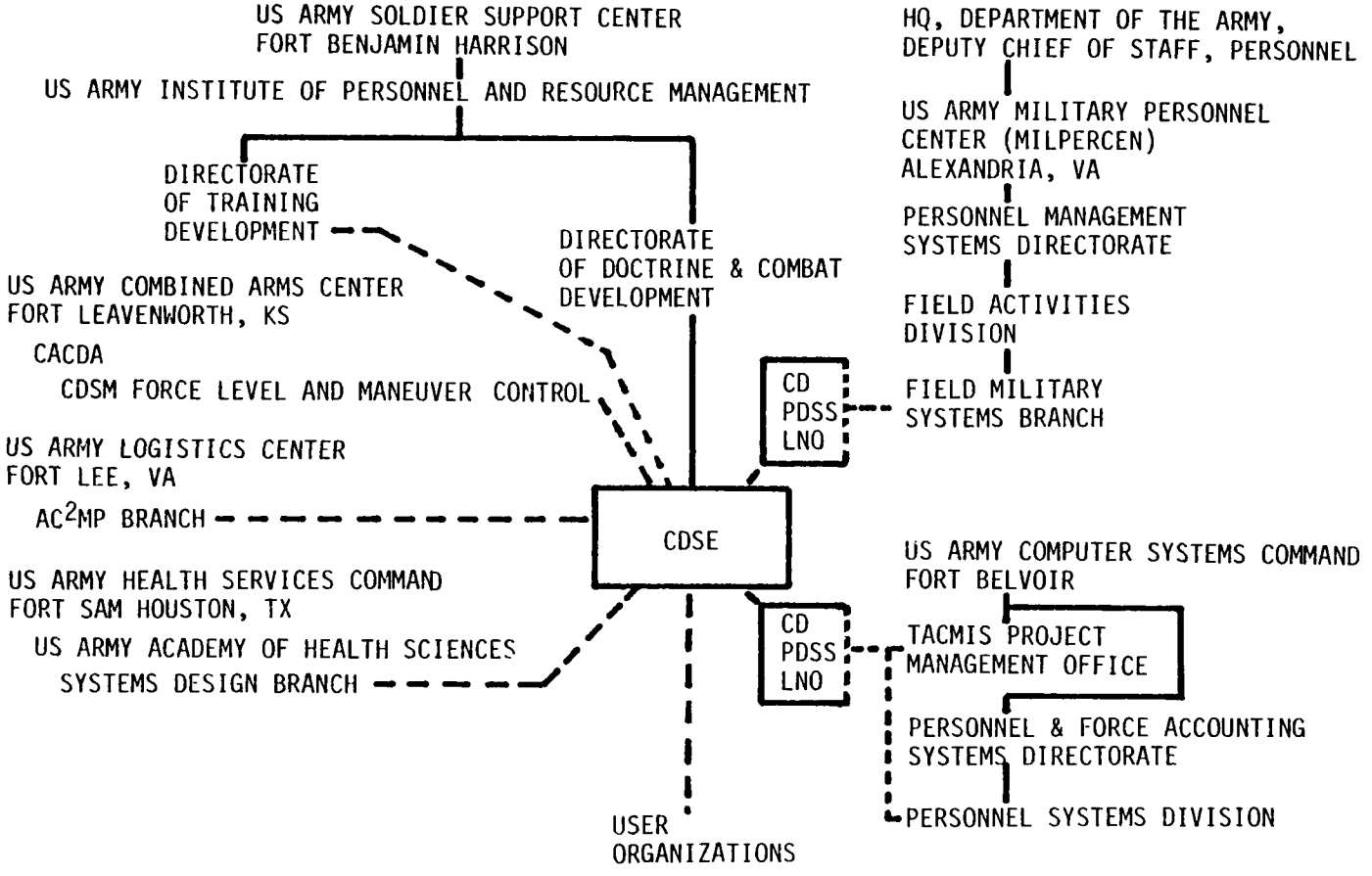
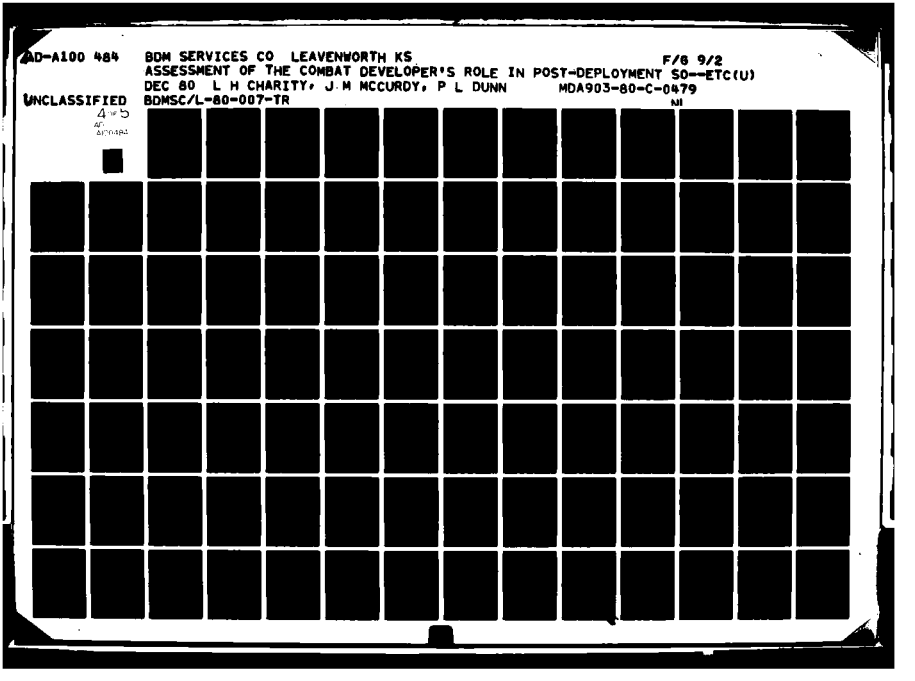


Figure E-26. Principal Elements,Theoretical PDSS System for SSC

AD-A100 484 BDM SERVICES CO LEAVENWORTH KS F/G 9/2
ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE IN POST-DEPLOYMENT SO--ETC(U)
DEC 80 L H CHARITY, J M MCCURDY, P L DUNN MDA903-80-C-0479
UNCLASSIFIED BDMSC/L-80-007-TR NL



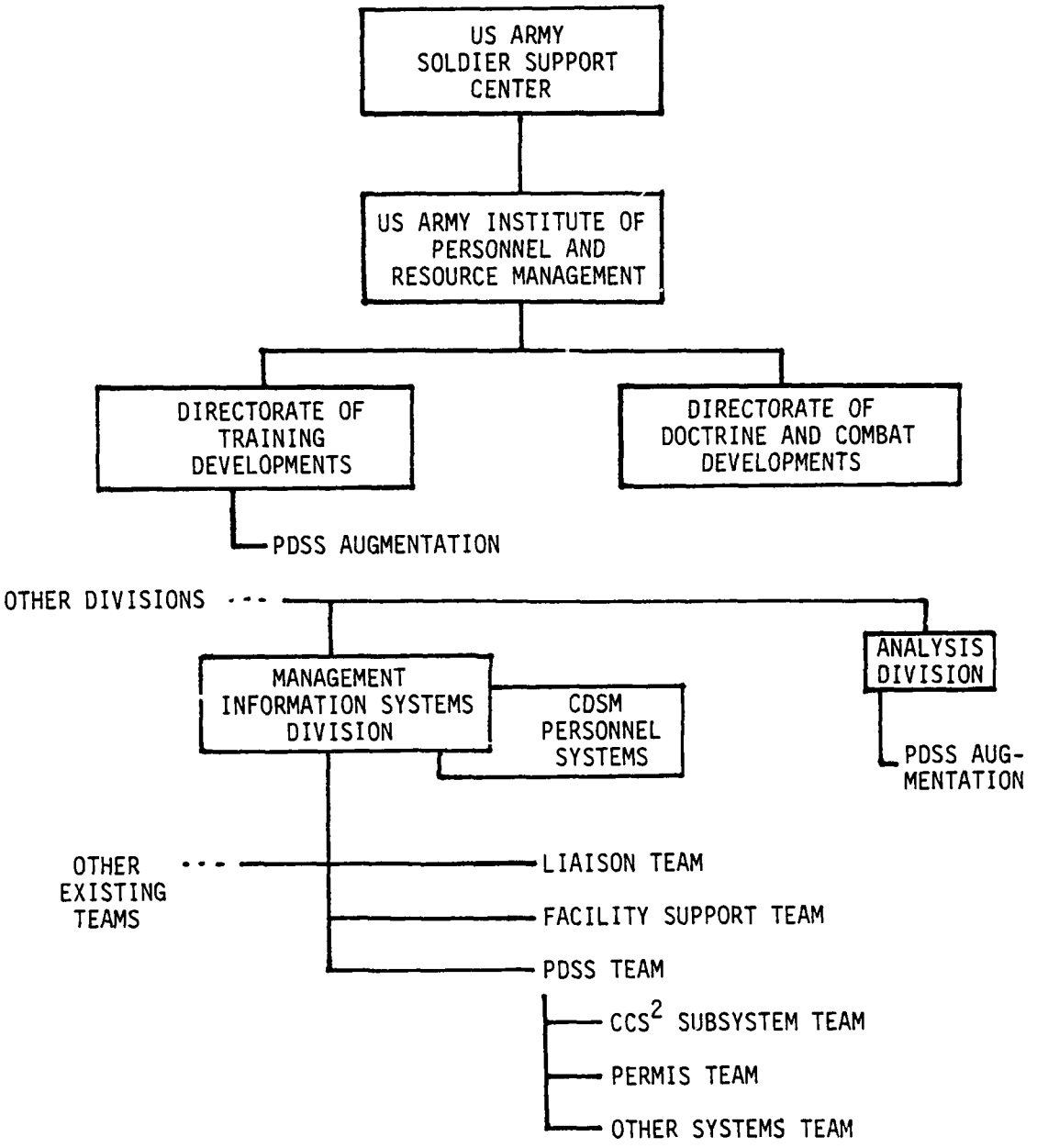


Figure E-27. CDSE structure, Theoretical PDSS System for Soldier Support Center

E-29. RESPONSIBILITIES AND RELATIONSHIPS.

a. CDSE. The overall mission of the Soldier Support CDSE is to insure that all CD PDSS responsibilities which are assigned to Soldier Support Center are adequately fulfilled for the personnel and administration portion of the Combat Service Support (CSS) BFA. The responsibilities and functions of the elements of this CDSE are outlined below.

(1) Chief, Soldier Support CDSE. The Chief, Soldier Support CDSE, is the principal administrator of PDSS functions at Soldier Support Center. He reports to the Director, Doctrine and Combat Developments, US Army Institute of Personnel and Resource Management. The Chief is responsible for carrying out the overall mission of the CDSE, using the resources at his disposal, and through close cooperation with the various external elements with which the CDSE interfaces.

(2) CDSM, Personnel Systems. The CDSM, Personnel Systems is the focal point and principal interface for all substantive TRADOC PDSS actions relating to BAS for which Soldier Support Center is assigned or allocated PDSS responsibilities. Because of the currently limited nature of those responsibilities, a single CDSM is designated, and he also serves as deputy to the Chief, Soldier Support CDSE. The office of the CDSM provides a nucleus that can be expanded with additional CDSMs, if future responsibilities require expansion. The CDSM, Personnel Systems has a small staff organized in four sections on the basis of BAS or groups of BAS, as appropriate. The CDSM and his staff are assisted, as appropriate, by the resources of the other CDSE branches, in performing CD PDSS functions which may be required by the BAS under the monitorship or purview of the Soldier Support CDSE.

(3) CDSE Management Branch. The CDSE Management Branch assists the Chief and the CDSM in planning and managing the CDSE. This branch is responsible for anticipating the workload of the CDSE, and for recommending, developing, coordinating, and maintaining appropriate plans for the necessary resources, to include training. This branch also is responsible for maintaining necessary documentation and records, recommending and developing CDSE policies, and helping to insure that CDSE operations are in concert with other PDSS operations and policies throughout TRADOC and the Army.

(4) Facility Support and Analysis Branch. The Facility Support and Analysis Branch is responsible for anticipating and planning for meeting the facility, equipment, and related support needs of the CDSE, including any needs that may arise for computer support, modeling, simulation, testing or analysis of BAS software. This branch will support or effect support of any special communications capabilities needed by the CDSE.

(5) CD PDSS LNO Support Branch. The CD PDSS LNO Support Branch is responsible for supporting and providing Combat Developer PDSS liaison teams or offices as needed to accomplish effectively the mission of the CDSE. Combat Developer PDSS liaison offices (CD PDSS LNO) are currently seen as needed at both MILPERCEN, Alexandria, VA, and at US Army Computer Systems Command, in the vicinity of Fort Belvoir, VA.

E-30. SYSTEM CAPABILITIES. The Theoretical PDSS System for Soldier Support Center is designed to adequately fulfill all Combat Developer PDSS responsibilities that can be foreseen at this time, into at least the late 1980's. System capabilities are based on currently perceived responsibilities, whose extent is subject to potential change. Therefore, the system is designed with a capability for expansion to meet new responsibilities, should the need arise. Figure E-28 lists the 64 TRADOC principal PDSS functions and indicates, by means of the "X" entries, which of the principal elements in the Theoretical System are responsible for performing those functions.

E-31. SYSTEM RESOURCE REQUIREMENTS.

a. Personnel. An estimate has been made by the study team of the personnel needed to staff the Theoretical PDSS System for Soldier Support Center. This estimate is based upon the currently perceived PDSS responsibilities of the Soldier Support Center and a consideration of each of the system structural elements discussed in the preceding paragraphs. The estimated personnel requirements were derived without reference to any resource constraints, but were subjected to review-for-reasonableness, and some adjustments were made to initial figures. The resulting numbers are shown in Figure E-29. A breakout of the 1986/7 numbers, by CDSE element, is provided in Figure E-30.

b. Civilian Personnel Costs. Costs of the civilian personnel portion of the estimated personnel requirements are futher estimated, in constant FY 81 K dollars, based on an assumed cost of $31.6K per managerial/technical man year and $16.0K per clerical/technician man-year, including 10% overhead loading. These cost estimates are:

	($000)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel Costs	316.8	316.8	316.8	316.8	316.8	316.8	316.8

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSE	CDSM, PERSONNEL SYSTEMS	CDSE MANAGEMENT BRANCH	FACILITY SUPPORT AND ANALYSIS BRANCH	LNO SUPPORT BRANCH	DIRECTORATE OF TRAINING DEVELOPMENT (DTD)
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	X	X			X	
		2. PROVIDE REPRESENTATION ON THE CRWG.	1		X			X	
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X				
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1		X			X	
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2		X			X	
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2		X			X	
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[c] CONCEPT.	1		X				
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1			X	X		
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X		X	X	X	
		3. ACQUIRE AND MANAGE RESOURCES.	1	X		X			
2. ANALYSIS	1. PERFORM ANALYSIS OF BAS SOFTWARE PROBLEM REPORTS.[a]	1. IN CONJUNCTION WITH MD, DETERMINE IF SOURCE OF PROBLEM IS FUNCTIONAL OR TECHNICAL.	2		X			X	
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2		X			X	
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3		X			X	
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3		X			X	
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2		X			X	
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2		X			X	
		2. EXAMINE BASIS FOR REQUIREMENT.	2		X	X			
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2		X				
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2		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.[b]	2		X		X		
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2		X		X		

Figure E-28. Assignment of functions, Theoretical System--Soldier Support Center (continued on next page)

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

Figure E-28. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSE	CDSM, PERSONNEL SYSTEMS	CDSE MANAGEMENT BRANCH	FACILITY SUPPORT AND ANALYSIS BRANCH	LNO SUPPORT BRANCH	DIRECTORATE OF TRAINING DEVELOPMENT (DTD)
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		X				
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2		X				
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2						X
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3						X
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2						
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2		X				
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2		X				
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3		X				
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1		X				
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1		X				
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	X				
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION. [a]	3						
	3 SUPPORT TO CRISIS/ WARTIME OPERATIONS. [a]	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1		X		X		
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1						
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1						
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3						
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1						
	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				

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

a [illegible] RARELY
b [illegible] OVER $500,000
c [illegible] AFTER NOTIFICATION BY MILPERCEN
[illegible] ING ROLE

Figure E-28. (concluded)

	FY81	FY82	FY83	FY84	FY85	FY86	FY87
REQUIRED							
MILITARY	12	12	12	12	12	12	12
CIVILIAN	4	4	4	4	4	4	4
TOTAL	16	16	16	16	16	16	16
AUTHORIZED							
MILITARY	6	6	6	6	6	6	6
CIVILIAN	0	0	0	0	0	0	0
TOTAL	6	6	6	6	6	6	6
ADDITIONAL NEEDED							
MILITARY	6	6	6	6	6	6	6
CIVILIAN	4	4	4	4	4	4	4
TOTAL	10	10	10	10	10	10	10

Figure E-29. Personnel required, Theoretical PDSS System, Soldier Support Center

	MANAGERIAL AND TECHNICAL		CLERICAL AND TECHNICIAN		TOTAL
	MIL	CIV	MIL	CIV	
ASST CDSM, PERSONNEL SYSTEMS	1				1
CCS^2 SUBSYSTEM TEAM	1	1	1		3
PERMIS	1		1		2
OTHER SYSTEMS SECTION		1	1		2
FACILITY SUPPORT AND ANALYSIS BRANCH		1	1		2
CD PDSS LNO	2	1			3
ANALYSIS DIVISION AUGMENTATION	2				2
DIRECTORATE OF TRAINING DEV. AUG.	1				1
TOTALS	8	4	4	0	16

Figure E-30. CDSE personnel requirements breakdown, Theoretical PDSS System, Soldier Support Center

APPENDIX F

DESCRIPTION OF THE HYBRID SYSTEM

CONTENTS

PRECEDING PAGE BLANK-NOT FILMED

SECTION I. GENERAL

F-1. INTRODUCTION. This appendix contains a description of a Hybrid PDSS System designed to provide TRADOC a capability for planning, managing, and performing those functions, associated with PDSS for BAS, that are the responsibility of the combat developer. This system, if implemented, would provide TRADOC the capability to fulfill on a prioritized basis, Combat Developer responsibilities in this important functional areas, for BAS projected to be in any life cycle phase requireing PDSS, through 1987. This section contains a general description of the Hybrid System. Subsequent sections of this appendix contain more detained descriptions of each component of the Hybrid System to include their organization, responsibilities and relationships, and estimates of resources that would be required to implement the system.

F-2. GENERAL SYSTEM DESCRIPTION.

a. Structure. This TRADOC Hybrid PDSS System has been derived primarily from a comparative analysis of the TRADOC Baseline and Theoretical PDSS Systems. The assumptions listed in Chapter 1, and the design guidelines and other considerations discussed in Chapter 2 were also applied to the design of this system. The result of this effort is a Hybrid System which provides a PDSS capability, tailored to the needs of HQ TRADOC and each of its functional centers that have PDSS responsibilities. Figure F-1 provides an overview of this Hybrid System, structured in accordance with the BFA concept. (This figure is repeated from Chapter 5 for the readers convenience in referring to it while reviewing this appendix.) The system depicted provides for:

- PDSS Staff Elements at HQ TRADOC and at the US Army Combined Arms Combat Development Activity (CACDA) to plan, program, and coordinate the system
- Two resource coordination branch-level staff elements in CACDA to ensure the fullest and most effective use possible of existing TRADOC analytical and test and evaluation resources to support CD PDSS requirements
- A Combat Developments System Manager (CDSM) for each Category 1 BAS and for all other BAS as required based on analysis of requirements in each BFA
- Four Combat Developer Support Factilities (CDSF) and other CD PDSS elements, as appropriate, at TRADOC Functional Centers having proponency for one or more Category 1 command or control BAS under the CCS^2 concept, and having a collocated MD-managed PDSS Center
- Three Combat Developer Support Elements (CDSE) at all other TRADOC functional centers having substantial requirements for a PDSS capability (e.g., proponency for one or more Category 2 or 3 BAS)
- Six Combat Developer PDSS Liaison Offices (CD PDSS LNO) needed to provide the required level of interaction with Materiel/System Developer PDSS Centers that are geographically separated from the CD location

PRECEDING PAGE BLANK-NOT FILMED

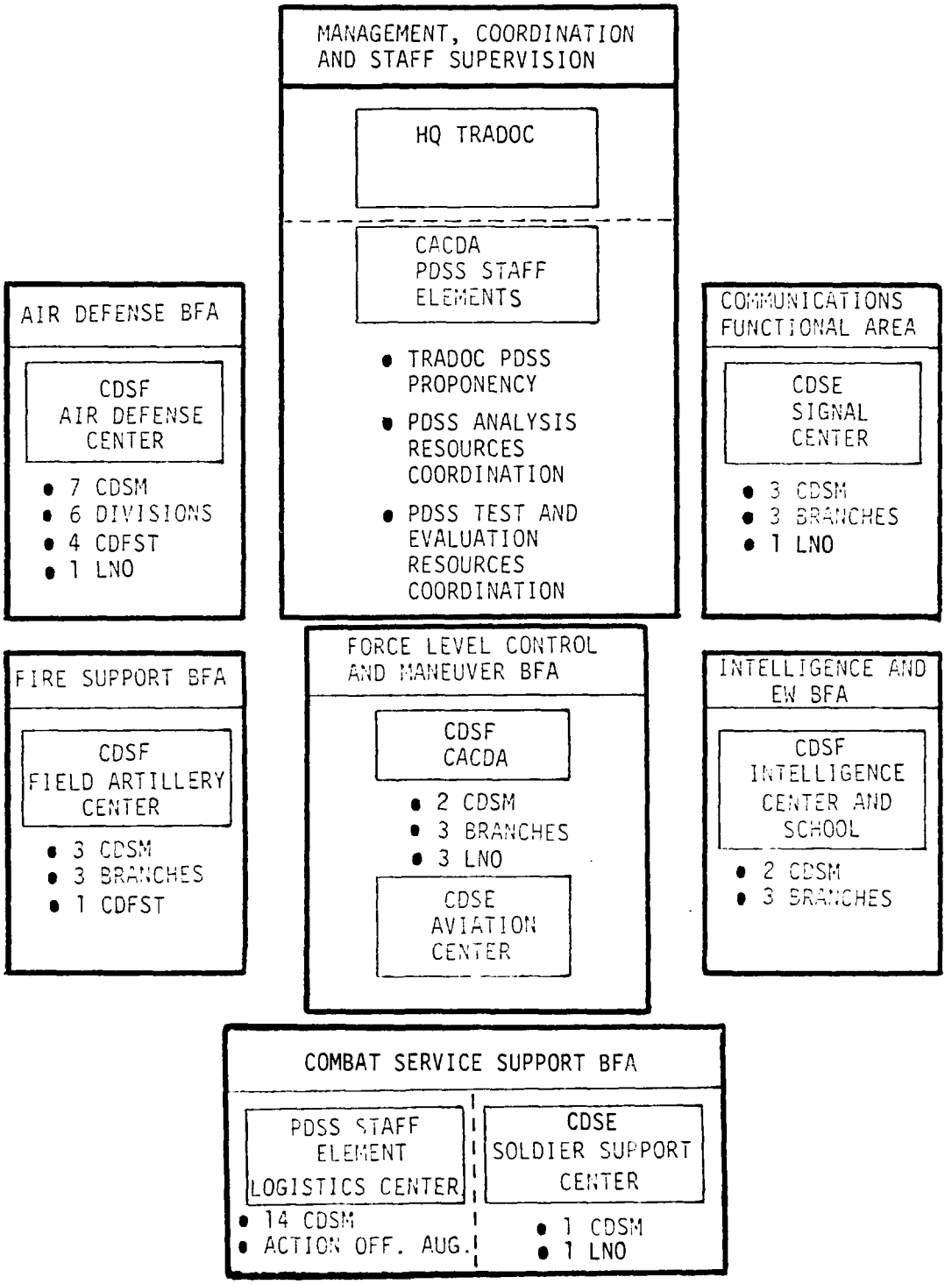


Figure F-1. Overview of the Hybrid System

- Combat Developer PDSS Forward Support Team (CDFST) where they are essential to: provide CD interface with system Users to assist in the identification, isolation, and reporting of system problems; the development and implementation of functional work around procedures; participate in User training; and provide other support and assistance as required.

b. Operational Concept. The operational concept associated with this Hybrid System is similar to TRADOC's present concept of operations. In the Hybrid System, it is envisioned that PDSS will continue to be performed as an integral part of the CD's system development and life cycle management functions under the TRADOC combat developments mission. Overall direction and control of the system will be exercised by HQ TRADOC, supported by CACDA functioning as the TRADOC PDSS proponent. PDSS responsibilities for BAS and the resources needed to carry out these responsibilities are allocated to the TRADOC functional centers, in consonance with the BFA Concept and other functional responsibilities of each center. The activity of key centers involved with command and control BAS is closely coordinated under the CCS[2] Concept. These centers will be linked by state-of-the-art communications to facilitate this interaction and coordination of effort.

c. System Components. Each component of the Hybrid System shown in Figure F-1 is discussed in terms of its structure, responsibilities, relationships, and resource requirements in Sections II through X of this appendix.

SECTION II. HEADQUARTERS TRADOC

F-3. ROLE. The role and responsibilities of HQ TRADOC in this Hybrid PDSS System are seen to be essentially the same as in the current Baseline System. 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 Section III. Most PDSS requirements and operations are assigned to BFA-level components of this Hybrid System for planning, programming, and execution.

F-4. ORGANIZATION. 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). This Hybrid PDSS System is based on continuation of this overall operating concept. For fulfilling the HQ TRADOC role, the system concept provides for the establishment of a PDSS Staff Element within the Systems Integration Branch of the Telecommunications, Command and Control, and Computer Systems Directorate of DCSCD. This element would provide the focal point for coordination of all TRADOC PDSS requirements, 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 school(s), described in Chapters 2 and 3, would not be changed by the implementation of this Hybrid PDSS System.

F-5. 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 Hybrid System. One of these personnel is needed in FY 81 and one each in FY 82, 84, and 86. It is proposed that two of these staff members be military officers with combat arms backgrounds and secondary specialties in operations research/systems analysis and automatic data processing. The other members should be civilians in operations research/systems analysis and the automatic data processing career fields. This will provide a desirable blend of knowledge and expertise and should also provide a means of maintaining the long term continuity needed in this functional area.

PRECEDING PAGE BLANK-NOT FILMED

SECTION III. COMBINED ARMS COMBAT DEVELOPMENT ACTIVITY

F-6. ROLE. This section addresses CACDA's special role in the Hybrid PDSS System as the TRADOC PDSS Proponent. CACDA also has a major role in that portion of the Hybrid PDSS System designed to support the Force Level Control Functional Area and the Maneuver BFA, but that role is discussed in Section IV. CACDA's role in the Hybrid PDSS System, as the TRADOC PDSS proponent, is envisioned to be a more active and prominent one than that performed at present by CACDA in the Baseline system. It is also expected to increase significantly in magnitude and scope as more BAS are fielded and the CCS^2 concept becomes a reality. Both of these developments will require increased Combat Developer participation in PDSS in general and in support of the major command and control systems of the CCS^2 concept in particular. This will necessitate that CACDA play a very active role in coordinating and integrating the various elements of TRADOC's PDSS involvement.

F-7. ORGANIZATION AND RESPONSIBILITIES. Within CACDA, the focal point for PDSS in the Baseline System is the JINTACCS Office, Army C2/JINTACCS Division, C3I Directorate. This Hybrid System provides for the continuation of this current assignment of responsibility. In addition, it provides for the establishment of two branch-level organizational elements--a BAS PDSS Analysis Resources Coordination Branch and a BAS PDSS Test and Evaluation Resources Coordination Branch. These branches would have responsibilities for coordinating the tasking and use of TRADOC-wide (1) analytical resources, and (2) test and evaluation resources, respectively, to address CD PDSS requirements. The objective of this effort would be to maintain a total force viewpoint and ensure the full and effective use of all existing resources that could contribute to satisfying requirements in these two functional areas. This should, in turn, result in realization of an improved capability with fewer resources than would otherwise be needed if each Hybrid PDSS System component operated entirely independently. The specific responsibilities and functions of the JINTACCS Office and these branches and alternatives for organization of the branches are discussed below.

a. Responsibilities.

(1) JINTACCS Office. The JINTACCS Office will serve as the focal point within CACDA for overall integration and coordination of PDSS activities for which CACDA is the TRADOC proponent and principal integrating center. Specific PDSS responsibilities of the JINTACCS Office will include the following:

- Coordinate closely and exchange information freely, on PDSS matters, with the Battlefield Systems Integration Branch, of the Directorate of Telecommunications, Command and Control, and Computer Systems (TC4S) of TRADOC HQ, which branch provides a principal interface on PDSS matters with HQDA and other major commands

PRECEDING PAGE BLANK-NOT FILMED

- Coordinate and integrate, as appropriate, PDSS requirements and activity of the TRADOC centers and schools

- In conjunction with the Battlefield Systems Integration Branch of HQ TRADOC, establish and maintain interfaces with DA staff elements and system/materiel developer elements on PDSS matters which cut across BFA lines

- Maintain records of past and current studies and management decisions pertaining to TRADOC's PDSS organization, activities, and plans

- Conduct a continuing functional evaluation of the TRADOC PDSS System, to include its requirements, organization, and effectiveness, and coordinate the adjustment of that system to accommodate changing situations and requirements.

(2) BAS PDSS Analysis Resources Coordination Branch. This branch is responsible for coordinating, through appropriate command and control channels, the tasking and use of all TRADOC resources with a capability to contribute to the analysis of CD PDSS requirements for BAS in all BFA, in order to make the fullest and most effective use possible of available resources. This branch also coordinates requests to organizations external to TRADOC, for analytical support in addressing CD PDSS actions. Principal functions to be performed include:

- Developing a familiarity with all BAS and maintaining a total force effectiveness and TRADOC-wide perspective regarding PDSS needs

- Developing a knowledge of the capabilities of all analytical resources (e.g., personnel, simulations, computer support) throughout TRADOC and external to TRADOC with a potential for supporting TRADOC PDSS requirements

- Establishing contact with CDSMs throughout TRADOC and maintaining an awareness of their analytical support needs

- Making recommendations and assisting CDSMs in planning and scheduling the use of analytical resources to satisfy CD PDSS needs

- Coordinating and consolidating the analytical needs for individual BAS so that resources are efficiently and effectively used to support total TRADOC requirements in this area

- Coordinating the matrix management of PDSS personnel among TRADOC functional centers and schools and other TRADOC analytical organizations so that teams are formed at the appropriate times and places with the necessary skills and manpower to analyze BAS PDSS problems most effectively

- Recommending priorities and assisting in the resolution of conflicts in needs for analytical resources among the BFAs.

(3) BAS PDSS Test & Evaluation Resources Coordination Branch. This branch is responsible for coordinating, through appropriate command and control channels, the tasking and use of all TRADOC resources with a capability to contribute to satisfying test and evaluation requirements associated with CD PDSS actions, in order to make the fullest and most effective use possible of available resources. This branch also coordinates requests to organizations external to TRADOC with potential for supporting test and evaluation requirements associated with CD PDSS actions. Principal functions to be performed include:

- Developing a familiarity with all BAS and maintaining a total force effectiveness and TRADOC-wide perspective regarding PDSS test and evaluation needs
- Developing a knowledge of the capabilities of all test and evaluation resources throughout TRADOC and those external to TRADOC with potential for supporting CD PDSS test and evaluation requirements
- Maintaining a thorough knowledge of all regulatory policies applicable to test and evaluation of BAS. Participating, and, as appropriate, taking the lead role in resolving conflicts and differences in interpretation of the meaning of applicable regulatory policies
- Establishing contact with CDSMs throughout TRADOC and maintaining an awareness of their test and evaluation needs
- Making recommendations and assisting CDSMs in planning and scheduling the use of test and evaluation resources to satisfy CD PDSS needs
- Coordinating and consolidating the test and evaluation needs for individual BAS so that resources are efficiently and effectively used to support total TRADOC requirements in this area
- Recommending priorities and assisting in the resolution of conflicts in needs for test and evaluation support among the BFAs.

b. Organization. There are several logical alternatives for the location of these two branch elements in the CACDA organizational structure. Among these are:

- Locate both branches in the Army C2/JINTACCS Division. This would centralize all of CACDA's TRADOC-wide PDSS responsibilities within this division
- Locate the BAS PDSS Analysis Resources Coordination Branch in either the Army C2/JINTACCS Division or the Methodology and Analysis Division of the C3I Directorate. Locate the BAS PDSS Test & Evaluation Resources Coordination Branch in the Test Development and Evaluation Directorate. These options would align these branches functionally with other CACDA elements having related functions

- Locate both branches in the proposed Force Level Control and Maneuver BFA CDSF organization at CACDA. This would further centralize PDSS activity but would involve the CDSF in TRADOC-wide PDSS responsibilities beyond those relevant to only Force Level Control or the Maneuver BFA.

Of these alternatives, the first appears to be the most desirable, but this matter should be addressed further during implementation planning.

F-8. RESOURCE REQUIREMENTS.

a. JINTACCS Office. It is estimated that the increased workload associated with fulfilling responsibilities as TRADOC PDSS proponent will require two staff officers in the JINTACCS office. One of these personnel is needed in FY 81 and one in FY 83. These personnel, one military and one civilian, would serve on a dedicated basis to fulfill CACDA's role of assisting HQ TRADOC in planning, coordinating, and integrating all PDSS activity within TRADOC and providing an interface with other commands and agencies on PDSS matters. The civilian member of this two-person staff element should be in the operations research/systems analysis or automatic data processing career field. The military member should be a combat arms officer with a secondary speciality in operations research/systems analysis or automatic data processing. This combination will provide a desirable blend of knowledge and expertise relative to the CD PDSS requirements and will facilitate maintaining the degree of continuity needed in this staff element.

b. BAS PDSS Analysis Resources Coordination Branch and Test and Evaluation Resources Coordination Branch. Based on the responsibilities and principal functions of these branches described above, it is proposed that they each be formed initially with a total of five personnel, structured as follows:

BRANCH	PERSONNEL				TOTAL
	TECHNICAL		ADMINISTRATIVE		
	MIL	CIV	MIL	CIV	
BAS PDSS Analysis Resources Coordination Branch	2	2		1	5
BAS PDSS Test and Evaluation Resources Coordination Branch	2	2		1	5
TOTAL	4	4		2	10

This proposed structure would provide each of these branches the same blend of knowledge and expertise and long term continuity as discussed in Paragraph a. above.

SECTION IV. FORCE LEVEL CONTROL FUNCTIONAL AREA AND MANEUVER BFA

F-9. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. Both the Force Level Control Functional Area and the Maneuver BFA are supported by the component of the Hybrid PDSS System discussed in this section.

b. TRADOC Centers and Schools Involved. TRADOC Centers and Schools involved with this component of the Hybrid System include CACDA, the US Army Aviation Center, and the US Army Armor Center. No requirement has been identified for active involvement in the system by other centers at this time. The structure of this component of the system and its relationship to the current organization of each of the TRADOC centers involved are discussed below.

c. Organizational Structure of the System. That portion of the Hybrid PDSS System responsible for supporting Force Level Control and the Maneuver BFA is shown in Figure F-2. It consists of:

- A CDSF and two CDSMs, one for the Force Level and Maneuver Control system and one for Maneuver BFA BAS, subordinate to CACDA at Fort Leavenworth
- Three CD PDSS LNOs located as follows:

  Fort Monmouth to facilitate Combat Developer interaction with the ERADCOM, CORADCOM, and AVRADCOM PDSS Centers at that installation

  Picatinny Arsenal to facilitate interaction with the ARRADCOM PDSS Center

  Redstone Arsenal to facilitate interaction with the MICOM PDSS Center

- A CDSE at the Aviation Center, Fort Rucker.

Each of these system elements is discussed further in the paragraphs that follow.

F-10. RESPONSIBILITIES AND RELATIONSHIPS.

a. CACDA. As proponent for Force Level Control and the Maneuver BFA, CACDA has a prominent role in all combat development actions associated with BAS in both of these functional areas. CACDA is proponent for SIGMA, the Force Level and Maneuver Control System, and for coordinating and exercising configuration control over the required interfaces between SIGMA and all other control systems of the CCS^2 concept. CACDA is also proponent for three Category 3 BAS in the Maneuver BFA (as shown in Appendix C). CACDA is also responsible for coordinating and integrating activity of all TRADOC centers involved with other BAS in this BFA. To provide a capability to

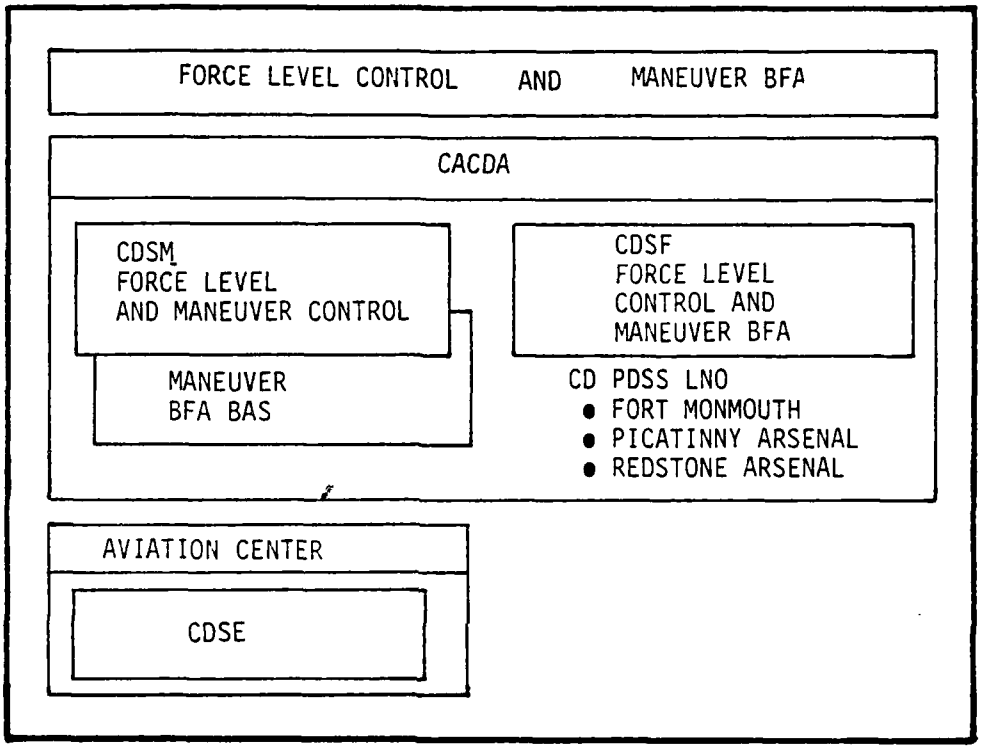


Figure F-2 . Overview of the Hybrid PDSS System-Force Level Control and Maneuver BFA

fulfill the PDSS role inherent in these responsibilities, this Hybrid PDSS System design provides for the establishment of a CDSF and two CDSMs at Fort Leavenworth and CD PDSS LNOs at three locations as mentioned above. The CDSF organization and its relationship to other elements of CACDA are shown in Figure F-3. Not visable in this structure are the two proposed branch-level resource coordination elements discussed in Section III. As shown, the CDSF represents a division level element in the C3I directorate. It is organized along functional lines and consists of a CDSF Chief, two CDSMs, three branch level elements, and three CD PDSS LNOs. Responsibilities and functions of each element are discussed below.

(1) Chief, CDSF. The Chief, CDSF, Fort Leavenworth, plans, directs, and supervises the operation of the CDSF in accomplishing all responsibilities for PDSS to BAS in the Force Level Control and Maneuver Functional Areas. In conjunction with the CDSM, Force Level and Maneuver Control System, and CDSM, Maneuver BFA Systems, he establishes priorities and allocates resources to address requirements for support of systems in both areas. He serves as the primary point of contact with the MD-managed PDSS Centers supporting BAS in both of these functional areas. He also supervises the three CD PDSS LNOs shown in Figure F-3 in the accomplishment of their responsibilities. The principal functions performed by the Chief CDSF, in either a supervisory, coordination, or action role, are shown in Figure F-4. An X entry in the column headed Chief, CDSF, indicates that he is involved directly with the function shown to the left of the X. An N entry indicates that he is not directly involved with the function. These same entries are used to show the functional responsibilities of each of the remaining CDSF elements discussed below.

(2) 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 plans, programs, and coordinates those software support tasks which the CDSF must perform in support of 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 F-4.

(3) CDSM, Specified Maneuver BFA Systems. The CDSM, Maneuver BFA System, serves as the CD for software associated with systems in the Maneuver BFA. As such, he is responsible for planning, programming, and coordinating those software support tasks which the CDSF must perform in support of the BAS associated with this BFA. He also serves as the principal field user's representative and as the primary point of contact with the MD on PDSS matters concerning these BAS. Specific functions with which he is involved in either a management, coordination, or performance role are shown in Figure F-4.

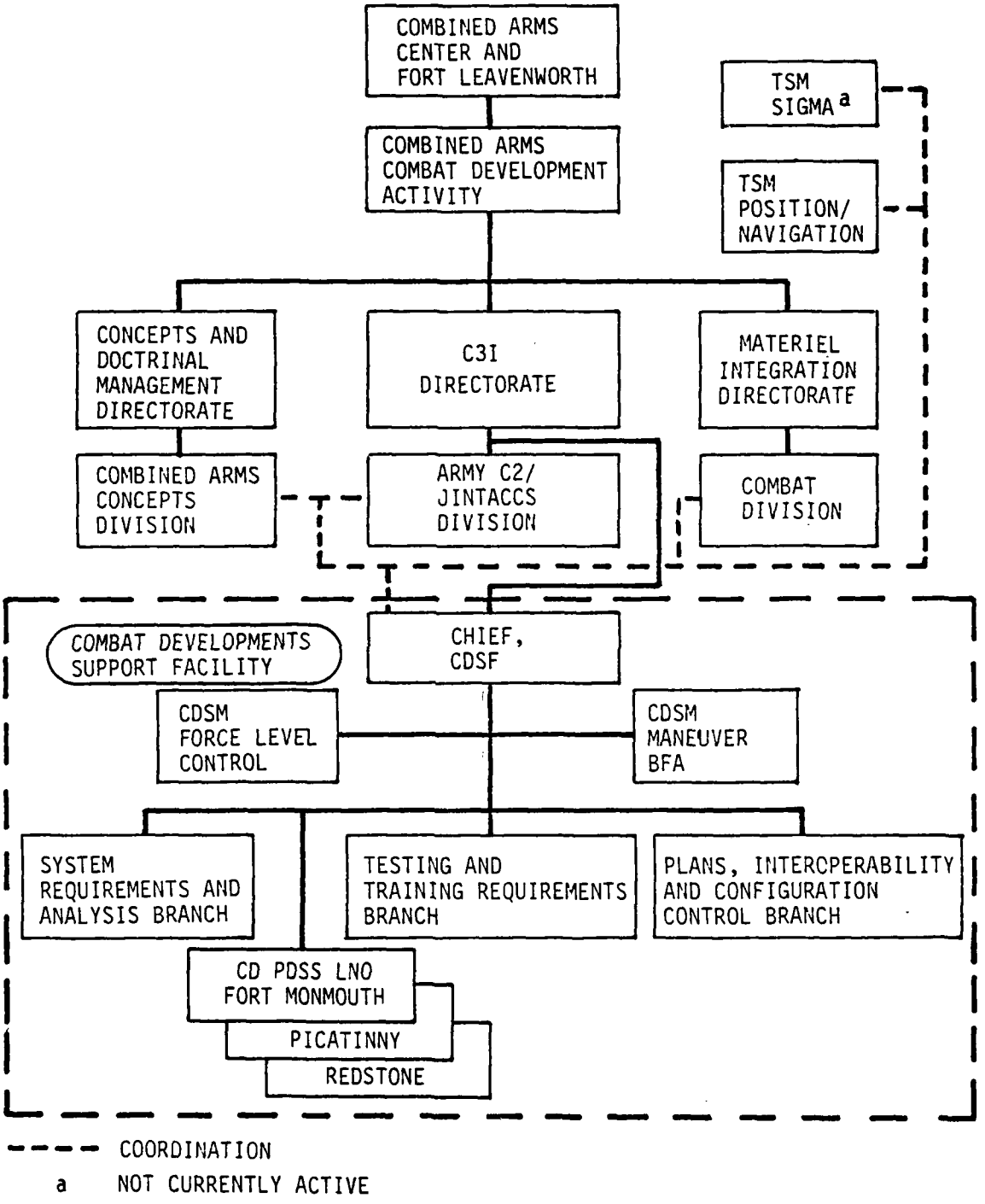


Figure F-3. Organizational structure, CDSF Fort Leavenworth

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSE	CDSM, FORCE LEVEL AND MANEUVER CONTROL SYSTEM	CDSM, SPECIFIED MANEUVER BFA BAS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH	PLANS, INTEROPERABILITY, & CONFIGURATION CONTROL BR.											
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	X	X	X	Z	Z	X	Z										
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	X	X	X	Z	Z	X	Z										
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X	X	Z	Z	X	Z										
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	Z	X	X	Z	Z	X	Z										
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	Z	X	X	Z	Z	X	Z										
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	Z	X	X	Z	Z	X	Z										
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS CONCEPT.	1	Z	X	Z	Z	Z	X	Z										
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	Z	Z	X	Z										
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	Z	Z	X	Z										
		3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	X	Z	Z	X	Z										
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	Z	X	X	X	Z	Z	Z										
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	Z	X	X	X	Z	Z	X										
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	Z	X	X	X	Z	Z	X										
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	Z	X	X	X	Z	Z	X										
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	Z	X	X	X	Z	Z	Z										
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	Z	X	X	X	Z	Z	Z										
		2. EXAMINE BASIS FOR REQUIREMENT.	2	Z	X	X	X	Z	Z	Z										
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	Z	X	X	X	Z	Z	X										
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	Z	X	X	X	Z	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	Z	X	X	X	Z	Z	Z										
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	Z	X	X	X	Z	X	Z										

Figure F-4. Assignment of functions, Hybrid System--Force Level Control and Maneuver BFA (continued on next page)

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

Figure F-4. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSF	CDSM, FORCE LEVEL AND MANEUVER CONTROL SYSTEM	CDSM, SPECIFIED MANEUVER BFA BAS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH	PLANS, INTEROPERABILITY, & CONFIGURATION CONTROL BR.	
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	N	X	X	N	X	N	N
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	N	X	X	N	X	N	N
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	N	X	X	N	X	N	N
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	N	X	X	N	X	N	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	N	X	X	X	X	N	N
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	N	X	X	X	X	N	N
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	N	X	X	X	X	N	N
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	N	X	X	N	X	N	N
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	N	X	X	X	N	X	N
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	N	X	X	X	N	X	N
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	N	X	X	N	N	X	N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	N	X	X	N	N	X	N
	3. SUPPORT TO CRISIS/WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	N	X	X	X	N	N	N
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	N	X	X	X	N	N	N
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	N	X	X	X	N	N	N
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	N	X	X	X	N	N	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	N	X	X	X	N	N	N
	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	N	X	X	X	N	N	N

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

X = Element is responsible and capable
N = Element is not responsible

Figure F-4. (concluded)

(4) Branch level CDSF elements. As mentioned above, this CDSF is organized functionally with three branches. All CD PDSS functions to be performed by the CDSF for all BAS in both the Force Level Control and Maneuver functional areas are allocated among these branches in a logical manner as discussed below. The names used in this report to identify the branches have been selected to be descriptive of responsibilities of each branch. Specific functions of each branch are shown in Figure F-4.

(a) Plans, Interoperability, and Configuration Control Branch. This branch supports the Chief, CDSF in all actions related to planning, administering, and managing the CDSF operation. It supports both the CDSM, Force Level and Maneuver Control System and the CDSM, Maneuver BFA Systems, in all actions associated with planning PDSS support for BAS in their respective areas 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 branch 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 branch coordinates with the CDSM in authorizing release of system change packages to the field.

(b) System Requirements and Analysis Branch. This branch is responsible for all actions involving identification, analysis, and development of system functional change requirements and, in coordination with the CDSM, stating these requirements to the MD. The source of these requirements may be any system User or cognizant CD organization. They may result from any of the stimulators of change discussed in Chapter 3. Analyses conducted by the branch 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.

(c) Testing and Training Requirements Branch. As suggested by its title, responsibilities of this branch fall generally into two functional areas. With respect to testing, the branch is responsible for supporting the CDSM in planning, coordinating, and monitoring or conducting, all assigned CD actions associated with testing changes to BAS. Accomplishment of these responsibilities involves working closely with the MD, OTEA, the appropriate US Army Test Board, TCATA, and/or other designated test activities, as appropriate. The branch 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.

(5) CD PDSS LNOs. The Hybrid PDSS System provides for establishing three CD PDSS LNOs from the CDSF, Fort Leavenworth, to Fort Monmouth, Picatinny Arsenal, and Redstone Arsenal to provide a CD PDSS interface with MD PDSS

Centers at each of those locations as shown in Paragraph F-9.c., above. Each of these LNOs is an on-site CD representative, responsible for interacting with the MD PDSS center(s) at the installation where he is located, on all aspects of PDSS for all BAS supported at each center, regardless of the BFA(s) involved. To fulfill this responsibility, each LNO must:

- Develop a familiarity with all BAS supported at each MD PDSS Center with which he interfaces
- Establish and maintain contact with the CDSM for each of these BAS
- Be knowledgeable of all recent, on-going, and pending changes to these BAS including the basis of the action, the status of the action, its significance and importance, and the CD's position/ interests with respect to the action
- Be aware of the MD's position/interests with respect to the action and plans associated with the action.

In this role, each LNO provides CD representation and facilities an MD-CD dialog at the action level that does not exist at present.

b. US Army Aviation Center. The Aviation Center is proponent for 10 Category 3 BAS as shown in Appendix C. Although the primary focus of effort during this study was directed to be on Category 1 and 2 systems, the CD PDSS responsibilities and workload associated with these 10 BAS were considered to be of sufficient significance to warrant some attention. PDSS support for eight of these BAS is scheduled to be provided by the AVRADCOM PDSS Center at Fort Monmouth. Support for the other two is to be provided by the ERADCOM PDSS Center, also at Fort Monmouth. To provide the desired CD PDSS capability to interact with Users and the MD in support of these systems, the Hybrid PDSS System proposes the establishment of a small CDSE at the Aviation Center as shown in Figure F-2. It is envisioned that the CDSE would be established as a section within the Systems Branch, Materiel Developments Division, Directorate of Combat Developments. This CDSE will be supported by the CD PDSS LNO, discussed in Paragraph F-10.a.(5), in its interaction with the AVRADCOM and ERADCOM PDSS Centers. Resources associated with this Aviation Center PDSS element are discussed in Paragraph F-11.

c. US Army Armor Center. The Armor Center is proponent for one Category 2 BAS, the Advanced Attack Helicopter. No PDSS Center has been designated at this time for supporting this system. A CDSE may eventually be needed at the Armor Center for this system. However, for the present, system Action Officers should be able to accomplish required PDSS planning for this BAS in coordination with the TSM for the system, located at the US Army Aviation Center.

E-11. ESTIMATE OF RESOURCE REQUIREMENTS. Time phased estimates of resouces needed to establish the Hybrid System CD PDSS elements supporting Force Level Control and the Maneuver BFA are shown below.

a. CDSF, Fort Leavenworth.

(1) Personnel. The following estimate includes four administrative personnel spaces. The "Authorized" spaces reflect an assumption that personnel authorized in the C^2 Development Branch, Army C2/JINTACCS Division, would be assigned to this CDSF.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	9	10	12	14	14	14	14
Civilian	9	11	12	14	16	17	17
TOTAL	18	21	24	28	30	31	31
Authorized							
Military	1	3	4	5	7	9	17
Civilian	1	1	1	2	3	3	4
TOTAL	2	4	5	7	10	12	21
Additional Needed							
Military	8	7	8	9	7	5	-3
Civilian	8	10	11	12	13	14	13
TOTAL	16	17	19	21	20	19	10

A breakout of these personnel requirements (based on FY 86-87 needs) by organizational element are shown below:

ELEMENT	TECHNICAL		ADMINISTRATIVE		TOTAL
	MIL	CIV	MIL	CIV	
OFFICE OF THE CHIEF	0	1	0	1	2
CDSM, FORCE LEVEL CONTROL	1	0	0	0	1
CDSM, MANEUVER BFA	1	0	0	0	1
SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	4	4	0	1	9
TESTING AND TRAINING REQUIREMENTS BRANCH	2	4	0	1	7
PLANS, INTEROPERABILITY, AND CONFIGURATION MANAGEMENT BRANCH	3	4	0	1	8
CD PDSS LNO	3	0	0	0	0
TOTALS	14	13	0	4	31

(2) Major Items of Equipment. The Fort Leavenworth CDSF 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 by the CDSF. This computer access is also required to facilitate CDSFs which support one or more control systems in the C^2S concept. Specific equipment required to provide this access and the capability required must be determined through further study.

(3) Facilities. Physical facility requirements include office space for assigned personnel, a computer terminal area, and a simulation/test/analysis area that would accommodate 10 to 12 personnel working simultaneously. It would be desirable to collocate this CDSF with the CORADCOM-managed PDSS Center at Fort Leavenworth. If collocation is not feasible, other suitable space should be selected for the CDSF that will facilitate interaction with the PDSS Center as well as other elements of CACDA.

(4) Funds. An estimate of funds required for the CDSF civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars. It is based on an average annual cost of $31.6K for one technical level civilian and $16.0K for each administrative-level civilian.

	FUNDS REQUIRED ($000)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
CIVILIAN PERSONNEL	268.8	332.0	348.0	411.2	458.8	474.8	474.8

Funds needed for equipment and physical facilities are dependent upon development of specific requirements and plans addressing these areas.

b. US Army Aviation Center. Estimates of personnel resources needed to establish the CDSE at the Aviation Center are shown below. No other resources, except administrative space for these elements, are required.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	1	1	1	1	1	1	1
Civilian	1	1	1	1	1	1	1
TOTAL	2	2	2	2	2	2	2

SECTION V. COMMUNICATIONS FUNCTIONAL AREA

F-12. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. The component of the TRADOC Hybrid PDSS System described in this section is designed to provide a capability to adequately fulfill all Combat Developer (CD) PDSS responsibilities for battlefield automated systems (BAS) in the Communications Functional Area through 1987.

b. Organizations Involved. The US Army Signal Center (USASC) is the principal TRADOC organization involved with this component of the Hybrid System. Principal elements of USASC involved with PDSS at the USASC are identified in Figure F-5. Within this structure, the focal point for handling all CD PDSS responsibilities and functional requirements would be the new division level element identified within the Directorate of Combat Developments, the Combat Development Support Element (CDSE).

c. CDSE Structure. The structure of the USASC CDSE, which is the central element in the Communications Functional Area component of the TRADOC Hybrid PDSS system is shown to the branch level in Figure F-6. As indicated, the CDSE organization consists of:

- A Chief of the CDSE
- A CDSM for ground and satellite communication systems
- A CDSM for position location, navigation, and control systems
- A System Requirements and Analysis Branch
- An Interoperability Branch
- A Testing and Training Requirements Branch.

F-13. RESPONSIBILITIES AND RELATIONSHIPS. The CDSE depicted in Figure F-6 has overall responsibility for CD PDSS functions associated with all BAS for which the US Army Signal Center is proponent. These BAS include two Category 1 systems and eight Category 2 systems as shown in Figure F-7. In addition, USASC becomes proponent for the AN/MSC-67 Communications Center (COMFAC), a Category 2 BAS, upon its deployment. (The US Army Intelligence Center and School is proponent for COMFAC during its development.) Outlined below are responsibilities related to PDSS for BAS within the communications functional area. The following discussion begins with addressal of the US Army Signal Center, as a whole, and its principal elements. Then, the CDSE and its Fort Gordon elements, designed to fulfill specific PDSS functions, are addressed. TSMs and other elements are then addressed. The CDSE PDSS Liaison Office, to be located at Fort Monmouth, is addressed last. The functions of each CDSE element are also shown in Figure F-8.

PRECEDING PAGE BLANK-NOT FILMED

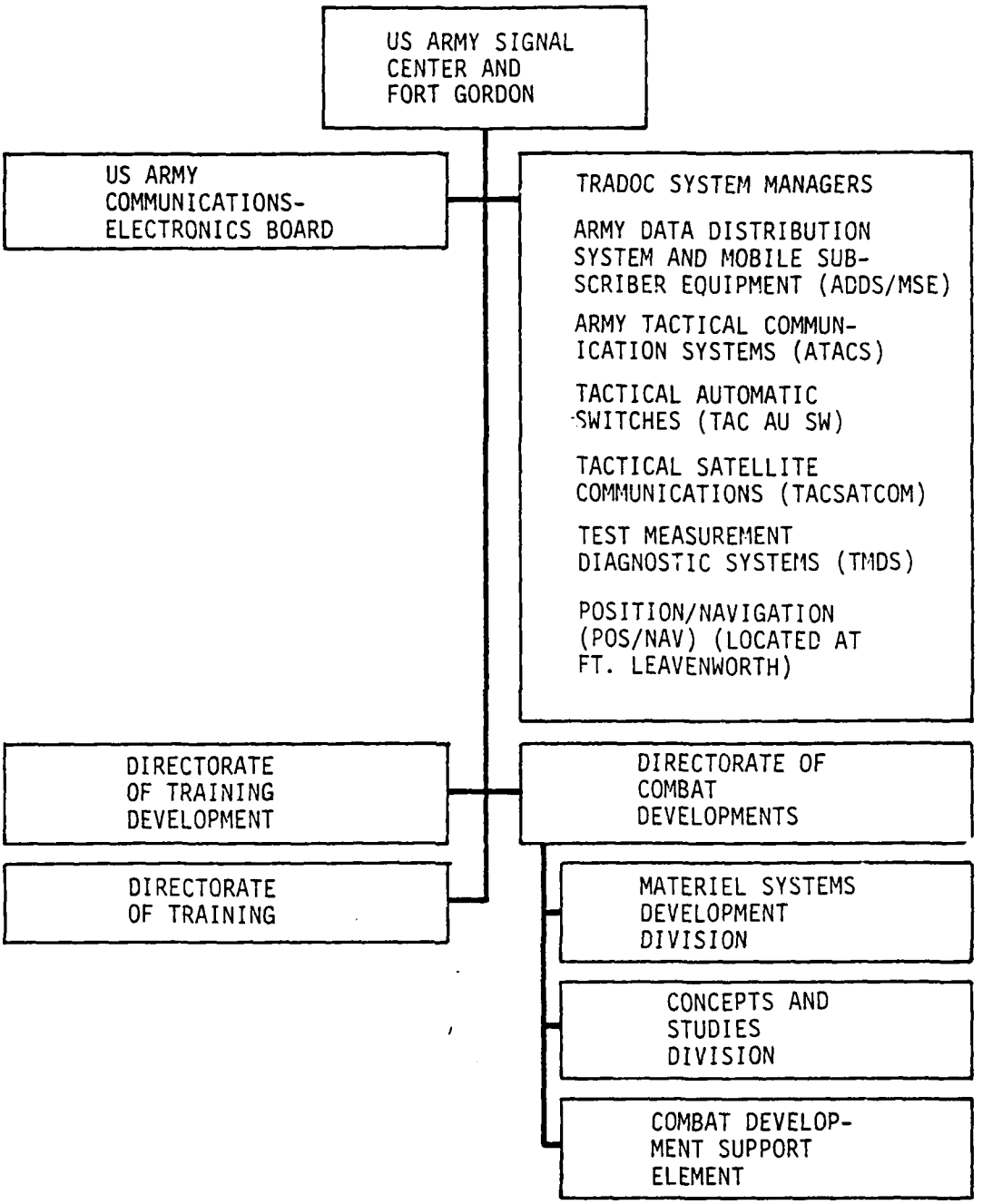


Figure F-5. Principal elements involved with the Hybrid PDSS System--Communications Functional Area

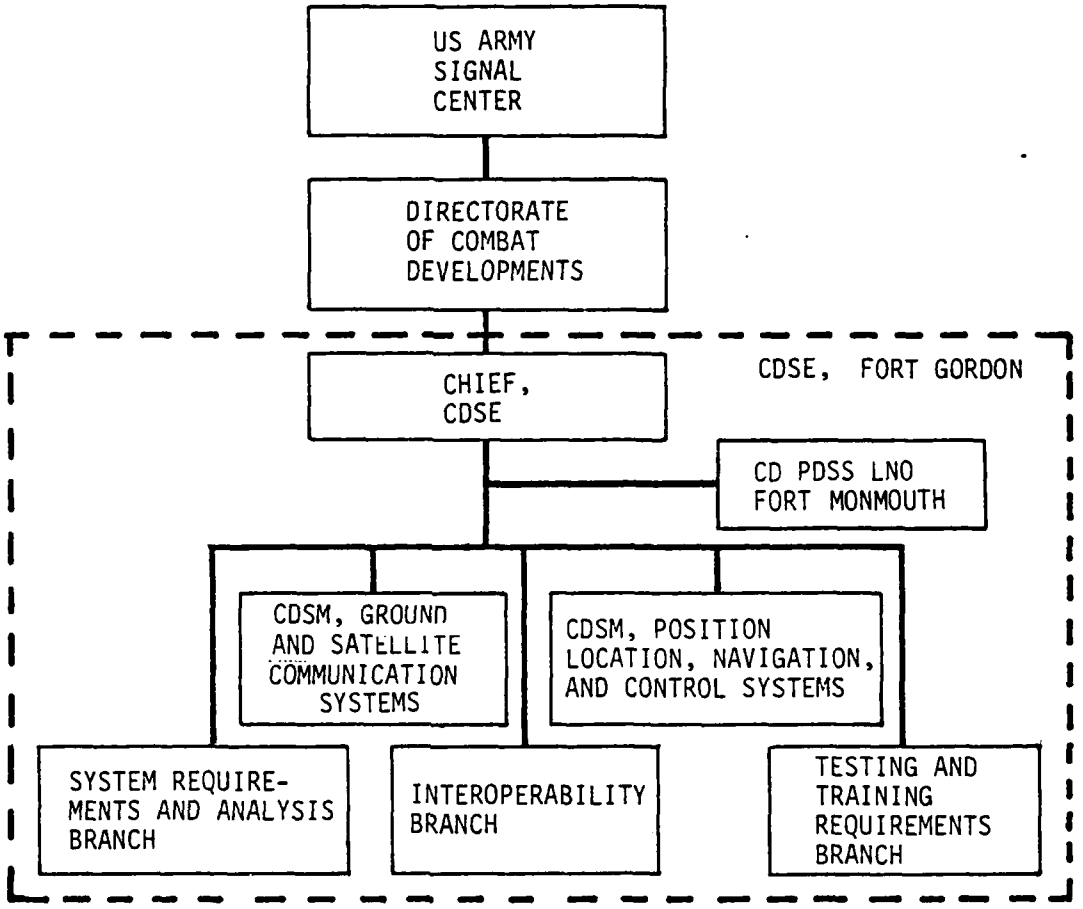


Figure F-6. CDSE Structure, Hybrid PDSS System--
Communications Functional Area

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USASC	PLRS--POSITION LOCATION REPORTING SYSTEM (FULL SCALE DEVELOPMENT)
USASC	JTIDS--JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (FULL SCALE DEVELOPMENT)
USASC	PLRS/JTIDS HYBRID (VALIDATION)
USASC	DLDED--DIVISION LEVEL DATA ENTRY DEVICE (CONCEPTUAL)
USASC	AN/TTC-39--AUTOMATIC TELEPHONE 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 TELEPHONE CENTRAL OFFICE (FULLY OPERATIONAL)
USASC	AN/MSM-105--TEST AND AUTOMATIC REPAIR FACILITY (LOW RATE INITIAL PRODUCTION)

Figure F-7. Systems requiring PDSS--Communications Functional Area

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD	CHIEF, CDSE	CDSM, GROUND COMMUNICATION SYSTEM	CDSM, POSITION LOCATION, NAVIGATION, & CONTROL SYS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH			
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMR.	1	X	X	X	X	X	X	X	Z	Z	X	Z	Z			
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	X	X	X	X	Z	X	X	Z	Z	X	Z	Z			
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X	X	X	X	Z	X	Z	Z	Z	Z	Z			
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	X	X	X	X	Z	Z	Z	X	X	Z	Z	Z			
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	Z	Z	Z	Z	Z	Z	Z	X	X	Z	Z	Z			
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	Z	Z	Z	Z	Z	Z	Z	X	X	Z	Z	Z			
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[2] CONCEPT.	1	Z	Z	Z	Z	X	Z	X	Z	Z	Z	Z	Z			
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	X	X	X	X	X	X	X	X	X			
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	X	Z	X	X	X	X	Z	Z	Z			
		3. ACQUIRE AND MANAGE RESOURCES.	1	Z	Z	Z	Z	Z	X	X	X	X	Z	Z	Z			
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	Z	Z	Z	Z	X	Z	Z	Z	Z	X	Z	Z			
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	Z	Z	Z	Z	X	Z	X	Z	Z	X	Z	Z			
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	Z	Z	Z	Z	X	Z	X	X	X	Z	Z	Z			
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	Z	Z	Z	Z	X	Z	X	X	X	Z	Z	Z			
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	Z	Z	Z	Z	X	Z	X	Z	Z	Z	Z	Z			
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	X	X	X	X	X	Z	Z	X	X	Z	Z	Z			
		2. EXAMINE BASIS FOR REQUIREMENT.	2	X	X	X	X	X	Z	Z	X	X	Z	Z	Z			
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	Z	Z	Z	Z	X	Z	X	Z	Z	Z	Z	Z			
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	X	X	X	X	X	Z	Z	X	X	Z	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	X	X	X	X	X	Z	Z	X	X	X	Z	Z			
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	X	X	X	X	X	Z	Z	X	X	Z	X	Z			

Figure F-8. Assignment of functions, Hybrid System--Communications Functional Area (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD	CHIEF, CDSE	CDSM, GROUND COMMUNICATION SYSTEMS	CDSM, POSITION LOCATION, NAVIGATION, & CONTROL SYS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH			
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	X	Z			
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	Z	Z			
		3. IDENTIFY TRAINING IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	Z	X			
		4. IDENTIFY LOGISTICAL IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	Z	Z			
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	Z	Z			
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	X	Z	Z			
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	Z	Z	Z	Z	X	Z	Z	X	X	Z	X	Z			
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	X	Z	Z			
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	X	X	Z			
		3. PROVIDE REQUIREMENT TO MD.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z			
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z			
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	X	Z	Z			
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	Z	Z	Z	Z	Z	X	X	Z	Z	Z	Z	X			
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	Z	Z	Z	Z	Z	X	X	Z	Z	Z	Z	X			
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	Z	Z	Z	Z	Z	X	X	Z	Z	Z	Z	X			
		4. MONITOR DEVELOPMENT TEST (DT).	2	Z	Z	Z	Z	Z	X	X	Z	Z	Z	Z	X			
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	X			
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	X			
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	X			
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS	2	Z	Z	Z	Z	Z	Z	X	Z	Z	X	Z	X			
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	Z	Z	Z	Z	Z	Z	X	Z	Z	X	Z	X			
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	Z	Z	Z	Z	Z	Z	Z	X	X	Z	Z	Z			
		2. FUNCTION AS USER SURROGATE.	3	Z	Z	Z	Z	Z	Z	Z	X	X	Z	Z	Z			
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	Z	Z	Z	Z	Z	Z	Z	X	X	X	Z	X			
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	3	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z			

Figure F-8. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	TSM ADDS/MSE	TSM TMDS	TSM TAC AU SW	TSM ATACS	MSD-DCD, USASC	C-E BOARD	CHIEF, CDSE	CDSM, GROUND COMMUNICATION SYSTEMS	CDSM, POSITION LOCATION, NAVIGATION, & CONTROL SYS	SYSTEM REQUIREMENTS AND ANALYSIS BRANCH	INTEROPERABILITY BRANCH	TESTING AND TRAINING REQUIREMENTS BRANCH			
6. 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	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	Z	Z	Z	Z	Z	Z	Z	X	X	Z	Z	X			
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	X			
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	Z	Z	Z	Z	Z	X	Z	X	X	Z	Z	X			
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	X	X	X	X	Z	Z	Z	Z	X	Z	X	Z			
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	X	X	X	X	Z	Z	Z	Z	X	Z	X	Z			
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	Z	Z	Z	Z	Z	Z	X	Z	Z	Z	Z	Z			
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	Z	Z	Z	Z	Z	Z	X	Z	Z	X	Z	Z			
	3. SUPPORT TO CRISIS/WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	X	X	X	X	Z	Z	Z	X	X	X	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	X	Z	Z			
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z			
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	Z	Z	Z	Z	Z	Z	Z	X	X	X	Z	Z			
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	X	X	X	X	Z	Z	Z	X	X	X	X	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	Z	Z	Z	X	Z	Z	X	X	X	X	Z			

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING.

X = Element is responsible and capable
N = Element is not responsible

Figure F-8. (concluded)

a. 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-electronics requirements for communications doctrine, equipment and materiel
- Acts as the US Army Communications-Electronics 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 communications-electronics doctrine, communications systems, equipment and materiel
- Evaluates the life-cycle assessment of all proponent materiel and training systems to insure that optimum training, doctrinal and organizational concepts are being used.

b. 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 the Commandant for the USASC training activities.

c. 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 proponency
- Develops maintenance concepts and reviews the maintenance test package
- Maintains cognizance of computer simulation models used by communication system analyses in CE system design, engineering, and evaluation.

d. 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.

e. Chief, CDSE. The Chief, CDSE plans, directs, and supervises the operation of the CDSE in accomplishing all CD responsibilities for PDSS to BAS in the Communications Functional Area. He establishes priorities and plans, programs, and allocates resources to address requirements. He serves as the primary point of contact on PDSS matters with other elements of USAICS and TRADOC, and with the Materiel/System Developers of communications BAS. He interacts with other USASC elements who have responsibilities associated with these BAS to include the five TSMs identified in Figure F-5, above, the Communications-Electronic Board, and the Directorate of Training Developments.

f. CDSM, Ground and Satellite Communication Systems. This CDSM serves as the CD manager for all PDSS activities associated with ground and satellite communication systems. Included in this group are one category 1 system (AN/MSM-105(V)) and three Category 2 systems (AN/TTC-39, AN/TYC-39, AN/UGC-74). The CDSM, Ground and Satellite Communication Systems 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 F-8.

g. CDSM, Position Location, Navigation, and Control Systems. This CDSM serves as the CD manager for all PDSS activities associated with position location, navigation, and control systems. Included in these three groups are one Category 1 system (PLRS/JTIDS Hybrid) and four category 2 systems (PLRS, JTIDS, DLDED, AN/TSQ-111(V)). The PDSS responsibilities and functions of this CDSM are the same as those described previously for the CDSM, Ground and Satellite Communication Systems except for variations imposed by differences in system types and quantities. Specific functions of this CDSM are shown in Figure F-8.

h. System Requirements and Analysis Branch. This branch of the CDSE 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. They may result from any of the stimulators of change discussed in Chapter 3. 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 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 F-8.

i. Interoperability Branch. This branch of the CDSE is responsible for all PDSS actions which deal with the interoperability of communication systems with each other and with other BAS. This branch analyzes the impact of functional changes on the interoperability of each system. It identifies interoperability change requirements which result from either changes to a communication system or to a BAS with which the communication system must interoperate. Functions of this branch are shown in Figure F-8.

j. Testing and Training Requirements Branch. As suggested by its title, responsibilities of this branch fall generally into two functional areas. With respect to testing, the branch is responsible for supporting the CDSMs in planning, coordinating, and monitoring or conducting, all assigned CD actions associated with testing changes to communication systems. Accomplishment of these responsibilities involves working closely with the MD, the TRITAC Office, the US Army Communications-Electronics Board, and/or other designated test activities, as appropriate. The branch 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. Functions of this branch are shown in Figure F-8.

k. Tactical Data Systems Office, Directorate of Training Developments, USASC. This office is responsible for the development of training materials which deal with tactical data systems.

l. 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 (ADPE).

m. US Army Communications-Electronics Board. The Communications-Electronics (C-E) Board at Fort Gordon is one of eight US Army test boards and as such is assigned the following missions under TRADOC Regulation 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 specific evaluations as directed by CG TRADOC.

n. 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.

o. 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 Army Tactical Communication Systems within TRADOC. For these systems, TSM-ATACS is ensuring that User requirements are being satisfied in terms of O&O concepts, hardware, software, training, fielding, and ILS support.

p. 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).

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

r. 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 Test Measurement Diagnostic Systems.

s. 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 Lightweight 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.

t. CD PDSS LNO. This office, which will be located at Fort Monmouth, will be responsible for interfacing directly with the CORADCOM PDSS Center at Monmouth which is tasked to provide PDSS for all BAS for which USASC is proponent except the DLDED which will be supported by the Computer Systems Command

(CSC) at its Fort Belvoir PDSS Facility. The liaison office will coordinate PDSS requirements and interact with the MD as appropriate in all phases of the PDSS effort.

F-14. ESTIMATE OF RESOURCE REQUIREMENTS. Time phased estimates of resources needed to establish the Hybrid System CD PDSS component supporting categories 1 and 2 systems in the Communications Functional Area are shown below.

a. Personnel.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	16	16	18	20	22	22	22
Civilian	11	11	12	13	14	14	14
TOTAL	27	27	30	33	36	36	36
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	16	16	18	20	22	22	22
Civilian	11	11	12	13	14	14	14
TOTAL	27	27	30	33	36	36	36

A breakout of these personnel by CDSE element is shown below:

	PERSONNEL				
	MANAGERIAL/ TECHNICAL		ADMINISTRATIVE/ TECHNICIAN		
ELEMENT	MIL	CIV	MIL	CIV	TOTAL
Chief, CDSE	3	1	0	1	5
CDSM, Ground and Satellite Communication Systems	5	2	0	1	8
CDSM, Position Location, Navigation, and Control Systems	5	2	0	1	8
System Requirements and Analysis Branch	4	2	0	0	6
Interoperability Branch	3	2	0	0	5
Testing and Training Requirements Branch	2	2	0	0	4
TOTALS	22	11	0	3	36

b. Funds. An estimate of funds required for the CDSE civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars. It is based on an estimated average cost of $31.6K per technical manyear (including 10 percent loading), and $16.0K per administrative manyear.

	FUNDS REQUIRED ($000)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	300.8	300.8	332.4	364.0	395.6	395.6	395.6

SECTION VI. FIRE SUPPORT BFA

F-15. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. The Fire Support BFA is the major contributor of fire support to maneuver forces. Included in this BFA are systems which support missile artillery, artillery fire control, and target acquisition.

b. TRADOC Centers and Schools Involved. The focal point for providing PDSS to the BAS within the Fire Support BFA is the US Army Field Artillery Center and Fort Sill (USAFACFS).

c. Organizational Structure of the System. That portion of the Hybrid PDSS System which supports the Fire Support BFA is shown in Figure F-9. It consists of:

- A CDSF and two CDSMs, one for artillery fire control systems and one for target acquisition systems and missile artillery systems, subordinate to USAFAS at Fort Sill
- One or more Combat Developer Forward Support Teams (CDFST) to facilitate combat developer interaction with the User in the field wherever TACFIRE is deployed.

Each of these system elements is discussed further in the paragraphs which follow.

F-16. RESPONSIBILITIES AND RELATIONSHIPS.

a. BAS to be Supported. The primary BAS to be supported by the CDSF at Fort Sill are those listed in Figure F-10.

b. Responsibilities and Functions to be Performed. Figure F-9 (presented earlier) gave an overview of the Hybrid PDSS System for the Fire Support BFA. Figure F-11 (presented here) gives a more detailed view of those organizational elements which are at Fort Sill. In the paragraphs which follow, the PDSS responsibilities and functions of each organizational element shown in those figures are described in detail.

(1) Fort Sill. Included in the responsibilities of Fort Sill are the following:

- Provide personnel, equipment, and facilities in support of test and evaluation of military equipment systems and components conducted by US Government agencies
- Command and exercise staff supervision and provide assistance to Field Artillery School in the areas of troop support, forecasts of personnel and equipment requirements for future instructional and developmental uses, and coordinating the integration of the school support mission with all other units/activities

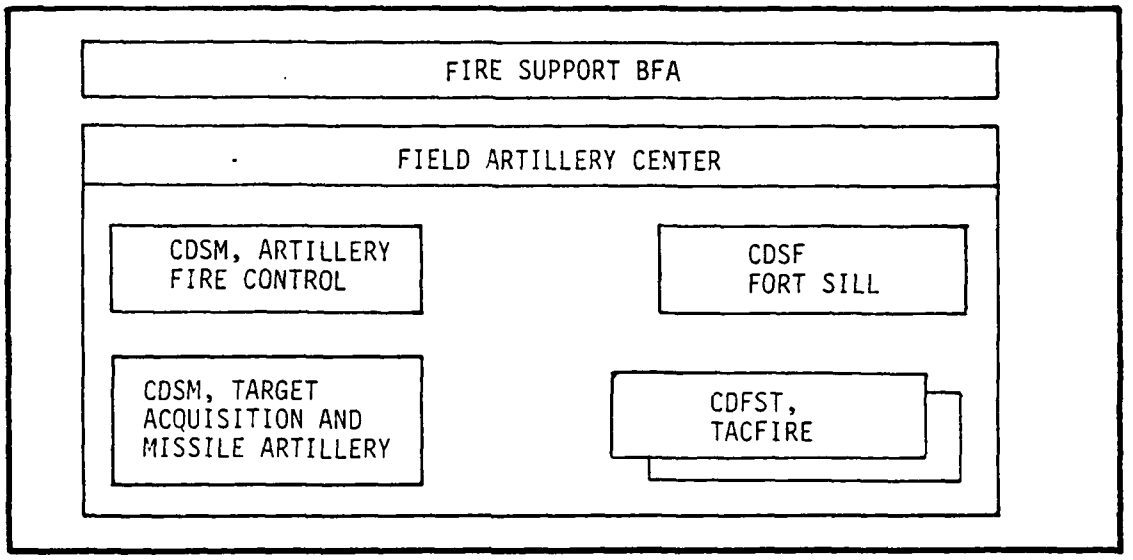


Figure F-9. Overview of the Hybrid PDSS System--
Fire Support BFA

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

Figure F-10. Category 1 and 2 systems requiring PDSS - Fire Support BFA

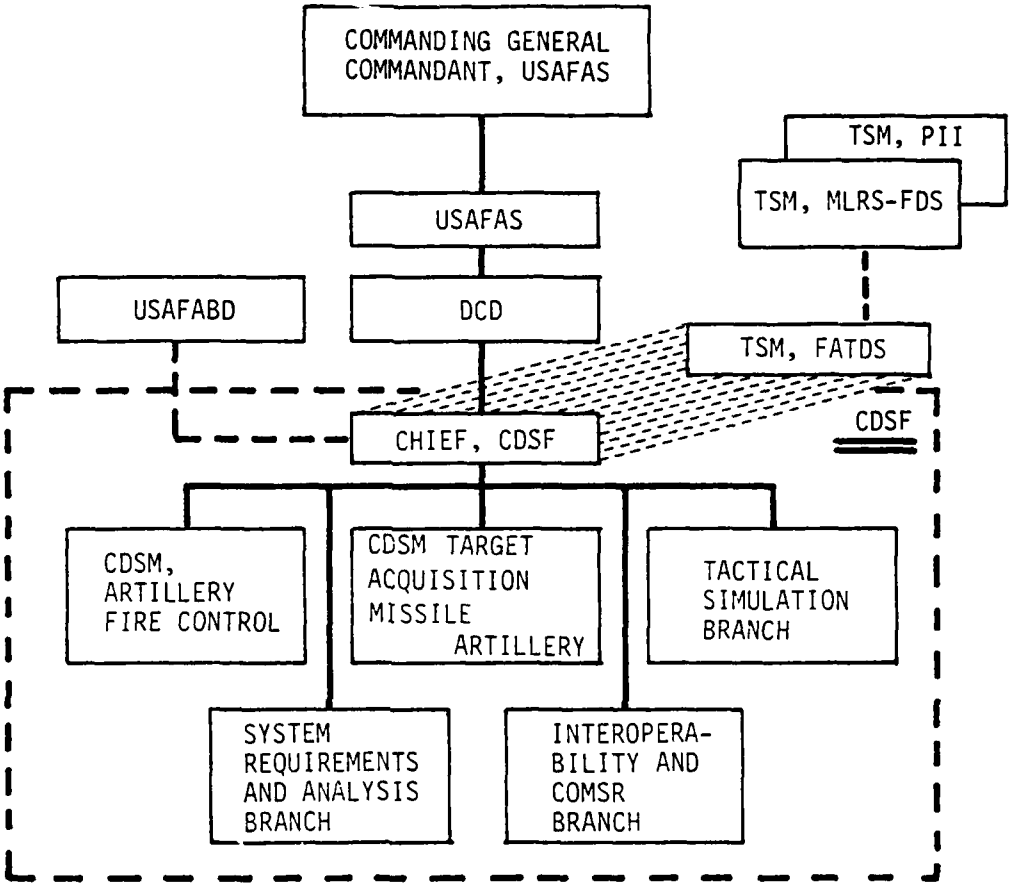


Figure F-11. PDSS organizational structure, USAFACFS

- Command and exercise staff supervision and provide assistance to the Field Artillery Board in the areas of troop support for ongoing developmental tests, and coordination of future requirements for personnel and equipment.

(2) Commanding General, USAFACFS. The Commanding General has the following responsibilities:

- Commands all elements of the US Army Field Artillery Center, Fort Sill

- Serves as the Commandant of the US Army Field Artillery School.

(3) US Army Field Artillery School (USAFAS). The PDSS related responsibilities of USAFAS include:

- 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

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

(4) Combat Developments Directorate (CD), USAFAS. The PDSS activities of the Combat Developments Directorate, USAFAS include:

- Evaluate the effects of new or revised doctrine, tactics, and techniques upon existing or developmental BAS

- Serve as the user proponent for Field Artillery BAS.

(5) Chief, CDSF, Fort Sill/TRADOC System Manager, Field Artillery Tactical Data Systems (FATDS). The person holding this position will serve two distinct roles and report to two different bosses. 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. In conjunction with the CDSM, Artillery Fire Control and the CDSM, Target Acquisition and Missile Artillery, he establishes priorities and allocates CDSF resources to address requirements for support of systems in each area. 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. Specific functions of the Chief, CDSF are shown in Figure F-12.

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSS, FORT SILL	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.	1	X	N	N	X	N	X	X	X	X
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	X	N	N	X	N	X	X	X	X
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	N	N	N	N	N	N	X	X
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	N	X	X	N	N	N	N	X	X
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	N	X	X	N	N	N	N	X	N
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	N	X	X	N	N	N	N	X	N
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[2] CONCEPT.	1	X	N	N	N	N	N	N	X	N
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	X	X	X	X	X	X
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	N	N	N	X	X	N
		3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	X	N	N	N	X	N	N
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	N	N	N	X	N	N	N	X	N
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	X	N	N	X	N	N	N	X	N
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	X	X	X	N	N	N	N	X	N
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	X	X	X	N	N	N	N	X	N
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	X	N	N	N	N	N	N	N	N
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	N	X	X	X	N	N	N	X	N
		2. EXAMINE BASIS FOR REQUIREMENT.	2	N	X	X	N	N	N	N	N	N
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	X	N	N	N	N	N	N	N	N
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	N	X	X	N	N	N	N	X	N
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS.	2	N	X	X	X	N	N	N	N	N
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	N	X	X	N	X	N	N	N	N

Figure F-12. Assignment of functions, Hybrid System--Fire Support BFA (continued on next page)

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

Figure F-12. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSS, FORT SILL	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							
15. 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	N	N	N	N	N	N	N	X	N							
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	N	N	N	N	N	N	N	X	N							
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	N	N	N	N	N	N	N	X	N							
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	N	X	X	N	N	N	N	X	N							
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	N	N	N	N	N	X	N	X	N							
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	N	N	N	N	N	N	N	X	N							
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	N	N	N	N	N	X	N	X	N							
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	N	X	X	N	N	N	N	X	N							
16. UTHEXT	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	N	N	N	N	X	N	N	X	N							
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	N	N	N	N	X	N	N	X	N							
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	N	N	N	N	N	N	X	N							
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	X	N	N	X	N	N	N	X	N							
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	N	X	X	X	N	N	N	X	N							
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	N	N	N	X	N	N	N	X	N							
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	X	N	N	X	N	N	N	X	N							
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	N	X	X	X	N	X	N	X	N							
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	N	X	X	X	X	X	N	X	X							
	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	N	X	X	X	X	N	N	X	N							

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

X = Element is responsible and capable
N = Element is not responsible

Figure F-12. (concluded)

As the TSM-FATDS, his mission, authority, and responsibilities 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. Specific functions of the TSM-FATDS are shown in Figure F-12.

(6) 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). 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 F-12.

(7) CDSM, Target Acquisition and Missile Artillery. This CDSM serves as the CD manager for all PDSS activities associated with target acquisition systems and missle artillery systems. Included in this group is one category 2 system (Pershing II). 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 F-12.

(8) 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. They may result from any of the stimulators of change discussed in Chapter 3. 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 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 F-12.

(9) 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.

(10) 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 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 either direct or remote access to computer resources.

(11) 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 evaluations 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 (TSSG). In accordance with this tasking, the Software Validation Branch, Test and Technical Support Division, USAFABD, has beer performing acceptance testing of new TACFIRE software releases. Depending on requirements, this testing has been or can be OT, DT, or command post exercise oriented. In addition to its testing responsibilities, this organization is also a member of the local Software Configuration Control Board.

(12) TRADOC System Manager, 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 insures User participation in all ECP's. In addition, the TSM-MLRS participates as a principal member on the TACFIRE/MLRS Executive Committee dealing with all aspects of TACFIRE-FDS interoperability.

(13) TRADOC System Manager, 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.

(14) Combat Developer Forward Support Team (CDFST) TACFIRE. The CDFST, TACFIRE is subordinate to the CDSF at Fort Sill and has the responsibility for maintaining liaison with and providing PDSS guidance to Users of TACFIRE. The number of such teams at any given time will depend upon the number and geographic dispersion of TACFIRE Users.

F-17. ESTIMATE OF RESOURCE REQUIREMENTS. Estimates of the resources required to establish the Hybrid PDSS System in support of the Fire Support BFA are presented below.

a. CDSF, Fort Sill.

(1) Personnel. The personnel estimates presented here are based primarily on support of categories 1 and 2 Fire Support BAS. The "authorized" spaces shown reflect an assumption that the personnel currently authorized for the Tactical Data Systems Division, Combat Developments Directorate, USAFAS would be assigned to the CDSF, Fort Sill.

PERSONNEL	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	14	16	16	18	18	18	18
Civilian	11	12	12	13	13	13	13
TOTAL	25	28	28	31	31	31	31
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	-7	-5	-5	-3	-3	-3	-3
Civilian	7	8	8	9	9	9	9
TOTAL	0	3	3	6	6	6	6

A breakout of the personnel requirements by organizational element for FY 87 is shown below.

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
TOTALS	17	10	1	3	31

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

(2) 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 C^2S concept. Specific items of equipment required to provide this access must be determined through further study.

(3) Facilities. Physical facility requirements include office space for assigned personnel and floor space for a computer and/or remote computer terminals. It would be desirable to collocate this CDSF with the CORADCOM-managed PDSS Center at Fort Sill. If collocation is not feasible, other suitable space should be selected for the CDSF which will facilitate close interaction with the PDSS Center.

(4) Funds. An estimate of funds required for the CDSF civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars. It is based on an estimated average cost of $31.6K per technical man year and $16.0K per administrative man year.

	FUNDS REQUIRED (THOUSANDS)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	300.8	332.4	332.4	364.0	364.0	364.0	364.0

Funds needed for equipment and facilities are dependent upon development of specific requirements and plans addressing these areas.

b. US Army Field Artillery Board (USAFABD).

(1) Personnel. In order to fulfill its PDSS responsibilities in testing TACFIRE update master tapes, the USAFABD will require the following additional personnel:

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

(2) 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.

(3) Funds. An estimate of funds required for the USAFABD personnel identified above is as follows:

	FUNDS REQUIRED (THOUSANDS)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	63.2	63.2	63.2	63.2	63.2	63.2	63.2

SECTION VII. AIR DEFENSE BFA

F-18. SYSTEM DESCRIPTION.

a. System Purpose and Scope. The Hybrid 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 Hybrid PDSS System has been structured without reference to resource constraints. This system is based on comparison of the Baseline and the Theoretical PDSS Systems. The Hybrid System reflects features of those two systems. Some new features and differences are also included. During structuring of the Hybrid System some consideration was given to ways in which resource requirements might be reduced. This system is basically a TRADOC system, although it must interact with, and is heavily dependent on, many non-TRADOC elements.

b. Principal System Features. This Hybrid System for providing PDSS in the Air Defense BFA is centered on what would be a new element, the Combat Developer Support Facility (CDSF), within the existing Directorate of Combat Development (DCD), of the US Army Air Defense School (USAADS), at Fort Bliss, Texas. Based on the existing Combat Systems Software Division (CSSD), the CDSF, as the term is used broadly in this Hybrid System, encompasses both the concept of an organizational element with overall responsibility for PDSS and the concept of a physical facility in which equipment and personnel resources can be assembled as necessary to address software issues of USAADS. This CDSF is based on the CDSF model in the PDSS Concept Plan for BAS, of May 1980, and serves as the CD facility which is to be the focal point for interaction with MD PDSS Centers such as that maintained at Fort Bliss by MICOM. This CDSF, under the management of the Directorate of Combat Developments, is the center for performance of CD software functions, which differ significantly from MD functions. In this Hybrid System, the CDSF operates in close coordination with other CDSFs. It is closely linked by special communications with the CCS^2 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 CDSF in this Hybrid System for providing PDSS in the Air Defense BFA includes elements whose principal mission is to serve 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 simulators and devices in the Air Defense BFA. Other TRADOC elements, both at Fort Bliss and at other installations, are active parts of this Hybrid System. Outside of TRADOC, there are elements of DARCOM, the Users of Air Defense systems, the Army Research Institute, and various contractors which are involved in the Hybrid 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. Accordingly, the CDSF at Fort Bliss, in this Hybrid System, maintains a liaison element at this Raytheon center to facilitate interchange of information, and coordination and execution of necessary PDSS functions. The CDSF and this liaison element are linked with special communications capabilities. In the Hybrid System, liaison with the MD PDSS Center at MICOM is accomplished by normal travel and communications which may be needed to supplement the assistance provided by liaison offices maintained by CACDA at such locations. Placement at Fort Bliss of a liaison

PRECEDING PAGE BLANK-NOT FILMED

team for DIVAD Gun from the MD PDSS Center at ARRADCOM, Picatinny Arsenal is suggested in this Hybrid System. Other elements of the CDSF have specific responsibilities for maintaining liaison with and providing guidance and support to Users. These elements, called Combat Developer PDSS Forward Support Teams (CDFSTs), provide liaison and/or forward support, particularly under crisis/wartime conditions, to User organizations such as the 32d AADCOM. These CDFSTs also possess special communications capabilities linking them directly with the CDSF at Fort Bliss, and other key elements, as necessary.

c. Principal Elements Involved. Principal elements involved in the Hybrid PDSS System for the Air Defense BFA are identified in Figure F-13. This figure also indicates some of the principal interfaces involved, thus providing a type of system overview. Structure within the CDSF is addressed below. Other DARCOM elements are also involved, but are not shown here in Figure F-13. 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. Use of these and possibly other analysis resources will be coordinated through a BAS PDSS Analysis Resources Coordination Branch established at CACDA in the Hybrid System. Similarly, use of test and evaluation resources will be coordinated through a BAS PDSS Test & Evaluation Resources Coordination Branch at CACDA. Although not indicated in the figure, such resources may include the Tactical Interoperability Support Element (TISE) and TCATA at Fort Hood, ARMTE, OTEA, CDEC, NTC (Fort Irwin), and field units. It must be understood, however, that most of the analysis of ADA systems software, as needed in performance of PDSS functions, requires high-resolution, high-fidelity system simulations and simulators of a type which do not (and would not be expected to) exist at locations other than USAADS and the Army Materiel Systems Analysis Agency (AMSAA), Aberdeen, MD. Also, 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 environments, inabilities 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.

d. CDSF Structure. The structure of the CDSF which is central to this Hybrid PDSS System is outlined down to the branch level in Figure F-14. This CDSF is seen as a mission-oriented organizational entity subordinate to the Director of Combat Developments, within the US Army Air Defense School. Although this CDSF is seen as a separate organizational entity within the

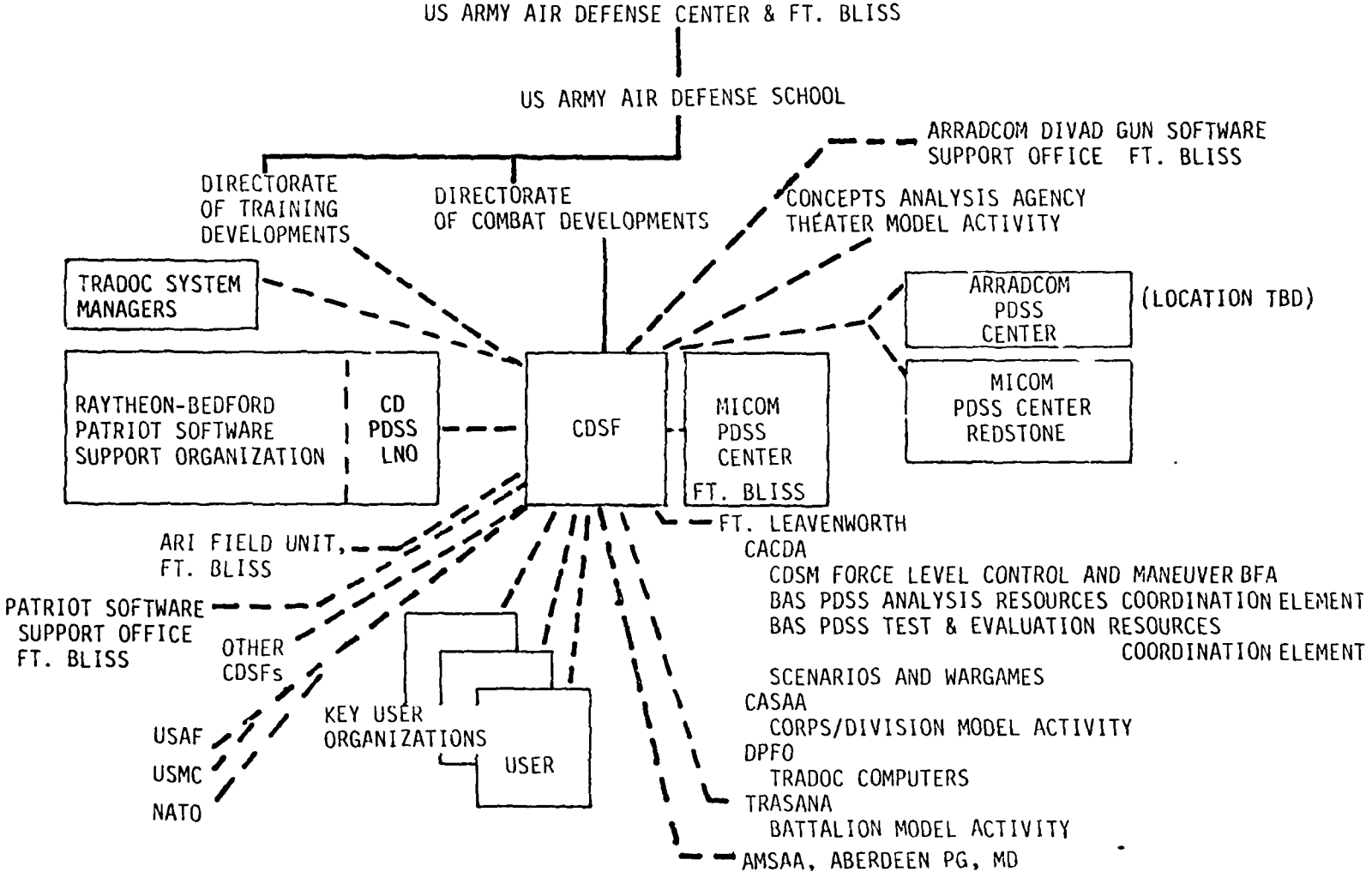
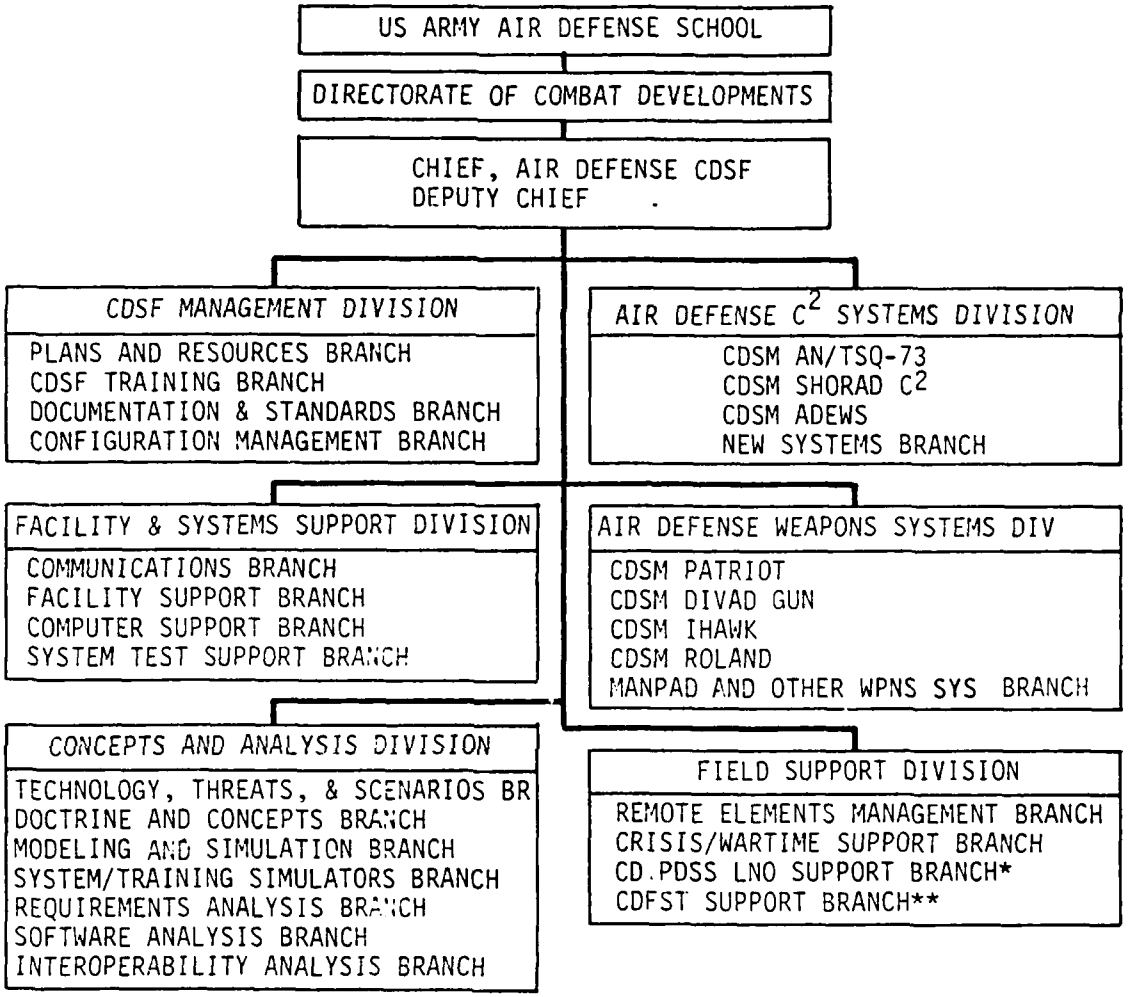


Figure F-13. Principal elements, Hybrid PDSS System for Air Defense BFA



* CD PDSS LNO LOCATED AT RAYTHEON-BEDFORD PDSS CENTER

** CDFSTs LOCATED AT MAJOR USER UNITS AS NEEDED

Figure F-14. CDSF structure, Hybrid PDSS System for Air Defense BFA

Directorate of Combat Developments (DCD), the subordinate portions of the CDSF, which reports through the Chief, Air Defense CDSF, or his deputy, must operate in close coordination with other elements of DCD. The basic structure of the CDSF involves six divisions, based primarily on functional lines. These divisions are:

- CDSF Management
- Facility & Systems Support
- Concepts and Analysis
- Air Defense C^2 Systems
- Air Defense Weapons Systems
- Field Support.

Within these six divisions, structure is again based primarily on functional lines, except in the Air Defense C^2 and Weapons Systems Division, where the branch level breakdown is according to principal system, and where the CDSMs for these principal systems serve as branch managers. The content of branches and the responsibilities of the elements within the CDSF are discussed in paragraph F-19, below.

e. Operating Concept. The operating concept for this Hybrid system involves CD performance of CD functions, but in conjunction with MD performance of MD functions. In fact, the basic mission of this Hybrid 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. Containing the analytical tools, devices, documentation, 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 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-19. RESPONSIBILITIES AND RELATIONSHIPS.

a. CDSF. The overall mission of the Air Defense CDSF is to ensure that all CD PDSS responsibilities and functions are adequately fulfilled for the entire Air Defense BFA. The responsibilities and functions of the elements of this CDSF are outlined below.

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

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

(3) CDSF Management Division. The CDSF Management Division provides staff support for the Chief and Deputy Chief and is responsible for a group of functions pertaining largely to management, management policies, and management support of the CDSF. These functions are performed within four branches: Plans and Resources, CDSF Training, Documentation & Standards, and Configuration Management.

(a) Plans and Resources Branch. The Plans and Resources Branch is the focal point for the determination of CDSF workload requirements, and the preparation and maintenance of plans and policies for acquisition, separation, and effective use of all resources within the CDSF. This function is performed in coordination with superior elements as well as the elements within the CDSF.

(b) CDSF Training Branch. The CDSF Training Branch participates in determining CDSF 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 CDSF personnel. A section within this branch 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 CDSF.

(c) Documentation & Standards Branch. The Documentation & Standards Branch maintains the official, central, up-to-date documentation on all software of all systems under the purview of the CDSF, in appropriate form by appropriate means. Also maintained by this branch will be all appropriate official correspondence and standards and regulations pertaining to the systems under CDSF 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. For instance, if the MD PDSS Center maintains locally an appropriate, accessible repository of software documentation, there should be no need to duplicate that in the CDSF.

(d) Configuration Management Branch. The Configuration Management Branch is responsible for ensuring that basic configuration management policies are understood and adhered to throughout the CDSF, and assists in the development of detailed procedures for configuration management of individual BAS under purview of the CDSF. The documentation maintained by the Documentation and Standards Branch is a requisite of this branch.

(4) Facility and Systems Support Division. The Facility and Systems Support Division is responsible for a group of common benefit functions involving the physical plant, equipment, and related technology and expertise, as well as serving as a common focal point for system test activities.

(a) Communications Branch. The Communications Branch 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.

(b) Facility Support Branch. The Facility Support Branch 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 CDSF mission. This branch will participate in the preparation and maintenance of resource plans for the CDSF.

(c) Computer Support Branch. The Computer Support Branch 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 branch will include a Model Development and Maintenance Section, which will assist in the writing and modification/maintenance of needed models/simulations, and a Support Software Branch, which will provide expertise, software utilities, and other items of software which may be needed to support the work of the CDSF.

(d) System Test Support Branch. The System Test Support Branch provides a common focal point for coordination of necessary CDSF participation in testing of BAS within the purview of the CDSF. 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 CDSF participation in planning, observation, and analysis of system tests. This branch also provides advice and assists in tests that may be conducted with CDSF resources. The work of this branch will be facilitated by the efforts of the BAS PDSS Test & Evaluation Resources Coordination Branch established at CACDA under this Hybrid System.

(5) Concepts and Analysis Division. The Concepts and Analysis Division provides, under the control of the CDSF but also available as appropriate to support other DCD needs, a broad capability for the intensive, sophisticated, computer-supported, and system-technically-oriented research and analysis necessary to effective fulfillment of the CDSF mission. It is intended that this division 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. This division contains the following seven branches:

- Technology, Threats, & Scenarios
- Doctrine and Concepts
- Modeling and Simulation
- System/Training Simulators
- Requirements Analysis
- Software Analysis
- Interoperability Analysis.

This division will maintain close contact and freely exchange information with the BAS PDSS Analysis Resources Coordination Branch established at CACDA under this Hybrid System. In this way, it is intentded that effective coordination and cooperation in the planning and execution of PDSS analysis efforts will result in fuller use of resources at various locations, lesser permanent requirement for resources at the Air Defense CDSF, a broader scope of analyses, and at least the quality and responsiveness of analytical effort that would be possible under the Theoretical System. From time to time, as appropriate, the resources of this division may be called upon, and special teams may be formed, to participate in analysis efforts at or pertaining to other centers.

(a) Technology, Threats, & Scenarios Branch. The Technology, Threats, & Scenarios Branch is responsible for acquiring, maintaining, and analyzing current information in the areas of technology and threat 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.

(b) Doctrine and Concepts Branch. The Doctrine and Concepts Branch provides a local center of expertise and information on both general Army doctrinal concepts and organization and also the detailed 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. 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 of this division.

(c) Modeling and Simulation Branch. The Modeling and Simulation Branch 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 analysis branches in this division. Skills required in this branch will include operations research/systems analysis, computer programming, understanding of the scientific and engineering principles and characteristics of air defense C^2 and weapons systems, and also an understanding of air defense system doctrine and tactics. A section in this branch will be devoted to anticipating analysis requirements and recommending analysis approaches and techniques to the CDSMs and others.

(d) System/Training Simulators Branch. The System/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 distrinction 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 CDSF mission. A section in this branch will be a focal point for identifying the requirements for training simulators and their use, as an adjunct to the Directorate of Training Developments.

(e) Requirements Analysis Branch. The Requirements Analysis 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 documented 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.

(f) Software Analysis Branch. The Software Analysis Branch is responsible for performing or effecting necessary detailed examination and analysis of software in or pertaining to BAS and simulators under the purview of the CDSF. Such detailed 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 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.

(g) Interoperability Analysis Branch. The Interoperability Analysis 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 CDSF. This branch will maintain a detailed and up-to-date awareness of the interoperability requirements and characteristics of all BAS with which the CDSF 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 accomodated, 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.

(6) Air Defense C^2 Systems Division. The Air Defense C^2 Systems Division is the focal point for CDSF activities pertaining to the air defense C^2 systems functional area. Within this division are CDSMs for AN/TSQ-73 (Missile Minder), SHORAD C^2, and Air Defense Electronic Warfare System (ADEWS), as well as a branch responsible for other/new air defense systems. The overall responsibilities of CDSMs have been defined in general in Chapter 3 of this report. In this CDSF, each CDSM is a focal point for all CDSF activities pertaining to his particular BAS, and is also the interface point for all external and internal communication regarding that BAS. The CDSM maintains a limited staff who are specialized in their knowledge of that particular BAS. Members

of his staff individually are further responsible for key functional areas, including software requirements, configuration control, software analysis, interoperability analysis, testing, training requirements, and field support, for that BAS. The CDSM and his staff call upon the resources of other CDSF divisions to assist in performing necessary analysis and field support functions, and to advise or assist in participation in system testing. The New Systems Branch within this division performs analogously for other or new systems as a group until such stage is reached where assignment of a dedicated CDSM is appropriate. The CDSMs will maintain contact and exchange necessary information with the BAS PDSS Analysis Resources Coordination Branch and the BAS PDSS Test & Evaluation Resources Coordination Branch at CACDA. Through these branches, additional temporary resources, for local projects, may be arranged as appropriate and as avalaible from other locations.

(7) Air Defense Weapons Systems Division. The Air Defense Weapons Systems Division is the focal point for CDSF activities pertaining to the air defense weapons system functional area. Within this division are CDSMs for Patriot, DIVAD Gun, I-Hawk, and Roland, with also a branch covering MANPAD and other AD weapons systems. The responsibilities of these CDSMs and the additional branch are analogous to those discussed in the preceding paragraph.

(8) Field Support Division. The Field Support Division is responsible for providing resources, and management and coordination of those resources, for field support and other remote elements, as required to support effectively the overall CDSF mission. The four branches within this division are: Remote Elements Management, Crisis/Wartime Support, CD PDSS LNO Support, and CDFST Support. Resource elements provided by this division will be considered organic to this division, while operational control will normally reside with the CDSM for which the element is functioning at the particular time. Some elements or personnel may acquire specialized knowledge of particular BAS and it may be desirable to preserve that specialization in the interest of efficient interaction with certain users or other elements. Need, travel, and other factors, however, may motivate for diversification of personnel or elements over several BAS. The Remote Elements Management Branch will coordinate with CDSMs and others, and weigh such factors, as appropriate, in the interest of best fulfilling the overall CDSF mission. The Crisis/Wartime Support Branch is responsible for developing, coordinating, and maintaining plans for support under crisis or wartime conditions. The CD PDSS LNO Branch provides essential travel, logistical, and other necessary support, maintains contact with the counterpart facility and serves as coordination point in such matters for CD PDSS LNOs that may be needed. A CD PDSS LNO is known to be needed at the Raytheon PDSS Center (Patriot Software Support Organization), at Bedford, Mass. CACDA liaison offices at the MD PDSS Centers at Picatinny and Redstone Arsenals, supplemented by normal travel and communications from the Air Defense CDSF, may fulfill needs at those locations. The CDFST Support Branch provides, as appropriate, necessary travel, logistical, and other support, and maintains contact, as appropriate, with served facilities where CDFSTs are required on permanent, semi-permanent, temporary, periodic, or ad hoc visits basis. CD PDSS LNOs

and CDFSTs maintain appropriate communication channels (through support by the Communications Branch) with the CDSM, or the CDSM staff, for the particular BAS being addressed. CDSM staff members and others, such as MD representatives, may accompany CDFSTs routinely on visits to Users.

b. Other Elements. The responsibilities of the USAADS Directorate of Combat Developments and the Directorate of Training Developments remain, in this Hybrid System, essentially the same as in the Baseline System. At Fort Leavenworth, responsibilities of CACDA are consistent with those enunciated in Section IV, involving the Force Level Control System and the JINTACCS Office, and the two BAS PDSS coordination branches, one for analysis resources and one for test and evaluation resources. Through the first of these branches, 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, DARCOM's Battlefield Systems Integration Directorate (BSI), at Alexandria, and Army Materiel Systems Analysis Agency, (AMSAA), at Aberdeen. The types of test and evaluation resources that may be available through the second branch have been indicated in paragraph F-18c, above. Since theater-through-battalion level models do not possess high enough resolution and fidelity to address the types of analysis issues involved in most ADA software investigations, those models themselves have extremely limited applicability to USAADS PDSS. Exceptions might occur in weighing some effectiveness considerations in a combined arms context, or in very specialized side-analyses. Some of the personnel resources, however, at these other analytical facilities do possess skills applicable to USAADS PDSS problems. The resolution level of the types of models developed and maintained at AMSAA is more in tune with USAADS needs, but few, if any, AMSAA models are directly applicable, although personnel expertise there remains a potential resource. The limitations of various testing resources, for USAADS software issues, were discussed in paragraph F-18c, above. Those limitations apply here also. It is recommended that, for effective pursuit of DIVAD Gun PDSS, the ARRADCOM PDSS Center at Picatinny Arsenal, Dover, Delaware, establish a Software Support Office at Fort Bliss. Such an office could provide technical expertise and contractor backup to the CDSF, and receive appropriate guidance in return, more effectively than the same functions could be performed by travel from the CDSF to Picatinny.

F-20. SYSTEM CAPABILITIES. The Hybrid PDSS System is designed to be capable of adequately fulfilling all CD PDSS responsibilities into at least the late 1980's for the entire Air Defense BFA. Accordingly, Figure F-15, which lists the 64 TRADOC principal PDSS functions, is used here only to show, by "X" entries, which elements in the Hybrid System are responsible for fulfilling these functions. Since the format of such a matrix could not legibly accommodate all of the CDSF and other elements involved, only the major divisions within the CDSF are identified in column headings. The Directorate of Training Developments is also identified because it carries a key responsibility.

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CDSF MGT DIV, COSF, DCD	FACIL. & SYST SPT DIV, COSF, DCD	CONCEPTS & ANALYSIS DIV, COSF, DCD	AD C^2 SYSTEMS DIV, COSF, DCD	AD WPNS SYST DIV, COSF, DCD	FIELD SPT DIV, COSF, DCD	CD POSS LNO-BEDFORD, COSF, DCD	CDFST, COSF, DCD	DIRECTORATE OF TRAINING DEVELOPMENTS
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1				X	X				
		2. PROVIDE REPRESENTATION ON THE CRWG.	1				X	X				
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X			X	X				
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1				X	X				
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2				X	X				
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2				X	X				
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS^2 CONCEPT.	1				X					
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X						
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	X	X	X	X			
		3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	X	X	X	X			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			X	X	X				
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2				X	X		X		
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3				X	X		X		
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3				X	X		X		
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2				X	X				
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2				X	X			X	
		2. EXAMINE BASIS FOR REQUIREMENT.	2				X	X				
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2				X	X		X		
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2				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			X	X	X				
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2			X	X	X				

Figure F-15. Assignment of functions, Hybrid System--Air Defense BFA (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CDSF MGT DIV, CDSF, DCD	FACIL. & SYST SPT DIV, CDSF, DCD	CONCEPTS & ANALYSIS DIV, CDSF, DCD	AD C² SYSTEMS DIV, CDSF, DCD	AD WPNS SYST DIV, CDSF, DCD	FIELD SPT DIV, CDSF, DCD	CD PDSS LNO-BEDFORD, CDSF, DCD	CDFST, CDSF, DCD	DIRECTORATE OF TRAINING DEVELOPMENTS							
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2			X	X	X			X								
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2			X	X	X											
		3. IDENTIFY TRAINING IMPACT.	2			X	X	X											
		4. IDENTIFY LOGISTICAL IMPACT.	2			X	X	X											
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	X		X	X	X											
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	X		X	X	X											
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2			X	X	X											
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2			X	X	X											
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2			X	X	X											
		3. PROVIDE REQUIREMENT TO MD.	2				X	X		X									
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2				X	X		X									
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2				X	X		X									
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2		X	X	X	X											
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2		X		X	X											
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2			X	X	X											
		4. MONITOR DEVELOPMENT TEST (DT).	2		X		X	X											
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2		X		X	X											
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2		X		X	X											
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2		X		X	X			X								
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2		X		X	X			X								
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3				X	X											
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3				X	X			X								
		2. FUNCTION AS USER SURROGATE.	3				X	X											
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3			X	X	X			X								
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD	3				X	X		X									

Figure F-15. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CDSF MGT DIV, CDSF, DCD	FACIL. & SYST SPT DIV, CDSF, DCD	CONCEPTS & ANALYSIS DIV, CDSF, DCD	ADT C^2 SYSTEMS DIV, CDSF, DCD	AD WPNS SYST DIV, CDSF, DCD	FIELD SPT DIV, CDSF, DCD	JO POSS LNO-BEDFORD, CDSF, DCE	CDFST, CDSF, DCD	DIRECTORATE OF TRAINING DEVELOPMENTS
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			X	X	X				
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2			X	X	X				
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2				X	X				X
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3				X	X			X	X
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2			X	X	X				X
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2			X	X	X				
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2			X	X	X				
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3				X	X			X	
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1			X	X	X				
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1			X	X	X				
	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		
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3			X	X	X			X	
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1			X	X	X			X	
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1			X	X	X				
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1				X	X		X		
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3			X	X	X				
		5. THROUGH *FRONT-END ANALYSIS, DESIGN FLEXIBILITY* INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1			X	X	X			X	
	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	

* 1 = ANYTIME AFTER POSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

Figure F-15. (concluded)

F-21. SYSTEM RESOURCE REQUIREMENTS.

a. Personnel. Personnel needed to staff the Air Defense CDSF for the Hybrid PDSS System have been estimated by the study team. These estimated personnel requirements are based on a consideration of the responsibilities and functions of each of the elements within the CDSF, through branch and section level, and include all field support and other remote personnel of the CDSF. The estimates were made without reference to any resource constraints. The estimates were, however, subjected to review-for-reasonableness and some adjustments in initial figures were made. The estimates are based on fulfilling the identified functions and responsibilities delineated above. The estimates are total requirements without consideration of the issue of in-house and contractual components. The resulting requirements figures are shown by fiscal year in the top portion of Figure F-16. These requirements are seen to grow from a total of 114 in 1981 to a total of 190 in 1987. The authorized numbers in the middle of that figure assume that the existing Combat Systems Software Division of DCD is incorporated in the CDSF. A breakout of these personnel requirements estimates, for the FY 1986/87 time frame is shown, by CDSF division, in Figure F-17.

b. Civilian Personnel Costs. The costs of the civilian personnel portion of the estimated personnel requirements are further estimated, in constant FY 81 K dollars, based on an assumed cost of $31.6K per technical/managerial and $16.0K per clerical/technician man-year, including 10% overhead loading, as shown below:

	CONSTANT FY 81 $000						
	FY 81	FY 82	FY 84	FY 84	FY 85	FY 86	FY 87
CIVILIAN PERSONNEL COSTS	1156.4	1267.2	1421.7	2065.5	2441.0	2521.5	2628.8

	FY81	FY82	FY83	FY84	FY85	FY86	FY87
REQUIRED							
MILITARY	70	75	80	86	90	91	92
CIVILIAN	44	48	53	77	91	94	98
TOTAL	114	123	133	163	181	185	190
AUTHORIZED*							
MILITARY	12	12	12	12	12	12	12
CIVILIAN	2	2	2	2	2	2	2
TOTAL	14	14	14	14	14	14	14
ADDITIONAL NEEDED							
MILITARY	58	63	68	74	78	79	80
CILIVIAN	42	46	51	75	89	92	96
TOTAL	100	109	119	149	167	171	176

Figure F-16. Personnel required, Hybrid PDSS System, ADA BFA

	MANAGERIAL AND TECHNICAL		CLERICAL AND TECHNICIAN		TOTAL
	MIL	CIV	MIL	CIV	
OFFICE OF THE CHIEF	2	0	1	1	4
CDFS MANAGEMENT DIVISION	9	14	4	7	34
FACILITY AND SYSTEMS SUPPORT DIVISION	7	11	7	7	32
CONCEPTS AND ANALYSIS DIVISION	17	23	2	8	50
AIR DEFENSE C^2 SYSTEMS DIVISION	10	6	1	1	18
AIR DEFENSE WEAPONS SYSTEMS DIVISION	10	7	1	1	19
FIELD SUPPORT DIVISION	14	7	7	5	33
TOTALS	69	68	23	30	190

Figure F-17. CDSF 1987 personnel requirements breakdown
Hybrid PDSS System, Air Defense BFA

SECTION VIII. INTELLIGENCE AND ELECTRONIC WARFARE BFA

F-22. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. The Intelligence and Electronic Warfare BFA is supported by the component of the TRADOC Hybrid PDSS System discussed in this section.

b. TRADOC Centers and Schools Involved. The US Army Intelligence Center and School is the primary TRADOC organization involved directly with this component of the Hybrid System. However, close coordination is required with the Force Level Control and Maneuver BFA component of the Hybrid System, discussed in Section IV, to ensure appropriate interface and interaction under the CCS^2 concept.

c. Organizational Structure of the System. An overview of that portion of the Hybrid System designed for supporting the Intelligence and Electronic Warfare BFA is shown in Figure F-18. This component consists of:

- A CDSF at USAICS
- A CDSM for ASAS who also serves as Chief of the CDSF
- A CDSM for other BAS in this BFA.

F-23. RESPONSIBILITIES AND RELATIONSHIPS. USAICS is proponent for the Intelligence and EW BFA and for most of the BAS in this BFA that are addressed in this study. These BAS include the ASAS and seven Category 2 systems shown in Figure F-19, and 10 Category 3 systems which are identified in Appendix C. The Intelligence and EW BFA component of the TRADOC Hybrid PDSS System illustrated in Figure F-18, has been designed to provide USAICS a capability to accomplish CD PDSS actions associated with these BAS. Figure F-20 shows the organization of this Hybrid System component in greater detail and illustrates its relationship to other elements of USAICS and TRADOC. As shown, the CDSF represents a division level element of the Directorate of Combat Developments. It is organized functionally rather than by system, although some system orientation will be necessary among individual members of the CDSF to provide specific system expertise as required. The size and structure of the CDSF is based on the assumptions that:

- Primary responsibility for CD actions associated with the development of Intelligence and EW BFA BAS, prior to their deployment will remain with the Materiel Division, Directorate of Combat Developments. PDSS for these systems is the responsibility of the CDSF
- ERADCOM-managed PDSS Centers will be established at Fort Huachuca and Fort Monmouth as provided in the PDSS Concept Plan for BAS

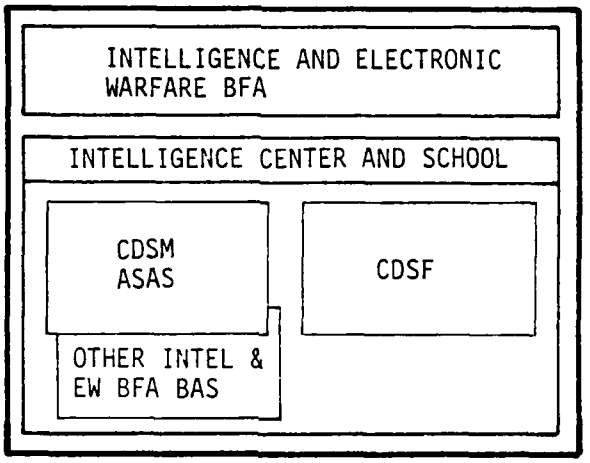


Figure F-18. Overview of the Hybrid PDSS System-Intelligence and EW BFA

INTELLIGENCE/EW BFA	
FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
USAICS	ASAS--ALL SOURCE ANALYSIS SYSTEM (CONCEPTUAL PHASE)
USAICS	AN/MSC-67--COMMUNICATIONS CENTER (COMFAC) * (VALIDATION 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 F-19. Intelligence and Electronic Warfare Category 1 and 2 BAS

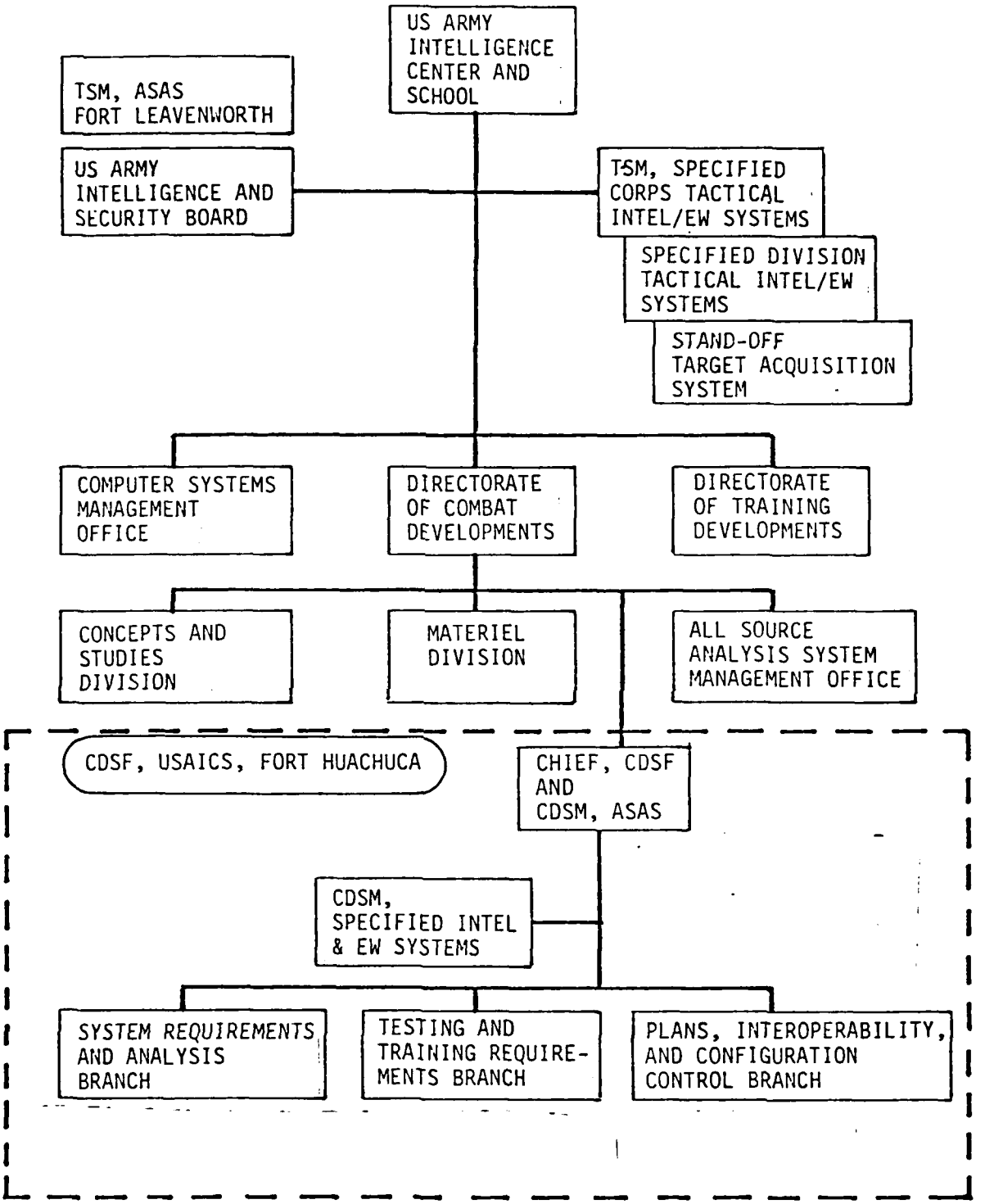


Figure F-20. Organization structure, CDSF, Fort Huachuca

- The Simulation Systems Management Office of the Computer Systems Management Office will acquire a capability to provide automated support to simulations and analyses conducted by the CDSF to examine functional problems associated with deployed BAS and the effects of potential or proposed system changes

- The Directorate of Training Developments will have the capability to handle, in coordination with the CDSF, training development requirements resulting from CD PDSS actions involving intelligence and EW BAS

- The US Army Intelligence and Security Board will have the capability to support the CDSF in addressing testing requirements resulting from PDSS actions involving intelligence and EW BAS.

Responsibilities and functions to be performed by each element of the CDSF are discussed below.

a. Chief, CDSF and CDSM, ASAS. One person holds both of these positions. As Chief, CDSF, he plans, directs, and supervises the operation of the CDSF in accomplishing all CD responsibilities for PDSS to BAS in the Intelligence and Electronic Warfare BFA. He establishes priorities and plans, programs, and allocates resources to address requirements. He serves as the primary point of contact on PDSS matters with other elements of USAICS and TRADOC, and with the ERADCOM-managed PDSS Centers at both Fort Huachuca and Fort Monmouth. He interacts with other USAICS elements who support the CDSF in various areas. These include:

- The Directorate of Training Developments on training requirements resulting from PDSS

- The US Army Intelligence and Security Board on system testing required as a result of PDSS actions

- The Simulation Systems Management Office of the Computer Systems Management Office in arranging automated support to simulations and the various analyses conducted by the CDSF

- The TSMs for ASAS, corps systems, division systems, and SOTAS on matters within the scope of their respective charters.

He interfaces with the CD PDSS LNO at Fort Monmouth (furnished by the CDSF, Fort Leavenworth) on matters involving PDSS for intelligence and EW systems that are supported by the ERADCOM-managed PDSS Center at Fort Monmouth. In his role as CDSM, ASAS, he serves as the CD for software associated with this system. He is responsible for managing and coordinating or performing all software-related actions within the CD PDSS role. 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 F-21.

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSF AND CDSM ASAS	CDSM, SPECIFIED INTEL & EW SYSTEMS	SYSTEM RQMTS. AND ANALYSIS BRANCH	TESTING & TRAINING REQUIREMENTS BR.	PLANS, INTEROPERABILITY, & CONFIG. CONTROL BR.	DIALECTICIAN OF TRAINING DEVELOPMENTS	COMPUTER SYSTEMS MANAGEMENT OFFICE	ARMY INTELLIGENCE AND SECURITY BOARD	TSMS (CORPS, DIVISION, SOTAS, AND ASAS)					
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING PDSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	X	X	N	N	X	N	N	N	X					
		2. PROVIDE REPRESENTATION ON THE CRWG.	1	X	X	N	N	N	N	N	N	X					
		3. PARTICIPATE IN DESIGNATION OF PDSS CENTER FOR EACH BAS.	1	X	X	N	N	X	N	N	N	X					
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1	X	X	N	N	N	N	N	N	X					
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2	N	N	N	N	X	N	N	N	N					
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2	N	N	N	N	X	N	N	N	N					
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[2] CONCEPT.	1	X	N	N	N	N	N	N	N	X					
	3. MANAGE CO PDSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1	X	X	X	X	X	N	X	N	X					
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X	X	N	N	X	N	X	N	X					
		3. ACQUIRE AND MANAGE RESOURCES.	1	X	X	N	N	X	N	X	N	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	X	X	X	N	N	N	N	N	N					
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2	X	X	X	N	N	N	N	N	N					
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3	X	X	X	N	N	N	N	N	N					
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3	X	X	X	N	X	N	N	N	N					
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2	X	X	X	N	N	N	N	N	N					
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2	X	X	X	N	N	N	N	N	N					
		2. EXAMINE BASIS FOR REQUIREMENT.	2	X	X	X	N	N	N	N	N	N					
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2	X	X	X	N	N	N	N	N	N					
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2	X	X	X	N	N	N	N	N	N					
	3. ANALYZE FUNCTIONAL IMPACT OF CONCEPTUAL CHANGES ON SYSTEMS.	1. IDENTIFY AND DEVELOP POTENTIAL CONCEPTUAL CHANGES AND EXAMINE THEIR IMPACT ON AFFECTED SYSTEMS.	2	X	X	X	N	N	N	X	N	N					
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2	X	X	X	N	X	N	X	N	N					

Figure F-21. Assignment of functions, Hybrid System--Intelligence and EW BFA (continued on next page)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	CHIEF, CDSF AND CDSM ASAS	CDSM, SPECIFIED INTEL & EW SYSTEMS	SYSTEM RQMTS. AND ANALYSIS BRANCH	TESTING & TRAINING REQUIREMENTS BR.	PLANS, INTEROPERABILITY, & CONFIG. CONTROL BR.	DIRECTORATE OF TRAINING DEVELOPMENTS	COMPUTER SYSTEMS MANAGEMENT OFFICE	ARMY INTELLIGENCE AND SECURITY BOARD	TSKS (CORPS, DIVISION, SOTAS, AND ASAS)						
2. ANALYSIS (CONTINUED)	4. ANALYZE FUNCTIONAL IMPACT OF PROPOSED SYSTEM CHANGES.	1. IDENTIFY OPERATIONAL IMPACT.	2	X	X	X	Z	X	Z	X	Z	X						
		2. IDENTIFY USER-RESOURCE REQUIREMENT IMPACT.	2	X	X	X	Z	Z	Z	X	Z	X						
		3. IDENTIFY TRAINING IMPACT.	2	X	X	Z	X	Z	X	X	Z	X						
		4. IDENTIFY LOGISTICAL IMPACT.	2	X	X	X	Z	Z	Z	X	Z	X						
		5. IDENTIFY IMPACT ON ALL PERSONNEL ASPECTS.	2	X	X	X	Z	Z	Z	X	Z	X						
		6. IDENTIFY HUMAN FACTORS IMPACT.	2	X	X	X	Z	Z	Z	X	Z	X						
		7. IDENTIFY SYSTEM INTEROPERABILITY IMPACT.	2	X	X	Z	Z	X	Z	X	Z	X						
3. SYSTEM MODIFICATION	1. DEVELOP FUNCTIONAL CHANGE REQUIREMENT.	1. DEFINE REQUIREMENT IN APPROPRIATE REQUIREMENTS DOCUMENT.	2	X	X	X	Z	Z	Z	X	Z	X						
		2. SPECIFY ANY INTEROPERABILITY CHANGE REQUIREMENT.	2	X	X	Z	Z	Z	Z	Z	Z	X						
		3. PROVIDE REQUIREMENT TO MD.	2	X	X	Z	Z	Z	Z	Z	Z	X						
		4. COORDINATE WITH MD IN ESTABLISHING CHANGE PRIORITIES AND OBJECTIVE IOC DATE.	2	X	X	Z	Z	Z	Z	Z	Z	X						
		5. MAINTAIN COORDINATION WITH MD DURING DEVELOPMENT OF CHANGE TO CLARIFY REQUIREMENTS AS REQUIRED.	2	X	X	Z	Z	Z	Z	Z	Z	X						
4. SYSTEM TESTING	1. MONITOR, PARTICIPATE IN, OR CONDUCT SYSTEM TESTING AS APPROPRIATE.	1. COORDINATE TYPE/DEGREE OF TESTING NECESSARY FOR EACH ISSUE/REVISION OF SOFTWARE PROGRAM.	2	X	X	Z	X	Z	Z	Z	X	X						
		2. DEVELOP SYSTEM CHANGE TEST CONDITIONS AND CRITERIA.	2	X	X	Z	X	Z	Z	Z	X	X						
		3. PARTICIPATE IN DESIGN OF THREAT SCENARIOS.	2	X	X	X	X	Z	Z	Z	X	X						
		4. MONITOR DEVELOPMENT TEST (DT).	2	X	X	Z	X	Z	Z	Z	X	X						
		5. PARTICIPATE AS TASKED BY HQDA IN OPERATIONAL TESTING (OT) CONDUCTED BY OTEA.	2	X	X	Z	X	Z	Z	Z	X	X						
		6. PLAN AND CONDUCT OTHER SYSTEM OT.	2	X	X	Z	X	Z	Z	Z	X	X						
		7. PLAN AND CONDUCT OR MONITOR USER ACCEPTANCE TESTING	2	X	X	Z	X	Z	Z	Z	X	X						
		8. EVALUATE OPERATIONAL SUITABILITY AND EFFECTIVENESS.	2	X	X	X	Z	Z	Z	Z	X	X						
		9. PROVIDE APPROVAL FOR SOFTWARE RELEASE TO THE FIELD.	3	X	X	Z	Z	Z	Z	Z	Z	X						
5. FIELD SUPPORT	1. MAINTAIN INTERFACE WITH AND PROVIDE FUNCTIONAL GUIDANCE TO FIELD USERS.	1. MAINTAIN COMMUNICATIONS WITH USERS.	3	X	X	X	Z	Z	Z	Z	Z	X						
		2. FUNCTION AS USER SURROGATE.	3	X	X	X	Z	Z	Z	Z	Z	X						
		3. DEVELOP AND PROVIDE GUIDANCE ON DOCTRINAL/ TACTICAL ASPECTS OF SYSTEM EMPLOYMENT.	3	X	X	X	Z	Z	Z	Z	Z	X						
		4. COORDINATE WITH MD ON THE SCHEDULE AND METHODOLOGY FOR DISTRIBUTION OF SYSTEM SOFTWARE CHANGE PACKAGE TO THE FIELD.	3	X	X	Z	Z	Z	Z	Z	Z	X						

Figure F-21. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED	CHIEF, CDSF AND CDSM ASAS	CDSM, SPECIFIED ISTEL & EW SYSTEMS	SYSTEM ROMTS, AND ANALYSIS BRANCH	TESTING & TRAINING REQUIREMENTS BR.	PLANS, INTEROPERABILITY, & CONFIG. CONTROL BE.	DIRECTORATE OF TRAINING DEVELOPMENTS	COMPUTER SYSTEMS MANAGEMENT OFFICE	ARMY INTELLIGENCE AND SECURITY BOARD	TSMS (CORPS, DIVISION, SOTAS, AND ASAS)
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	X	X	N	X	N	X	N	N	X
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	X	X	N	X	N	X	N	N	X
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	X	X	N	X	N	X	N	N	X
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	X	X	N	X	N	X	N	N	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	X	X	X	X	N	X	X	N	X
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	X	X	X	X	N	X	N	N	X
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	X	X	N	X	N	X	N	N	X
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	X	X	N	X	N	X	N	N	N
6. OTHER	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	X	X	X	N	X	N	N	N	X
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	X	X	X	N	X	N	N	N	X
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED POSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	X	N	N	X	N	N	N	N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	X	X	N	N	X	N	N	N	N
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY POSS RESPONSE REQUIREMENTS.	1	X	X	X	N	N	N	N	N	X
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE POSS UNDER VARIOUS SCENARIOS.	1	X	X	X	N	N	N	X	N	X
		3. COORDINATE WITH THE MD IN PLANNING POSS SUPPORT.	1	X	X	N	N	N	N	N	N	X
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	X	X	X	N	X	N	N	N	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	X	X	X	N	N	N	X	N	X
	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	N	N	N	X	X	N

* 1 = ANYTIME AFTER POSS PLANNING
  2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
  3 = AFTER FIELDING

X = Element is responsible and capable
N = Element is not responsible

Figure F-21. (concluded)

b. CDSM, Specified Intel/EW Systems. This CDSM has responsibility for all Intelligence and EW BFA BAS addressed in this study except the ASAS. He is responsible for managing and coordinating or performing all software-related actions within the CD PDSS role for these BAS. This includes planning and coordinating the activity of the CDSF in supporting these systems. He is the primary point of contact with the MD on PDSS matters involving any of these systems. He interfaces with the CD PDSS LNO at Fort Monmouth (furnished by the CDSF, Fort Leavenworth) on matters involving PDSS for intelligence and EW systems 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 F-21.

c. Branch level CDSF elements. As mentioned above, this CDSF is organized functionally with three branches. All CD PDSS functions to be performed by the CDSF for all BAS in the Intelligence and Electronic Warfare BFA are allocated among these branches in a logical manner as discussed below. The names used in this report to identify the branches have been selected to be descriptive of responsibilities of each branch. These responsibilities are discussed below. Specific functions are shown in Figure F-21.

(1) Plans, Interoperability, and Configuration Control Branch. This branch supports the Chief, CDSF in all actions related to planning, administering, and managing the CDSF operation. It supports both CDSM in all actions associated with planning PDSS support for BAS in their respective areas 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 branch 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 branch coordinates with the CDSM in authorizing release of system change packages to the field.

(2) System Requirements and Analysis Branch. This branch is responsible for all actions involving identification, analysis, and development of system functional change requirements and, in coordination with the CDSM, stating these requirements to the MD. The source of these requirements may be any system User or cognizant CD organization. They may result from any of the stimulators of change discussed in Chapter 3. Analyses conducted by the branch 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. The branch is responsible, in coordination with the appropriate CDSM, for interfacing with system Users to assist in identifying, isolating, and initiating action to correct User-reported system problems. The branch is responsible for assisting in developing functional work-around procedures, if necessary, pending problem resolution.

(3) Testing and Training Requirements Branch. As suggested by its title, responsibilities of this branch fall generally into two functional areas--testing and training. With respect to testing, the branch is responsible for supporting the CDSM in planning, coordinating, and monitoring or conducting, all assigned CD actions associated with testing changes to BAS. Accomplishment of these responsibilities involves working closely with the MD, OTEA, the US Army

Intelligence and Security Board, TCATA, and/or other designated test activities, as appropriate. The branch 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.

F-24. ESTIMATE OF RESOURCE REQUIREMENTS. Time phased estimates of resources needed to establish the Hybrid System component supporting the Intelligence and Electronic Warfare BFA are shown below.

a. Personnel.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required							
Military	6	7	8	9	9	9	9
Civilian	3	5	7	9	10	10	10
TOTAL	9	12	15	18	19	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	6	7	8	9	9	9	9
Civilian	3	5	7	9	10	10	10
TOTAL	9	12	15	18	19	19	19

A breakout of these personnel by CDSF element is shown below:

ELEMENT	PERSONNEL				TOTAL
	TECHNICAL		ADMINISTRATIVE		
	MIL	CIV	MIL	CIV	
Office of the Chief, CDSF, and CDSM, ASAS	1	0	0	1	2
CDSM, specified INTEL/EW systems	1	0	0	0	1
System Requirements and Analysis Branch	3	3	0	1	7
Testing and Training Requirements Branch	2	2	0	0	4
Plans, Interoperability, and Configuration Control Branch	2	2	0	1	5
TOTAL	9	7	0	3	19

b. Major Items of Equipment. This CDSF requires interactive access to the computer (to be acquired) at the Computer Systems Management Office to conduct simulations and support tests and other analyses conducted by elements of the CDSF. Computer access is also required to provide linkage with the CDSF, Fort Leavenworth and other CDSFs which support one or more control systems in the CCS^2 concept. Specific equipment required to provide this access and the capability required must be determined through further study.

c. Facilities. Physical facility requirements include office space for assigned personnel, a computer terminal area, and a simulation/test/analysis area that would accommodate 6 to 8 personnel working simultaneously. It would be desirable to collocate this CDSF with the ERADCOM-managed PDSS Center at Fort Huachuca. If collocation is not feasible, other suitable space should be selected for the CDSF that will facilitate interaction with the PDSS Center as well as other elements of USAICS.

d. Funds. An estimate of funds required for the CDSF civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars.

	FUNDS REQUIRED ($000)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	79.2	142.4	205.6	253.2	269.2	269.2	269.2

Funds needed for equipment and physical facilities are dependent upon development of specific requirements and plans addressing these areas.

SECTION IX. COMBAT SERVICE SUPPORT BFA--US ARMY LOGISTICS CENTER

F-25. SYSTEM DESCRIPTION.

a. Functional Areas/BFA Supported. The component of the TRADOC Hybrid PDSS System described in this section is designed to provide an improved PDSS capability for that part of the Combat Service Support BFA for which the US Army Logistics Center (LOGCEN) is responsible.

b. TRADOC Centers and Schools Involved. The LOGCEN and the US Army Ordnance Center and School, over which the LOGCEN exercises an integrating center role, are directly involved with this component of the Hybrid PDSS System. In addition, close coordination is required between this Hybrid System component and those components of the system supporting the Combined Arms Center and the Soldier Support Center described in Sections IV and X, respectively. This coordination is required for a number of reasons but in particular to ensure appropriate interface and interaction among these organizations in managing and intefacing the CSS control system under the CCS^2 Concept. No requirement exists for a PDSS capability, at other centers and schools (Missile and Munitions, Transportation, and Quartermaster) associated with the LOGCEN in the CCS BFA at this time.

c. Organizational Structure of the System. An overview of that portion of the Hybrid System addressed in this section is shown in Figure F-22. As shown, this component consists of:

- A CD PDSS Staff Element at the LOGCEN
- A CDSM for each logistics system addressed in this study
- An Action Officer augmentation to existing divisions of the Management Information Systems Directorate for handing PDSS functions.

This system and each of its elements is discussed in further detail in the paragraphs that follow.

F-26. RESPONSIBILITIES AND RELATIONSHIPS.

a. LOGCEN.

(1) System Responsibilities. The LOGCEN is the TRADOC proponent for all logistics systems addressed in this study. These systems are shown in Figure F-23. Included among these systems is 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 CCS^2 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 actions associated with all aspects of the Combat Developer's role in all phases of the system life cycle including PDSS. While the LOGCEN has been involved for many years in performing CD PDSS functions for logistics systems already deployed, the

PRECEDING PAGE BLANK-NOT FILMED

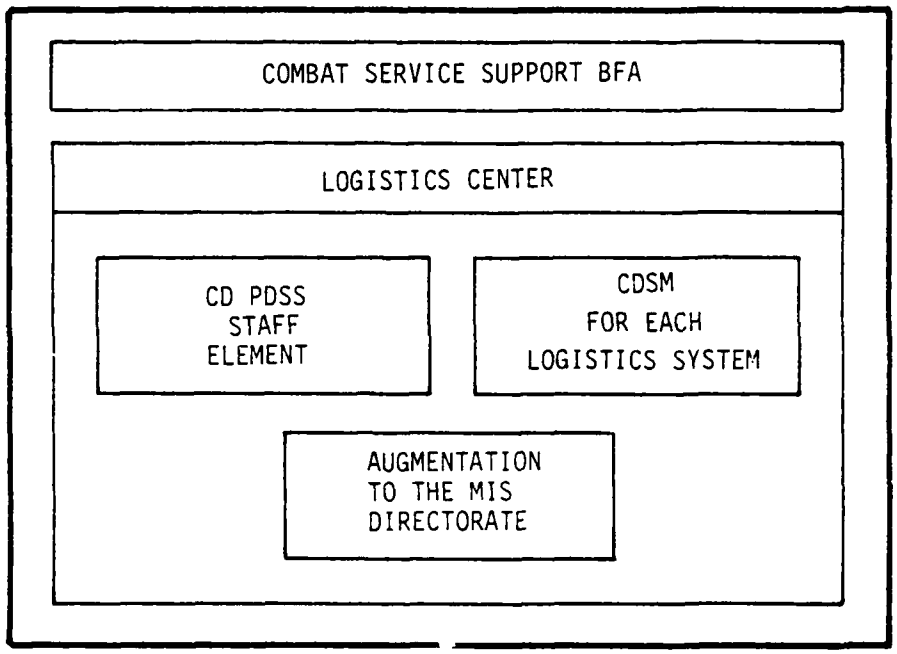


Figure F-22. Overview of the Hybrid PDSS System-CSS BFA--logistics area

FUNCTIONAL PROPONENT	BATTLEFIELD AUTOMATED SYSTEM (BAS)
LOGCEN/ DCSLOG	DSU/GSU--DIRECT SUPPORT UNIT GENERAL SUPPORT UNIT (OPERATION)
USASC	DLDED (DEFINITION/DESIGN)
LOGCEN/ DCSLOG	SAMS--STANDARD ARMY MAINTENANCE 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	DAMMS--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)

Figure F-23. Logistics systems

projected deployment of new systems and the further extension of some currently fielded systems requires that the current PDSS capability be improved. The Hybrid PDSS System illustrated in Figure F-22, has been designed to provide the needed enhancement in the LOGCEN's current PDSS capability.

(2) Hybrid System design and responsibilities of organizational elements. An 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 currently followed at the LOGCEN. The Hybrid System shown in Figure F-22 resulted from this design effort. The elements of this Hybrid System and their relationship to the existing organizational structure are shown in more detail in Figure F-24. This structure and the responsibilities and functions of each element are discussed in the following paragraphs.

(a) 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 Office in the Management Information Systems Directorate. The head of this staff element would serve as the primary point of contact in coordinating PDSS maters with other elements of the LOGCEN, other organizations of TRADOC, and with the CSC-managed PDSS Center at Fort Lee. 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. Specific functions of this staff element are shown in Figure F-25.

(b) 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 Hybrid 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 the MD on PDSS matters affecting his system. Specific functions for which each CDSM is responsible in either a management, coordination, or performance role are shown in Figure F-25.

(c) PDSS Action Officer augmentation to the Field Systems and Supply Systems Divisions. This Hybrid 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. They would be accomplished

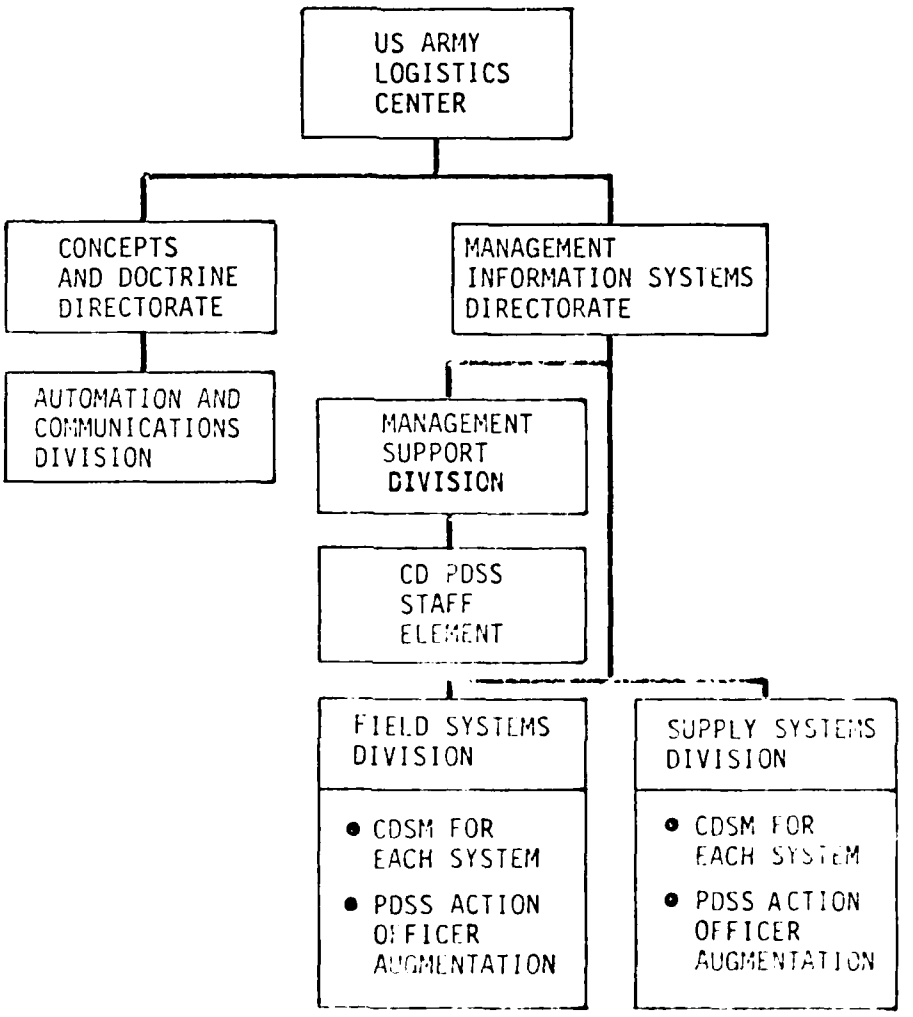


Figure F-24. Elements of the Hybrid PDSS System--LOGCEN

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

Figure F-25. Assignment of functions, Hybrid System--CSS BFA, Logistics Center (continued on next page)

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

Figure F-25. (continued)

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	POSS STAFF ELEMENT	FIELD SYSTEMS DIVISION, MIS DIRECTORATE	SUPPLY SYSTEMS DIVISION, MIS DIRECTORATE	AUTOMATION & COMMUNICATIONS DIV, C&D DIR.
15. 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	N	X	X	N
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2	N	X	X	N
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2	N	X	X	N
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3	X	X	X	N
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2	N	X	X	N
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2	N	X	X	N
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2	N	X	X	N
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3	X	X	X	N
	1. JOINT AND INTERNATIONAL INTEROPERABILITY REQUIREMENTS.	1. IDENTIFY REQUIREMENTS.	1	N	N	N	N
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1	N	N	N	N
	2. SUPPORT TO CONTINGENCY PLANNING.	1. COORDINATE WITH MD IN PLANNING FOR REQUIRED PDSS SUPPORT TO BAS IN THE CONTINGENCY FORCE.	3	X	X	X	N
		2. PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.	3	X	X	X	N
	3. SUPPORT TO CRISIS/ WARTIME OPERATIONS.	1. SPECIFY PDSS RESPONSE REQUIREMENTS.	1	X	X	X	N
		2. EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE PDSS UNDER VARIOUS SCENARIOS.	1	X	X	X	N
		3. COORDINATE WITH THE MD IN PLANNING PDSS SUPPORT.	1	X	X	X	N
		4. DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION DOES NOT PERMIT SOFTWARE CHANGES.	3	N	X	X	N
		5. THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY INTO THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ANTICIPATED CONTINGENCIES.	1	N	X	X	X
16. 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	N

* 1 = ANYTIME AFTER PDSS PLANNING
2 = AFTER SOFTWARE FREEZE POINT (SOFTWARE CONFIGURATION ESTABLISHED)
3 = AFTER FIELDING

X = Element is responsible and capable
N = Element is not responsible

Figure F-25. (concluded)

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 Hybrid System provides for a personnel augmentation 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 F-25. No requirement for a personnel augmentation to the Concepts and Doctrine Directorate for handling PDSS actions is foreseen or provided for in this Hybrid System. Except for PDSS planning during system design, it is assumed that PDSS for all systems will be the responsibility of MISD.

b. US Army Ordnance Center and School. The Ordnance Center is proponent for two Category 3 BAS, the Biological Detector (XM-19-XM-2) and the Chemical Agent Alarm Remote Sensing (XM-21). PDSS for these two BAS is to be provided by the ARRADCOM PDSS Center at Picatinny Arsenal. System Action Officers at the Ordnance Center will have primary responsibility for CD PDSS actions associated with these two systems. To support these Action Officers and provide direct interface with the system developer, this Hybrid PDSS System provides for a CD PDSS LNO from CACDA to be located at the ARRADCOM PDSS Center at Picatinny. This LNO will coordinate requirements of the Ordnance Center and interface with the ARRADCOM system developers on PDSS actions associated with these two systems.

F-27. RESOURCES. Time-phased estimates of resources needed to establish this Hybrid PDSS System component for support of the logistics portion of the CSS BFA are shown below.

a. Personnel.

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Required[1]							
Military	33	33	34	36	36	38	38
Civilian	78	78	79	83	83	85	85
TOTAL	111	111	113	119	119	123	123
Authorized[1]							
Military	30	30	30	30	30	30	30
Civilian	72	72	72	72	72	72	72
TOTAL	102	102	102	102	102	102	102
Additional Needed							
Military	3	3	4	6	6	8	8
Civilian	6	6	7	11	11	13	13
TOTAL	9	9	11	17	17	21	21

[1] Not limited to PDSS personnel; includes all personnel in MISD directly involved in systems development and life cycle management.

A breakout of these additional personnel requirements by organizational element is shown below:

ELEMENT	PERSONNEL				TOTAL
	TECHNICAL		ADMINISTRATIVE		
	MIL	CIV	MIL	CIV	
CD PDSS STAFF ELEMENT	2	2	0	1	5
FIELD SYSTEMS DIVISION	4	6	0	0	10
SUPPLY SYSTEMS DIVISION	2	4	0	0	6
TOTAL	8	12	0	1	21

b. Facilities. Physical facility requirements include office space for the five member CD PDSS Staff Element and the PDSS personnel augmentations to the Supply Systems and Field Systems Divisions.

c. Major Equipment. A terminal is needed to the TRADOC Data Processing Field Office computer at Fort Leavenworth to facilitate interaction with the CACDA CDSF in designing, managing and exercising configuration control over the major command and control BAS under the CCS^2 Concept.

d. Funds. An estimate of funds required for the additional civilian personnel requirements identified above is shown below. This estimate is in FY 81 constant dollars and is based on an average cost of $31.6 K for technical-level personnel and $16.0 K for administrative personnel.

	FUNDS REQUIRED ($000)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Civilian Personnel	189.6	189.6	221.2	332.0	332.0	395.2	395.2

SECTION X. COMBAT SERVICE SUPPORT BFA--US ARMY SOLDIER SUPPORT CENTER

F-27. SYSTEM DESCRIPTION.

a. System Purpose and Scope. The Hybrid PDSS System described in this section is intended to adequately fulfill all Combat Developer PDSS functions for the Soldier Support Center, into at least the late 1980's. This Hybrid PDSS System has been structured without reference to resource constraints. This system is based on comparison of the Baseline and Theoretical PDSS Systems. The basic structure of the Theoretical System was retained in this Hybrid System. During design of this Hybrid System, however, some consideration was given to ways in which resource requirements might be reduced. This system is basically a TRADOC system, although it must interact with, and is heavily dependent on, non-TRADOC elements.

b. Principal System Elements and Features. This Hybrid System for providing PDSS in the Soldier Support Center portion of the Combat Service Support BFA is centered on a new element. This element, a Combat Developer Support Element (CDSE), would assume all PDSS responsibilities of the existing Management Information Systems Division within the Directorate of Combat Developments at Fort Benjamin Harrison, Indiana. The new element (CDSE) would also be subordinate to that directorate, in the US Army Institute of Personnel and Resource Management. The new element is termed a CDSE, rather than a Combat Developer Support Facility, since it is not anticipated that any Materiel Developer (MD) PDSS Center will be located at Fort Benjamin Harrison. Such a PDSS Center will instead be located at US Army Computer Systems Command facilities at Fort Belvoir, VA. Accordingly, a Combat Developer PDSS Liaison Office (CD PDSS LNO) from the CDSE at Soldier Support Center will be located at the Fort Belvoir PDSS Center of the MD, in this Hybrid System. This Liaison Office will interface and coordinate interaction with both the TACMIS Project Office (MD for DLDED, DAS3, and related systems) and the Personnel Systems Division, Personnel and Force Accounting Directorate (MD for SIDPERS, VFDMIS, etc.), of Computer Systems Command. A second Liaison Office (CD PDSS LNO) from the CDSE at Soldier Support Center will be located at the US Army Military Personnel Center (MILPERCEN) facilities in Alexandria, VA. This Liaison Office (a similar element already exists) will coordinate interaction with the Field Military Systems Branch, Field Activities Division, Personnel Management Systems Directorate, MILPERCEN. The Field Military Systems Branch is the proponent agency for SIDPERS and has responsibility for its functional design, development, implementation, and maintenance, for all changes which are anticipated not to exceed a cost of $100K. The Hybrid PDSS System for the Soldier Support Center portion of the CSS BFA is organized to permit additional liaison offices to be established as necessary, and for growth to occur in the CDSE and its remote elements in the event that Soldier Support Center responsibilities for PDSS should increase. Such increases may occur as a result of potential charter adjustments vis-a-vis MILPERCEN, or through events which may evolve within the existing charters. Relationships between the CDSE at Soldier Support Center and the CDSM for Force Level and Maneuver Control at CACDA, Fort Leavenworth, and with the AC^{2}MP Branch within the Automation and Communications Division of the Concepts and Doctrine Directorate at the Logistics Center, are seen to require special communications capabilities, but not remote liaison offices. Normal communications and travel are seen

as adequate for relationships between the CDSE and the Systems Design Branch of the Academy of Health Sciences, and other interfacing elements. A need is not seen for the CDSE to dispatch Combat Developer PDSS Forward Support Teams (CDFSTs) to User units, unless the responsibilities of Soldier Support Center are considerably broadened. Normal communications and occasional travel of selected members of the CDSE staff should suffice. The principal elements and interfaces involved in the Hybrid PDSS System are outlined in Figure F-26, which also provides a type of system overview.

c. CDSE Structure. The structure of the CDSE which is central to this Hybrid PDSS System is outlined in Figure F-27. This is a relatively simple and rudimentary structure which reflects the rather limited PDSS responsibilities currently borne by the Soldier Support Center (SSC). This structure does provide, however, a nucleus which could be expanded rapidly in response to any significant increase in SSC PDSS responsibilities. The structure consists of a Chief, Soldier Support CDSE, reporting to the Directorate of Doctrine and Combat Development. Under the Chief are three functionally-oriented branches--CDSE Management, Facility Support and Analysis, and CD PDSS LNO Support--which are primarily embryonic elements in which planning and anticipating possible future needs is a principal current function. The CDSM, Personnel Systems is also Deputy Chief of the CDSE, but is largely free of such administrative burdens and concentrates on operating what is essentally a fourth branch. Within this branch are focal points for PDSS activities relating to four BAS or BAS groups in which Soldier Support Center currently has a limited degree of responsibility. The first of these, Software Conversion, involves a degree of CD participation, from a PDSS viewpoint, in conversion of several fielded personnel software elements to operate on new hardware. The second item, CCS^2 Subsystem, involves PDSS aspects of development of the Personnel Subsystem for the CSS Control System for the CCS^2 concept under the Force Level Control System, whose CDSM is at Fort Leavenworth. The third item, New Personnel System, involves PDSS aspects of a system being conceived to replace SIDPERS. The New Personnel System will interface with the Theater Army Medical Management Information System (TAMMIS), which is in the conceptual stage. The fourth and last item, Other Systems, involves monitoring and coordinating responsibilities pertaining to several BAS, including SIDPERS, SIDPERS Wartime, a related Personnel Software Package for DLDED, the Prisoners of War Information System (PWIS), VFDMIS, TAPER and TAPER Wartime, VTAADS, and OESS. Any changes to SIDPERS software which are anticipated to cost over $100K would be a responsibility of SSC under this fourth item. The functions of the elements of this structure are discussed further in the next paragraph.

F-29. RESPONSIBILITIES AND RELATIONSHIPS.

a. CDSE. The overall mission of the Soldier Support CDSE is to insure that all CD PDSS responsibilities which are assigned to Soldier Support Center are adequately fulfilled for the personnel and administration portion of the Combat Service Support (CSS) BFA. The responsibilities and functions of the elements of this CDSE are outlined below.

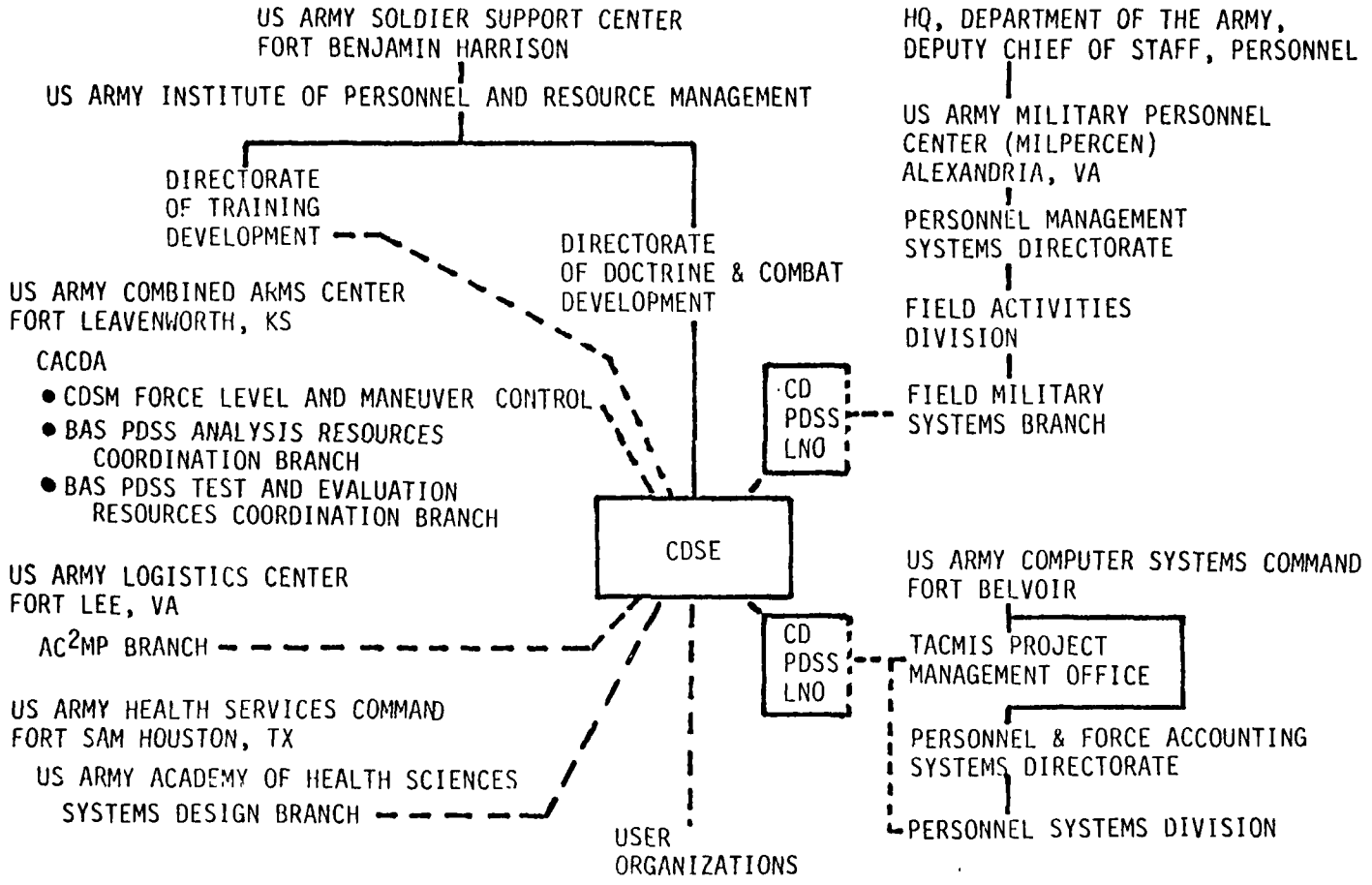


Figure F-26. Principal Elements, Theoretical PDSS System for SSC

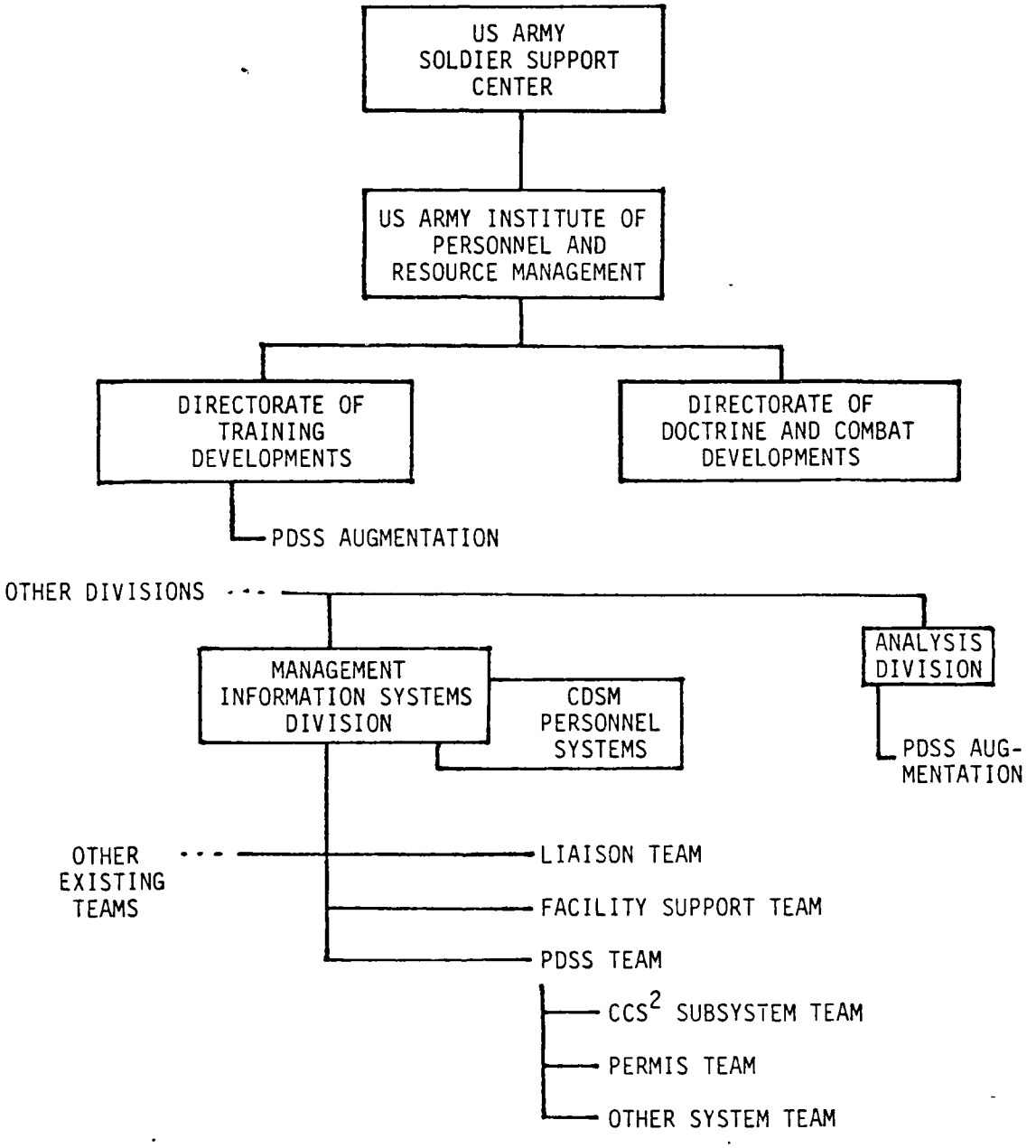


Figure F-27. CDSE structure, Hybrid PDSS System for Soldier Support Center

AD-A100 484 BDM SERVICES CO LEAVENWORTH KS F/G 9/2
ASSESSMENT OF THE COMBAT DEVELOPER'S ROLE IN POST-DEPLOYMENT SO--ETC(U)
DEC 80 L H CHARITY, J M MCCURDY, P L DUNN MDA903-80-C-0479
UNCLASSIFIED BDMSC/L-80-007-TR NL

(1) Chief, Soldier Support CDSE. The Chief, Soldier Support CDSE, is the principal administrator of PDSS functions at Soldier Support Center. He reports to the Director, Doctrine and Combat Developments, US Army Institute of Personnel and Resource Management. The Chief is responsible for carrying out the overall mission of the CDSE, using the resources at his disposal, and through close cooperation with the various external elements with which the CDSE interfaces.

(2) CDSM, Personnel Systems. The CDSM, Personnel Systems is the focal point and principal interface for all substantive TRADOC PDSS actions relating to BAS for which Soldier Support Center is assigned or allocated PDSS responsibilities. Because of the currently limited nature of those responsibilities, a single CDSM is designated, and he also serves as deputy to the Chief, Soldier Support CDSE. The office of the CDSM provides a nucleus that can be expanded with additional CDSMs, if future responsibilities require expansion. The CDSM, Personnel Systems has a small staff organized in four sections on the basis of BAS or groups of BAS, as appropriate. In performing CD PDSS functions which may be required by the BAS under the monitorship or purview of the Soldier Support CDSE, the CDSM and his staff are assisted by the resources of the other CDSE branches. When necessary, those resources may be temporarily augmented by, or additional assistance may be obtained from, resources at other locations. The CDSM will maintain close contact and freely exchange information with the BAS PDSS Analysis Resources Coordination Branch and the BAS PDSS Test & Evaluation Resources Coordination Branch at CACDA, Fort Leavenworth, to facilitate appropriate mutual use of resources.

(3) CDSE Management Branch. The CDSE Management Branch assists the Chief and the CDSM in planning and managing the CDSE. This branch is responsible for anticipating the workload of the CDSE, and for recommending, developing, coordinating, and maintaining appropriate plans for the necessary resources, to include training. This branch also is responsible for maintaining necessary documentation and records, recommending and developing CDSE policies, and helping to insure that CDSE operations are in concert with other PDSS operations and policies throughout TRADOC and the Army.

(4) Facility Support and Analysis Branch. The Facility Support and Analysis Branch is responsible for anticipating and planning for meeting the facility, equipment, and related support needs of the CDSE, including any needs that may arise for computer support, modeling, simulation, testing or analysis of BAS software. This branch will support or effect support of any special communications capabilities needed by the CDSE. The resources of this branch may be temporarily augmented or assisted, as noted in paragraph (2), above.

(5) CD PDSS LNO Support Branch. The CD PDSS LNO Support Branch is responsible for supporting and providing Combat Developer PDSS liaison teams or offices as needed to accomplish effectively the mission of the CDSE.

Combat Developer PDSS liaison offices (CD PDSS LNO) are currently seen as needed at both MILPERCEN, Alexandria, VA, and at US Army Computer Systems Command, in the vicinity of Fort Belvoir, VA.

F-30. SYSTEM CAPABILITIES. The Hybrid PDSS System for Soldier Support Center is designed to adequately fulfill all Combat Developer PDSS responsibilities that can be foreseen at this time, into at least the late 1980's. System capabilities are based on currently perceived responsibilities, whose extent is subject to potential change. Therefore, the system is designed with a capability for expansion to meet new responsibilities, should the need arise. Accordingly, Figure F-28, which lists the 64 TRADOC principal PDSS functions, is used here only to show, by "X" entries, which elements in the Hybrid System are responsible for fulfilling those functions.

F-31. SYSTEM RESOURCE REQUIREMENTS.

a. Personnel. An estimate has been made by the study team of the personnel needed to staff the Hybrid PDSS System for Soldier Support Center. This estimate is based upon the currently perceived PDSS responsibilities of the Soldier Support Center and a consideration of each of the system structural elements discussed in the preceding paragraphs. The estimated personnel requirements were derived without reference to any resource constraints. The resulting numbers are shown in Figure F-29. A breakout of the 1986/7 numbers, by CDSE element, is provided in Figure F-30. The estimates remain the same as those shown for the Theoretical System, because both structures are skeletal. The Hybrid System, however, offers greater flexibility to meet temporary needs for more resources, by sharing resources at or from other locations.

b. Civilian Personnel Costs. Costs of the civilian personnel portion of the estimated personnel requirements are futher estimated, in constant FY 81 K dollars, based on an assumed cost of $31.6K per managerial/technical man year and $16.0K per clerical/technician man-year, including 10% overhead loading. These cost estimates are:

	($000)						
	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
CIVILIAN PERSONNEL COSTS	316.8	316.8	316.8	316.8	316.8	316.8	316.8

TASK AREA	TRADOC RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSE	CDSM, PERSONNEL SYSTEMS	CDSE MANAGEMENT BRANCH	FACILITY SUPPORT AND ANALYSIS BRANCH	LNO SUPPORT BRANCH	DIRECTORATE OF TRAINING DEVELOPMENT (DTD)
1. MANAGEMENT	1. PARTICIPATE WITH MD IN DEVELOPING AND MAINTAINING POSS PLANS FOR EACH BAS.	1. PARTICIPATE IN DEVELOPMENT OF THE CRMP.	1	X	X			X	
		2. PROVIDE REPRESENTATION ON THE CRWG.	1		X			X	
		3. PARTICIPATE IN DESIGNATION OF POSS CENTER FOR EACH BAS.	1	X	X				
	2. PARTICIPATE WITH MD IN CONFIGURATION MANAGEMENT.	1. PROVIDE REPRESENTATION ON EACH BAS CCB.	1		X			X	
		2. PROVIDE REPRESENTATION ON EACH BAS SSCB.	2		X			X	
		3. PROVIDE REPRESENTATION ON EACH BAS FSCB.	2		X			X	
		4. PROVIDE REPRESENTATION ON ANY EXECUTIVE LEVEL CCB ESTABLISHED UNDER THE CCS[2] CONCEPT.	1		X				
	3. MANAGE CD POSS EFFORT.	1. DETERMINE REQUIREMENTS (PERSONNEL, EQUIPMENT, FACILITIES, SIMULATION MODELS AND DEVICES, DATA BASES).	1			X	X		
		2. PLAN AND PROGRAM FOR RESOURCES.	1	X		X	X	X	
		3. ACQUIRE AND MANAGE RESOURCES.	1	X		X			
2. ANALYSIS	1. PERFORM ANALYSIS OF BAS SOFTWARE PROBLEM REPORTS.[a]	1. IN CONJUNCTION WITH MD, DETERMINE IF SOURCE OF PROBLEM IS FUNCTIONAL OR TECHNICAL.	2		X			X	
		2. COORDINATE WITH MD ON ACTION REQUIRED TO ADDRESS THE PROBLEM.	2		X			X	
		3. COORDINATE WITH MD IN NOTIFYING THE USER OF RECEIPT AND PLAN OF ACTION ON TROUBLE REPORTS.	3		X			X	
		4. COORDINATE WITH MD ON PROVIDING SOLUTION TO THE FIELD.	3		X			X	
		5. ESTABLISH, IN COORDINATION WITH MD, PRIORITY OF CHANGE AND TIME FRAME FOR CHANGE TO BE EFFECTED.	2		X			X	
	2. ANALYZE USER-STATED REQUIREMENTS.	1. RECEIVE REQUIREMENT FROM USER.	2		X			X	
		2. EXAMINE BASIS FOR REQUIREMENT.	2		X	X			
		3. COORDINATE WITH MD REGARDING ACTION TO SATISFY VALIDATED REQUIREMENTS.	2		X				
		4. INFORM USER OF PLANNED DISPOSITION OF REQUIREMENT.	2		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.[b]	2		X		X		
		2. DETERMINE AND EXAMINE IMPACT ON SYSTEM INTEROPERABILITY BASELINE.	2		X		X		

Figure F-28. Assignment of functions, Hybrid System--Soldier Support Center (continued on next page)

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

Figure F-28. (continued)

TASK AREA	RESPONSIBILITY	FUNCTIONS	LIFE CYCLE STAGE WHEN FUNCTION IS REQUIRED*	CHIEF, CDSE	CDSM, PERSONNEL SYSTEMS	CDSE MANAGEMENT BRANCH	FACILITY SUPPORT AND ANALYSIS BRANCH	LNO SUPPORT BRANCH	DIRECTORATE OF TRAINING DEVELOPMENT (DTD)
5. FIELD SUPPORT (CONTINUED)	2. DEVELOP ... TRAINING ... QUIRED ... CHANGE ... NEW EQUIPM... ING (NET.	1. DETERMINE TRAINING/RETRAINING DEVELOPMENT REQUIREMENTS.	2		X				
		2. DETERMINE TRAINING DEVICE REQUIREMENTS.	2		X				
		3. DEVELOP TRAINING PLAN FOR MEETING REQUIREMENTS.	2						X
		4. DEVELOP AND DISTRIBUTE UPDATED OR NEW TRAINING LITERATURE AND MATERIALS.	3						X
		5. DEVELOP TRAINING SCENARIOS FOR INSTITUTION AND FIELD USE.	2						
		6. DEVELOP TRAINING SUPPORT SOFTWARE REQUIREMENTS.	2		X				
		7. VALIDATE/VERIFY TRAINING MATERIALS.	2		X				
		8. PARTICIPATE IN FIELD USER TRAINING AND NET.	3		X				
6. OTHER	1. JOINT AND INTER-NATIONAL INTEROPER-ABILITY REQUIREMENTS	1. IDENTIFY REQUIREMENTS.	1		X				
		2. SPECIFY IN REQUIREMENTS DOCUMENT.	1		X				
	2. SUPPORT TO CONT... PLANNING.	COORDINATE WITH MD IN PLANNING FOR REQUIRED PDSS SUPPORT TO BAS *IN THE CONTINGENCY FORCE*.	3	X	X				
		PROVIDE FOR "TACTICAL TAILORING" OF FIELDED SOFTWARE TO CONTINGENCY MISSION.[a]	3						
	3. SUPPORT TO CRISIS WARTIME OPERATIONS.	SPECIFY PDSS RESPONSE REQUIREMENTS.	1		X		X		
		EXAMINE ALTERNATIVES FOR PROVIDING THE MOST TIMELY AND EFFECTIVE PDSS UNDER VARIOUS SCENARIOS.	1						
		COORDINATE WITH THE MD IN PLANNING PDSS SUPPORT.	1						
		DEVELOP PROCEDURAL WORK-AROUNDS WHEN SITUATION ... NOT PERMIT SOFTWARE CHANGES.	3						
		THROUGH FRONT-END ANALYSIS, DESIGN FLEXIBILITY ... THE SOFTWARE TO ALLOW FIELD USER RESPONSE TO ...IPATED CONTINGENCIES.	1						
	4. ASSESS CONTINUED TACTICAL SUITABILITY OF BAS.	... PERIODIC REEVALUATIONS OF BAS TO DETERMINE ...ED TACTICAL SUITABILITY AS CHANGES OCCUR IN ... DOCTRINE, AND OPERATIONAL REQUIREMENTS.	3		X				

* 1 = ANYTIME AFTER PDSS ...
2 = AFTER SOFTWARE ... CONFIGURATION ESTAB...
3 = AFTER FIELDING

[illegible] ...TWARE

a ... PERFORMED ONLY RARELY
b ... ONLY ON CHANGES OVER $100,000
c ... AFTER NOTIFICATION FROM ...
d ... MONITORING ROLE

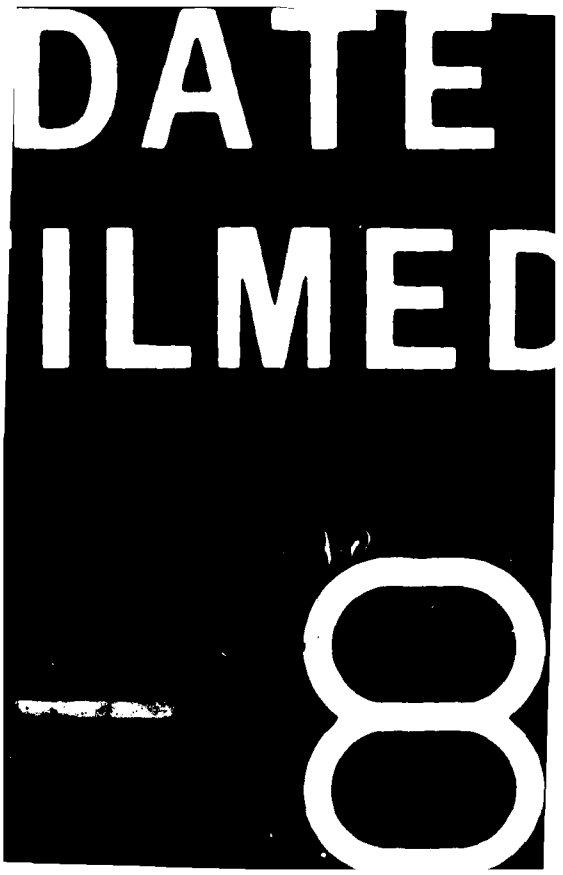
Figure F-28. (concluded)

	FY81	FY82	FY83	FY84	FY85	FY86	FY87
REQUIRED							
MILITARY	12	12	12	12	12	12	12
CIVILIAN	4	4	4	4	4	4	4
TOTAL	16	16	16	16	16	15	16
AUTHORIZED							
MILITARY	6	6	6	6	6	6	
CIVILIAN	0	0	0	0	0		
TOTAL	6	6	6	6	6		
ADDITIONAL NEEDED							
MILITARY	6					6	6
CIVILIAN	4					4	4
TOTAL				10	10	10	10

Figure F-29. Personnel required, Hybrid PDSS System, Soldier Support Center

	TECHNICAL		CLERICAL AND TECHNICIAN		TOTAL
	MIL	CIV	MIL	CIV	
[illegible]MS	1				1
[illegible]AM	1	1	1		3
	1		1		2
[illegible]ER SYSTEMS SECTION		1	1		2
FACILITY SUPPORT AND ANALYSIS BRANCH		1	1		2
CD PDSS LNO	2	1			3
ANALYSIS DIVISION AUGMENTATION	2				2
DIRECTORATE OF TRAINING DEV. AUG.	1				1
TOTALS	8	4	4	0	16

Figure F-30. CDSE personnel requirements breakdown, Hybrid PDSS System, Soldier Support Center


DATE
ILMED
8