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19. ABSTRACT (Continue on reverse if necessary and identify by block number) The U S Marine Corps examined the Force Service Support Group (FSSG) and Marine Wing Support Group (MWSG) structures to enhance the ability of these organizations to provide improved Combat Service Support (CSS) to the Fleet Marine Force. The purposes of this study were to examine the CSS information exchange requirements for Marine Expeditionary Force (MEF) and Marine Expeditionary Brigade (MEB) in a combat environment, to determine communications needlines and flowlines for CSS information exchange, and to determine the communications equipment required to support the exchange. The conclusions and recommendations drawn from this study are concurred in with the exception of the three items noted in the letter of promulgation. <i>Report 12-1</i>					
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From: Commanding General, Marine Corps Combat Development Command

Subj: DETERMINATION OF THE COMBAT SERVICE SUPPORT INFORMATION EXCHANGE REQUIREMENTS (1986-1996) SCN: DM611052

1. The objectives of this study were to: determine the Combat Service Support (CSS) information exchange requirements in a combat environment between Command and Control Facilities (C2FACS) and CSS C2FACS, and among CSS C2FACS; define CSS C2FACS tasks and break them down into elemental tasks; produce message formats to implement information exchange and identify their elemental contents; and to specify the circuits and equipment to support the information exchange between C2FACS and CSS C2FACS, and among CSS C2FACS.

2. All objectives of the study were met. The conclusions and recommendations drawn from this study are concurred in with the following exceptions:

a. RECOMMENDATION I. That the Marine Corps adopt and procure a modem which transmits digital data over current VHF assets. Further, that a testing program should be conducted with the Single Channel Ground-to-Air Radio System (SINCGARS) radio family and Marine Corps End User Computer Equipment (EUCE) to determine compatibility.

(1) USMC Position. Nonconcur.

(2) Discussion

(a) Centrally managed Procurement Marine Corps (PMC) funds cannot be obtained until FY92. As such, the Initial Operational Capability (IOC) for such a modem could not occur until FY93. SINCGARS radios will have a 16kb/s data port which is capable of supporting data exchange between EUCEs through the Unit Level Tactical Data Switch (ULTDS). The SINCGARS IOC will be FY95.

(b) Compatibility testing between the EUCE and SINCGARS is not required since there is no direct interface requirement between the two. Rather, the interface is between the EUCE and ULTDS. SINCGARS merely provides the ULTDS path. There is little tactical value in interfacing EUCE directly to SINCGARS. The 50 to 100 foot distance limitation for the EUCE RS-232 output will require locating the SINCGARS emitter within the Command Post. The postulated enemy Radio Electronic Combat (REC) threat will preclude this type of tactical employment.

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(c) A modem which is suitable for the current VHF family and SINCGARS is being pursued through an Engineer Change Proposal (ECP) to the ULTDS.

This ECP will develop a MODE VII AUTODIN Interface Card which will replace the EUCE RS-232 card when networking through the ULTDS is required. The MODE VII interface card is a priority ECP and will be ready for fielding for ULTDS IOC.

(3) USMC Action. Marine Corps Combat Development Command (MCCDC) and Marine Corps Research, Development, and Acquisition Command (MCRDAC) will continue to closely monitor and evaluate ongoing Fleet Marine Force (FMF) local area networking efforts. Specific attention must be paid to defining interoperability requirements for locally procured modems. In view of planned procurement of the ULTDS and SINCGARS, the need for a standard, militarized modem procurement suitable for use with VHF-FM radios would not be prudent. Rather, the priority should be given to defining modem interoperability requirements which must be met prior to expending any local O&MMC funds.

b. RECOMMENDATION V. That priority should be given in the Planning, Programming and Budgeting System (PPBS) process to expedite fielding of the SINCGARS family of VHF equipment and the AN/MRC-141 Digital Wideband Transmission system (DWTS). The modification to the AN/MRC-135 multichannel radio equipment to provide a digital data capability should be installed as an interim solution to providing a digital capability until the DWTS can be fielded. Additionally, based on the equipment analysis for the MARCORS Scenario used in the study, the proposed T/E for H&S Battalion of the FSSG for multichannel and high frequency radio equipment should be increased.

(1) USMC Position. Partially concur.

(2) Discussion

(a) The DWTS consists of the AN/TRC-170 and AN/MRC-139. Both these systems, as well as SINCGARS, have been established in the Program Objective Memorandum (POM) 90/91 FYDP, and are being given priority for procurement. This portion of the conclusion is concurred with.

(b) The digital modification to the AN/MRC-135, AN/VCC-2 PIP, is currently under review by the Marine Air-Ground Task Force (MAGTF) Warfighting Center. While this Product Improvement Plan (PIP) will provide an interim digital path for data, tactical employment will be limited to point-to-point configurations only. It will not support networking multiple

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micro-computers. Networking will require the (ULTDS), which provides the required buffering, error detection/correction, and switching. The cost-benefit of this procurement requires further examination.

(c) An increase in allowances of high frequency radio and multichannel equipment for the H&S Battalion, Force Service Support Group (FSSG) is not required. The planned allowances for this unit are 16 AN/MRC-139's. Each AN/MRC-139 has the capability of terminating two separate multichannel links providing the equivalent of seventy-two 16 kb/s channels, which are more than adequate to meet the requirements of the data and circuit switched architecture. High frequency radio allowance increases were based on a requirement to provide backup. The Marine Corps relies upon the maintenance and supply systems to provide the required spares and equipment availability.

(3) USMC Action

(a) The SINCGARS and AN/MRC-139, and ULTDS procurement will continue to be given priority within the budget.

(b) MCRDAC will evaluate the AN/MRC-135 digital modification program to determine if the capability it provides is effective from a cost-benefit perspective in view of the anticipated fielding date of the An/MRC-139.

c. RECOMMENDATION VI. That the informal programs for testing and approving a variety of commercial modems to support HF and VHF transmission of data should be brought under centralized control and formalized at MCRDAC. Any modem selected should be modified/ruggedized to military specifications. An operational handbook should be published instructing the FMF on proper use of the modem. Priority should be given to fielding the MD-1230 and any other selected modems.

(1) USMC Position. Concur in principle.

(2) Discussion. The uncontrolled testing and approving of modems needs to be brought under control. The FMF has expanded O&MMC funds for modems to support local area networking. These modems may or may not be interoperable and logistically supportable. The long-term answer is the Mode VII AUTODIN Cards being developed under the ULTDS program. The immediate solution is to develop a technical baseline which ensures interoperability between each Marine Expeditionary Force (MEF). This technical baseline will define the technical parameters required prior to any future expenditure O&MMC funds. Modems which do not meet these requirements would not be authorized for tactical or

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administrative local area networks. Contractor furnished logistics support using O&MMC funds needs to be examined in detail, but appears to be the most viable alternative.

(3) USMC Action. MCRDAC will survey each MEF to ascertain modem commonality, publish the required technical parameters and investigate the feasibility of using contractor maintenance support until fielding of the equipment which can support the long term local area networking architecture.

3. A copy of this letter will be affixed inside the front cover of each copy of the subject study report prior to its distribution.


W. R. ETNYRE

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EXECUTIVE SUMMARY

ES-1 Introduction

ES-1.1 Objective. The objectives of the study are:

- a) to determine the Combat Service Support (CSS) information exchange requirements in a combat environment between Command and Control Facilities (C2FACs) and CSS C2FACs, and among CSS C2FACs;
- b) to define CSS C2FACs tasks and break them down into elemental tasks;
- c) to produce message formats to implement information exchange and identify their elemental contents; and
- d) to specify the circuits and equipment to support the information exchange between C2FACs and CSS C2FACs, and among CSS C2FACs.

ES-1.2 Purpose. To examine the CSS information exchange requirements for a Marine Expeditionary Force (MEF) and Marine Expeditionary Brigade (MEB) in a combat environment in order to determine the impact CSS information exchange has on the tactical communications system.

ES-1.3 Scope. The scope of work for the study includes:

- a) performing a detailed analysis of CSS functions;
- b) identifying and examining CSS C2FAC functions down to their elemental tasks;
- c) defining and analyzing CSS C2FAC information exchange requirements;

- d) determining the means by which information may be exchanged between C2FACs and CSS C2FACs, and among CSS C2FACs; and
- e) determining what interoperability/equipment deficiencies exist that may preclude the exchange of information between C2FACs and CSS C2FACs, and among CSS C2FACs.

ES-1.4 **Background.** The Marine Corps is engaged in a dynamic process of examining and redefining CSS functions and organizations in an effort to provide more effective and efficient combat service support to Air Combat Elements (ACEs) and Ground Combat Elements (GCEs) of the Marine Air Ground Task Force (MAGTF). One key area that will enhance the effectiveness and efficiency of all Combat Service Support Elements (CSSE) involves information exchange. The MAGTF Data Transfer Alternatives (1986-1996) Study, completed in 1985, established a general communications framework for the transmission and reception of tactical data and record/formatted message traffic according to the priorities and needs of the MAGTF commander. This study now examines, in depth, the impact that the CSS information exchange requirements of the Force and Brigade Service Support Groups have on the existing communications architecture of the MAGTF.

ES-1.5 **Methodology.** A functional analysis approach was used combining research, interviews, scenario development and system analysis. Figure ES-1 depicts the approach adopted which:

- a) identifies and analyzes down to the task level of the CSS functions;
- b) determines the operational facilities involved in performing the various tasks;
- c) determines the information that must flow between the operational facilities to satisfy the function; and

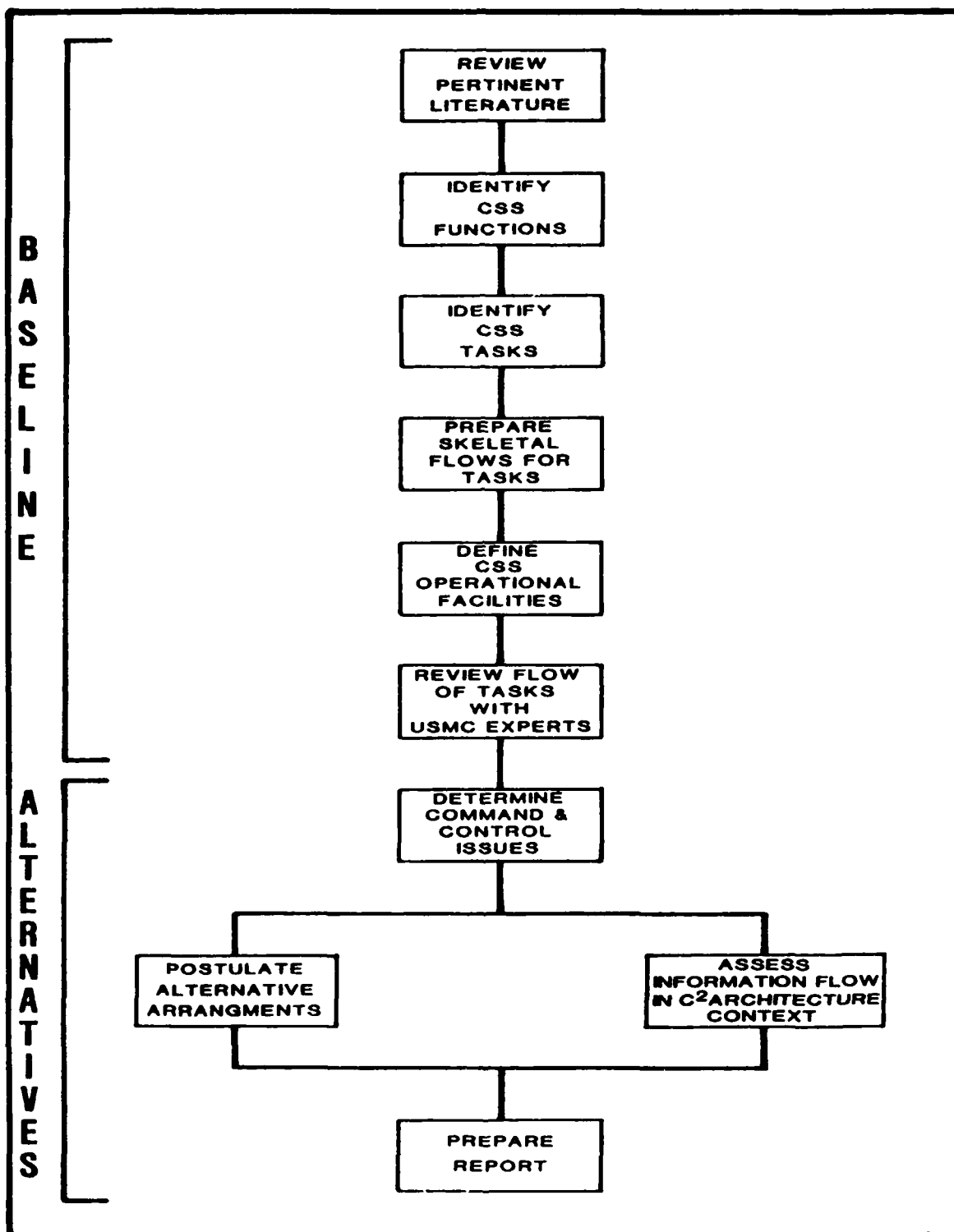


Figure ES-1.

- d) analyzes the flow of information in relation to the communications architecture.

ES-2 Scenario

The Marine Corps 1B scenario which was used in the study is one of the more complex in terms of communications requirements. It involves a MEB and a MEF operating in the same general geographical area but under separate commands. The scenario was modified for this study by replacing the MEB with a Maritime Prepositioning Force (MPF) MEB. This allowed for an examination of unique MPF communications requirements. Section 2 describes the scenario application.

ES-3 Combat Service Support Functions and CSS Command and Control Facilities

In order to determine the CSS information exchange requirements it was necessary to determine what was CSS information, what information had to be exchanged, and which CSS C2FACs did the information have to be exchanged between. A C2FAC was defined as an element of a MAGTF or other military or naval force structure tasked to plan, direct, coordinate, and/or control tactical operations and supporting functions. The CSS functions were examined in detail down to the task and activity level. Section 3 displays this information by each of the six CSS functional areas. Section 4 defines CSS C2FACs involved in CSS operations and lists the specific CSS activities each performs to satisfy the CSS functions. Section 5 diagrams, through the use of Command and Control Flow Diagrams (C2FDs), how information is needed to perform various tasks. The C2FD approach provides a logically rigorous way of identifying and quantifying data transfer requirements and parallels the approach used by the ground combat and air combat arms, which is documented in the Technical Interface Concept (TIC) and Technical Interface Design Plan (TIDP). This method provided a common basis for definition and evaluation of systems which must eventually interoperate.

ES-4 CSS Message Types and Content

The discrete occurrence of information between command and control facilities is referred to as a message exchange occurrence. The message exchange occurrence is either in the form of a request or a report. Section 6 examines each CSS function in terms of the different requests and reports required to exchange necessary information, identifies the elements of information that must be transmitted and recommends the format of the message exchange occurrence.

ES-5 Communications

Electronic data transfer alternatives are governed by the availability and capacity of the communications system. The resources available for the transfer of CSS information are provided by the Marine Corps Communications System. Demands on the system are generated to satisfy the function of the MAGTF C2FACs. Capabilities are a function of the equipments. Availability depends on the allocation of equipments to the facilities. Allocation by type of equipment is dependent on doctrine, mission priority, physical location in terms of distance and equipment capabilities, all of which were considered in order to perform the analysis. Section 7 describes the analysis conducted to determine how the CSS information exchange requirement can be satisfied by the Marine Corps Communications architecture.

ES-6 Conclusions and Recommendations

ES-6.1 Conclusions

ES-6.1.1 Conclusion. The hierarchy of CSS functions, subfunctions, tasks and activities in section 3 shows actual CSS requirements. Performance of all identified subfunctions is sufficient to satisfy functional requirements, and performance of all tasks for every designated subfunction is sufficient to satisfy each of those subfunctions as indicated. The logic structure thus

evolved is sufficiently substantial to serve as a foundation upon which to build the additional elements of the study.

ES-6.1.2 Conclusion. The force structure in the modified MARCOR 1B Scenario involving the employment of a MEF and separate MPF MEB is adequate to identify all organizational relationships which require a CSS communication capability. The relationships thus identified are sufficiently comprehensive as to illuminate all required needlines.

ES-6.1.3 Conclusion. Communications for the CSS element of an MPF operation are drawn mainly from the Landing Support Battalion. Their assets are insufficient to satisfy the requirement. MPF operations are heavily dependent on digital data transfer of information. The Landing Support Battalion has sufficient analogue terminal equipment to satisfy the requirement, but proper modems should be available in order to convert to digital data for high speed transmission.

ES-6.1.4 Conclusion. An exchange of information is required between CSS functional area operations centers, the combat operation center of the CSSE, and C2FACs of the ACE, GCE and MAGTF command element. CSS information must be transmitted over the same Marine Corps communications network used for command support and combat information. Information requirements must be considered in their aggregate in order to make an accurate evaluation of their combined impact on the network. Common units of measurement and standard methods of configuration, quantifying traffic loads and sizing of other communications phenomena are mandatory in order to design the complete network and to measure accurately the effect of changes. The identification of CSS C2FACs and their information exchange requirements is a key step towards a standard configuration. It enables the communications planner to consider CSS information exchange on a common basis with tactical command support and command information exchange requirements.

ES-6.1.5 Conclusion. C2FDs provide a structured method for determining information flow and exchange requirements. Extensive development of C2FDs for tactical systems has been accomplished for the applicable areas of warfare listed in JCS Pub 12. This concept is equally applicable to CSS.

ES-6.1.6 Conclusion. The study identified the CSS C2FACs that required information exchange to accomplish their mission. It showed that this information exchange occurs in three different message types; requests, status reports and special reports. With information from these message types, the CSS commander and his staff have a current picture of the CSSE combat support capability and are able to provide that support in the most effective manner possible. These message types have been developed so they can be standardized.

ES-6.1.7 Conclusion. The connectivity previously identified in the MAGTF Data Transfer Alternatives Study is sufficient to absorb the additional data transfer requirements indicated in this study.

ES-6.1.8 Conclusion. C2FDs provide a structured method for determining information flow and exchange requirements. Extensive use of C2FD has been accomplished for the Tactical Data systems supporting the applicable areas of warfare listed in JCS Pub 12 and are presented in the TIDP. They are also used to support interoperability actions among services. The application of C2FDs and the information flow lines with exchange requirements are equally applicable to CSS areas of warfare.

ES-6.1.9 Conclusion. The information transfer requirement for CSS are voluminous and cannot be accommodated in a timely manner over Marine Corps Communications voice circuitry. A need exists to provide data transmission capability within the Marine Corps Communications structure to handle the large amounts of information transfer required for CSS operations over portable VHF and HF transmission systems. While the Marine Corps intends to procure the MD-1230, High Speed Serial Tone Modem for HF radio communications, there are no current plans to procure a service-approved VHF modem.

ES-6.2 Recommendations

ES-6.2.1 Recommendation. That the Marine Corps adopt and procure a modem to allow for transmission of digital data over current VHF assets. Further, that a testing program should be conducted with the SINCGARS radio family and Marine Corps EUCS to determine compatibility.

ES-6.2.2 Recommendation. That the Marine Corps include consideration of CSS C2FACs as part of the documentation requirement in the Technical Interface Concept where appropriate and consider CSS information exchange requirements in future Marine Corps Communications architecture modifications. It is further recommended that system developers be encouraged to consider CSS C2FACs information exchange requirements in all future Telecommunications Support Plans.

ES-6.2.3 Recommendation. That C2FDs appearing in this report should be incorporated into the Technical Interface Design Plan (TIDP). They will provide a basis for review and comment as CSS requirements are developed and standardized by the JCS.

ES-6.2.4 Recommendation. That the three message types identified in section 6 of this report should be used as a contribution by the Marine Corps for the JCS standardization effort. The formats presented should be adopted as standard message formats.

ES-6.2.5 Recommendation. That priority should be given in the Planning, Programming and Budgeting System (PPBS) process to expedite fielding of the SINCGARS family of VHF equipment and the AN/MRC-() Digital Wideband Transmission System (DWTS). The modification to the AN/MRC-135 multichannel radio equipment to provide a digital data capability should be installed as an interim solution to providing a digital capability until the DWTS can be fielded. Additionally, based on the equipment analysis for the IB scenario, the proposed T/E for H&S Battalion of the FSSG should be increased by eight

AN/MRC (). The proposed T/E for H&S Battalion would support the H&S Battalion and Supply Battalion requirement for HF communications but would not allow for a reserve allowance in case of equipment failure. Therefore, it is recommended that the H&S Battalion proposed T/E be increased by 6 AN/PRC-104s and 2 AN/MRC-138s.

ES-6.2.6 Recommendation. That the informal programs for testing and approving a variety of commercial modems to support HF and VHF transmission of data should be brought under centralized control and formalized at the Marine Corps Research, Development and Acquisition Command. Any modem selected should be modified/ruggedized to military specifications. An operational handbook should be published instructing the FMF on proper use of modems. Priority should be given to fielding the MD-1230 and any other selected modems.

ES-6.2.7 Recommendation. That the Marine Corps investigate using the Digital Communications Terminal (DCT) for CSS applications. The DCT allows burst transmission of preformatted, bit-oriented messages, and can store up to 84 kilobits of information in memory. It is being procured in large quantities (1,714 to be procured in FY88) for tactical use in the Marine Corps. This device has been successfully tested with the current inventory of UHF, VHF and HF equipments. The message formats contained in section 6 of this study could be preprogrammed into the DCT to allow for rapid transmission of critical CSS information by maneuver elements which in turn, will allow for even more efficient processing within CSSE elements if such data has been received in digital form.

SECTION 1. INTRODUCTION

1.1 Background

1.1.1 Combat Service Support. The United States Marine Corps is examining the Force Service Support Group (FSSG) and Marine Wing Support Group (MWSG) structures to enhance the ability of these organizations to provide improved Combat Service Support (CSS) to the Fleet Marine Force. CSS functions have recently been redefined by the Doctrine Center, Marine Corps Development and Education Command (MCDEC). Fleet Marine Force Manual (FMFM) 4, published in January 1987, defines CSS as those essential logistic functions, activities and tasks which the CSS element (CSSE) performs for other elements of the Marine Air-Ground Task Force (MAGTF) to maintain combat effectiveness in the area of operations. It lists and defines six logistics functions: supply, maintenance, transportation, deliberate engineering, health services, and services. The remaining manuals of the FMFM 4 series are being rewritten to conform to FMFM 4.

1.1.2 Information Exchange. The MAGTF Data Transfer Alternatives Study (1986-1996) established a general communications framework for the transmission and reception of tactical data and record/formatted message traffic according to the priority and the needs of the MAGTF commander. In determining the needs of the CSSE, the then existing force structure and functions were applied against communications requirements for a Marine Expeditionary Force (MEF) scenario. While the results of the study, which was completed in 1985, are still valid and useful for communications planning in general, the CSS portion of the study needed to be expanded to encompass information exchange requirements for both a MEF and a Marine Expeditionary Brigade (MEB) based on existing concepts of employment and current functional areas for CSS.

1.2 Study Purpose

The purposes of this study are to examine the CSS information exchange requirements for a MEF and MEB in a combat environment, to determine communications needlines and flowlines for CSS information exchange, and to determine the communications equipment required to support the exchange.

1.3 Study Objective

The objectives of this study are:

- (1) Determine the Combat Service Support information exchange requirements in a combat environment between command and control facilities (C2FACs) and CSS C2FACs, and among CSS C2FACs;
- (2) Define CSS C2FACs tasks and decompose into elemental tasks;
- (3) Produce message types that implement information exchange and identify their elemental contents; and
- (4) Specify the circuits and equipment to support the information exchange between C2FACs and CSS C2FACs, and among CSS C2FACs.

1.4 Study Assumptions and Guidance

The assumptions and guidance provided by the Marine Corps for this study are:

- (1) The mission of the Marine Corps, as outlined in the Marine Corps Long Range Plan (MLRP), will remain substantially the same;
- (2) Organizational and personnel strengths will remain constant during the 1986-2000 time frame;

- (3) Interoperability among Marine Corps and other services' C³I systems will be achieved;
- (4) Communication security equipment will be integrated or integral to all tactical voice and data C² systems;
- (5) The Marine Corps IB scenario modified to include a Maritime Prepositioning Force (MPF) will be used as the scenario for the study; and
- (6) Only current doctrine, practice, or equipment now in use or planned for implementation by the year 2000 will be considered.

1.5 Study Methodology

1.5.1 General. Figure 1-1 illustrates the functional analysis approach developed and used to support the information exchange analysis. The approach was based on the following questions:

- (1) What is meant by combat service support? What is its operational mission? What is its functional mission?
- (2) What command and control elements (C2E) are included in the combat service support process?
- (3) What tasks do these C2Es perform to effect combat service support?
- (4) What transfer of information is required between which C2Es in order for them to perform their combat service support mission? What is the path of this information transfer?

1.5.2 Functional Approach. To answer these questions, a review of current literature on U.S. Marine Corps concepts, doctrine and organization was conducted to identify the CSS functions and determine how they were distributed

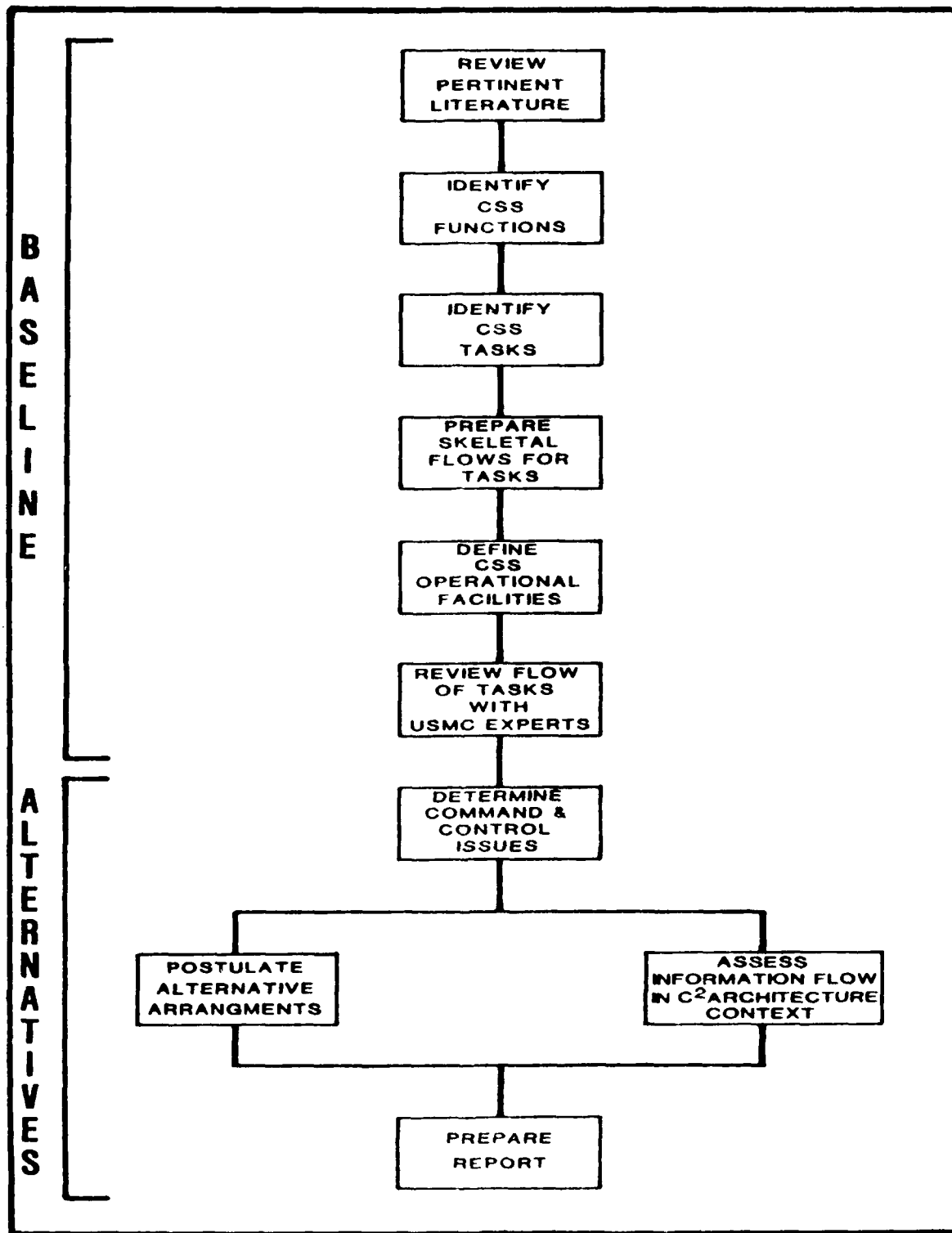


Figure 1-1. Functional Analysis Approach

within the CSSE. Once this was accomplished extensive interviews were conducted with Marine Corps personnel using a questionnaire to identify what tasks were required to be performed in order to satisfy each function. Command and control flow diagrams (C2FD) were then prepared depicting the needlines (the requirement for flow of information) between C2Es. Concurrently, CSS C2FACs were identified and defined. Their distribution within C2Es was then established. The next step was to validate the C2FDs with key personnel at the Doctrine Center at MCDEC. This process was preliminary to determining the needlines between CSS C2FACs. The final step in the process was to compare these needlines to established flowlines (the communications path taken to satisfy the needline) based on communications doctrine and the previously published MAGTF Data Transfer Alternatives (1986-1996) study. The results of this process are contained in section 8, Conclusions and Recommendations.

1.6 Report Organization

The remainder of this report is organized into 7 sections as described herein:

- (1) Section 2, Scenario and Force Structure. Use of the 1B Scenario as modified to include an MPF vice a land prepositioned force is explained.
- (2) Section 3, Combat Service Support Functions. CSS functions, subfunctions and tasks are identified and discussed.
- (3) Section 4, CSS C2FAC Information Exchange. CSS C2FACs that support the Marine Corps 1B scenario are identified and defined.
- (4) Section 5, Command and Control Flow Diagrams. This section diagrams and explains the information exchange requirements necessary to satisfy individual CSS functions.

- (5) Section 6, CSS Message Types and Content. Message types by functional area are identified. Elements of information are examined and message formats to contain these elements are recommended.
- (6) Section 7, CSS Communications Requirements. This section describes the requirements for communications to support the information exchange needlines developed as C2FDs in section 5. It recommends flowlines that would support the needlines and identifies equipment that is needed to connect the flowlines. Deficiencies in equipment based on FSSG current allowances are noted.
- (7) Section 8, Conclusions and Recommendations. These are drawn from the previous section.

SECTION 2. SCENARIO AND FORCE STRUCTURE

2.1 General

The background for this study is the MARCOR 1B Scenario. It involves the employment of a MEF and separate MEB in the same geographical area, but under separate control. It represents the most complex scenario, from a communications viewpoint, of those currently approved. MARCOR 1B provides more flexibility than previous ones by allowing the activities to be tailored to specific study objectives.

2.2 Scenario

The scenario, as applied in this study, has been modified with the concurrence of the SAC. An MPF MEB has been substituted for the land prepositioned force appearing in the scenario. This was done because the communications requirements for an MPF MEB are greater due to the additional assignments imposed in acquiring and accounting for material prior to and during offload of maritime prepositioning ships. The communications equipment listed in the scenario has been expanded in section six of this report to include the most current equipment available to Marine Air-Ground Task Forces (MAGTF). The time span of the scenario encompasses the pre-assault (arrival/assembly) and assault phase of an operation for the MEB. This allowed the study team to examine the unique communications requirements associated with an MPF deployment as well as the traditional CSS communications requirements of a deployed MEB. Conversely, the post-assault phase for a MEF was examined to ensure all aspects of current doctrine were considered. This point in time of the operation allowed the study team to take into account combat service support areas (CSSA) in support of the Air Combat Element (ACE), Ground Combat Element (GCE) and combat service support detachments (CSSD) in support of GCE maneuver elements.

2.3 Command Relationships

In applying the MARCOR 1B scenario to this study certain command relationships were established. Figure 2-1 establishes the command relationships for the MAF while figure 2-2 establishes the relationships for an MPF MEB based on the MARCOR 1B scenario.

2.4 Force Structure

The MAGTF organization for the study reflects the modifications previously mentioned and the structure has been approved by the SAC. Figures 2-3 and 2-4 show the MEB and MEF units involved in the modified scenario. Figure 2-5 is a breakdown of the Brigade Service Support Group (BSSG) for the MEB. Figure 2-6 is a breakdown of the CSSE for the MEF.

2.5 Maritime Prepositioning Force (MPF)

The unique requirements of an MPF necessitate a task organization from the MEB and the Navy Support Element (NSE) to support the offload of equipment and supplies. Figures 2-7 and 2-8 show task organizations for beach and port operations for the NSE and MEB respectively. A description of the task organized units required during the arrival/assembly (pre-assault) phase of an operation to support MPF operations is listed below.

1. Offload Preparation Party (OPP) - embarked aboard each MPS Squadron ship to prepare equipment for debarkation. Personnel are drawn from all of the MEB's subordinate elements and from the NSE. The OPP forms the nucleus of the ships' debarkation teams, augmented by MEB Fly in Element (FIE) personnel, upon arrival in the arrival/assembly area (AAA).

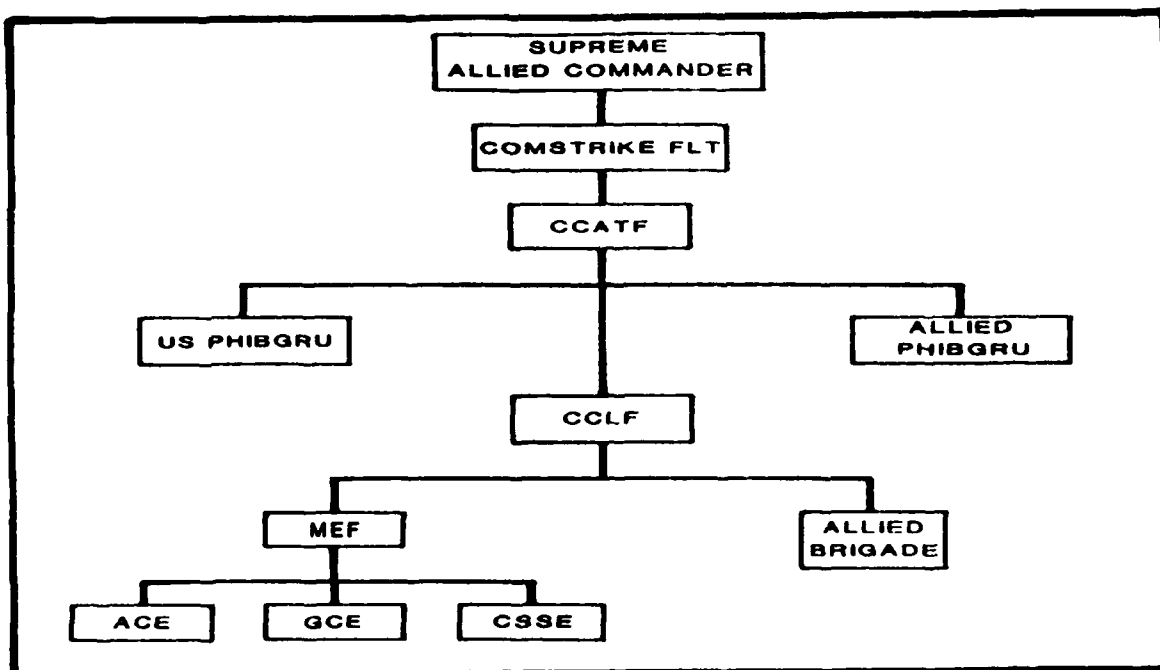


Figure 2-1. Command Relationships for AMPHIBIOUS Operations

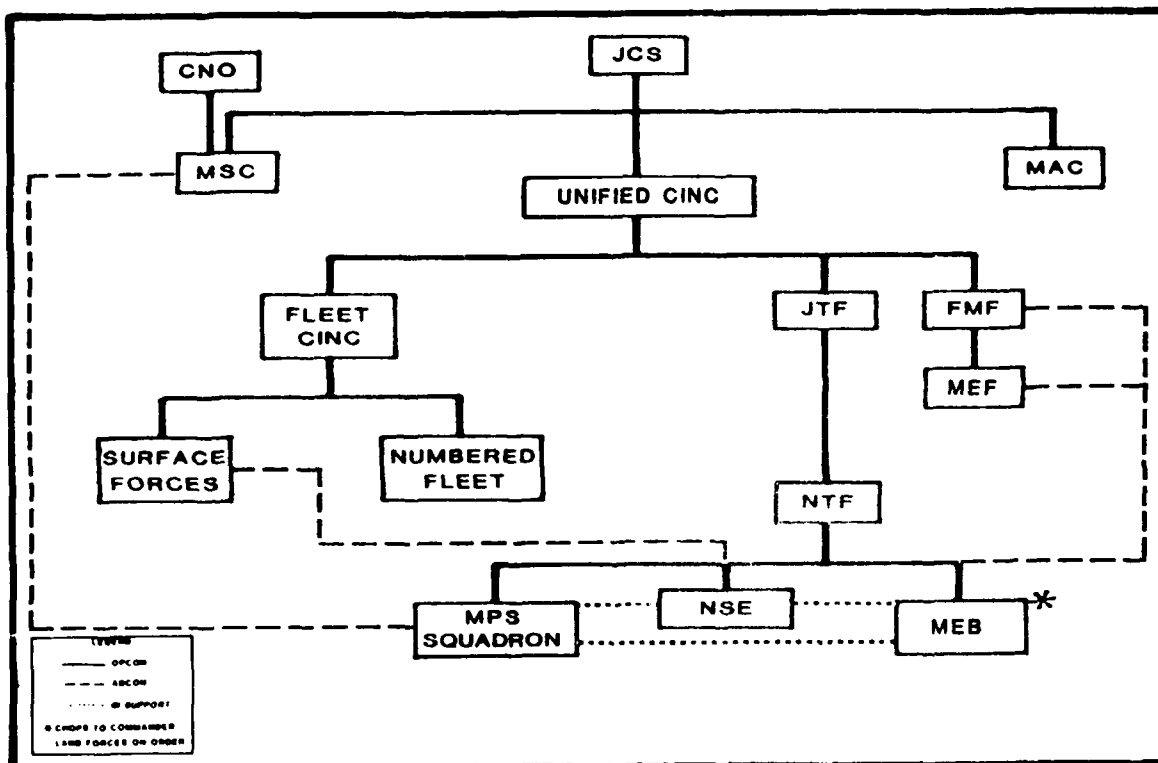


Figure 2-2. Command Relationships for MPF MEB

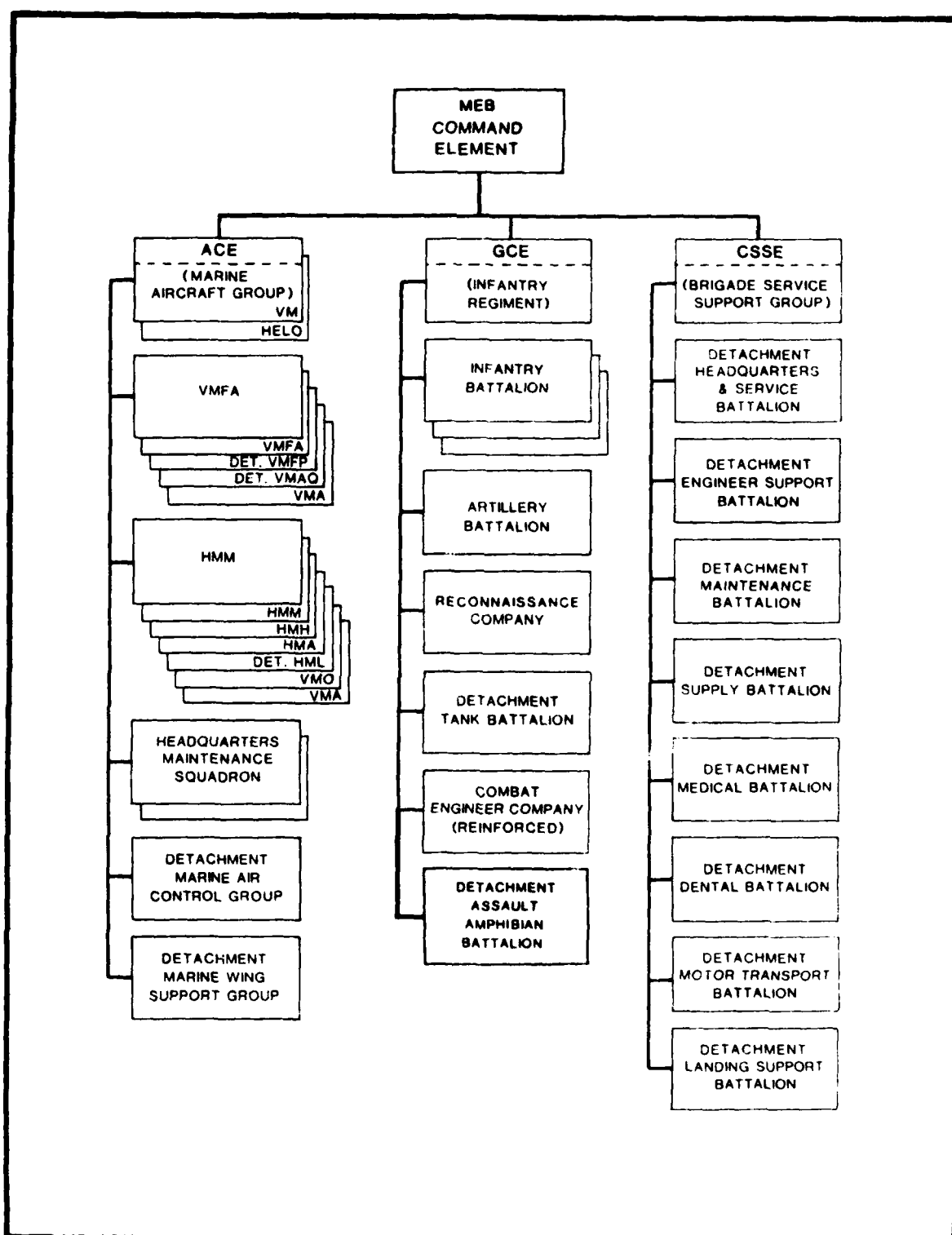


Figure 2-3. Marine Expeditionary Brigade

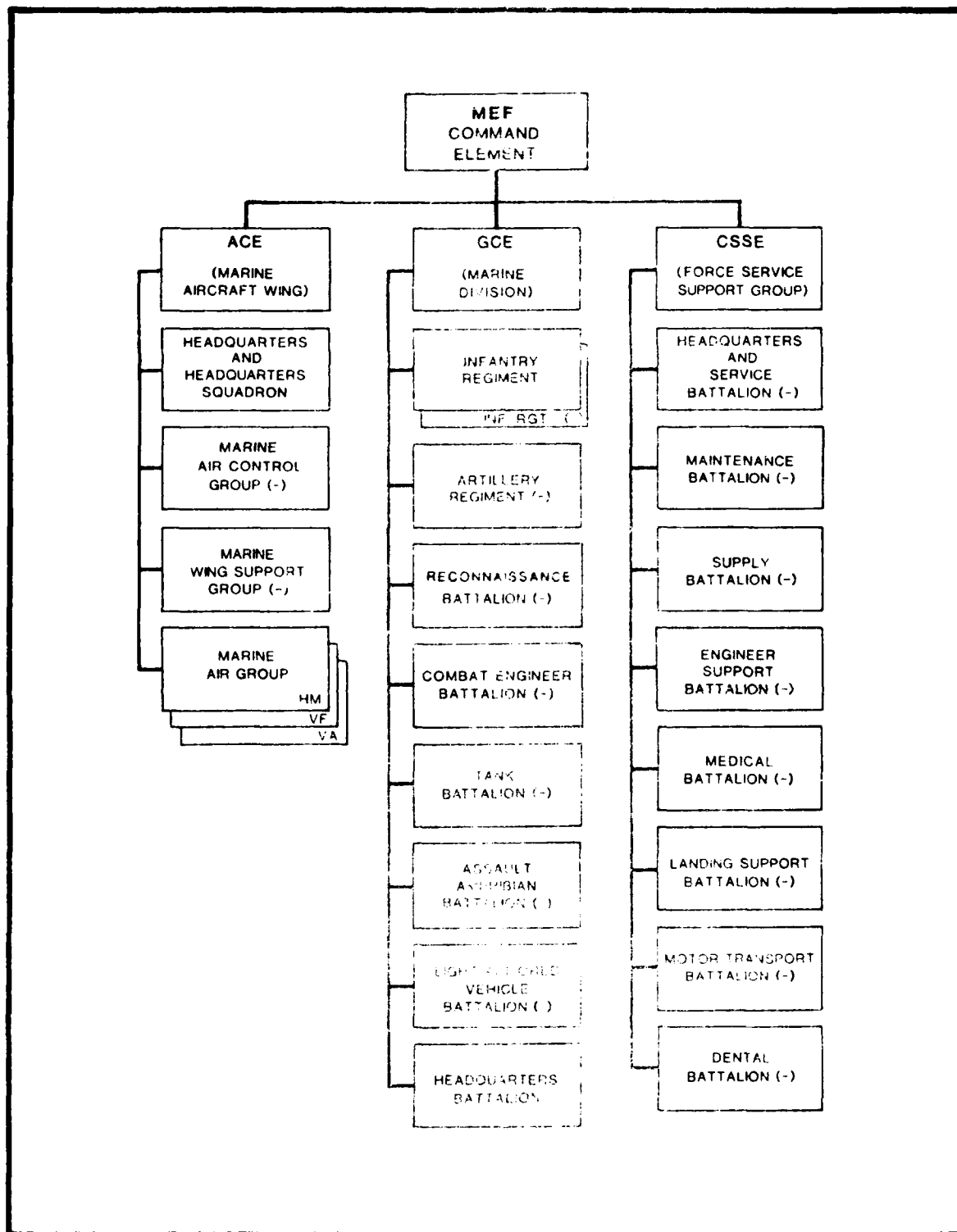


Figure 2-4. Marine Expeditionary Force

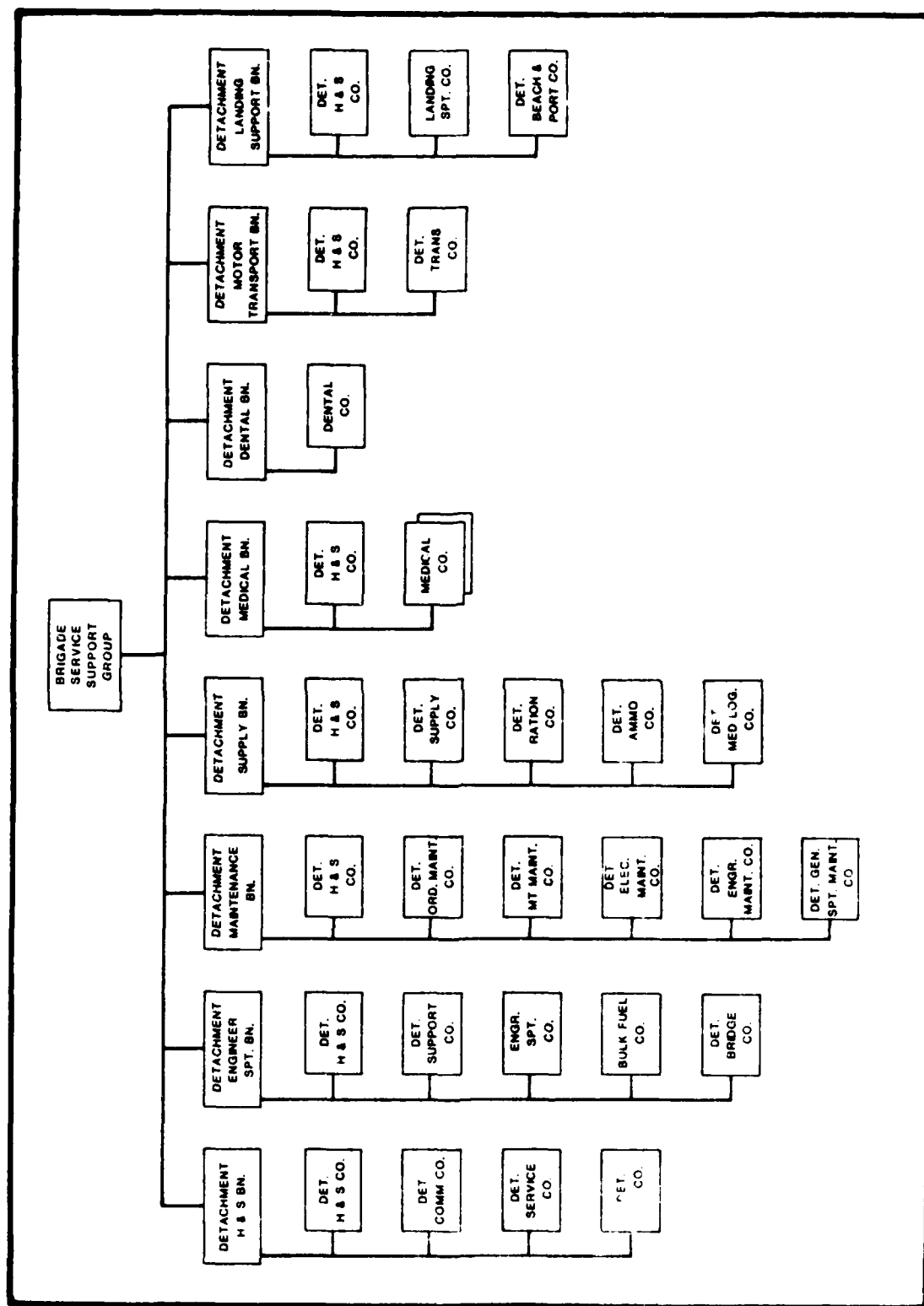


Figure 2-5. MEB Combat Service Support Element

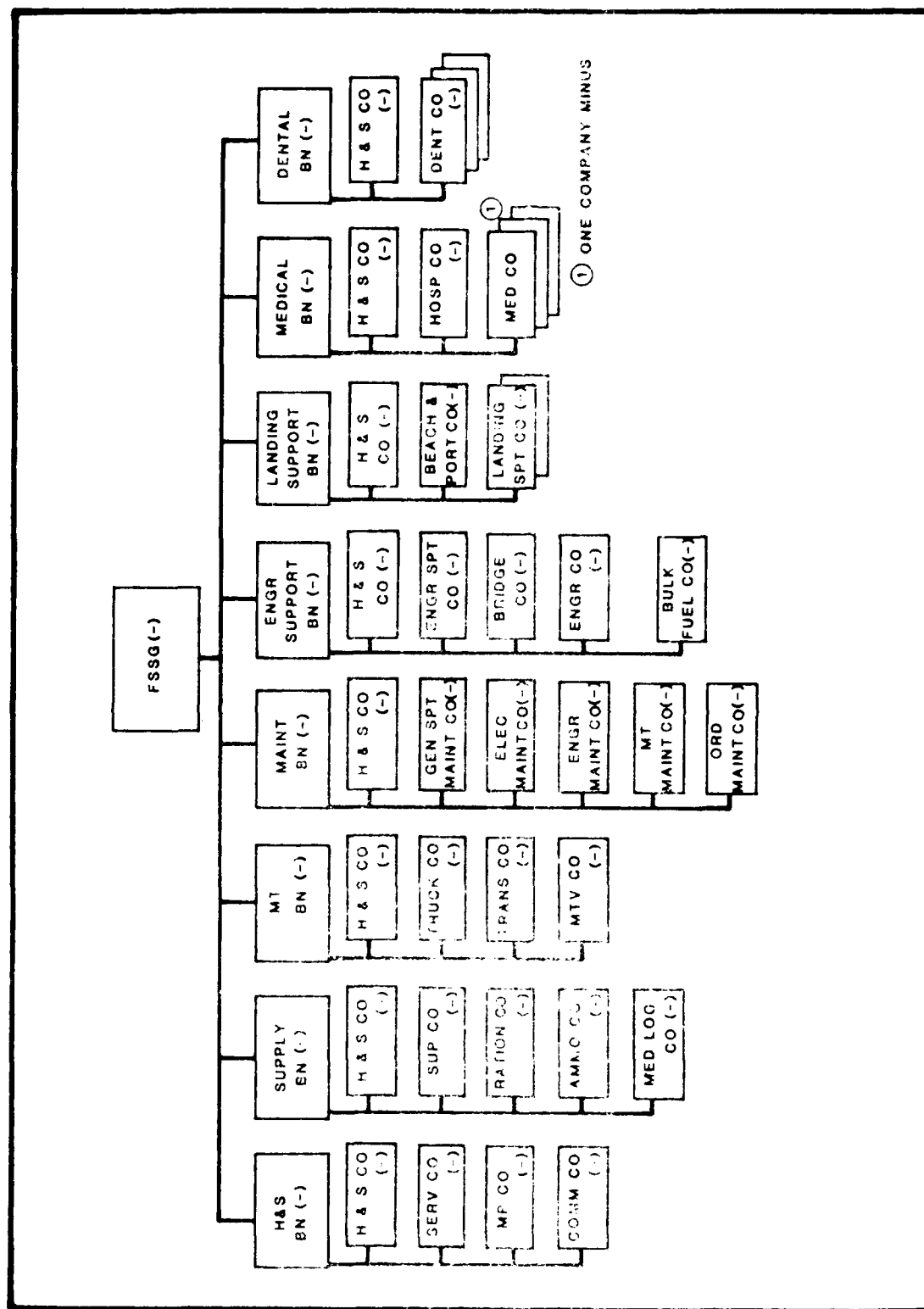


Figure 2-6. MEF Combat Service Support Element

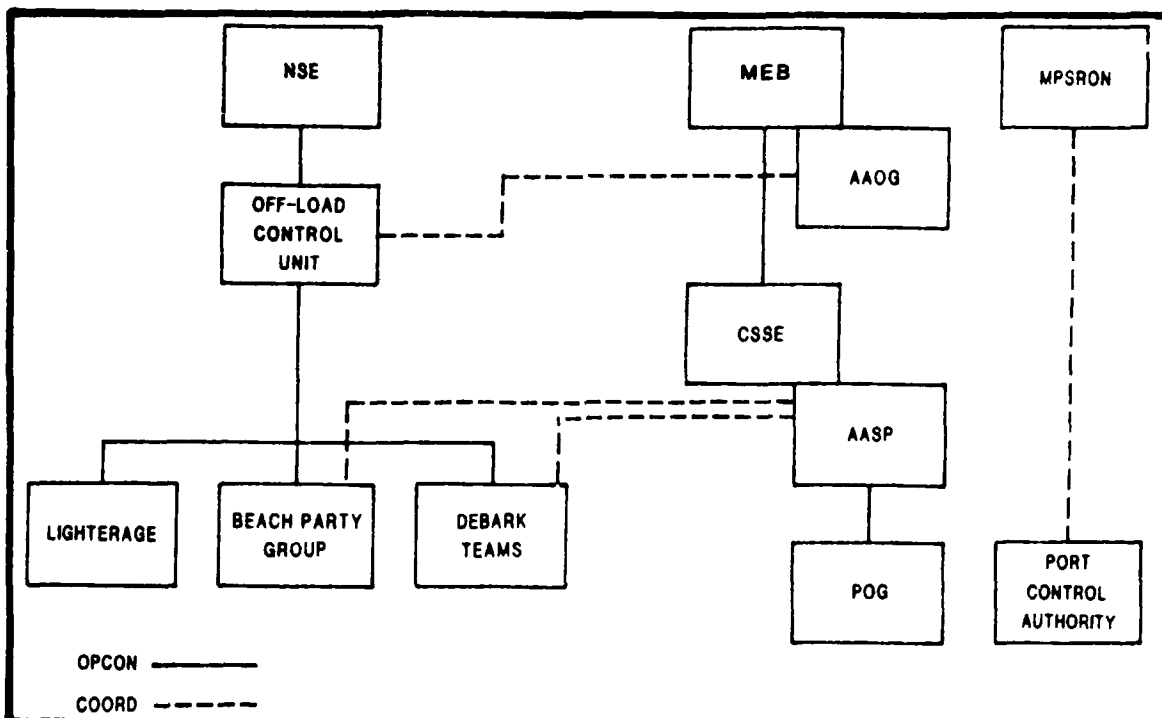


Figure 2-7. Organization for Port Operations

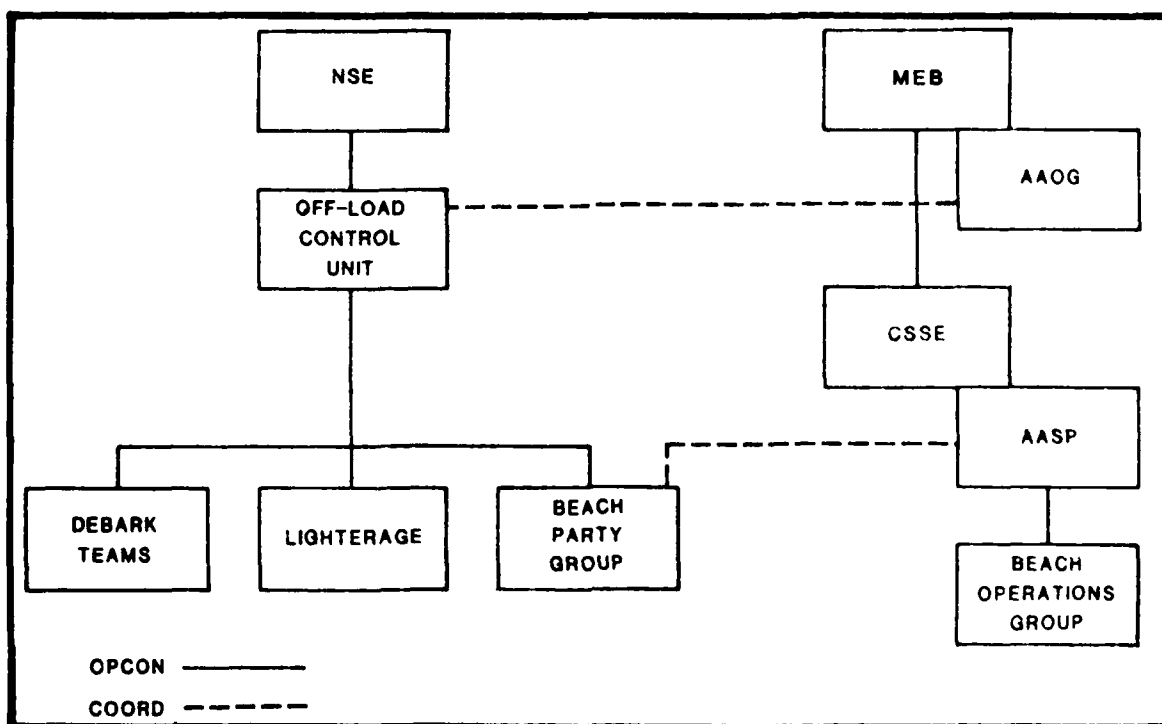


Figure 2-8. Organization for Beach Operations

2. Survey Liaison Reconnaissance Party (SLRP) - consists of MEB headquarters, subordinate elements and NSE personnel who deploy to the AAA on order of the CG, MEB. It is absorbed into the Arrival/-Assembly Operations Group (AAOG) when the AAOG is established ashore.
3. Advance Party - task organized with logistics, CSS and communications personnel from MEB Headquarters and major subordinate commands. The advance party arrives in the arrival/assembly area (AAA) two to three days prior to the arrival of the HPSRON and conjoins with the SLRP to organize the AAA.
4. Offload Control Unit (OCU) - responsible for offload and ship-to-shore movement of MPF equipment and supplies. Composed of NSE personnel and the USMC debarkation teams.
5. Arrival/Assembly Operations Group (AAOG) - task organized from MEB Headquarters and major subordinate commands with logistics, CSS and communications personnel plus a liaison team from the NSE. It plans, controls and coordinates offload and arrival/assembly operations. The AAOG also provides initial command and control for the MEB Headquarters in the AAA.
6. Arrival/Assembly Support Party (AASP) - task organized from the CSSE with augmentation from other MEB elements. The AASP provides throughput for personnel, equipment and supplies. The AASP is the executing agency for the MEB commander. It is made up of a headquarters/operations section and three throughput control groups.
 - a. Arrival Airfield Control Group (AACG) - task organized around a nucleus from the landing support company. The AACG controls offload and throughput from the arrival airfield to the AAA.

- b. Port Operations Group (POG) - from the landing support company nucleus. Under the direction of the AASP the POG prepares the port for arrival of the MPSRON and provides throughput to the AAA.
 - c. Beach Operations Group (BOG) - from the landing support company and under control of the AASP the BOG coordinates with the NSE Beach Party Group to prepare the beach area to support throughput from lighterage touchdown points to the AAA.
7. Arrival/Assembly Operations Element (AAOE) - each MEB element is responsible for preparing a separate area as an AAA. It is task organized from within its own element and comes under the technical control of the AAOG during arrival/assembly operations. The nucleus of the AAOE will deploy to the operating area as part of the SLRP.
8. Navy Support Element Beach Party Group (NSE BPG) - Navy counterpart of the BOG and POG. The NSE BPG is under operational control of the NSE but coordinates closely with the AASP.

SECTION 3. COMBAT SERVICE SUPPORT FUNCTIONS

3.1 General

3.1.1 Definition. FMFM-4 defines combat service support as "those essential logistic functions, activities, and tasks which the CSSE performs for other elements of the MAGTF to maintain combat effectiveness in the areas of operations." It further states, "It does not include those logistics functions, activities and tasks more appropriately classified as command support. Command support functions include personnel administration, chaplain services, financial management, communications, intelligence, billeting, messing, band and the component functions of morale, welfare, and recreation activities." As can be seen in this precise definition the key phrase is "for other elements of the MAGTF." Using this definition, functions performed by MWSG are no longer considered combat service support since the performance of their functions is in support of the air combat element (ACE) of which they are a part. However, when the requirements are beyond their capability and they turn to the CSSE, the support provided is combat service support. Similarly, the CSSE provides combat service support of a function to other elements of the MAGTF and command support of the same function to elements within the CSSE.

3.1.2 CSS Functions. The six functions performed by the CSSE for other elements of the MAGTF are:

1. supply;
2. maintenance;
3. transportation;
4. deliberate engineering;
5. health services; and
6. services.

These six CSS functions form the basis of any size CSSE, from a FSSG supporting a MEF to a Marine Expeditionary Unit (MEU) Service Support Group (MSSG) supporting a MEU. Within a CSSE a combat service support detachment (CSSD) is formed to provide direct CSS to an individual element of the ACE or Ground Combat Element (GCE). The CSSD would be task organized to include/provide specific functions to the unit it is supporting. This may or may not include all six functions. An example would be a CSSD task organized to provide supply, maintenance and motor transport for a maneuver battalion of the GCE. Note that motor transport is not a function, but is a subfunction of transportation.

3.2 Subfunctions and Tasks

3.2.1 Subfunctions. Figures 3-1 to 3-6 break down the six functional areas of CSS by individual sub-functions. Each individual subfunction can then be examined by looking at the tasks that must be performed in order to ensure that the subfunction requirement is fulfilled.

3.2.2 Tasks. Table 3-1 lists the tasks and activities by subfunction and function that have been identified as necessary to satisfy a requirement. Table 3-2 lists the supply classes shown in the Table 3-1 tasks and activities and in section 5. The tasks identified are those tasks that require an exchange of information between one or more C2FACs or CSS C2FACs in order to accomplish the task. The activities listed represent activities that would be performed by a specific operational facility in accomplishing the related tasks. They are activities that were identified by the FMF to HQMC after several conferences as presently being accomplished by battalions of the FSSG. These activities, where appropriate, will be associated with a specific operational facility in the next section. The following section will also identify operational facilities required, in support of the Marine Corps 1B scenario, to satisfy the CSS functions.

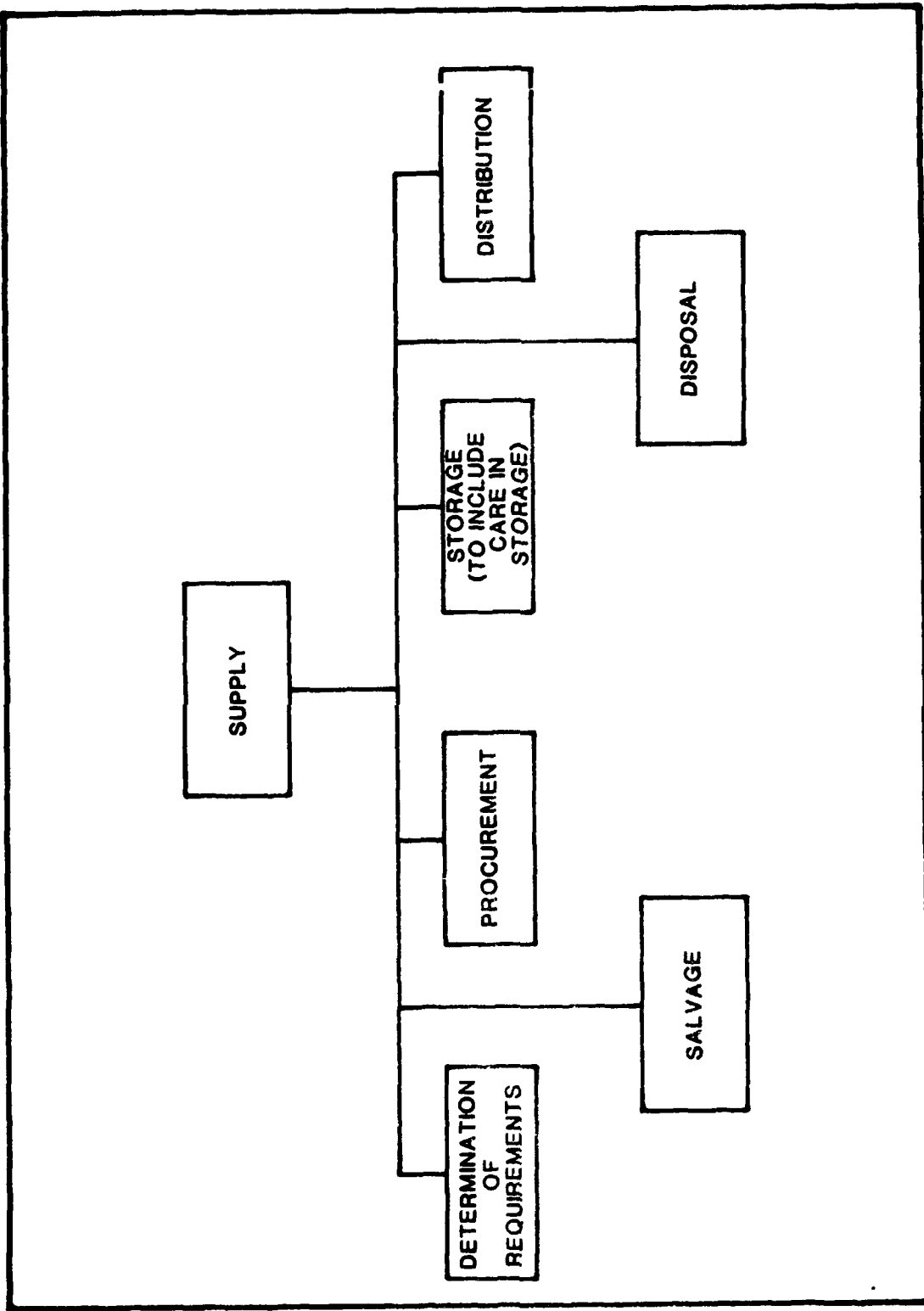


Figure 3-1. Supply Sub-Functions

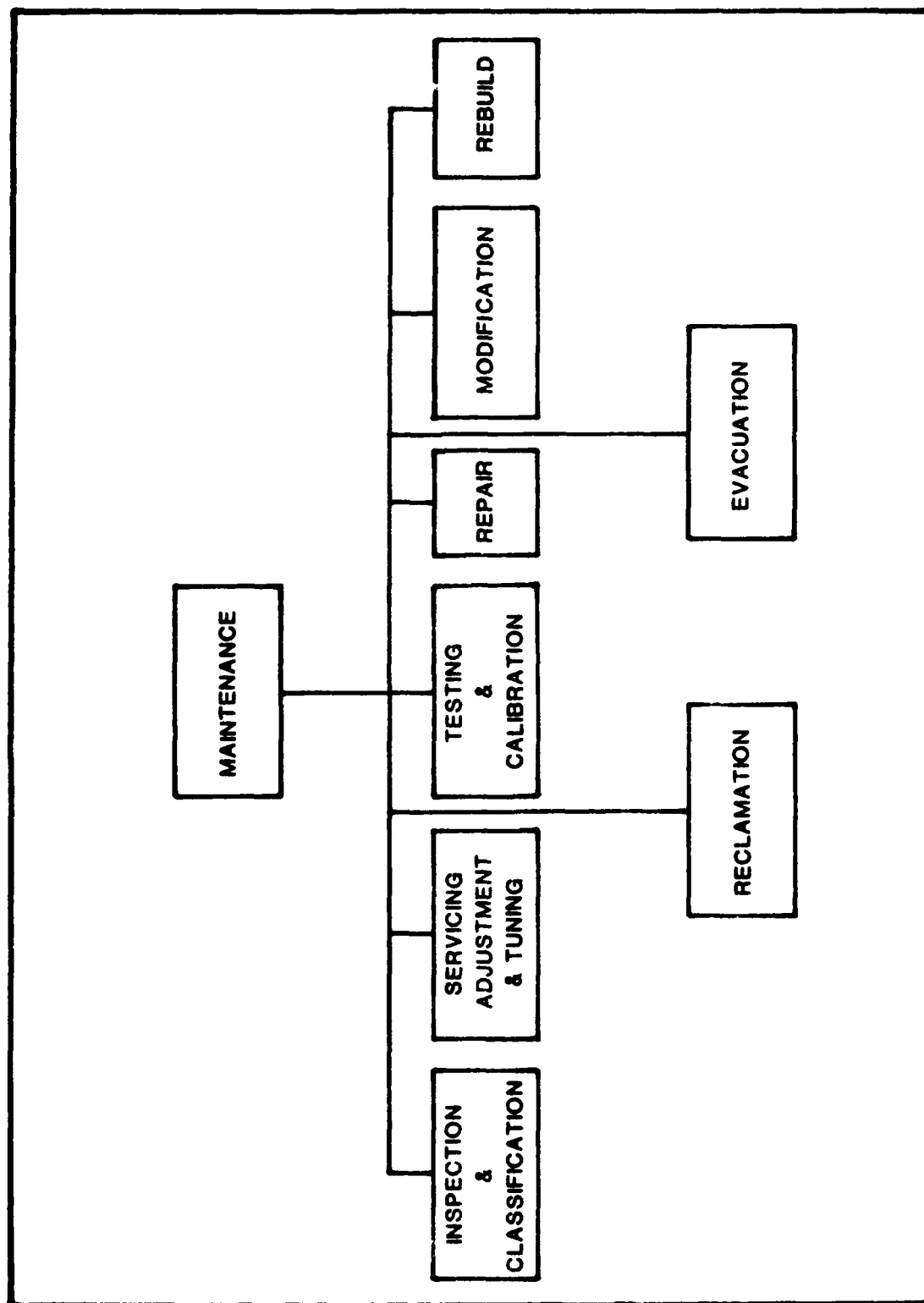


Figure 3-2. Maintenance Sub-Functions

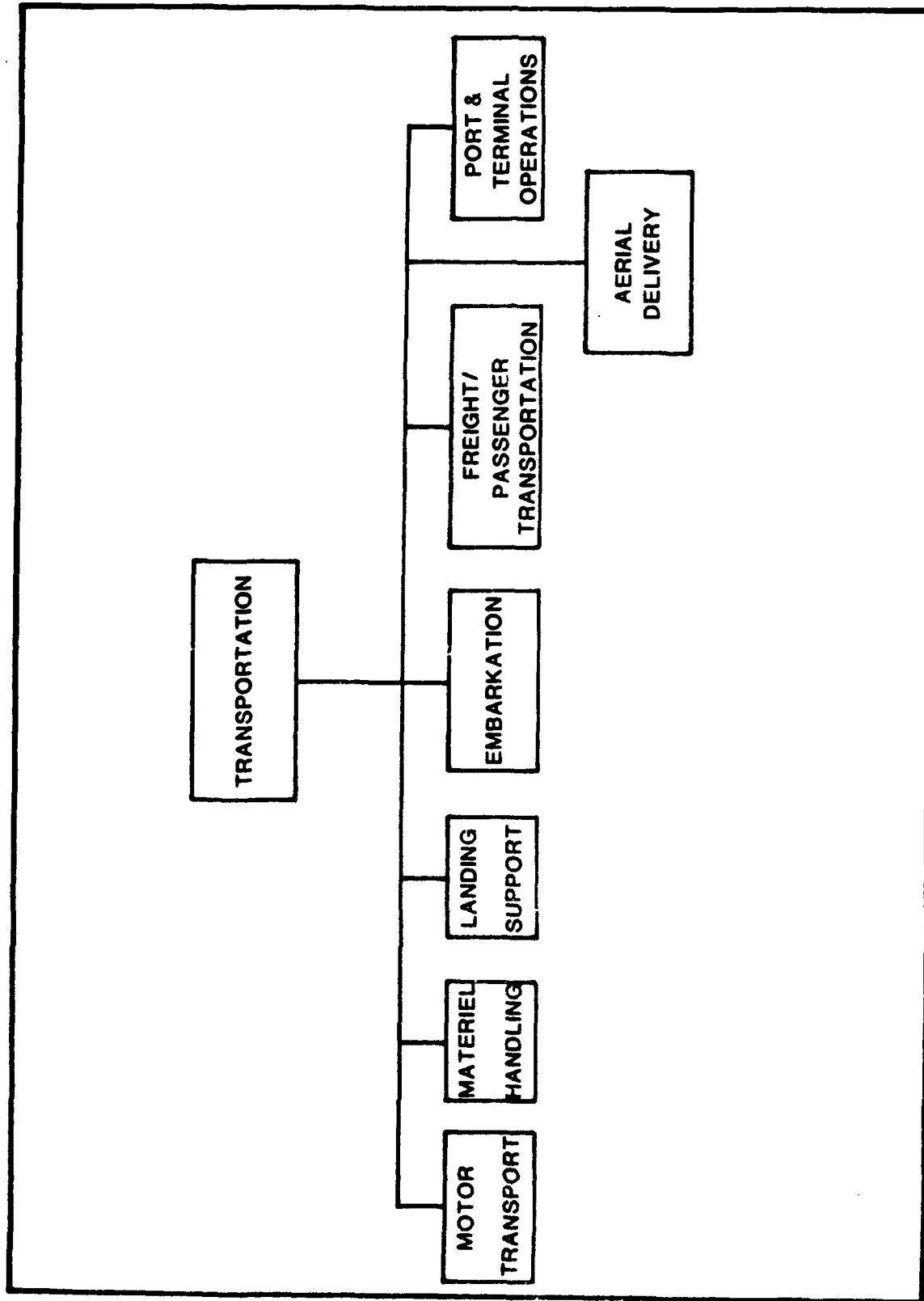


Figure 3-3. Transportation Sub-Functions

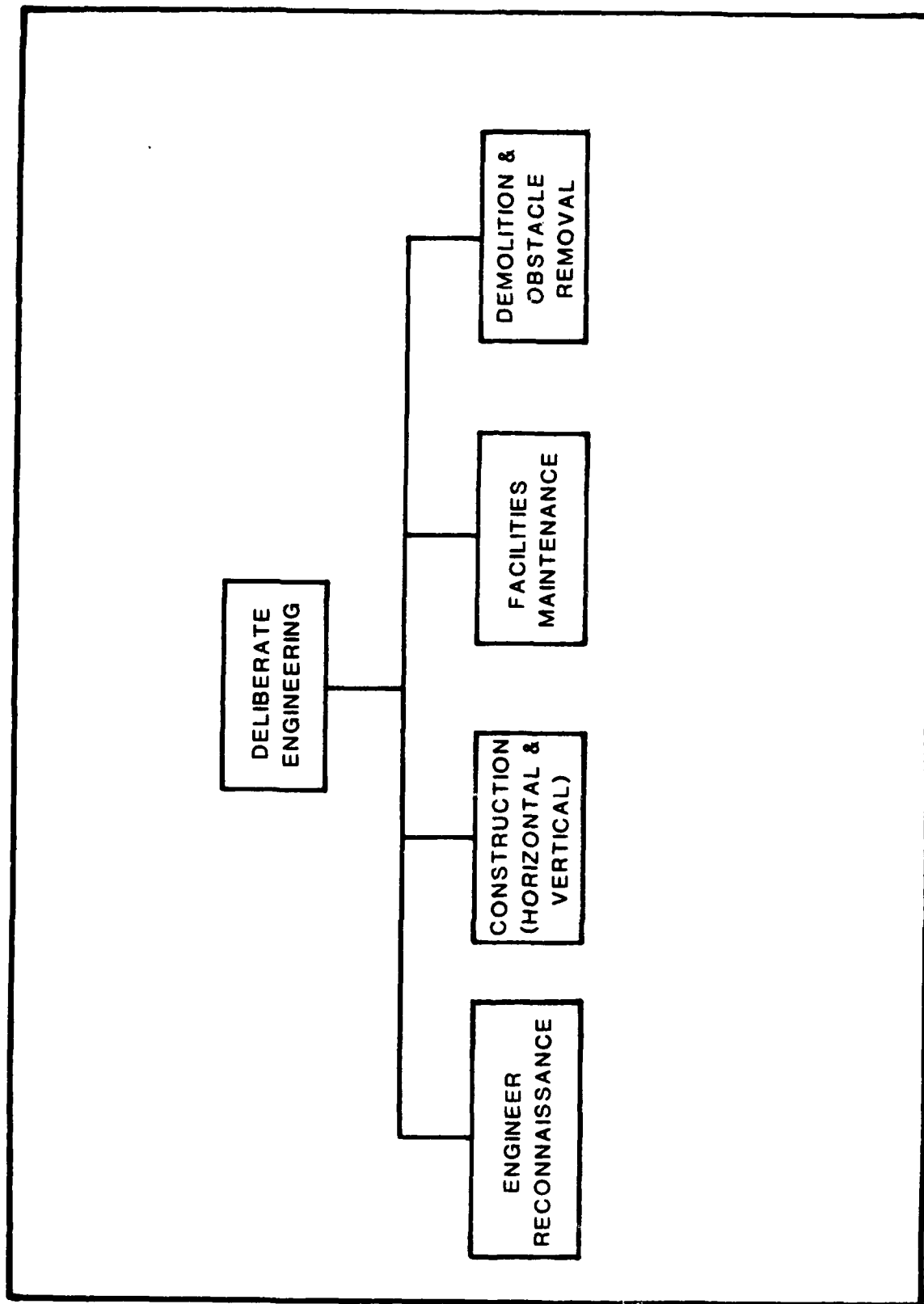


Figure 3-4. Deliberate Engineering Sub-Functions

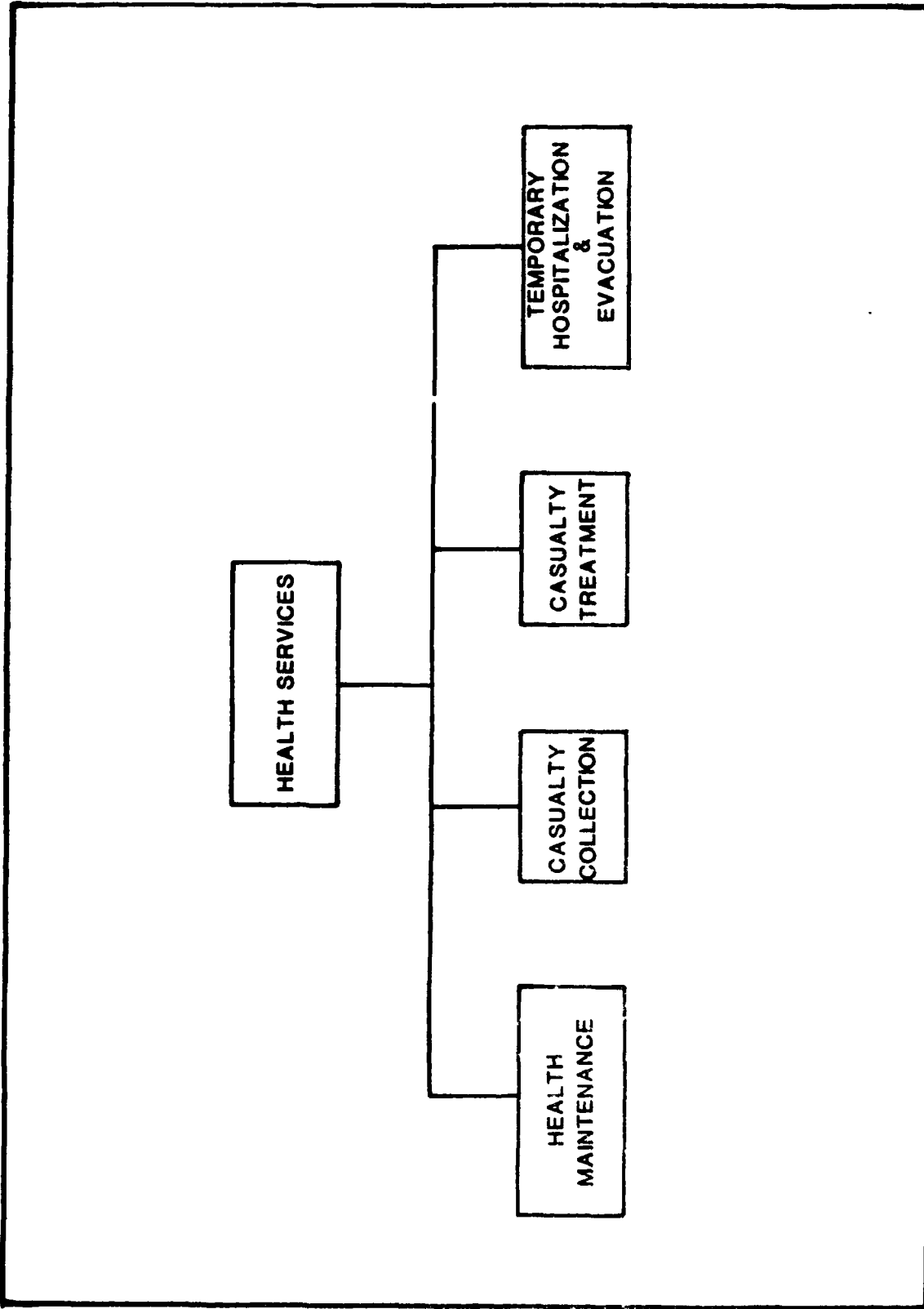


Figure 3-5. Health Services Sub-Functions

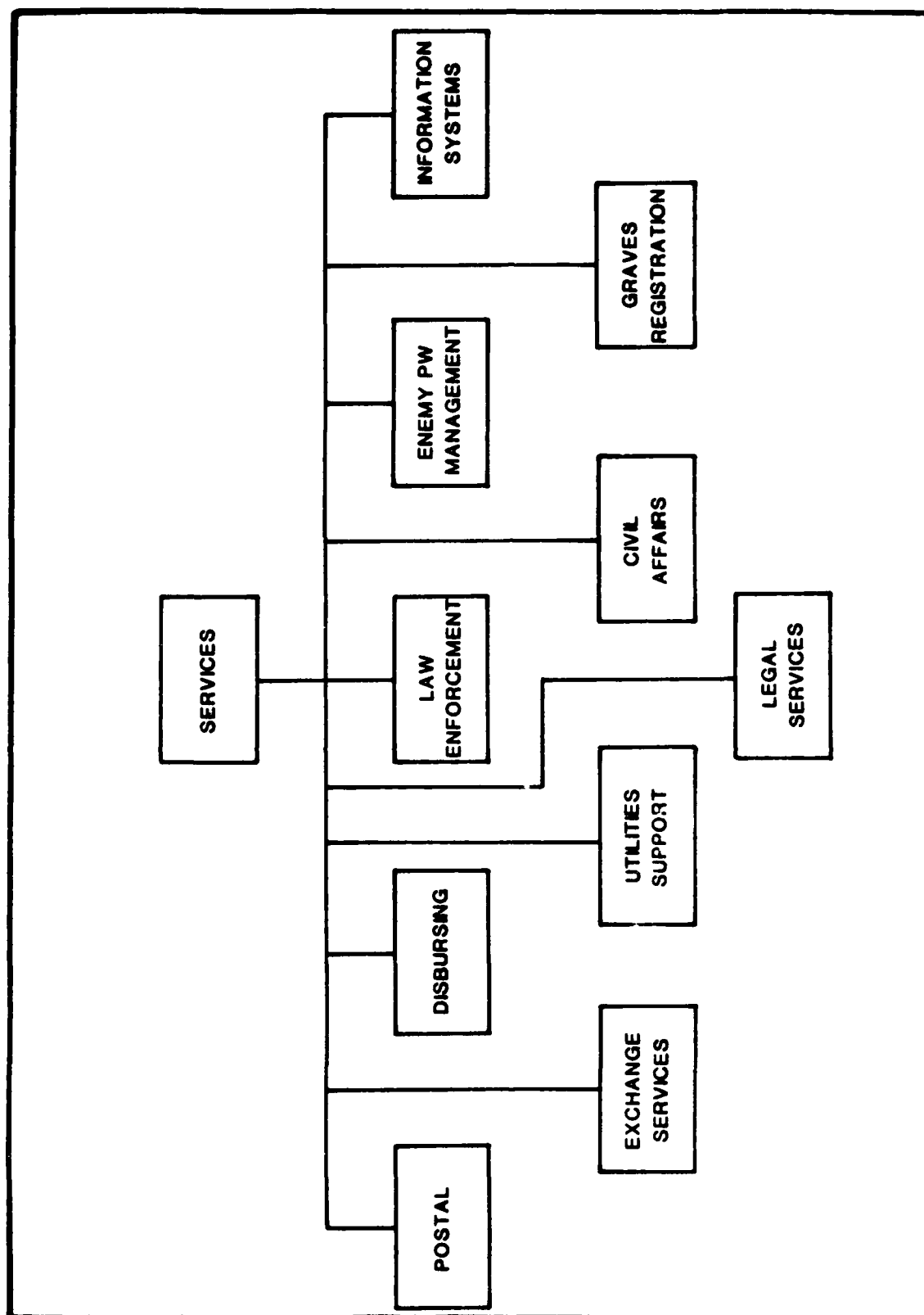


Figure 3-6. Services Sub-Functions

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities

FUNCTION: Supply		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Determination of Requirements	Data Collection Forecasting Provisioning Computation	Determine supply requirements to include stock control Provide supply status management reports as required
Procurement	Requisitioning Issue Control Receipt Control Stock Review Technical Research Special Projects	Procure necessary supply items Provide technical management, data research and customer service Provide initial issue of provisioning assets Provide civilian contracting/cross service support
Storage (to include care in storage)	Issue Receipt Materiel Handling Warehousing Inventory Security Preparation, Packaging Preservation Quality Control Preparation for Shipping	Movement, storage and dispensing of tactical fuel (limited) Store immediate supplies until required Provide customer service and assistance Provide intermediate level shop stores issue points Manage MAF secondary repairable Provide accounting for classes I, II, III, IV, V, VII, VIII and IX Provide technical assistance in receipt, storage, assembly and provision of nuclear and other specified ordinance

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Supply		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Storage (to include care in storage) (Con't)		Provide packing, preservation and packing (PP&P) service Provide storage of class VIII
Distribution	Issue Shipping and Receiving Materiel Handling	Provide warehousing capability Establish and operate deployed ration dumps, field bakery Provide receipt, storage and forwarding of packaged fuel Distribute class VIII
Salvage	Collecting Evacuating Disposition	Provide salvage functions for MAF
Disposal	Sales Destruction Shipment	Provide disposal functions for a MAGTF
Inspection and Classification	Maintenance Management Maintenance Administration Quality Control	Technical inspections as directed Contact team maintenance to effect on-site repair Maintenance of class VIII supplies and equipment

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Maintenance		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Servicing, Adjustment and Tuning	Maintenance Operation Maintenance Administration Workload Control Quality Control	
Testing and Calibration	Maintenance Operation Maintenance Administration Workload Control Quality Control	Calibration of test equipment
Repair	Maintenance Operation Maintenance Administration Workload Control Quality Control	Principal end item (PEI) (3rd echelon) maintenance at combat service support areas (CSSA) or repair facilities when such maintenance is beyond contact team capability Office machine repair as required
Modification	Maintenance Operation Maintenance Administration Workload Control Quality Control	3rd echelon maintenance and modification on "in stock" equipment
Rebuild	Maintenance Operation Maintenance Administration Workload Control Quality Control	Intermediate (4th echelon) maintenance for secondary repairables
Reclamation	Maintenance Operation Maintenance Administration Workload Control Quality Control	Custodial service for the operational ready float and cryptographic exchange pool
Evacuation	Maintenance Operation Maintenance Administration Workload Control Quality Control	Ordinance tracked vehicle recovery capability

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Transportation		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Motor Transport	Requirements Determination Resource Coordination Resource Assignment Resource Control	Medium and heavy MT support for bulk dry cargo, water (bulk) and classes III and IIIA (bulk) Refrigerated van transportation and limited storage capability for class I perishables Heavy equipment lift augmentation to MEF Personnel lift augmentation to MEF
Materiel Handling	Requirements Determination Resource Coordination Resource Assignment Resource Control	Operation of cargo/materiel handling equipment Provide specialized materiel handling equipment and personnel for management of passengers and break bulk/container cargo throughout during terminal operations at seaports, airports, railheads and beaches
Landing Support	Requirements Determination Resource Coordination Resource Assignment Resource Control	Organization and development of the beach area Coordination of initial bulk fluid transfer Offload of lighterage at the beach Direction of MEB drivers Command support for the BOG Providing vehicle operators for assignment to lighterage

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Transportation		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Embarkation	Requirements Determination Resource Coordination Resource Assignment Resource Control	Port preparation Establishment of overflow areas for supplies and equipment Establishment of liaison with host nation port authorities Operation of cargo/material handling equipment Assistance to Navy cargo handlers Direction to MEB drivers Establishment of bulk fuel/water reception and transfer facilities Continued operation of port facilities for resupply Local security
Freight/Passenger Transportation	Requirements Determination Resource Coordination Resource Assignment Resource Control	Airfield preparation Establishment of overflow areas for supplies and equipment Establishment of liaison with host nation port authorities Operation of cargo/material handling equipment Assistance to Navy cargo handlers Direction to MEB drivers Establishment of bulk fuel/water reception and transfer facilities Continued operation of airfield facilities for resupply Local security

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Transportation		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Aerial Delivery	Requirements Determination Resource Coordination Resource Assignment Resource Control	Preparation of air-delivery equipment and personnel support
Port and Terminal Operations	Requirements Determination Resource Coordination Resource Assignment Resource Control	Port preparation Establishment of overflow areas for supplies and equipment Establishment of liaison with host nation port authorities Operation of cargo/material handling equipment Assistance to Navy cargo handlers Direction to MEB drivers Establishment of bulk fuel/water reception and transfer facilities Continued operation of port facilities for resupply Local security

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Deliberate Engineering		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Engineering Reconnaissance	Mapping, surveying	Survey and drafting engineering planning
Construction (Horizontal and Vertical)	Develop Lines of Communication Construct Bridges Airfield Sites Helo Sites Beach Preparation Bulk Fuel Site Preparation Quarry Operations Temporary Camps Maintenance Facilities Storage Facilities Loading Ramps & Docks Assist Preparation of Medical Facilities	Provide limited material testing support Conduct quarry operations Bridging operations, fixed and floating (limited) Construction of airstrips Construction of field fortifications Defensive position fortifications Clearing landing sites for VSTOL Beach improvement Provide prefab construction Construct pioneer roads Material handling (crane support) Construction of tents and strong backs Construction of unpaved roads Construction of mar- shalling areas Provide vertical construction and concrete support (limited) Conduct rock crushing operations Prepare, install, expedient airfields

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Deliberate Engineering		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Facilities Maintenance	Repair/Maintain Billeting Facilities Drainage Systems Airfield Runways Taxiways Roads/Bridges	Rapid runway repair (limited) Conduct rock crushing operations Maintain airfields Provide war damage repair
Demolition and Obstacle Removal	EOD Facilities Destruction Minefield Placement and Removal	Emplacement/clearing of mines Installation/breaching of barriers Emplacement/breaching of obstacles

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Health Services		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Health Maintenance	Sick Call Preventive Medicine	Medically sustain the combat forces Assist in the prevention of disease and injury Plan for Medical Battalion support of MAGTF Provide preventive medicine and industrial hygiene Provide NBC patient decontamination
Casualty Collection	First Aid Initial Resuscitation Treatment Triage Battlefield Evacuation Transportation	Minimize mortality and morbidity Provide facilities for the collection and caring of patients Provide facilities for initial resuscitative care Provide medical evacuation support to forward medical elements Coordinate medical evacuation
Casualty Treatment, Temporary Hospitalization and Evacuation	Life Saving Surgery Resuscitation Treatment Stabilization Return to Duty Whole Blood Distribution Evacuation Control	Minimize mortality and morbidity Provide facilities for resuscitative surgery and temporary hospitalization Provide medical teams for management and handling of mass casualties Provide NBC patient treatment

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Services		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Postal	Collection Distribution Route Dispatch Postal Sales Directory Services	Provide postal functional support for the MEF
Disbursing	Pay Travel Collections Voucher	Provide all disbursing functional support for the MEF
Law Enforcement	Enforce Law and Order Personnel Security Customs Investigations Laboratory Services Polygraph Support Liaison with Local Police Limited Counterinsurgency Operations Traffic Control Correctional Facilities	Provide MP combat support to conduct circulation control for the MEF Task organize within capability to reinforce interior guard and local security of MEF facilities as assigned Provide nucleus for MP response force for conduct of rear area combat Provide MP combat support for law enforcement, criminal investigation, U.S. military confinement, terrorism counteraction and canine support Provide MP handlers/scout dogs for offensive and counterinsurgency operations of MEF Provide MP support for enemy PW management

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Services		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Enemy PW Management	Collection Confinement Guarding Escorting/Evacuating	Provide for collection, processing and evacuation of enemy PWs
Automated Information Systems	Data Systems Development Input/Output Control Housekeeping Functions	Provide all class I support for the MEF
Exchange Services	Provide Necessity, Health and Comfort items Procure Account Warehousing Sales Operations	Provide all exchange functional support for the MEF
Utilities Support	Water Supply Well Drilling Electrical Power Environmental Control Baths Laundry Decontamination Fumigation	Provide water and hygiene services (limited) Provide mobile electric power (limited)
Legal Support Services	Military Justice Legal Assistance Civil-Military Relationships International Law	Provide all legal services support for the MEF

Table 3-1. CSS Functions, Subfunctions, Tasks and Activities (Cont'd)

FUNCTION: Services		
<u>SUBFUNCTION</u>	<u>TASKS</u>	<u>ACTIVITIES</u>
Civil Affairs	Civil Information/ Education Civilian Supply Displaced Persons/Welfare Public Health/Safety Property Control Public Works/Utilities Claims/Legal Language	Provide for the collection, processing and evacuation of civilian internees Provide initial civil affairs capability for the MEF
Graves Registration	Identification Registration Temporary Interment Cemetery Maintenance Search and Recovery Disinterment	Provide for collection, identification, evacuation and temporary interment of deceased

Table 3-2. Classes of Supply

<u>CLASS</u>	<u>DESCRIPTION</u>
Class I	Rations/Water
Class II	Administrative/Housekeeping/Clothing
Class III	Petroleum, Oils, Lubricants
Class IV	Construction/Barrier Material
Class V	Ground and Air Munitions
Class VI	Personal Demand Items
Class VII	Major End Items
Class VIII	Medical Supplies
Class IX	Repair Parts

SECTION 4. CSS C2FAC INFORMATION EXCHANGE

4.1 General

A Command and Control Facility (C2FAC) is an organizational element of one Service that needs to communicate with an organizational element in another Service in order to perform its command and control functions. The Marine Corps Technical Interface Concept (TIC) lists Marine Corps C2FACs and establishes information exchange requirements. This permits analysis of these requirements between OPFACs to determine operational needlines. At present, the TIC does not include C2FACs in support of CSS functions. This section identifies candidate Combat Service Support C2FACs (CSS C2FACs) that support the CSS functions, subfunctions and tasks previously discussed. The CSS C2FACs defined herein are limited to those that exchange information in support of the 1B Scenario. Additional CSS C2FACs may be recognized for unique applications of a land prepositioned MEB or for a MEU operation. Figures 4-1 thru 4-3 depict the CSS C2FACs required in support of the 1B scenario. The acronyms used in the diagrams are explained on the succeeding pages of this section.

4.2 CSS C2FACs

4.2.1 Combat Service Support Operation Center (CSSOC). The CSSOC is the nerve center of the CSS operation. It includes the personnel and communications equipment necessary to control CSS operations for the MAGTF. It serves as the hub for incoming requests for CSS from the ACE and GCE. It also coordinates command support to the CSSE to include fire support. All subordinate operation centers coordinate local area security in assigned areas. In a MEF operation the CSSOC passes requests to the FSSG Battalion Operation Centers (OCs) for CSS execution in their area of expertise. In a MEB or smaller operation the CSSOC and CSSD are the only OCs of the CSSE and execute all tasks assigned.

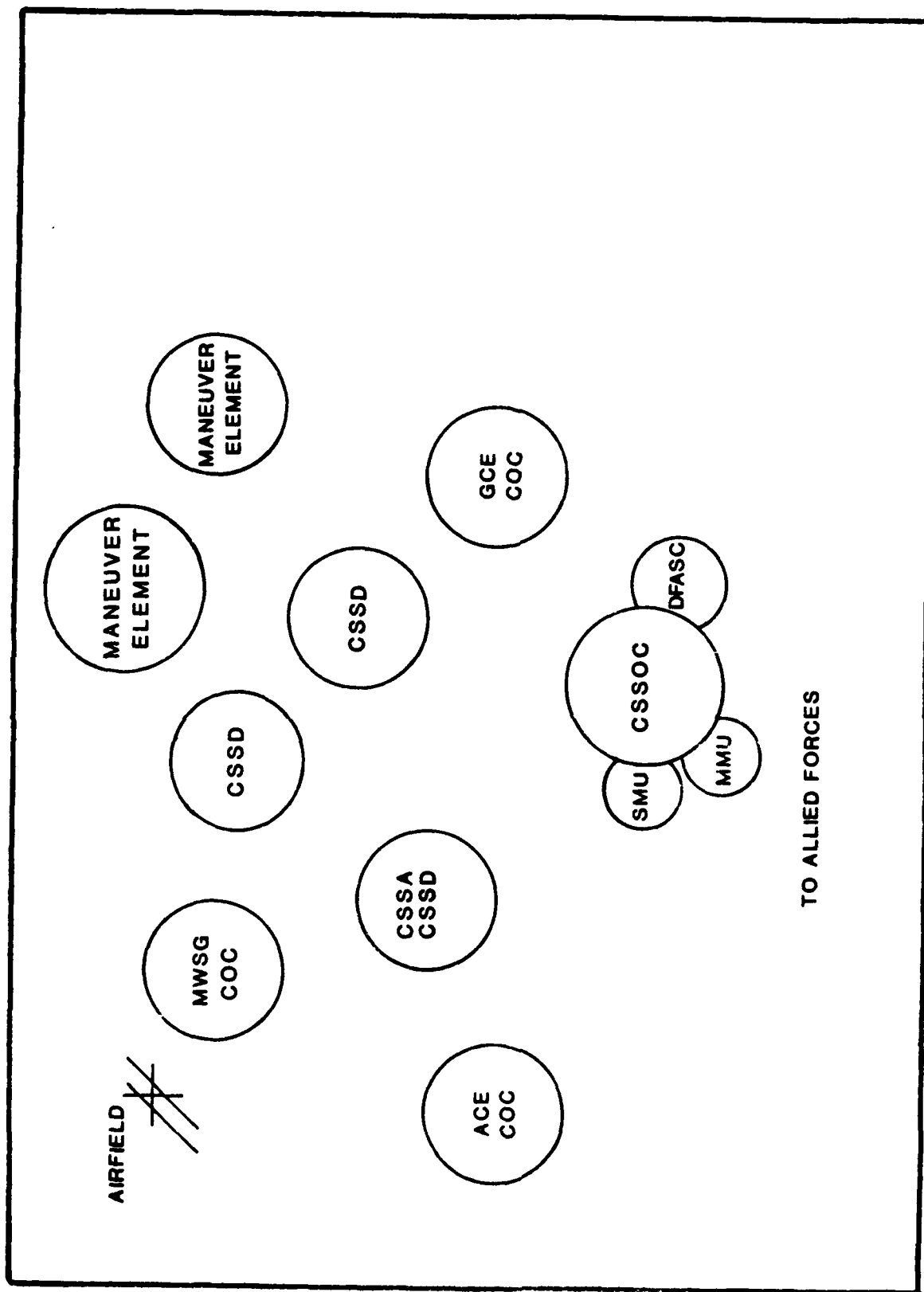


Figure 4-1. Operational Facilities Involved in MEB CSS Operations

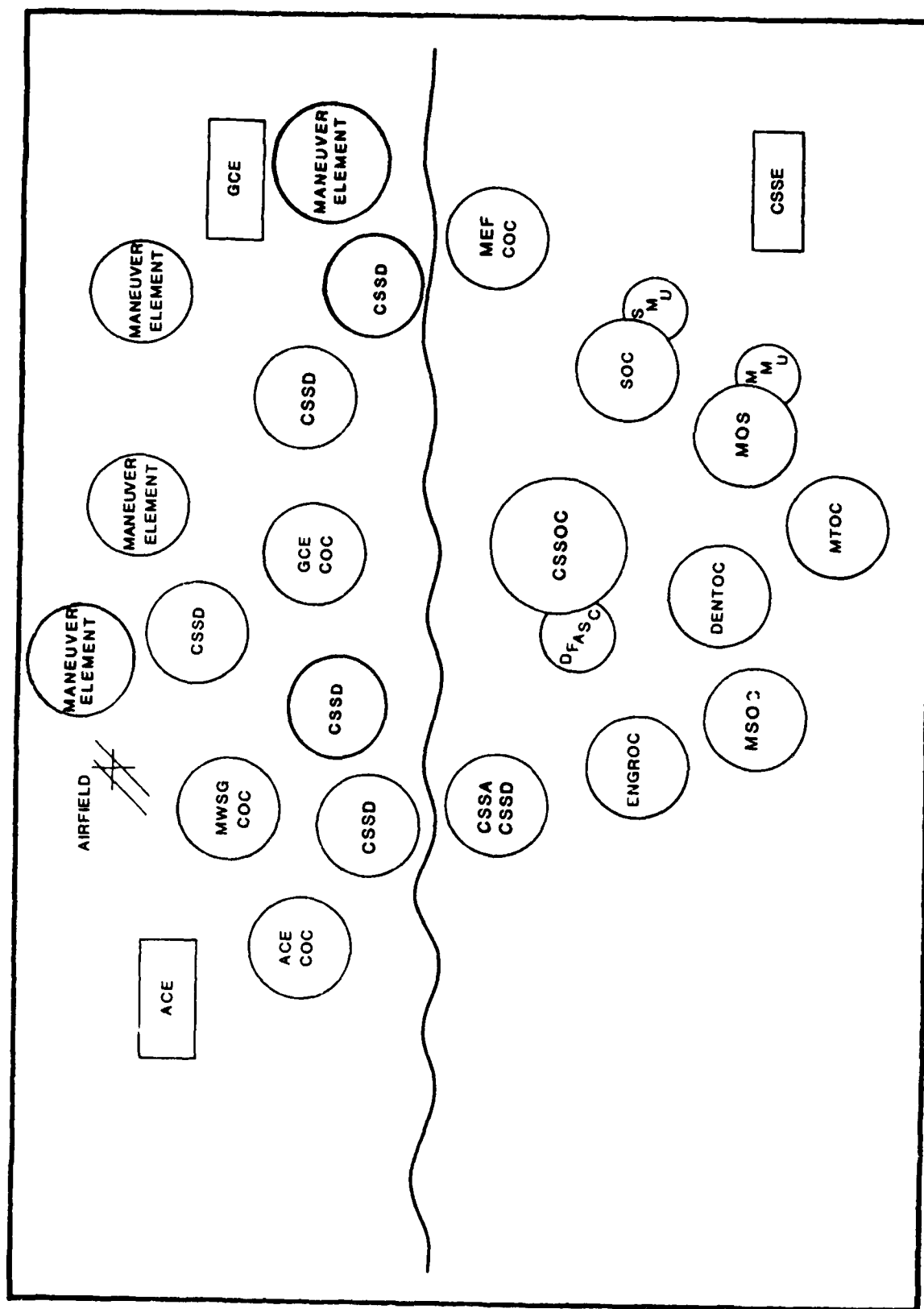


Figure 4-2. Operational Facilities Involved in MEF CSS Operations

4.2.2 Deployable Force Automated Service Center/MAGTF Automated Service Center (DFASC/MASC). The DFASC/MASC at the CSSE provides automated data processing support to the MAGTF commander. The special activities performed are:

- provide automated data processing (ADP) support to the MAGTF;
- download files from the Regional Automated Service Center (RASC);
- maintain MAGTF class I Automated Information System (AIS) data bases,
- incorporate class I system changes;
- prepare class I data for transmission to CONUS from the AOA;
- prepare reports;
- data transfer within the Amphibious Objective Area (AOA); and
- support CSS interactive ADP functions.

4.2.3 Combat Service Support Detachment (CSSD) Operations Center. The CSSD is task organized to provide direct support to an element or elements of the ACE or GCE. The CSSD Operations Center will control and execute CSS functions assigned to it by the CSSE commander for the ACE/GCE element(s) it supports.

4.2.4 Maintenance Operations Section (MOS). The MOS is part of the Maintenance Battalion of the FSSG. The Material Management Unit (MMU) is considered to be part of the MOSs. The MOS plans, controls, directs and reports maintenance activity for the MAF. The MOS is responsible for the following activities:

- contact team maintenance to effect on-site repair;
- principal end item (PEI) (3rd echelon) maintenance at combat service support areas (CSSA) or repair facilities when such maintenance is beyond contact team capability;
- intermediate (4th echelon) maintenance for secondary repairables;
- technical inspections as directed;
- ordnance tracked vehicle recovery capability;
- calibration of test equipment;
- office machine repair as required;
- custodial service for the operational ready float and cryptographic exchange pool; and
- 3rd echelon maintenance and modification on "in stock" equipment.

4.2.5 Motor Transport Operations Center (MTOC). The MTOC deploys as part of the Motor Transport Battalion FSSG for MEF size operations. It coordinates and directs motor transport personnel and assets required for CSS operations. MTOC is responsible for the following activities:

- medium and heavy motor transport (MT) support for bulk dry cargo, water (bulk) and classes III and IIIA (bulk);
- refrigerated van transportation and limited storage capability for class I perishables;
- heavy equipment lift augmentation to MEF; and
- personnel lift augmentation to MEF.

4.2.6 Medical Support Operations Center (MSOC). The MSOC, as part of the Medical Battalion, FSSG plans, coordinates and directs medical teams required in support of MEF units over and above their organic capability. It coordinates casualty collection, emergency treatment, specialized surgery and evacuation of personnel requiring further medical treatment.

4.2.7 Dental Operations Center (DENTOC). The DENTOC as part of the Dental Battalion, FSSG plans, coordinates and directs dental support for a MEF to include specialized care of casualties with maxillo-facial injuries. It coordinates with the MSOC those dental casualties requiring evacuation for further dental surgical treatment.

4.2.8 Engineer Operations Center (ENGROC). The ENGROC as part of the Engineer Support Battalion, FSSG plans, coordinates, directs and reports general engineer support requirements of the MEF and internal engineer support of the FSSG. The below listed activities are the responsibility of the ENGROC:

- | | |
|--|------------------------------------|
| - survey and drafting support | - conduct rock crushing operations |
| - provide mobile electric power | - emplacement/breaching obstacles |
| - provide limited material testing support | - beach improvement |
| - conduct quarry operations | - provide prefab construction |
| | - construct pioneer roads |

- bridging operations, fixed and floating (limited)
- emplacement/clearing of mines
- clearing landing sites
- installation/breaching of barriers
- construction of field fortifications
- water and hygiene service (limited)
- engineering planning
- construction of airstrips
- rapid runway repair (limited)
- provide rear area defense as directed
- material handling (crane support)
- construction of tents and strong backs
- movement, storage and dispensing of tactical fuel (limited)
- mobile electric power (limited)
- construction of unpaved roads
- construction of marshalling areas
- provide war damage repair
- provide vertical construction and concrete support (limited)
- prepare, install, maintain expedient airfields

4.2.9 Supply Operations Center (SOC). The SOC as part of the Supply Battalion, FSSG plans, coordinates, directs and reports supply support above the organic capability of MEF elements. The SASSY Management Unit (SMU) is an integral element of the SOC and is the centralized record keeping, control and data collection agency for the MAGTF. It is responsible for the full range of inventory management actions including requirements determination, stock replenishment, issue and redistribution, inquiry response and excess disposal determination. The below listed activities are the responsibility of the SOC:

- manage and provide supply service support to include stock functions
- provide salvage functions for deployed MAGTF
- provide technical management, data research, customer service and assistance
- provide intermediate level shop stores issue points for the MEF
- provide management of the MEF's secondary repairables through the maintenance float
- provide procurement service for items decentralized by the integrated material manager (IMM)
- provide supply status management
- provide civilian contracting/cross servicing functional support for deployed units
- provide warehousing capability in support of the MAGTF
- provide accounting for Class I, II III, IV, VII and IX supplies, initial issue provisioning assets, and authorized levels of war reserve
- establish and operate deployed ration dumps to include storage, issue, and accounting for subsistence items
- establish and operate a field bakery in support of the MAGTF's landing force

- reports as required
- provide interface with financial and maintenance management systems
- provide for the receipt, storage, issue and maintenance (2nd through 4th ECH) of all Class VIII supplies and equipment
- provide receipt, storage and forwarding of package fuel
- provide technical assistance in receipt, storage, assembly, and provision of nuclear ordinance and other specified ordinance
- provide receipt, storage, issue and accounting functions for all Class V items
- provide PP&P service

4.2.10 Landing Support Operations Center (LSOC). The LSOC as part of the Landing Support Battalion, FSSG plans, coordinates directs and reports transportation support in the form of landing support, terminal service support, material handling and air delivery to the MEF. The following activities are the responsibility of the LSOC:

- provide specialized material handling equipment and personnel for management of passengers and break bulk/container cargo throughput during terminal operations at seaports, airports, railheads and beaches;
- air-delivery equipment and personnel support;
- material handling equipment support;
- limited engineer tasks; and
- establish routes of egress from the beach.

4.2.11 Headquarters and Service Operations Center (HQSVCOC). The HQSVCOC as part of the Headquarters and Service Battalion, FSSG plans, coordinates, directs and reports on a variety of service subfunctions in support of CSS for the MEF. The following activities are the responsibility of the HQSVCOC:

- command support to all elements of the MAGTF;
- local security to CSSE headquarters;
- MP combat support to conduct circulation control for the MAGTF;
- collection, processing and evacuation of enemy PWs and civilian internees;
- MP combat support for law enforcement, criminal investigation, U.S. military prisoner confinement, terrorism counteraction and canine support;
- MP handler/military working dog capability for security of critical areas of the MAGTF;

- MP handler/scout dogs for MAGTF; and
- collection, identification, evacuation and temporary interment of the deceased.

In addition to the CSS activities the HQSVCOC provides fire support coordination, and rear area security coordination for the FSSG.

4.2.12 Combat Service Support Area (CSSA) CSSD Operations Center. The CSSA CSSD operations center directs and controls the activities of the CSSA. It receives direction from, and passes requests to, the CSSOC concerning distribution and storage of supplies within its operational dumps. It coordinates distribution of supplies to CSSDs and ACE/GCE elements from the CSSA.

4.2.13 Arrival and Assembly Operations Group Operations Center (AAOG). The AAOG is the senior C2FAC in the AAA and as such acts as the senior command and control agency for the MEB until MEB headquarters is established ashore. The AAOG plans, directs, controls and reports on those tasks associated with the offload of the Maritime Prepositioning Squadron (MPSRON) and staging of personnel and equipment in the AAA. In addition it coordinates security and ground movement within the AAA.

4.2.14 Arrival/Assembly Support Party Operation Center (AASP). The AASP, composed of elements from the BSSG, is responsible for planning, directing, controlling and reporting on throughput of personnel and equipment/supplies at port, beach and airfield.

4.2.15 Port Operations Group Operation Center (POG). The POG is composed of personnel and equipment from the Landing Support Company of the BSSG. It is responsible for planning, reporting, controlling and executing throughput of supplies and equipment. The POG operations center, under the AASP, coordinates the following activities:

- port preparation;
- establishment of overflow areas for supplies and equipment;
- establishment of liaison with host nation port authorities;
- operation of cargo/material handling equipment;
- assistance to Navy cargo handlers;
- direction to MEB drivers;
- establishment of bulk fuel/water reception and transfer facilities;
- continued operation of port facilities for resupply; and
- local security.

4.2.16 Beach Operations Group Operations Center (BOG). The BOG, composed from elements of the Land Support Company, BSSG, is responsible for planning, reporting, controlling and executing throughput of supplies and equipment. The BOG, under the AASP, coordinates the following activities:

- organization and development of the beach area;
- coordination of initial bulk fluid transfer;
- offload of lighterage at the beach;
- direction of MEB drivers;
- command support for the BOG;
- providing vehicle operators for assignment to lighterage; and
- local security.

4.2.17 Arrival Airfield Control Group Operations Center (AACG). The AACG, composed from elements of the Landing Support Company, BSSG, is responsible for planning, control, coordination, reporting and execution of the offload of airlifted units and equipment in the AAA. The AACG is subordinate to the AASP.

4.2.18 Arrival and Assembly Operations Element Operations Center (AAOE). The AAOE for each MEB element coordinates the logistics functions of the offload of MPF equipment and supplies and the arrival and assembly of forces.

4.2.19 Navy Support Element Beach Party Group Operations Center (NSE BPG). The NSE BPG is the Navy counterpart of the AASP. It is tasked with offload and ship-to-shore movement of MPF equipment and supplies.

4.2.20 Offload Control Unit Operations Center (OCU). The OCU is the Navy counterpart of the AAOG. It is the senior controlling agency for the Navy onsite during AAA operations.

SECTION 5. COMMAND AND CONTROL FLOW DIAGRAMS (C2FD)

5.1 General

In performing a functional analysis, C2FDs are the accepted method for determining the information flow and exchange requirements between C2FACs. C2FDs provide a standard way of identifying data transfer. Once the requirement for data transfer has been established, the specific message types and their content can be identified and examined to quantify the amount of data transfer that must occur between the C2FACs. The final step in the functional analysis is to determine if a communications architecture can support the flow of information between the various C2FACs. This section will establish the exchange requirements by means of C2FDs. Section 6 will examine the message types and determine their contents. Section 7 will overlay the exchange requirements on the available communications architecture.

The diagrams and accompanying text in this section illustrate the information exchange events in each of the broad operational tasks required to accomplish the CSS mission. The textual material for each diagram block explains the purpose and application of the information exchange.

5.2 The Major CSS FUNCTIONS

The major CSS functions impacting C2 systems during Combat and Amphibious Operations involve supply, maintenance, transportation and medical resources. The problems associated with these functions deal with the allocation, control, use and disposal of limited resources.

The allocation process for all of these functions is related to the Tactical Plan as developed by the MAGTF Commander and his GCE Commander. This plan is developed by functional estimates from the supporting and supported units which are reviewed and commented upon concurrently by the commanders and their staffs as shown in figure 5-1.

The results of this process become the CSS Plan of Support during all phases of the operation. It is published as the MAGTF Administrative Plan and Embarkation Plan. It is also published as the CSSE Commander's Operation Plan. This plan of support serves as the baseline for status reporting of supply, maintenance, transportation and health service functions while the MAGTF is in combat.

5.2.1 Overview of Supply Function. The overview of supply operations in the AOA is shown in figure 5-2.

0-1, 0-2

The using unit requests supply support from the CSSD Liaison Team located in the area. This request can either be for a new item or it can be for supply of an item which has become exhausted.

0-3 The CSSD liaison checks with the CSSD on the supply availability.

0-4 The CSSD COC determines if it does or does not have the supplies needed. As noted in figure 5-2, these supplies are limited to those that are used daily by the combat units; Class I, III, IV, V, limited II, VIII, batteries.

0-5 If the supplies are available, the CSSD delivers them to the requestor.

0-6 If the supplies are not available, the CSSD requests support from the next nearest or higher source of supplies. In many instances, because of distance, this would be a CSSA placed somewhere between the CSSD and the CSSE. In any event the CSSD reports the latest status to the requesting unit.

0-7 If the requested supplies are available after a check by the CSSA CSSD COC, the CSSD coordinates the delivery of the supplies.

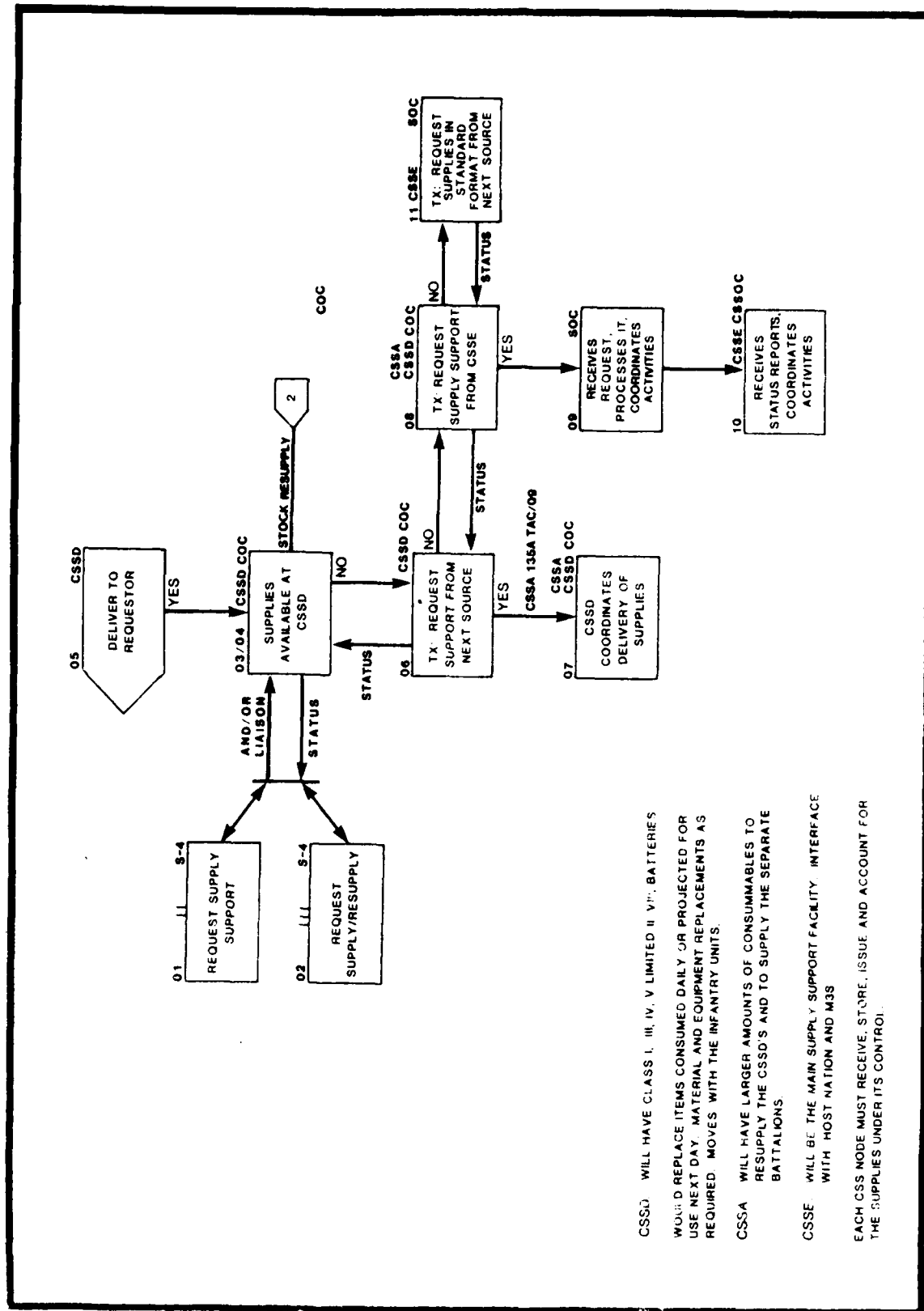


Figure 5-2. Overview of Supply Operations in AOA

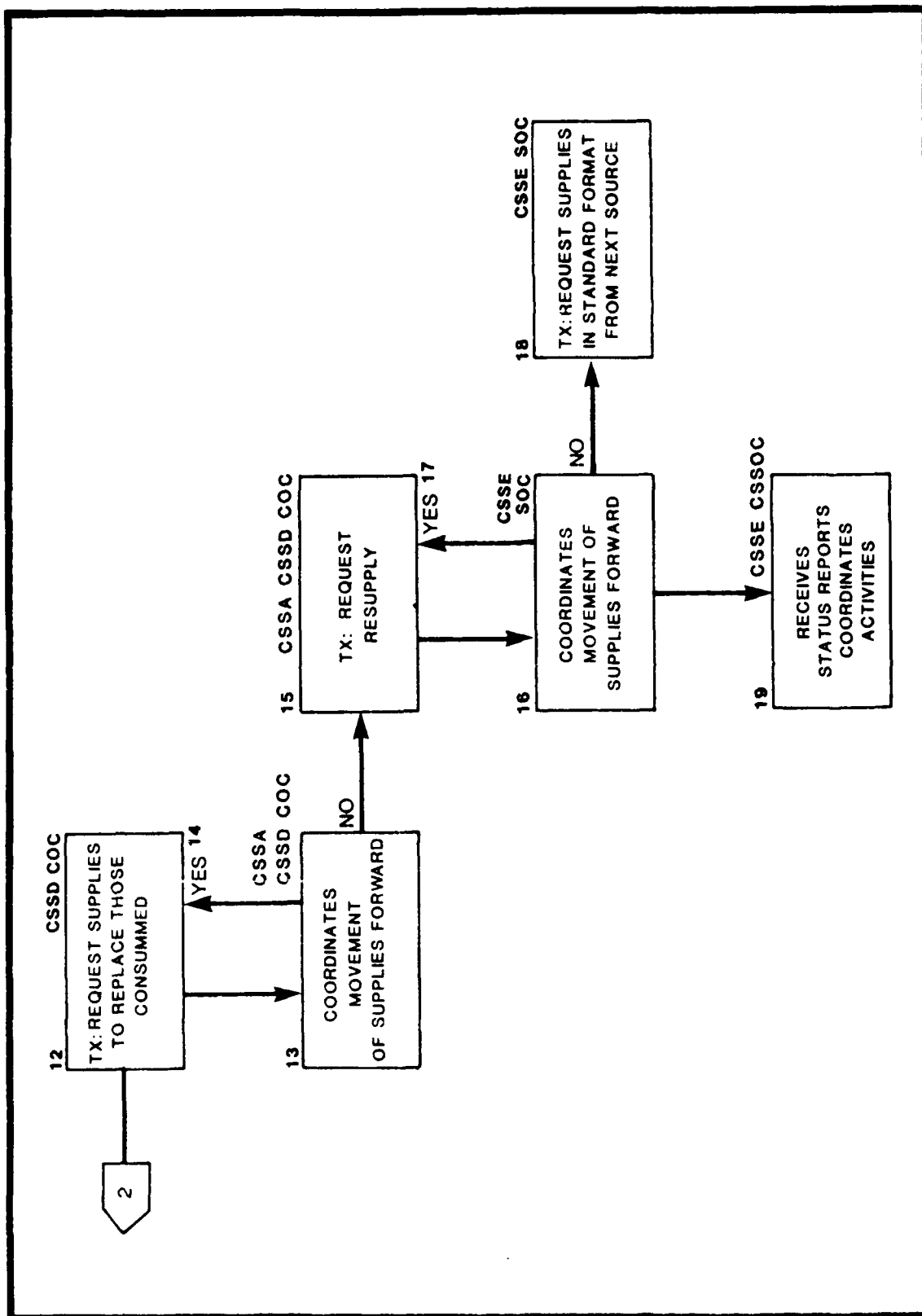


Figure 5-2. Overview of Supply Operations in AOA (Cont'd)

- 0-8 If the requested supplies are not available at the CSSA, the CSSA CSSD COC requests supply support from the CSSE. The CSSE SOC acts upon the request in one of two ways.
- 0-9 The SOC receives and processes the request from the CSSA. If it has the supplies, the SOC issues the supplies and coordinates the activities to insure that the supplies are received by the CSSD and delivered to the requestor.
- 0-10 The CSSE CSSOC receives and maintains status on supply availability and requirements to ensure delivery of needed supplies to the users.
- 0-11 If the CSSE SOC finds that the supplies requested by the CSSA are not available from its own resources, it can request the supplies from the next source using the standard supply format. This support could come from various sources, e.g., the host nation, other services, DLA, USMC service depots.
- 0-12 The CSSD is normally resupplied by a push method of support from the rear for high usage items. The CSSD COC maintains a level of supply that is consumed daily or is projected for use the next day. Status reports are submitted to the CSS elements who act upon them. The supplies are moved from the closest source possible to ensure uninterrupted support to the user.
- 0-13 The CSSA carries a larger quantity of the same supplies than do CSSD carriers. It coordinates with the CSSD and pushes the supplies forward to maintain projected stock levels.
- 0-14 If the shortage requirements of the CSSD are available from the CSSA, the latter will push them forward to the former. Such forward movements are reported daily to the CSSOC.

- 0-15 If the supply levels at the CSSA are too low to push from its stocks, the CSSA CSSD COC requests support from the CSSE SOC. The SOC reacts in one of two ways depending upon the availability of supplies.
- 0-16 If the supplies are available, the SOC coordinates with the CSSE CSSOC to get the supplies moved rapidly forward.
- 0-17 The CSSOC coordinates with the SOC and the transportation COC to move the supplies forward.
- 0-18 If the supplies are not available at the CSSE, the SOC will request supply support in the standard format from the next source.

5.2.1.1 Subfunction: Determination of Requirements

TASKS: Data Collection, Forecasting, Provisioning, Computation.

The supply estimates discussed as part of figure 5-1, Allocating Supply, Maintenance, Transportation and Medical Resources, are developed as shown in figure 5-3.

- 0-1 The SMU, as part of the FSSG general account, works with each unit of the MAGTF, reviewing history data on each item of equipment required in the operation. This analysis allows the unit S-4s to forecast further requirements based upon the tasks they will be doing. This computation of historical and forecasting information assists in determining supply and parts usage so the unit can order the items it needs.
- 0-2 While the SMU is working with the unit S-4/G-4s, the SOC reviews the supply history of the MAGTF T/O and T/E with the CSSE CSSOC. From this history and the forecasts which are developed after considering where the MAGTF will operate, the SOC/CSSOC computes the supplies

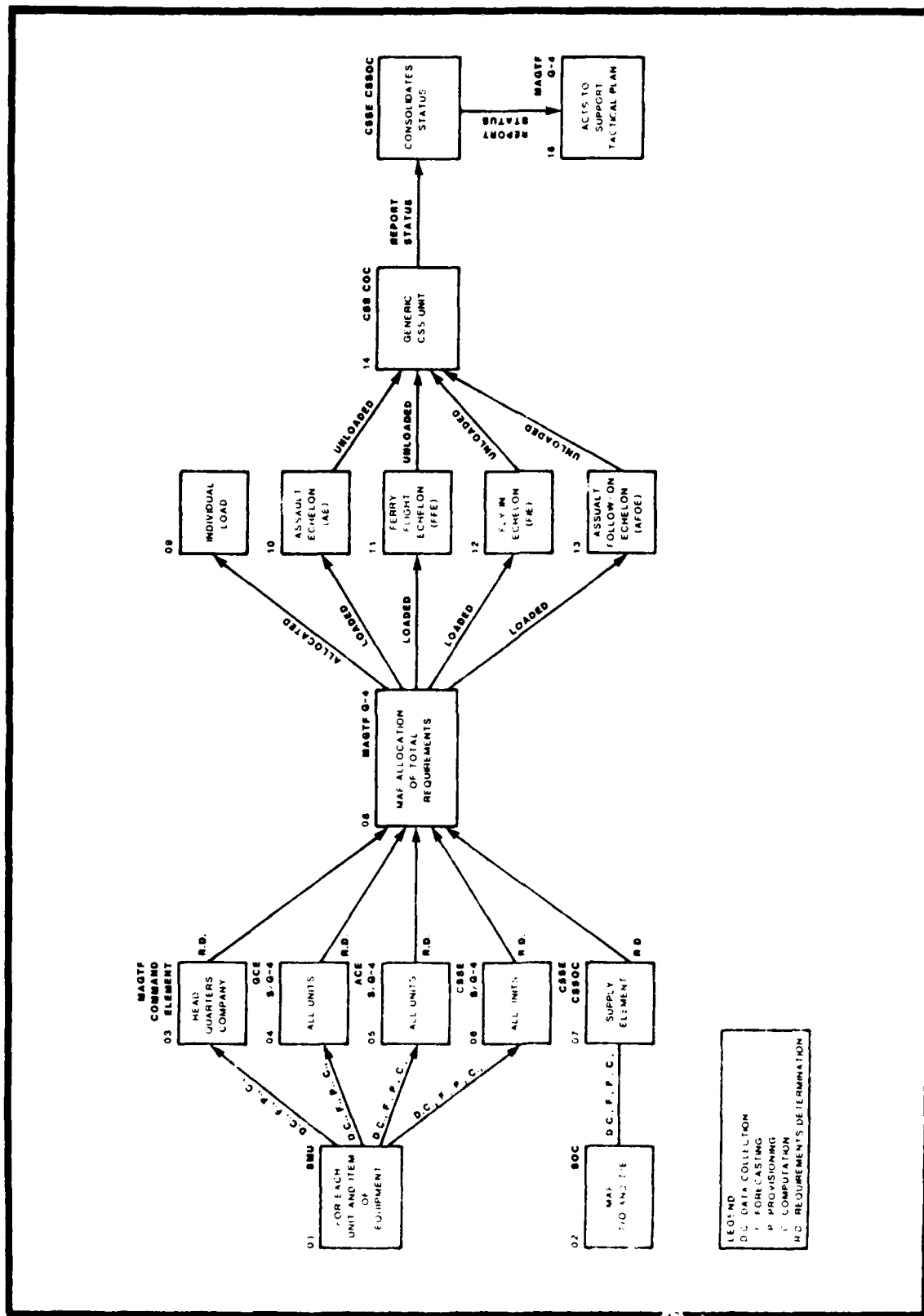


Figure 5-3. FUNCTION: Supply SUBFUNCTION: Determination of Requirements
 TASKS: Data Collection, Forecasting, Provisioning, Computation

required to support the MAGTF's mission for a given period of time, usually 60 days. After this time the MAGTF will require resupply from outside sources. This process also gives the SOC a baseline for provisioning to fill forecasted requirements.

0-3, 0-4, 0-5, 0-6

The subordinate Commander reports his requirements for supply support to the MAGTF G-4. The MAGTF G-4 reviews these requirements with his staff who recommend either approval or changes based upon their information. This process is followed by each of the other elements of the MAGTF. These are shown in figure 5-3 as 04, 05, and 0-6.

0-7

The CSSOC provides its estimate of supply requirements to support the MAGTF to the MAGTF G-4 in the same manner as the other MAGTF units. These requirements are for stocks that will be carried to the AOA to support the resupply functions of the CSSE.

0-8 0-9, 0-10, 0-11, 0-12, 0-13

Based upon the advice of the element commanders, the MAGTF Cmdr approves the supply concept of operations for the MAGTF. The MAGTF G-4 then allocates the supplies across the transportation means that will be used to reach the AOA. This is shown in figure 5-3 by the assignment of supplies and T/E equipment that the individual Marine will carry in his pack and on his person as 0-9. Those that will travel with this assault echelon, either as a unit with a prescribed load or a resupply of a prescribed load, are considered as 0-10. The other transportation elements are 0-11, 0-12 and 0-13. The majority of the supply stocks will be in the assault follow-on echelon. The total amount of supplies allocated among the echelons should equal the total available and approved by the MAGTF Commander.

0-14

As the supplies arrive in the AOA, they are unloaded and recorded as to type and location by the receiving CSS element. This center could

be an LSOC in a Beach Support Area or an Arrival/Assembly Support Party at a port, beach or airfield. A CSS element is required to report status to the CSSOC.

- 0-15 The CSSOC consolidates reports and provides status to the MAGTF G-4.
- 0-16 The MAGTF G-4 reviews the consolidated supply status reports and takes action to support the tactical plan.

5.2.1.2 Subfunction: Procurement

TASKS: Requisitioning, Issue Control, Receipt Control, Stock Review, Technical Research, Special Projects.

The tasks associated with the procurement subfunction are shown in figure 5-4.

- 0-1 The unit supply officer maintains certain levels of supplies on hand to meet his organization's mission needs. This level of supply is determined by unit T/E maintenance history, T/O size, and mission assignment. The supply officer initiates unit requisitions and, working under the guidance of the S-4, maintains information concerning requisition status and issues of supplies that are received and used. He works with the unit maintenance personnel to review maintenance stocks and performs technical research on part numbers.
- 0-2 The CSS Unit COC (either CSSD or CSSA) requisitions items of supply to support the user. It exercises issue and receipt control over the items of supply it handles and insures the continued ability to support the user by review of stock levels. In addition, it maintains liaison with the using unit for future requirements and report status of its efforts to the CSSOC.

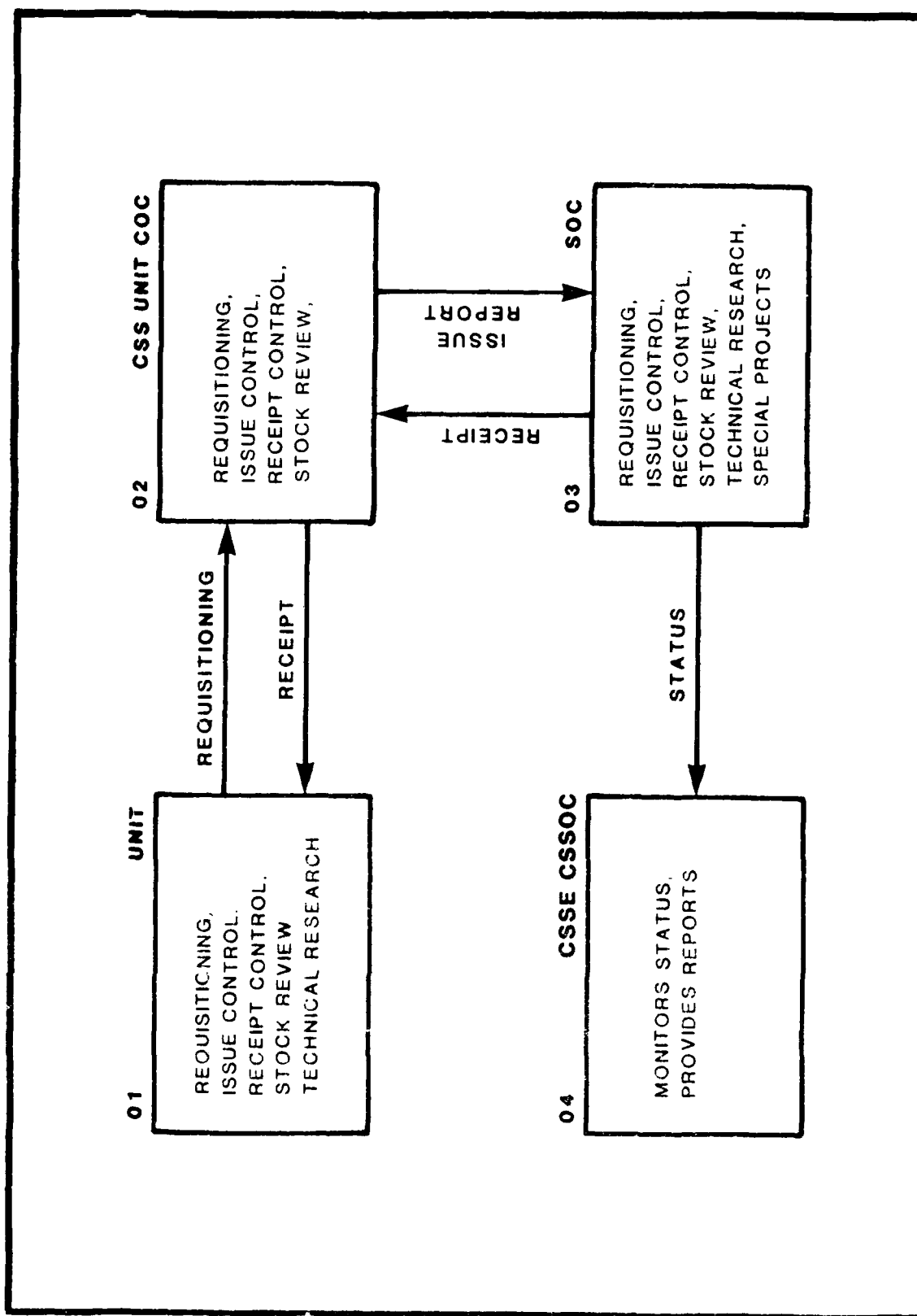


Figure 5-4. FUNCTION: Supply SUBFUNCTION: Procurement TASKS: Requisitioning, Issue Control, Receipt Control, Stock Review Technical Research, Special Projects

- 0-3 The CSSE SOC maintains the most extensive level and variety of supplies ashore. It is also the activity which prepares the requisitions out of the AOA, if required. This activity performs all of the tasks relating to procurement. Status reports are made to the TLOC.
- 0-4 The CSSE TLOC monitors the procurement status and provides status reports to the MAGTF G-4 and unit commander.

5.2.1.3 Subfunction: Storage/Distribution

TASKS: Issue, Receipt, Material Handling, Warehousing, Inventory, Security, PP&P, Quality Control, Preparation for Shipping.

Figure 5-5 illustrates that the tasks shown for the Storage/Distribution subfunctions of supply are tasks which require most of the supply effort at each CSS node. It also points out that to accomplish this supply effort involves extensive information exchange between the CSS node, the user, and the MAGTF staff. These information exchanges are similar to those described in figure 5-2, Overview of Supply Operations in AOA, and are shown here to illustrate the Storage/Distribution subfunctions.

- 0-1 The user maintains liaison with the CSS node operations center and states unit needs by requisition or status report. The user is issued and receipt for supplies. This procedure of issue and receipts applies to all transactions, including fuel at Class III supply points.

0-2 0-3, 0-4, 0-5, 0-6, 0-8

Supply levels are reviewed to insure ability to support the user. Items are requisitioned to maintain stockage levels or to provide items to the user. Each node issues and receipts for items of supply. Transportation and/or material handling equipment requests are

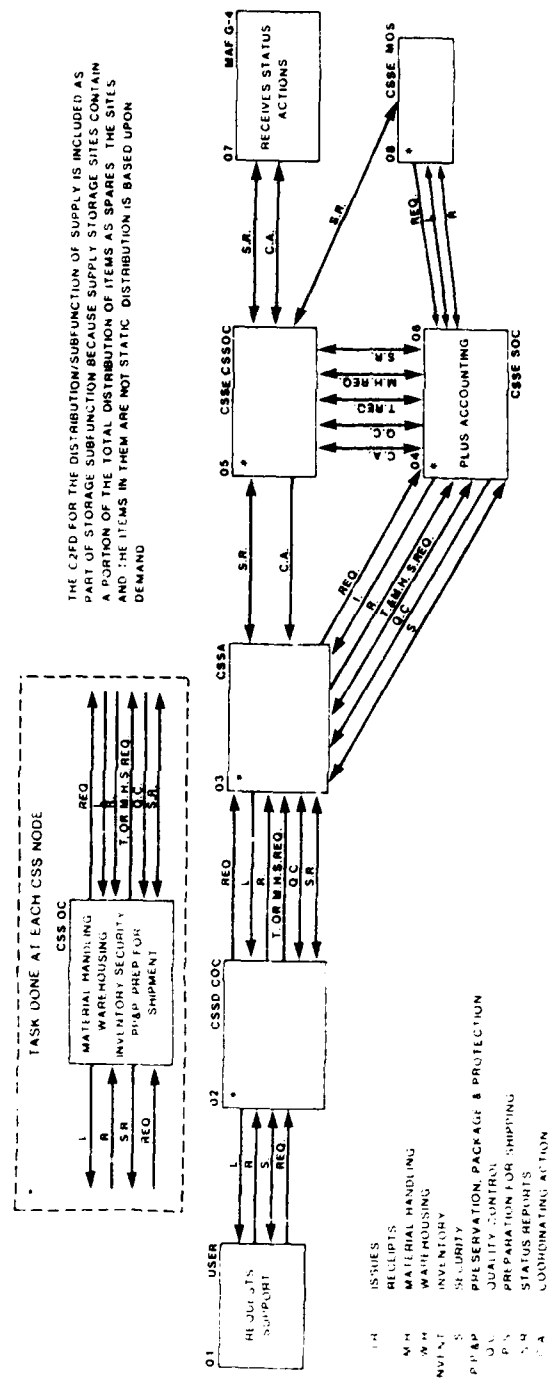


Figure 5-5. FUNCTION: Supply SUBFUNCTION: Storage/Distribution TASKS: Issue, Receipt, Material Handling, Warehousing, Inventory, Security, PP&P, Quality Control, Preparation for Shipping

made by the CSS node in order to distribute supplies in a timely manner, both between CSS nodes and to the supported users.

- 0-5 The CSSE CSSOC, as the nerve center for the MAGTF supply function, performs as the coordinating action center. It receives status reports from all the CSS nodes, including the MOS, and provides status reports on actions taken to the MAGTF G-4. The action coordination role is the means used by the CSSE Commander to best support all elements of the MAGTF.
- 0-6 The SOC performs all of the tasks of supply/distribution plus the additional task of formal accounting. The formal records of supplies are maintained here and provide the basis of resupply actions. The resupply actions to all classes of supply, including Class III (bulk fuel), would also include secondary repairables salvaged from damaged equipment before disposal.
- 0-7 The MAGTF G-4 receives status reports from the MAGTF elements and supports the CSSE Commander in performing the MAGTF Commander's priority supply functions.

5.2.1.4 Subfunction: Salvage

TASKS: Collecting, Evacuation, Disposition

Figure 5-6 shows the tasks associated with salvage.

- 0-1 Salvage is the collection of unusable friendly or enemy equipment from the battlefield. It is retrieved by CSS units and staged to the rear. The user requests evacuation of all destroyed equipment and replacement of equipment belonging to his account.

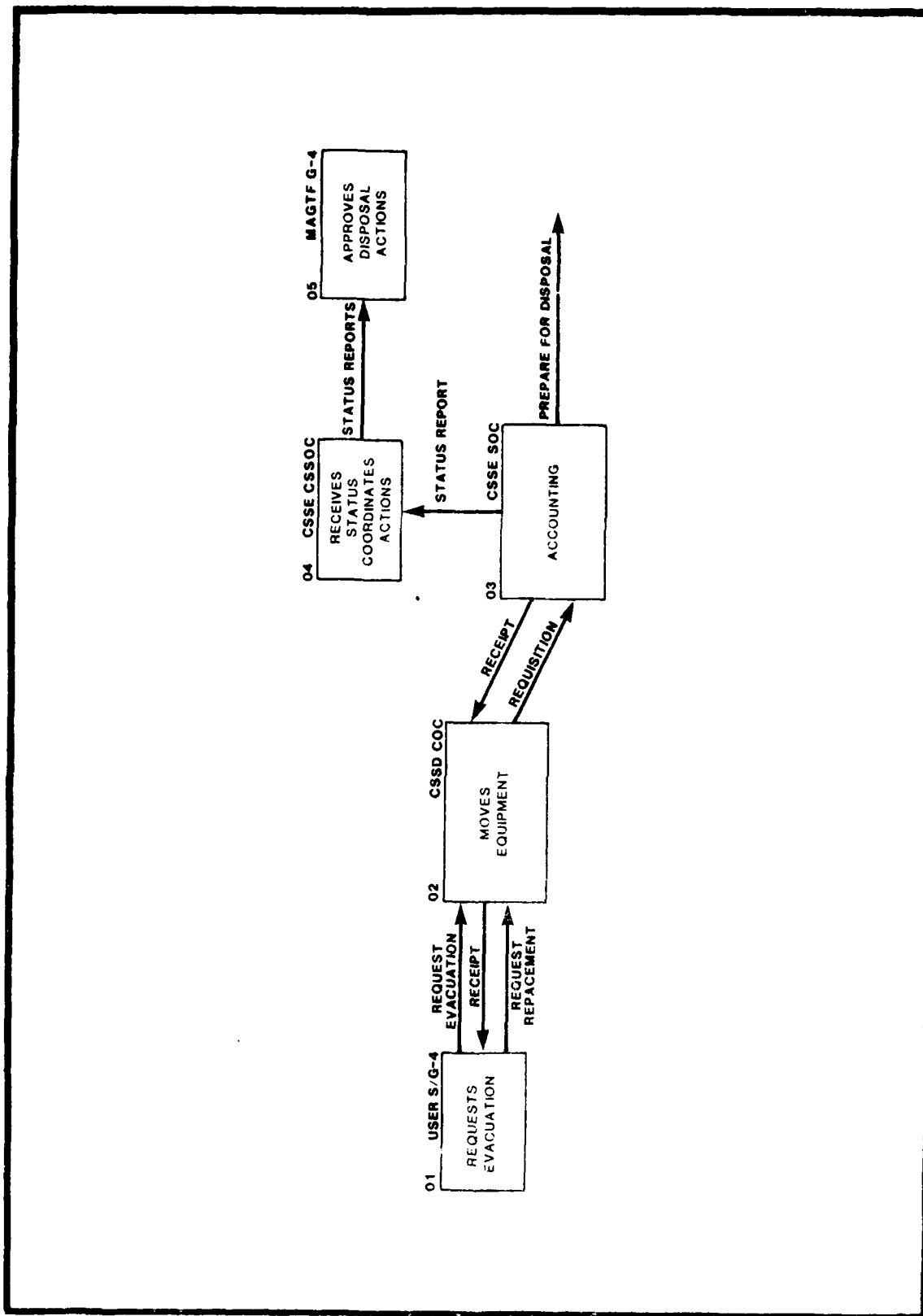


Figure 5-6. FUNCTION: Supply SUBFUNCTION: Salvage
TASKS: Collecting, Evacuation, Disposition

0-2 The CSS unit with collection capability picks up the equipment, receipts for it, and processes the requisition for replacement.

0-3 The CSSE SOC receipts for the equipment, handles the replacement action and reports status to the CSSOC. The SOC works with the Maintenance Battalion MOs to determine salvage value of components and prepares the paperwork for disposal.

0-4, 0-5

The CSSOC and MAGTF G-4 act upon status reports by approving of the disposal actions.

5.2.1.5 Subfunction: Disposal

TASKS: Sales, Destruction, Shipment.

0-1 Figure 5-7 shows that disposal occurs after salvage of equipment. The CSSE Supply Bn SOC is the paperwork focal point for disposal actions. The equipment has to be accounted for and disposal documents prepared. The SOC coordinates action with the CSSE CSSOC, MAGTF G-4, and MOs to salvage whatever possible. It determines the means of disposal for the rest. It then takes the necessary steps to accomplish the approved disposal actions.

0-2, 0-3

The CSSOC and MAGTF G-4 determine the disposal priority based upon the CSSE and MAGTF Commander's requirements.

0-4 The MOS takes the necessary action to support disposal. The MOC saves parts required for continued maintenance support.

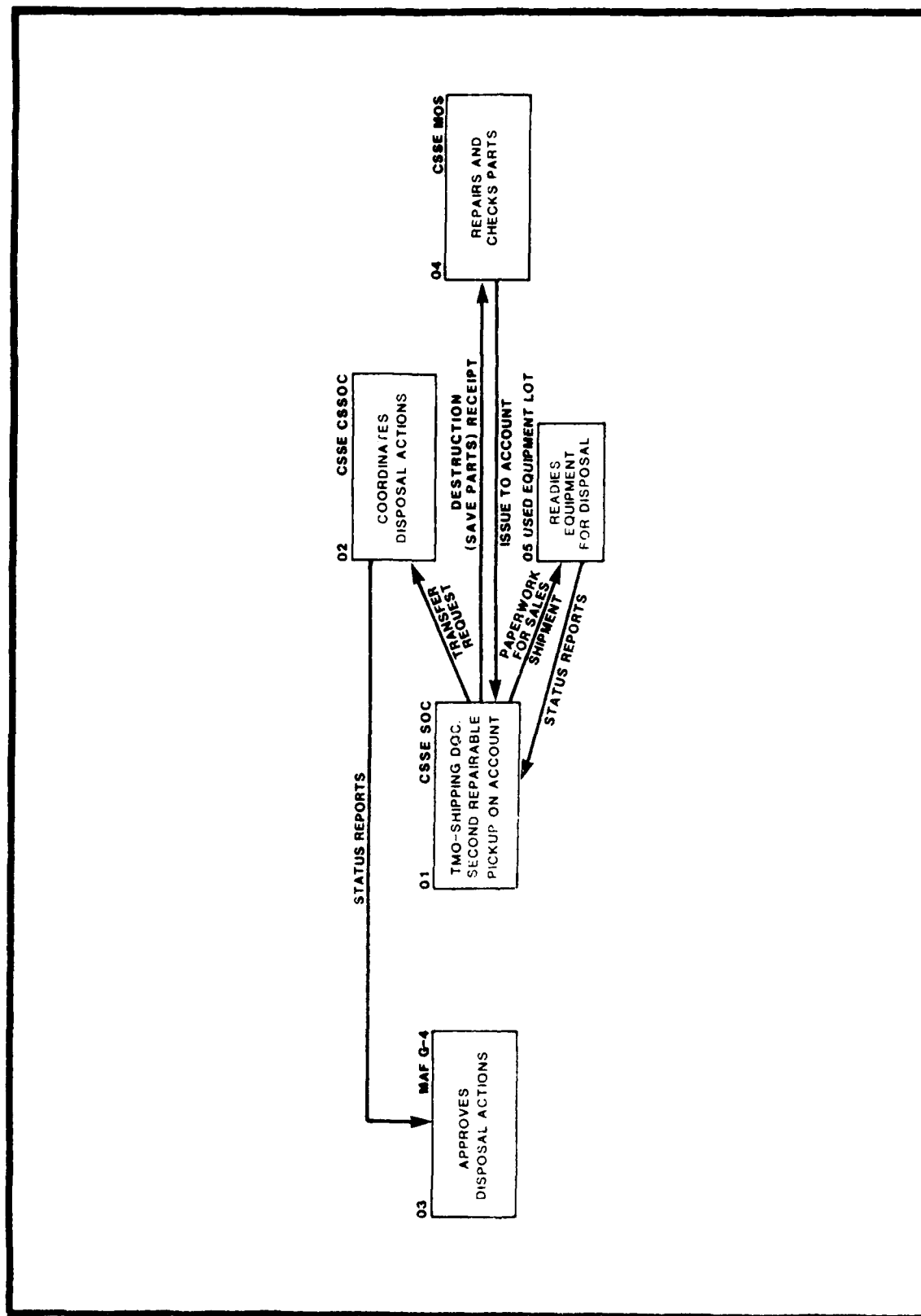


Figure 5-7. FUNCTION: Supply SUBFUNCTION: Disposal TASKS: Sales, Destruction, Shipment

0-5 The equipment is prepared for disposal. All legal and environmental regulations are met prior to shipment or sale. The equipment is disposed of and status is reported to the SOC.

5.2.2 Transportation. Transportation is the movement of personnel, supplies or equipment from one point to another by a variety of means. The CSS function of transportation includes control and management of the various means. The following subfunctions comprise the various modes of motor transport, material handling, landing support, embarkation, freight/passenger transportation, aerial delivery and port terminal operations.

5.2.2.1 Subfunction: Motor Transport (Planning).

TASKS: Requirements Determination, Resources Coordination, Resources Assignment, Resource Control.

In figure 5-8, the tasks in the Transportation subfunction, Motor Transport, are shown for both the planning and execution phases.

0-1, 0-2, 0-3, 0-5

In the planning phase the MAGTF elements, based upon the Concept of Operations developed by the MAGTF Commander, develop and state their requirements for additional motor transport, after utilizing all of their own assets, to the MAGTF G-4.

0-4 The MAGTF G-4, based upon the MAGTF Commander's priorities and the CSSE Commander's recommendation, establishes priorities of motor transport allocation to support the logistical course of action (COA).

0-5 The CSSOC operations section allocates the motor transport resources to support the COAs.

0-6 The CSSE MTOC provides the resources based on the approved allocation.

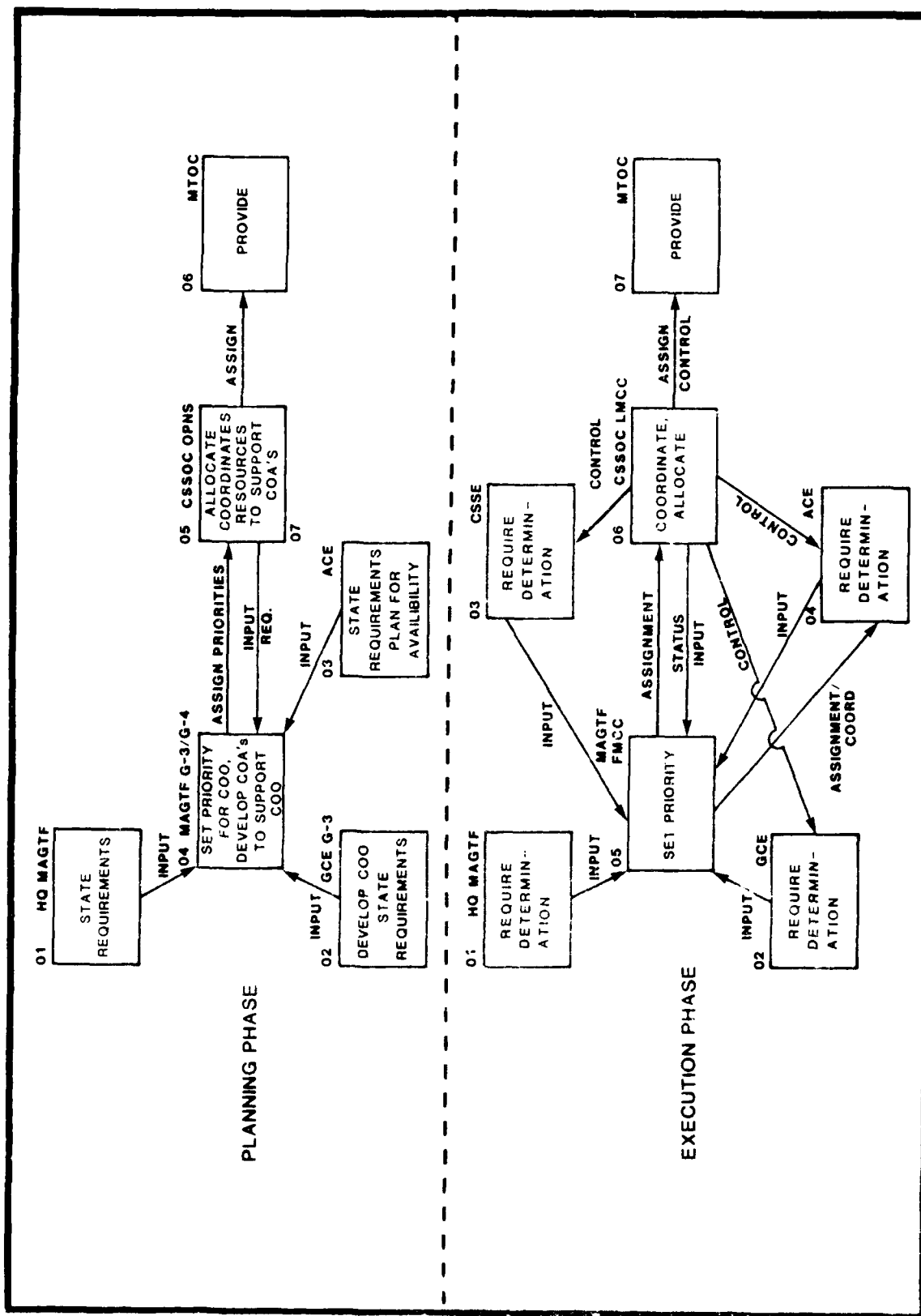


Figure 5-8. FUNCTION: Transportation SUBFUNCTION: Motor Transport TASK: Requirements Determination/Resources Coordination/Resources Assignment/Resource Control

5.2.2.2 Subfunction: Motor Transport (Execution).

TASKS: Requirements Determination, Resources Coordination, Resources Assignment, Resource Control.

0-1, 0-2, 0-3, 0-4

In the execution phase, after the initial landing and movement ashore, control of motor transport resources reverts to the Motor Transport Battalion. New motor transport requirements are determined by the elements of the MAGTF and requested from the MAGTF Commander, via the FMCC.

0-5 The MAGTF FMCC sets priorities based upon the MAGTF Commander's initial priorities as modified by the actual tactical and logistical situation. The FMCC provides status to the MAGTF elements and assigns resources coordination responsibility to the CSSE Commander via the CSSOC LMCC.

0-6 The CSSOC LMCC allocates the motor transport resources to meet the requirements. It assigns control of these resources to the Motor Transport Battalion Commander or to the unit commander if the resources are attached. Coordination, assignment and control are maintained by periodic status reporting and new requirement determination.

5.2.2.3 Subfunction: Material Handling

TASKS: Requirements Determination, Resources Coordination, Resources Assignment, Resource Control.

The Material Handling tasks are shown in figure 5-9 or both the planning and execution phase.

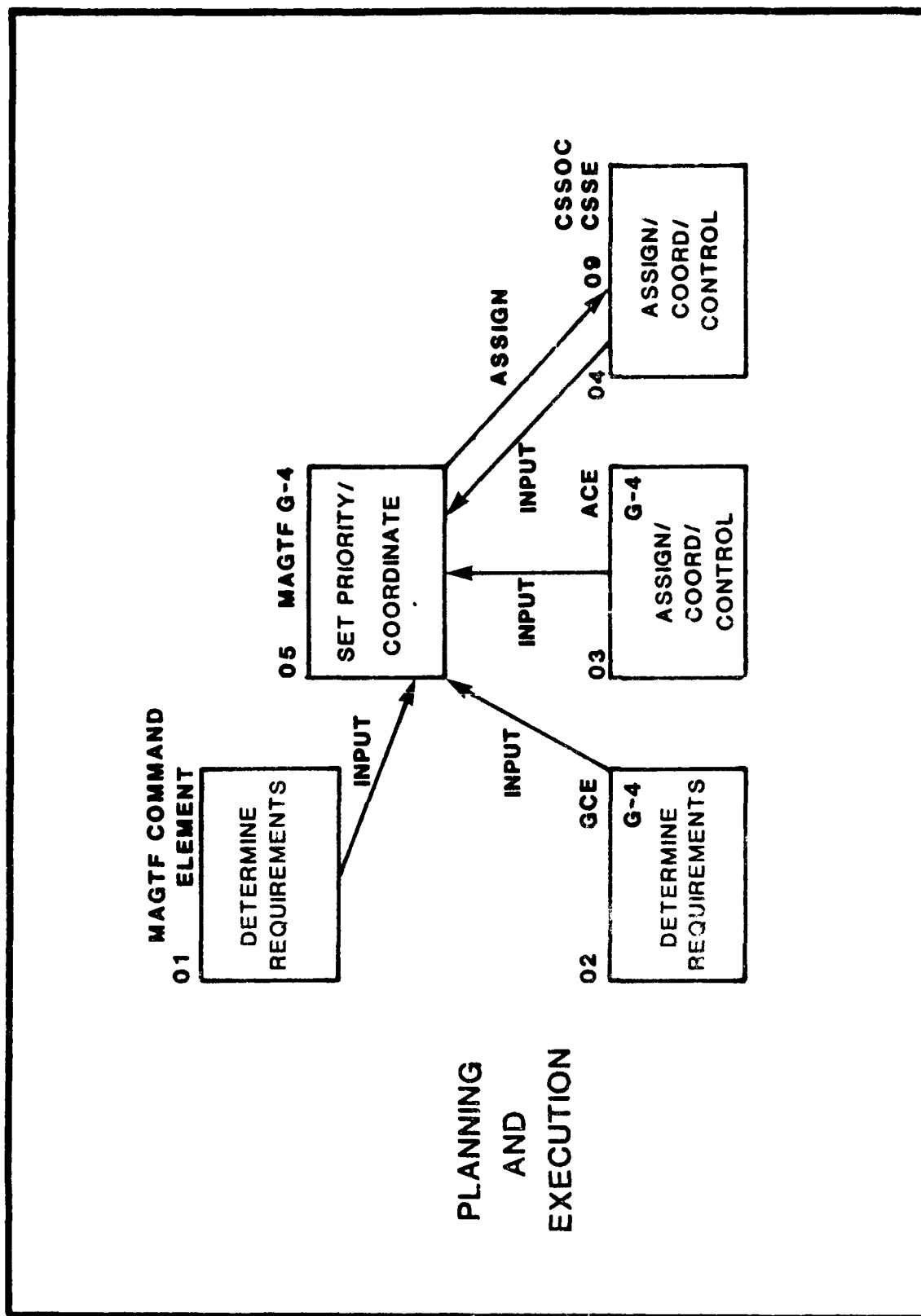


Figure 5-9. FUNCTION: Transportation SUBFUNCTION: Material Handling
TASK: Requirements Determination/Resource Coordination/Resource Assignment/Resource Control

0-1, 0-2, 0-3, 0-4

MAGTF elements requiring material handling above their organic assets determine their requirements and forward these requirements to the MAGTF G-4.

0-5 The MAGTF G-4 sets the MHE priorities and coordinates the assignment actions with the CSSOC and the requesting units.

5.2.2.4 Subfunction: Embarkation

TASKS: Requirements Determination, Resources Coordination, Resources Assignment, Resource Control.

Figure 5-10 pictures the tasks associated with the embarkation subfunction during the planning and execution phases.

0-1 The MAGTF elements determine their specific embarkation requirements from the MAGTF Concept of Operations and the MAGTF Embarkation Officer's tentative embarkation assignments.

0-5 The MAGTF elements submit their requirements to the MAGTF G-4 who sets priorities, approves their requirements, and assigns embarkation space. He coordinates this assignment with the CSSE CSSOC for embarkation action.

0-6 The CSSE CSSOC coordinates the actual movement and embarkation of the MAGTF. The FSSG battalions perform their primary embarkation functions during the embarkation movement. Control is exercised by the Logistics Movement Coordination Center internal to the CSSE CSSOC.

0-7 The LSOC establishes command and control facilities at ports, airfields and other movement staging areas to receive and move men,

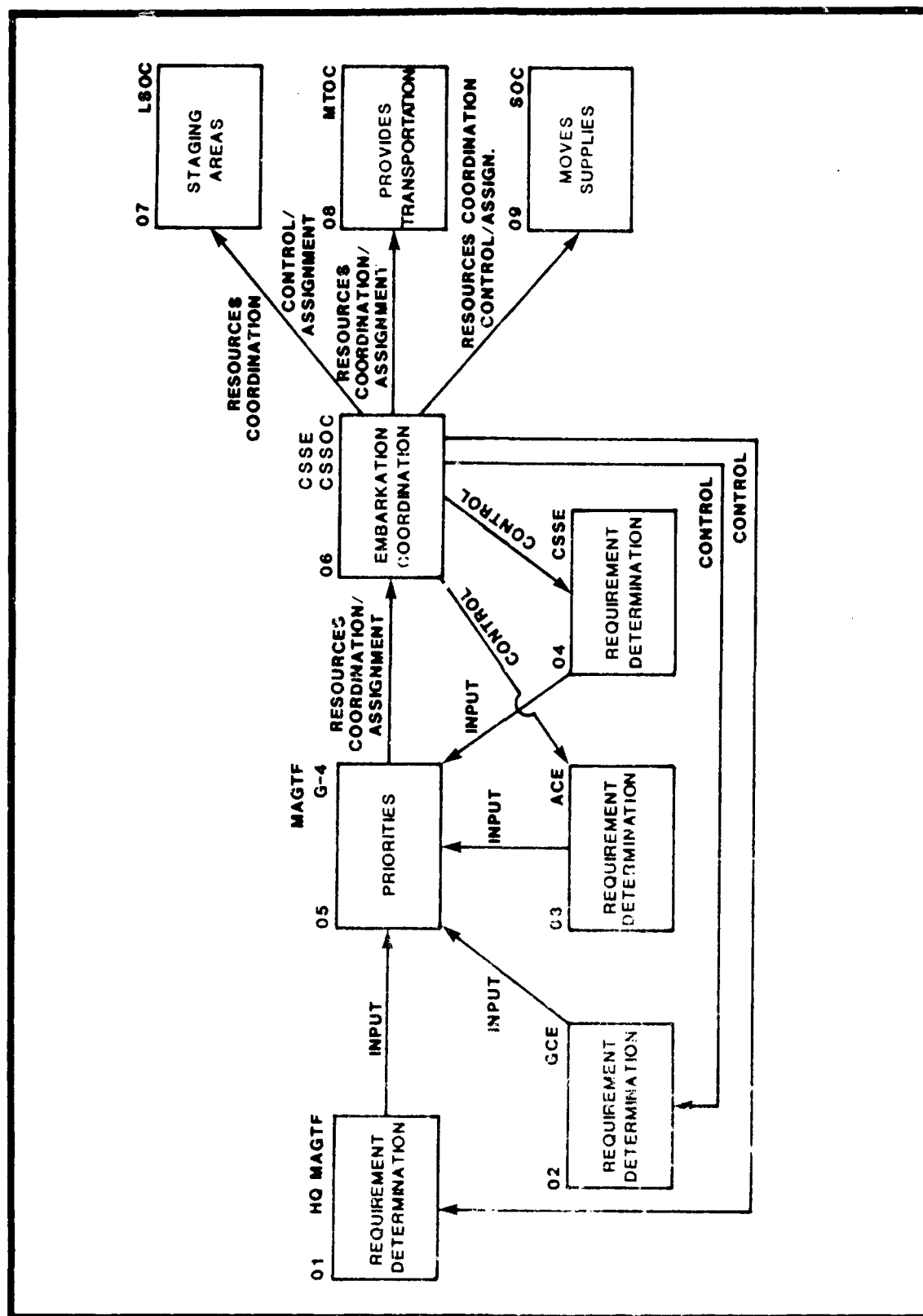


Figure 5-10. FUNCTION: Transportation SUBFUNCTION: Embarkation TASK: Requirements Determination/Resources Coordination/Resources Assignment/Resource Control

materials and equipment according to plan. It maintains control by status boards and reports.

0-8 The MTOC provides trucks to move men, materials and supplies. It maintains control on assignment status.

0-9 The SOC coordinates the movement of supplies with the MTOC and LSOC. It provides status information on supply loading to the CSSOC.

5.2.2.5 Subfunction: Landing Support

TASKS: Requirements Determination, Resources Coordination, Resources Assignment, Resource Control.

The landing support tasks for both the planning and execution phases are shown in figure 5-11.

0-1, 0-2, 0-3, 0-4

MAGTF elements develop a landing plan based upon the COO. This plan provides for a serialized landing sequence of men, equipment and supplies. The MAGTF elements determine this landing sequence which is approved by the MAGTF Commander. The resources to task organize the Landing Support Shore Party Groups are assigned to the Landing Support Battalion. The landing support subfunction covers the help provided to move the men, material and equipment during the amphibious assault. The CSSE Landing Support Battalion task organizes into command and control groups to support beaches or helicopter landings during the assault and assault follow-on. The Landing Support task organized units are the vortex through which everything flows.

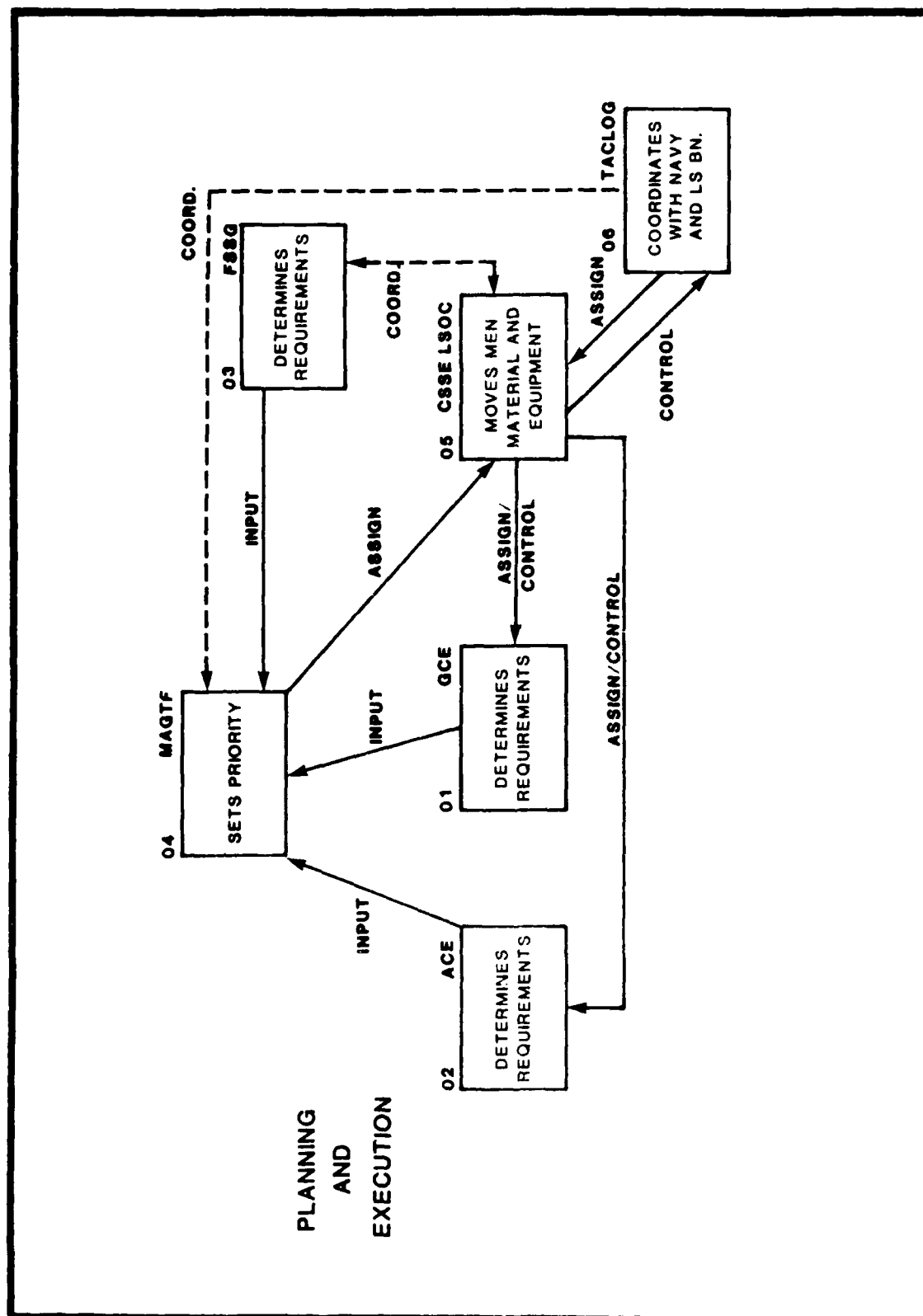


Figure 5-11. FUNCTION: Transportation SUBFUNCTION: Landing Support TASKS: Requirements Determination/Resources Coordination/Resources Assignment/Resource Control

0-5, 0-6

Each LSOC works with the TACLOG to continue to bring the assigned serials ashore in the sequence desired by the Commander. The TACLOG maintains contact with the command elements to assist in keeping the flow of material, men and equipment moving.

5.2.2.6 Subfunction: Freight/Passenger Transportation/Port/Terminal Operations

TASKS: Requirements Determination, Resources Coordination, Resources Assignment, Resource Control.

Figure 5-12 covers the tasks associated with the Freight/Passenger Transportation/Port Terminals Operations subfunction during both the planning and execution phases of an operation.

0-1, 0-2, 0-3, 0-4, 0-5

The MAGTF elements determine their manpower and material movement requirements. They input this information to the FMCC who determines the movement requirements and coordinate with outside agencies for the spaces to effect the movement. The assignment of responsibility of the movement is given to the CSSE who coordinates and controls the movement through a Logistics Movement Coordination Center (LMCC).

0-6 The LMCC coordinates the resources to move the force in the time and sequence required. It maintains control through receipt of status reports from the airfield or port.

0-7 The MTOC provides transportation to move the force.

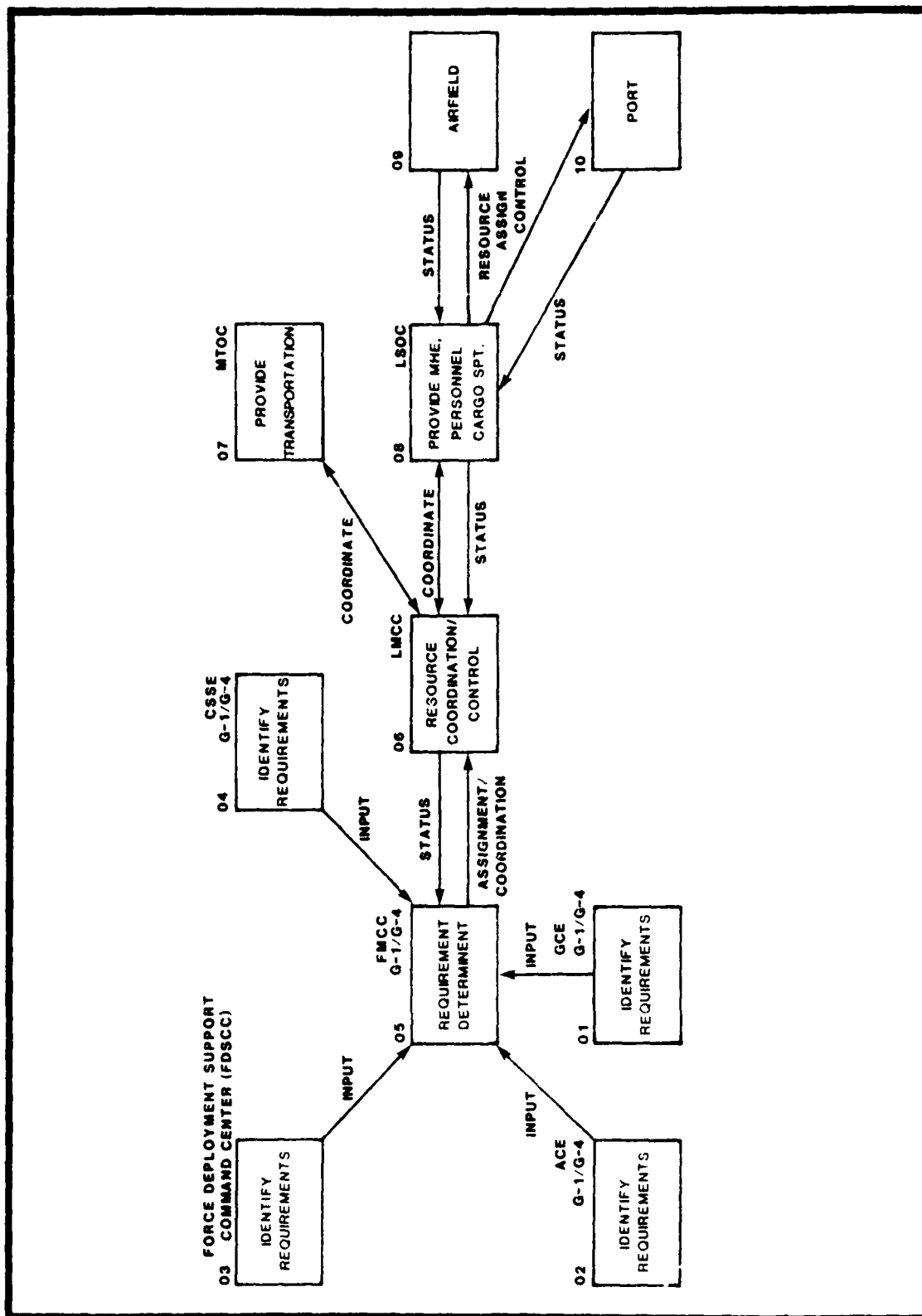


Figure 5-12. FUNCTION: Transportation SUBFUNCTION: Freight/Passenger Transportation/Port Terminal Operations TASKS: Requirements Determination/Resources Coordination/Resources Assignment/Resource Control

0-8, 0-9, 0-10

The LSOC provides the MHE, the personnel and the communications to operate the airfield, port and staging facilities. Resources are assigned and controlled to allow continuous operation throughout the period. Operations are reported by status reports to the LMCC.

5.2.2.7 Subfunction: Aerial Delivery

TASKS: Requirements Determination, Resources Coordination, Resources Assignment, Resource Control.

The aerial delivery planning and execution phase tasks are shown in figure 5-13.

0-1, 0-2, 0-3, 04

The GCE COC, determines his requirement for aerial delivery and requests support from the MAGTF COC. The MAGTF COC coordinates this requirement with the CSSE CSSOC and the ACE.

0-3 The CSSOC passes the assignment to the LSOC to provide support as part of its normal mission. The LSOC provides support from the Air Delivery Support Platoon which prepares the air drop. The Landing Support COC coordinates with the ACE and provides control to the CSSOC and ACE by status reports.

5.2.3 The Maintenance Concept

The maintenance concept most used in the combat environment is to relieve the combat and combat support units of as much of the maintenance effort as possible. Listed under the maintenance function are eight subfunctions:

Inspection and Classification (I & C)

Servicing, Adjustments and Training (S, A & T)

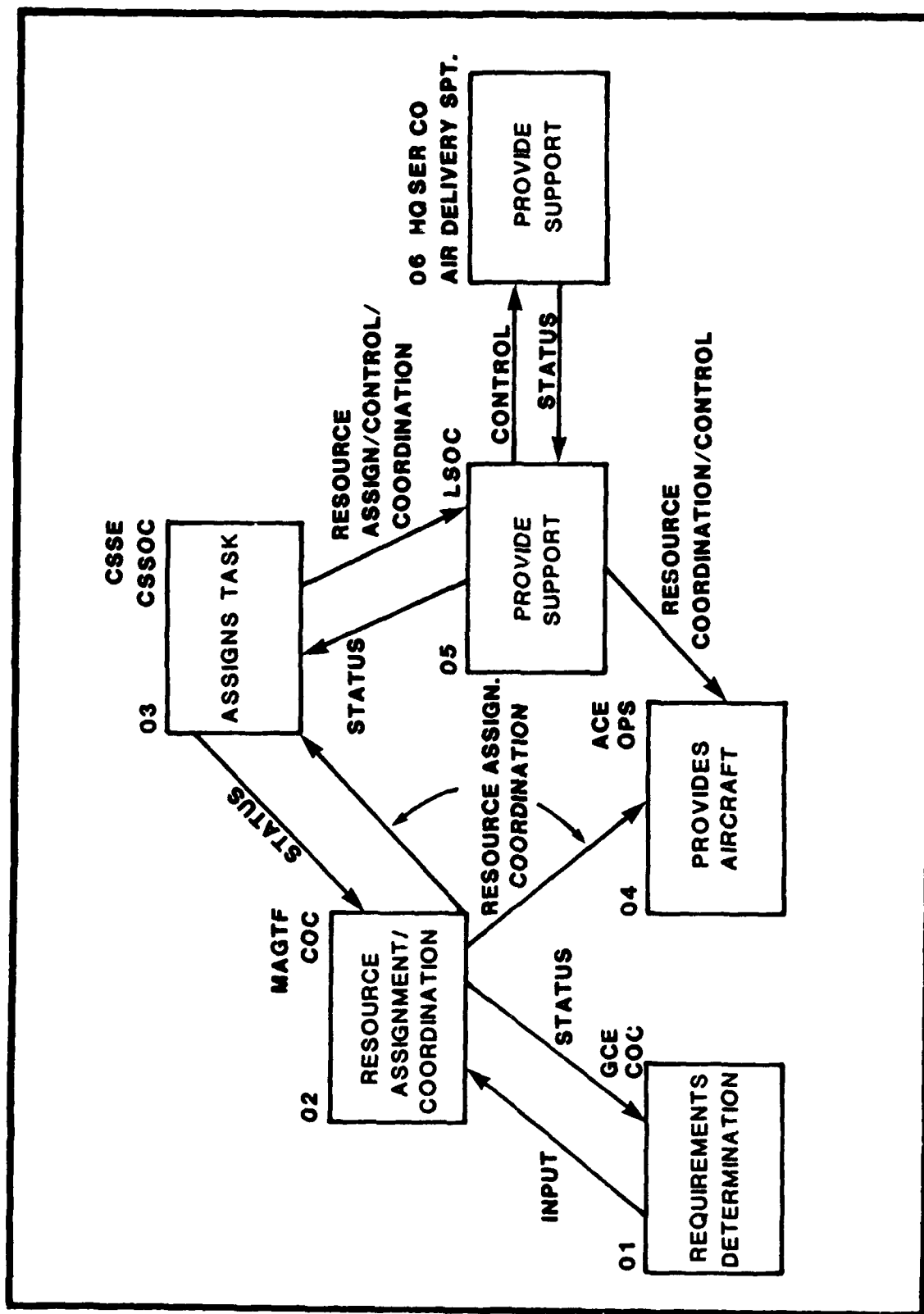


Figure 5-13. FUNCTION: Transportation SUBFUNCTION: Aerial Delivery TASKS: Requirements Determination/Resources Coordination/Resources Assignment/Resource Control

Testing and Calibration (T & C)

Repair

Modification

Rebuild

Reclamation

Evacuation

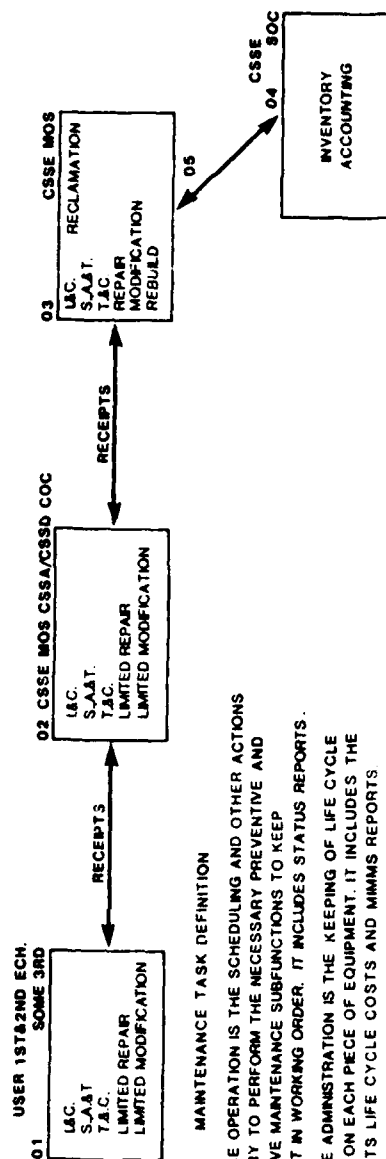
These subfunctions are accomplished within defined levels and echelons of maintenance. The levels are organizational, intermediate, and depot. Five echelons are identified within these three levels of maintenance. The first (operator) and second (using unit) are done by the owner of the equipment at the organizational level. This generally consists of I&C, S,A&T and limited T&C. Third echelon is the replacement of components, minor repairs, and modifications by CSS units who have trained personnel and authority to perform third echelon repairs on specific equipment. Fourth echelon is done by identified, trained CSS units. This echelon includes all of the subfunctions of maintenance. Third and Fourth echelons are considered intermediate level of maintenance. The fifth level is depot maintenance and is generally done at depots using highly trained personnel and special equipment.

The maintenance tasks are listed in figure 5-14. They are required to be done at all echelons and levels of maintenance but, in the combat environment, as much as possible is done by the CSS units. This does not mean that the user can ignore equipment; however, the user must record organizational maintenance and open an Equipment Repair Order (ERO) when work is beyond the unit's capacity, as shown in figure 5-15, Flow of Equipment Repair Ashore.

5.2.3.1 All Subfunctions

TASKS: All Tasks

In figures 5-14 and 5-15, the Maintenance subfunctions and tasks are indicated with their flow diagrams.



MAINTENANCE TASK DEFINITION

MAINTENANCE OPERATION IS THE SCHEDULING AND OTHER ACTIONS NECESSARY TO PERFORM THE NECESSARY PREVENTIVE AND CORRECTIVE MAINTENANCE SUBFUNCTIONS TO KEEP EQUIPMENT IN WORKING ORDER. IT INCLUDES STATUS REPORTS.

MAINTENANCE ADMINISTRATION IS THE KEEPING OF LIFE CYCLE RECORDS ON EACH PIECE OF EQUIPMENT. IT INCLUDES THE EQUIPMENT'S LIFE CYCLE COSTS AND MIMMS REPORTS.

WORKLOAD CONTROL IS THE MANAGEMENT FUNCTION NECESSARY TO SUPPORT THE MOVEMENT OF EQUIPMENT IN AND OUT OF SHOP AREAS EXPEDITIOUSLY.

QUALITY CONTROL IS THE ACTIONS NECESSARY TO ENSURE THAT REPAIRS ARE DONE CORRECTLY AND THAT ALL ACTIONS ARE RECORDED.

MAINTENANCE SUBFUNCTION LISTING

(I.C.) INSPECTION AND CLASSIFICATION
(S.A&T) SERVICING, ADJUSTMENTS AND TRAINING
(T&C) TESTING AND CALIBRATION
REPAIR
MODIFICATION
REBUILD
RECLAMATION
EVACUATION

Figure 5-14. FUNCTION: Maintenance: All Subfunctions: All Tasks

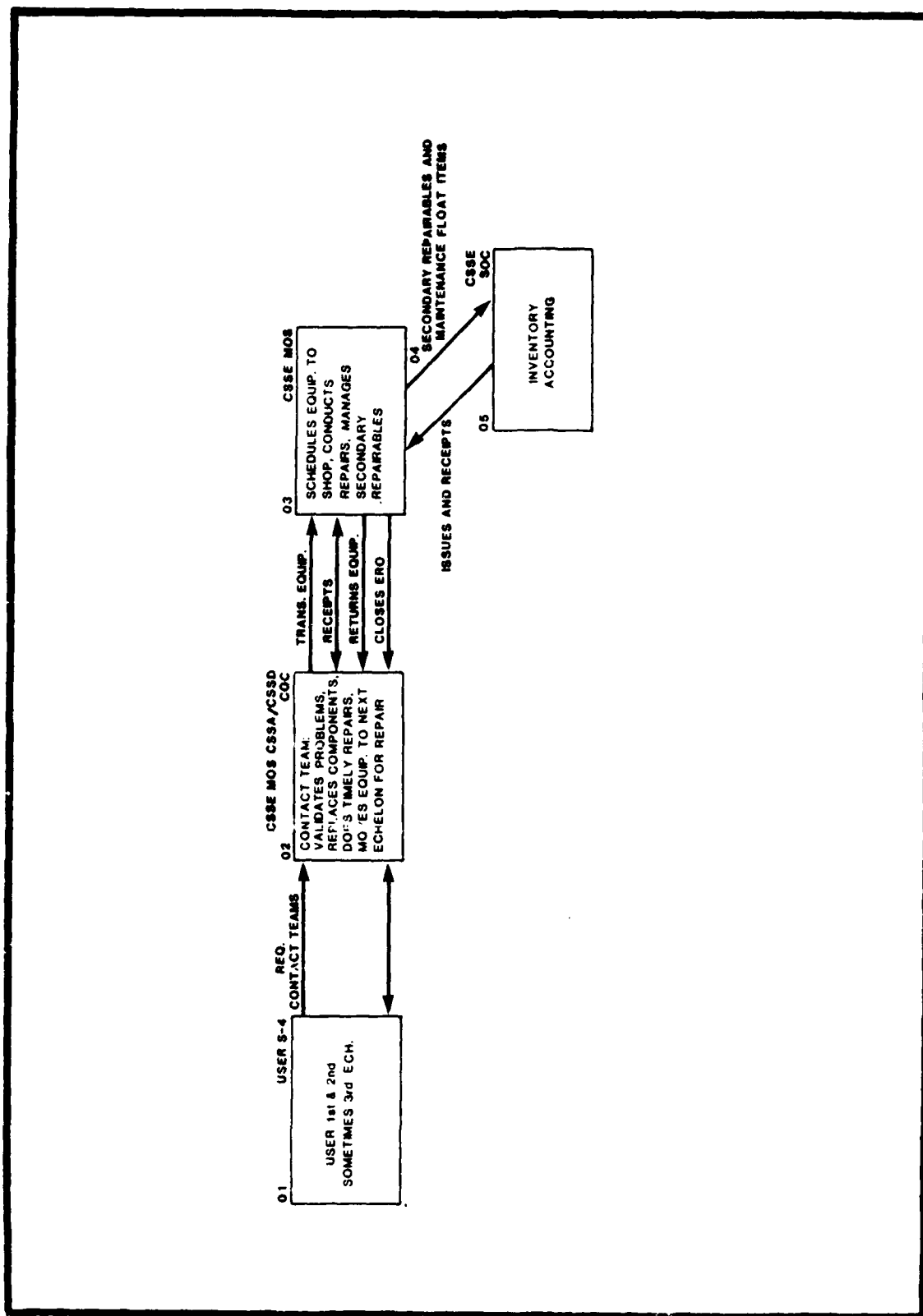


Figure 5-15. Flow of Equipment Repair Ashore

- 0-1 The using unit performs the maintenance operations authorized at its level (1st & 2nd, some units limited 3rd) to keep its equipment combat ready. This includes the maintenance and administration, including the necessary record keeping and reporting of status. Workload control involves the scheduling of equipment service to insure that the unit will be prepared to enter combat. Quality control is the supervision required to ensure repairs are done correctly and all actions are recorded.
- 0-2 If the user determines that repairs or problems are beyond his capability, he requests support from the CSSD. The CSSD contact team inspects and classifies the problem and either fixes it on site or moves it out of the user's area. If the equipment is moved the user opens an ERO/rapid request and gets a receipt from the CSSD contact team. The CSSD moves the equipment to the closest CSSA where the work can be done. Certain critical items are repaired or serviced at the CSSD directly supporting the combat unit.
- 0-3 Equipment that cannot be fixed at the CSSD is moved to the Maintenance Battalion for repair by the specific commodity shop or a contact team from Maintenance Battalion is dispatched. The maintenance shops receipt for the equipment, perform L&C and report the status to the Maintenance Operation Section (MOS). The MOS ensures workload and quality control is done and reports the status to the CSSOC and the user.
- 0-4 The commodity shops have pre-expended bin supplies for repair work, but order supply parts from the Supply Battalion to replenish stock or obtain other parts required to fix the equipment.
- 0-5 The Supply Battalion provides the parts or reports status if the missing items have to be back ordered. Supply status is maintained until the part is received and issued. The commodity shop performs

the work and then notifies the CSSD to return the equipment to the user. The actions required to fix the equipment are recorded, the equipment is receipted for by the user, and the ERO is closed. If the equipment is determined to be unrepairable, a replacement item can be issued from the PWR. The accounting function is performed by the SOC while the MIMMS reporting and the ERO information is handled by the MOS.

5.2.4 Health Services

Health Services is the CSS function which involves the human resources of a MAGTF. It is concerned with all of the subfunctions and tasks that insure the physical well-being of Marines is maintained at the highest possible state of readiness to support combat. Health Services starts with the daily routine of sick call and preventative medicine, moves through the initial collection and treatment of casualties, and concludes with the hospitalization and further evacuation of casualties out of the AOA. There is a strict requirement in the Health Services function to maintain health and treatment records on a current basis and to ensure that the records stay with the Marine under treatment.

During combat, casualties are moved through an evacuation chain which consists of five levels. The first level is the corpsman in the field, who provides the initial treatment prior to arrival at the Battalion Aid Station, the second level. Here the Marine is treated and returned to duty or further moved to the Medical Battalion Field Hospital for field surgery, etc., the third level. The patient may then be moved to a hospital ship or fleet hospital, the fourth level, and finally to a medical facility for convalescent care, the fifth level. This movement chain is regulated by a Medical Regulating Coordination Center (MRCC) that ensures that the casualty gets the quickest support possible. The MRCC can direct movement to the nearest medical facility with space and medical support available to assist the Marine. To provide this capability properly the MRCC needs status information rapidly in

order to maintain the best quality of care. The Health Services CSS subfunctions and tasks are shown in figures 5-16 through 5-18.

5.2.4.1 Subfunction: Health Maintenance

TASKS: Sick Call, Preventive Medicine.

In figure 5-16, the tasks in the Health Services subfunctions are shown in the execution phase.

- 0-1 This figure applies to both medical and dental sick call and to preventive medicine. The Marine with a problem visits the user's Medical Treatment Facility (MTF) on an emergency basis or by appointment, for preventive medicine. The patient is treated and his treatment is recorded. Numbers of patients and their status are recorded and reported by the medical facility.
- 0-2 If the patient needs specialist care for something beyond the capability of the user's MTF, the patient reports to the Medical Battalion's MTF for medical support. This can be either by appointment or for emergency treatment. In either case, all patients are treated and their status is reported both to each user's MTF and to the CSSE CSSOC Health Services Support Unit (HSSU).
- 0-3 The HSSU section of the CSSOC receives reports from all units that support the medical well being of the MAGTF and provides the status of MAGTF medical resources. These reports, together with other health services casualty reports, enable the CSSE Cmdr and the MAGTF Cmdr to make the best use of medical resources.
- 0-4 Sick Call and Preventive Medicine Status Reports are forwarded to the MAGTF G-4 and MEDO for review.

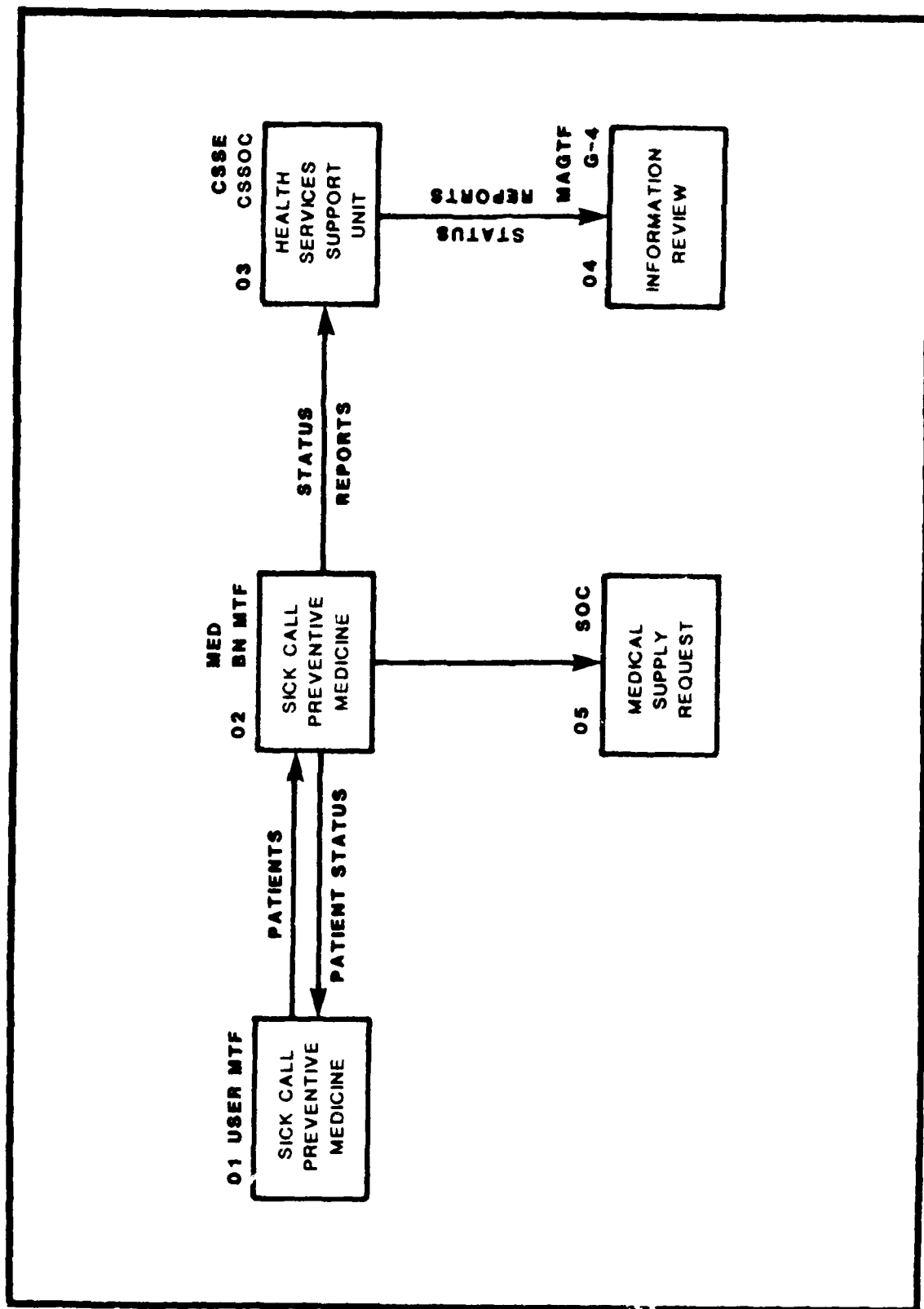


Figure 5-16. FUNCTION: Health Services SUBFUNCTION: Health Maintenance
TASKS Sick Call, Preventive Medicine

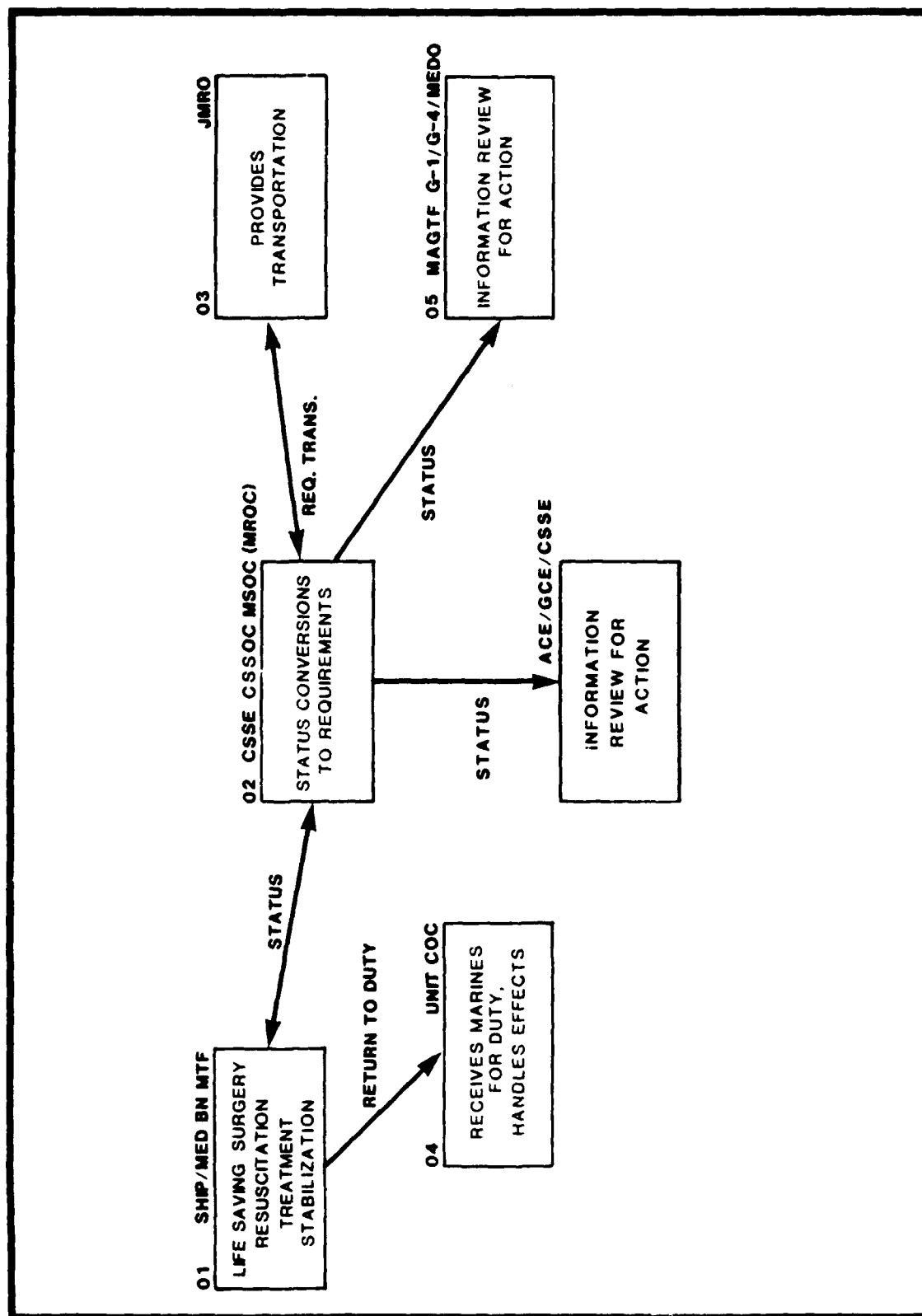


Figure 5-18. FUNCTION: Health Services SUBFUNCTIONS: Casualty Treatment, Temporary Hospitalization and Evacuation TASKS: Life Saving, Surgery, Resuscitation, Treatment, Stabilization, Return to Duty, Whole Blood Distribution, Evacuation Control

0-5 Medical Supply requests to support sick call are forwarded to the SOC and handled like any other supply request.

5.2.4.2 Subfunction: Casualty Collection (Tactical)

TASKS: First Aid, Initial Resuscitation, Treatment, Triage, Battlefield Evacuation, and Transportation

In figure 5-17, the tasks in the Health Services subfunction, Casualty Collection (Tactical), are shown.

0-1 When a Marine becomes a casualty, he is given first aid by a unit corpsman or doctor at the unit MTF and his casualty medical treatment record is started. If he is well enough he is returned to duty. If he needs further treatment, which cannot be provided by the unit MTF, a request for medical evacuation is made to the MRCC.

0-2, 0-3, 0-4

The MRCC is the medical regulating coordination center which manages the MTF spaces and coordinates medical transportation requirements. The MRCC makes sure that medical resources are being used to their best advantage without overloading one MTF or underutilizing another. The personnel at the MRCC request helicopter transportation from the ACE DASC (0-3) or provide ground transportation depending upon the location of the MTF that is to receive the casualties. The HSSU at the CSSE CSSOC (0-4) assist as required.

0-5 The DASC assigns helicopter support and reports back to the MRCC and the requesting unit via the MRCC.

0-6, 0-7

The CSSOC HSSU provides status reports on casualty collection actions to the MAGTF ACE GCE and CSSE G-4/MEDO. This information is based

upon the action taken following the Battalion MTF requests for medical evacuations, their triage diagnosis, and the casualty receiving actions at each MTF which has accepted casualties during the reporting period. The information is based upon seven separate status reports:

Patient Flow Status (within MTF)

Bed Status

Operating Room Backlog

Medical Regulating Status

Blood Status

Medical Personnel Status

Vehicle Status

- 0-8 Each MTF reports status to the MRCC, CSSOC and MAGTF G-1, G-4/MEDO. Patients are either returned to duty or are moved out of the area for further treatment or convalescent care.

5.2.4.3 Subfunction: Casualty Treatment, Temporary Hospitalization and Evacuation

TASKS: Life Saving, Surgery, Resuscitation, Treatment, Stabilization, Return to Duty, Whole Blood Distribution, and Evacuation Control.

In figure 5-18, the tasks in the Health Services subfunction, Casualty Treatment, Temporary Hospitalization and Evacuation, are shown.

- 0-1 When the casualty has been triaged, the Marine is evaluated and surgical priority of his case is determined. This is recorded and the casualty is treated and placed in a ward for care and stabilization. Information concerning the casualty is maintained in the Patient Affairs Office. All status information concerning the casualty is

communicated from this activity. It is based upon the information recorded in the Marine's medical record, the Triage log book, the casualty receiving log book and the seven status reports; patient flow, bed, operating room backlog, medical regulating, blood, medical personnel and vehicles.

- 0-2 The various MTFs report status to the CSSOC Medical Support Operations Center (MSOC). From these status reports the administrative needs, resources usage, estimates of near term requirements and patient location are pinpointed. Within the MTFs this information is handled by the Patients Affairs section.
- 0-3 Patients requiring transportation are referred by the MSOC to the Interservice Joint Medical Regulation Officer (JMRO) for movement out of the AOA.
- 0-4 Patients who have recovered are returned to duty with their unit.
- 0-5 Patient and administrative status is reported to the MAGTF G-1/G-4/MEDO for review and any required action.

5.3 Other CSS Functions

The two remaining CSS functions, Deliberate Engineering and Services, are normally in general support of the MAGTF. This differs from the major CSS functions which may be in either direct or general support.

5.3.1 Deliberate Engineering. Engineering resources available to the MAGTF are limited and their projects time consuming. Projects are prioritized and are based on an approved engineering plan and engineering estimates.

5.3.1.1 Subfunction: Construction (Horizontal and Vertical)

TASKS: All Tasks in the Planning Phase

In figure 5-19, the tasks in the Deliberate Engineering subfunction, Construction, are shown for both the planning and execution phases.

- 0-1 In the planning phase the MAGTF G-4 confers with the G-3 and Staff Engineer to develop construction priorities (dumps, airfields, lines of communications (LOCs), etc.) based upon the proposed concept of operations. These construction priorities and the time constraints involved are included in the course of action (COA) supporting the final COO. Once the COO and the supporting engineer's COA is decided, the MAGTF G-4 publishes the plan containing the scheduled site completions. This objective plan is used by the engineers to baseline their status reports once they start to build the facility.
- 0-2 The CSSOC operations section directs the Engineer Battalion to organize and support the approved engineer plan. The CSSOC section provides assistance to the Engineer Support Commander by assisting in the planning process and coordinating actions concerning transportation, supply and embarkation. It also assists in assuring that Class IV construction items are available and supported in the shipping requirements.
- 0-3 The Engineer Support Bn Operations Section develops the required organization by task with T/O, T/E, material, and time requirements. The construction materials list is submitted to CSSOC Opns and the Bn Supply for approval and ordering. The Bn Supply requisitions the material and identifies it by task for control purposes.

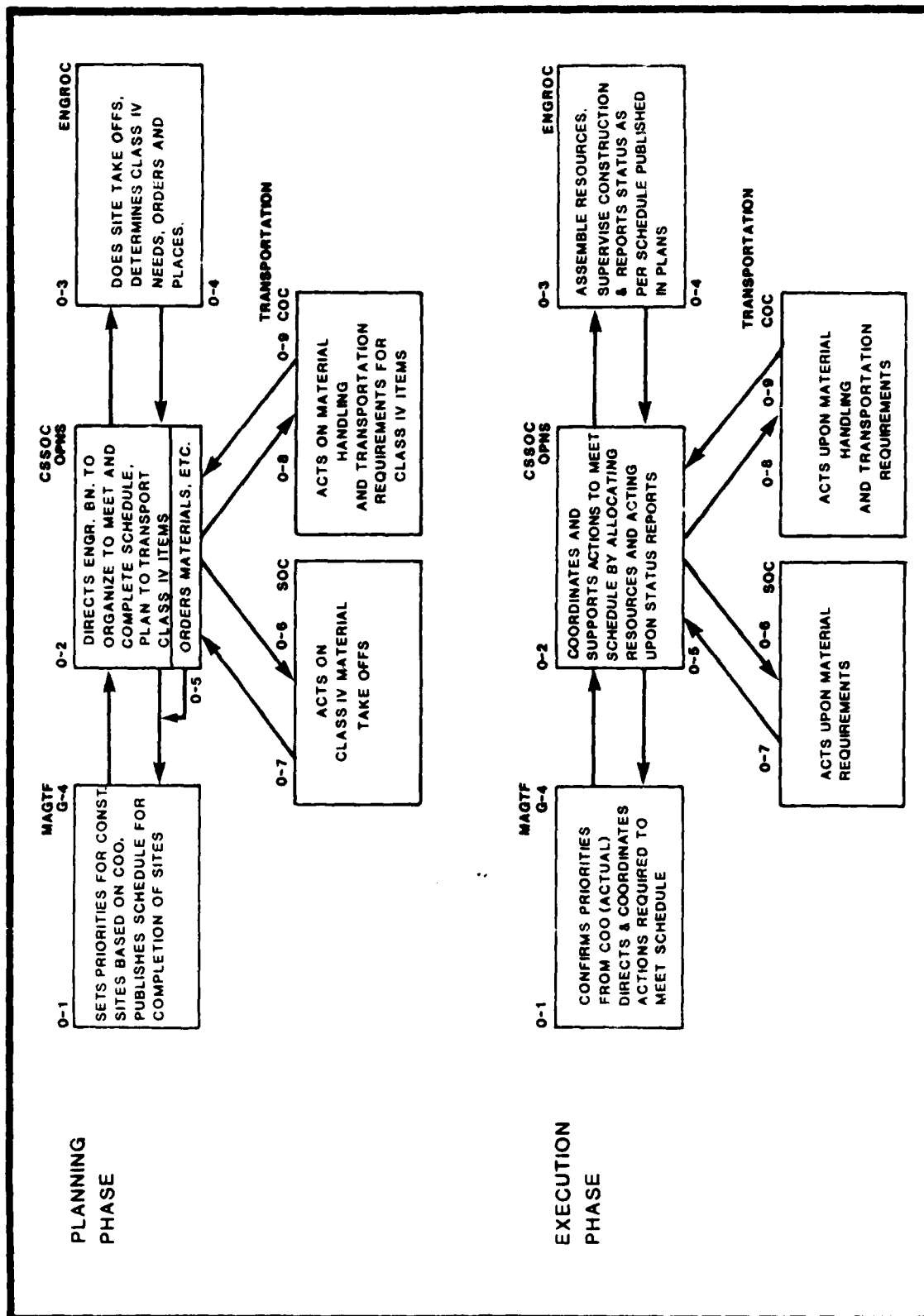


Figure 5-19. FUNCTION: Deliberate Engineering SUBFUNCTION: Construction (Horizontal & Vertical) TASKS: In the Planning and Execution Phases

- 0-4 The Engineer Support Bn submits their task organization and material requirements to the CSSOC for approval and coordination action. The CSSOC includes the engineer plan in the CSSE operations plan to ensure proper loading of units and materials to get them into the AOA in time to accomplish the tasks assigned. Some Class IV materials earmarked for these prospects can arrive in follow-on shipping.
- 0-5 CSSOC reports plan status to MAGTF G-4 for inclusion in the MAGTF Administration and Operations Plans.
- 0-6 The SOC takes the necessary supply actions to order, receive and distribute the materials according to the CSSE Operations Plan.
- 0-7 The SOC reports on material status when ordered and as status changes until all materials are received.
- 0-8 The transportation coordinator in the CSSOC acts upon the material handling and movement requirements with the SOC and includes these elements as part of the plan to support the engineer plan.
- 0-9 The transportation COC reports on material handling and transportation status when ordered and as status changes.

5.3.1.2 Subfunction: Construction (Horizontal and Vertical)

TASKS: All Tasks in the Execution Phase

- 0-1 In the execution phase shown in figure 5-19 the MAGTF G-4 confirms the priorities developed from the COO (Actual) to the CSSOC and other commands. The G-4 directs and coordinates actions required through all phases of operations until the project is completed and units move into the facilities. The actions are taken based on information

provided in progress and status reports. Coordination actions are taken with other MAGTF staff sections, other commands, and the CSSOC.

- 0-2 CSSOC Opns supports the Engineer Bn Commander in meeting approved Deliberate Engineering construction schedules by coordinating actions to get construction materials, equipment and personnel moved to the construction sites. These actions are based upon status reports and support requests from the Engineer Support Battalion.
- 0-3 The ENGROC assembles resources, moves them to the sites, supervises construction, and provides quality control.
- 0-4 The ENGROC reports status based upon approved plans and identifies requirements to resolve problems which might prevent meeting the schedule.
- 0-5 CSSOC Opns reports on coordination actions and status to MAGTF G-4.
- 0-6 The SOC reacts to CSSOC Opns requests for supply support.
- 0-7 The SOC provides the status of the CSSOC requirements for supply support by construction project.
- 0-8 Transportation COC reacts to CSSOC Opns for transportation requirements to support construction projects.
- 0-9 Transportation COC provides status to CSSOC and Engr Support Bn concerning requirements for transportation needs at each construction site.

5.3.1.3 Subfunction: Facilities Maintenance

TASKS: All Tasks in the Planning Phase

In figure 5-20, the tasks in the Deliberate Engineering subfunction, Facilities Maintenance, are shown for both the planning and execution phases.

- 0-1 In the planning phase the MAGTF Engr Officer and the G-4 working with the MAGTF G-2/G-3 develop plans for facility repairs based upon the approved COO. As these could conflict with the Engineers construction tasks, a total priority and level of effort is established for all engineer efforts.
- 0-2 The CSSOC Opns directs the Engineer Support Bn to organize for facilities repair. The CSSOC Staff Engineers provide coordinating support to assist in this effort.
- 0-3 The ENGROC plans and organizes to perform facilities repairs in accordance with priorities established by MAGTF G-4. These priorities are based upon total engineer mission tasking, both construction and repairs. The priorities can be changed by the MAGTF G-4.
- 0-4 The ENGROC submits its proposed organization and plans to the CSSOC Opns for coordination and inclusion in their operation plans.
- 0-5 The CSSOC Opns incorporates the Engineer Support Battalion plans into its operations plans after coordinating all events between the two plans and ensuring that all actions are supported in the CSSE and MAGTF COA. This result is reported to the MAGTF G-4.

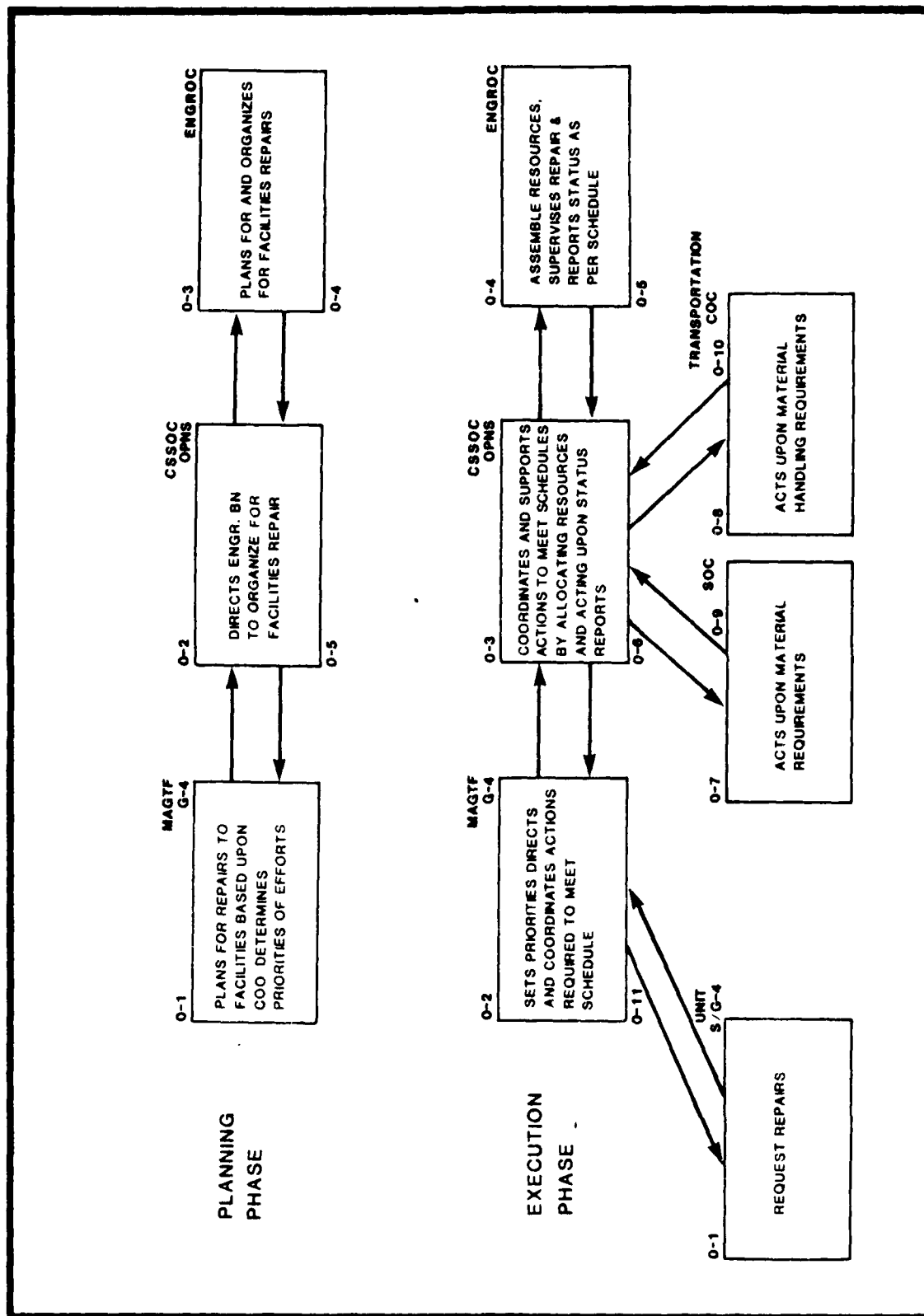


Figure 5-20. FUNCTION: Deliberate Engineering SUBFUNCTION: Facilities Maintenance
TASKS: In the Planning and Execution Phases

5.3.1.4 Subfunction: Facilities Maintenance

TASKS: All Tasks in the Execution Phase

- 0-1 During the execution phase, Engineer units which are organized to support repair/maintenance of facilities do so in accordance with their own reconnaissance and resulting daily schedule. These units are usually in general support assigned to a specific area of responsibility. Requests for priority repairs come from the combat unit to the MAGTF G-4.
- 0-2 The MAGTF G-4 reviews the facilities maintenance requests and establishes priorities within the capabilities of either the Engineer Support Bn or other resources available. The G-4 works with the CSSE CSSOC staff and the Engineer Battalion Commander to adjust the schedule to support all required actions.
- 0-3 The CSSOC Opns Engr Section then adjusts its schedule and assists the Engineer Support Battalion in performing the necessary repairs.
- 0-4 The ENGROC assigns the repair task, assembles any additional required resources, supervises the repair, and reports the status of repairs by task.
- 0-5 The CSSOC Opns supports the Engineer Bn by acting upon status reports.
- 0-6 Actions taken by the CSSOC are reported to the MAGTF G-4. Reporting is either by daily status updates or special situation.
- 0-7 The CSSOC Opns requests the supply SOC to act upon material requirements. This may include drawing items from supply depots or obtaining material from the local economy.

- 0-8 The CSSOC Opns requests the transportation COC to support material handling and transportation requirements if they are beyond the Engineer Battalion capability.
- 0-9 The SOC reports actions taken to the CSSOC who informs the MAGTF G-4 and the original requesting unit.
- 0-10 The Transportation COC informs the CSSOC of the actions taken in regard to the support requirement. This information is passed to the MAGTF G-4 and the requesting unit.
- 0-11 The units receive a repair status report.

5.3.1.5 Subfunction: Engineering Reconnaissance

TASKS. Mapping, Surveying.

In figure 5-21, the tasks in the Deliberate Engineering subfunction, Engineering Reconnaissance, are shown for both the planning and execution phases.

- 0-1 In the planning phase the MAGTF G-4 and Engineer working with the G-2/G-3 develop engineering estimates to support the approved COO. These include map and serial photo surveys to locate airfields, lines of communications (LOCs), landing beaches, port facilities, quarry sites, etc. These estimates could require new aerial photos to support the survey and engineer estimates.
- 0-2 The ACE Opns is requested to fly the photo mission and obtain the desired photographs.
- 0-3 The ACE Opns provides the necessary photographs to support the survey actions. The MAGTF G-4 and Engineer may use the photos and maps to conduct surveys to develop plans or to develop engineering estimates.

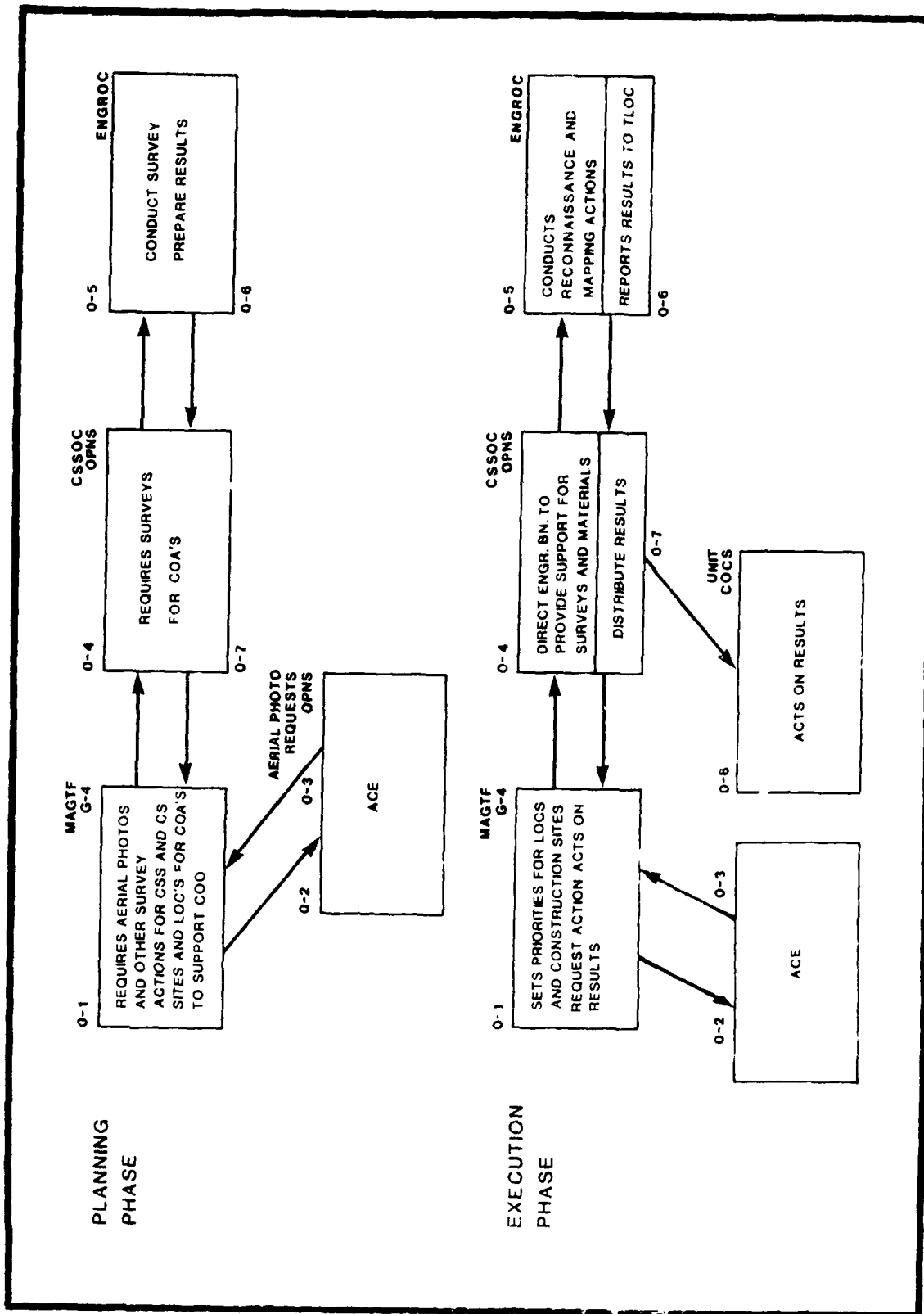


Figure 5-21. FUNCTION: Deliberate Engineering SUBFUNCTION: Engineer Reconnaissance
TASKS: Mapping, Surveying

- 0-4 The MAGTF G-4 and Engineer may request the CSSOC Opns and Engr Section to conduct surveys to develop plans as estimates for support of the various courses of action. They also conduct surveys within their capabilities.
- 0-5 The ENGROC performs the requested surveys and/or mapping. They develop engineer estimates and take mapping/survey actions as desired.
- 0-6 The ENGROC reports survey/mapping results. They also report engineer estimates concerning the various COAs to support the COO.
- 0-7 The CSSOC incorporates the Engineer Support Battalion surveys/mapping and/or estimates into their plans and forward them to the MAGTF G-4/Engr.

5.3.1.6 Subfunction: Engineering Reconnaissance

TASKS: Mapping, Surveying.

- 0-1 In the execution phase the MAGTF G-4 and Engineer establish priorities for LOCs and construction sites requiring mapping and surveying actions based upon plans as modified by the actual physical reconnaissance.
- 0-2. The G-4 requests the ACE to provide aerial photos of sites and LOCs.
- 0-3 The ACE flies the mission, takes photos, and delivers them to the MAGTF G-4 and Engineer for action. The MAGTF G-4 requests mapping or surveying support to develop sites.
- 0-4 CSSOC Opns directs Engineer Bn to conduct surveys and provide support as required.

- 0-5 Engineer Support Bn conducts reconnaissance and/or mapping or survey actions.
- 0-6 Engineer Support Bn reports results to CSSOC Opns.
- 0-7 CSSOC Opns distributes results to MAGTF G-4/Engineer and Unit COCs that are involved with the sites. This could be an ACE or GCE unit that will move into the site on a scheduled basis.
- 0-8 The Unit COCs act upon the results.

5.3.1.7 Subfunction: Demolition and Obstacle Removal

TASKS: Facilities Destruction, Minefield Placement and Removal.

In figure 5-22, the tasks in the Deliberate Engineering subfunction, Demolition and Obstacle Removal, are shown for just the execution phase since planning and execution are done concurrently.

- 0-1 The Unit COC requests support for demolition, or minefield placement/removal. Any change to a minefield in place should require a change request so that any action can be properly made and recorded.
- 0-2 MAGTF G-4 approves actions upon Engineers recommendations, sets priorities of minefield actions, etc.
- 0-3 CSSOC Opns coordinates and supports demolition and/or minefield actions, monitors status, and directs Engineer Support Bn. to perform necessary actions.
- 0-4 The ENGROC assembles required resources from the Ammo Dump and Engineer units. The units perform the approved actions. They also record and report status to the Engineer Support Bn. COC.

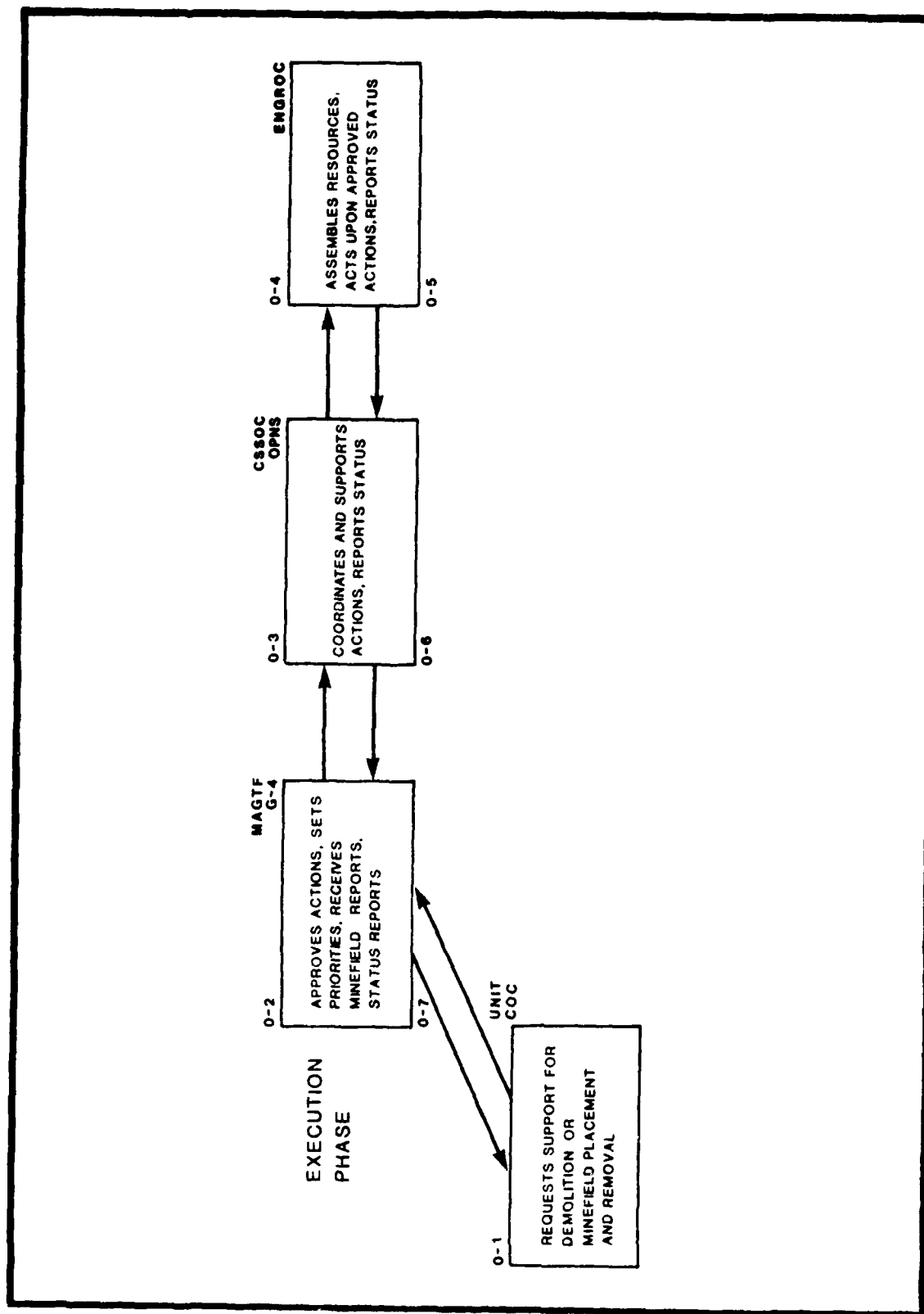


Figure 5-22. FUNCTION: Deliberate Engineering SUBFUNCTION: Demolition and Obstacle Removal
TASK: Facilities Destruction, Minefield Placement and Removal

- 0-5 The ENGROC reports status to the CSSOC Engr/Opns.
- 0-6 CSSOC Engr/Opns monitors actions, assures necessary records are made and reports status to MAGTF G-4/Engineer.
- 0-7 The MAGTF G-4/Engr maintains minefield records and status reports to ensure proper control.

5.3.2 Services Function

The Services function is a collection of support services provided by a base unit in garrison. These services are also required by a major military force in combat. The Services subfunctions have been consolidated in the CSSE. They support the entire MAGTF.

5.3.2.1 Subfunction: Postal

TASKS: Collection, Distribution, Route, Dispatch, Postal Sales, Directory Services.

The Postal subfunction is shown in figure 5-23.

- 0-1 The postal subfunction is one of several CSS functions performed by the Headquarters and Service Battalion, FSSG for the MAGTF in combat that is traditionally associated with base logistic support in garrison. In the AOA it is approached as a combination of unit command support and CSS tasks. Mail is collected and delivered to the Post Office by designated unit mail clerks appointed in writing by the command. These clerks also pick up and distribute the mail received and sorted by postal clerks. The unit mail clerk activities are considered part of the command support function while the postal clerk's activities fall in the category of combat service support. The Post Office is established near an airhead or other facility

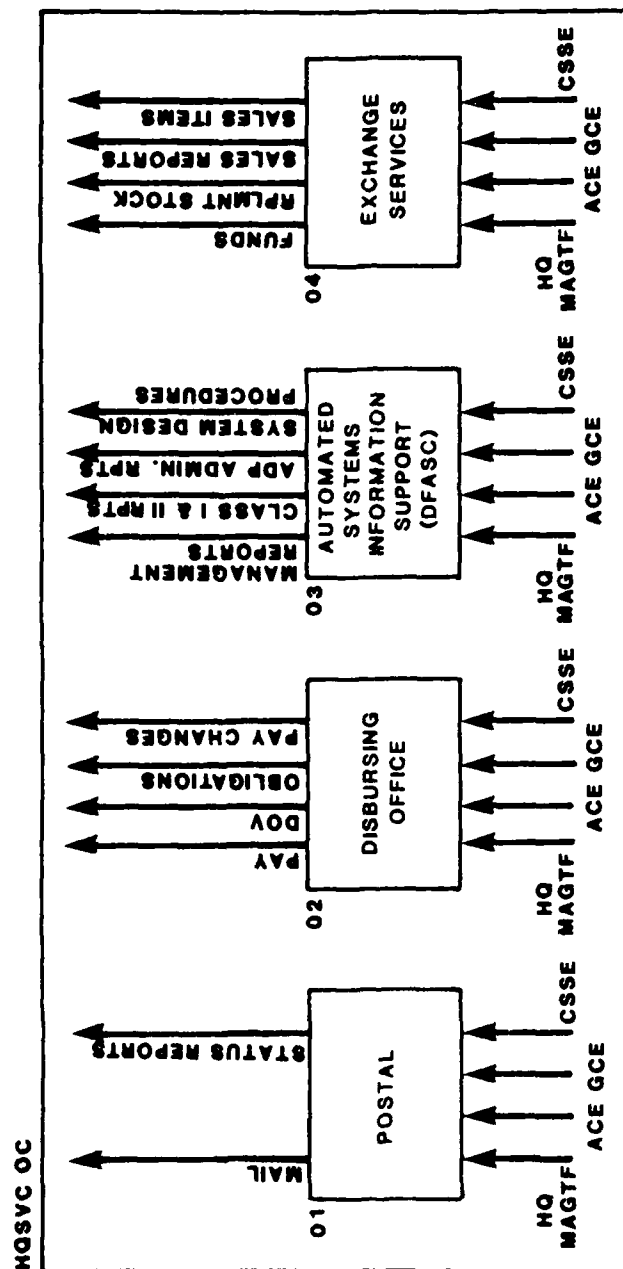


Figure 5-23. FUNCTION: Services SUBFUNCTION: Postal, Disbursing, Automated Information Systems, Exchange Services

where it can rapidly move mail into and out of the AOA. When received, mail is sorted by the postal clerks according to unit and unit location. A directory service is maintained listing units and their location to assist in mail routing. Mail is collected, bagged and dispatched in U.S. mail bags at the post office. Monies collected from the sale of money orders are turned over to the Disbursing Officer in exchange for a check made payable to the Accountable Postmaster. Monies collected from the sale of stamps, envelopes, and packages are turned over to the Disbursing Officer in exchange for a separate check made payable to the Accountable Postmaster. As shown in figure 5-23, input is received from all elements of the MAGTF with mail being dispatched, funds turned into the CSSE disbursing office and reports being made in accordance with Department of Defense Postal Services directives. These reports are handled by mail.

5.3.2.2 Subfunction: Disbursing

TASKS: Pay, Travel, Collections, Voucher, Foreign Currency

The disbursing information is shown in figure 5-23.

0-2 The MEF Disbursing Platoon, Headquarters and Service Battalion, FSSG holds US Treasury Symbols in safekeeping for the MAGTF. The Disbursing Platoon has the ability to provide pay, travel, public voucher, foreign currency exchange and check cashing support to Marines and make payment for all military obligations incurred by MAGTF Forces. When augmented with Navy pay specialists, the Disbursing Platoon will be able to provide pay support to other supporting troops. The Marine's Master Military Pay Account is maintained by the Marine Corps Finance Center which provides the Leave and Earning Statements via mail. The actual amount to be paid to the Marine is based on a pre-selected "Deployed Pay" amount chosen by the Marine and maintained locally on a Class II program. This program is used for non-

Direct Deposit participants only. Personal checks will be cashed for direct deposit participants. Once payments are made, the MAGTF Disbursing Office reports the information to the Finance Center. All other pay related information must be reported in the same manner. The Disbursing Officer's monthly account is manually prepared and reported to the Finance Center monthly. Appropriation totals and statements of accountability are reported to the Finance Center.

5.3.2.3 SUBFUNCTION: Automated Information Systems

TASKS: Data Systems Development, Input/Output Control, Housekeeping Function

0-3 The CSSE provides all of the Automated Information Systems Support to the MAGTF, as shown in figure 5-23. This AIS support includes input/output production. MAGTF units and staffs provide changes to Class I systems. The Data Systems development support task provides programming assistance to the users of new systems. The housekeeping support task includes all of the management support and application support needed to produce the required systems and reports. The input/output production reports serve as AIS periodic reports within the MAGTF and as management reports out of the AOA.

5.3.2.4 Subfunction: Exchange Services

TASKS: Provide Necessity and Health and Comfort items, Procure, Account, Warehousing, Sale Operations.

0-4 The exchange services mission in the AOA is to provide as articles for resale those items which could add to the comfort of the individual Marine. As shown in figure 5-23, this involves the resale of toilet articles, candy, tobacco, soft drinks, beer, and souvenirs.

In areas where an exchange cannot provide support, certain health and comfort items are issued as personal demand items (Class VI). All elements of the MAGTF state their requirements for services. The exchange personnel conduct sales, order replacement stocks, report sales, and process funds through the Disbursing Office.

5.3.2.5 Subfunction: Legal Support Services

TASKS: Military Justice, Legal Assistance, Civil-military Relationships, International Law Operations.

The legal support subfunction is shown in figure 5-24.

0-5 The Staff Judge Advocate (SJA) is responsible for providing legal support services to the MAGTF. The Legal Support Section receives requests concerning military justice and other legal matters from all of the MAGTF elements. Outputs of the actions taken by the SJA are in the form of legal case decisions, legal agreements between the MAGTF and civil authorities, administrative reports and military justice results.

5.3.2.6 Subfunction: Civil Affairs

TASKS: Civil Information, Civilian Supply, Displaced Persons/Welfare, Public Health/Safety, Property Control, Public Works, Utilities, Claims/Legal, Language Interpretation.

0-6 Civil Affairs requires the assistance of all the service support elements of the MAGTF. For this reason it is placed under the control of one organization as shown in figure 5-24. The Civil Affairs Group and/or the Legal Service Support Section coordinates the actions required to support a civilian community. It assists the local population to adjust to the disruptions caused by the MAGTF's

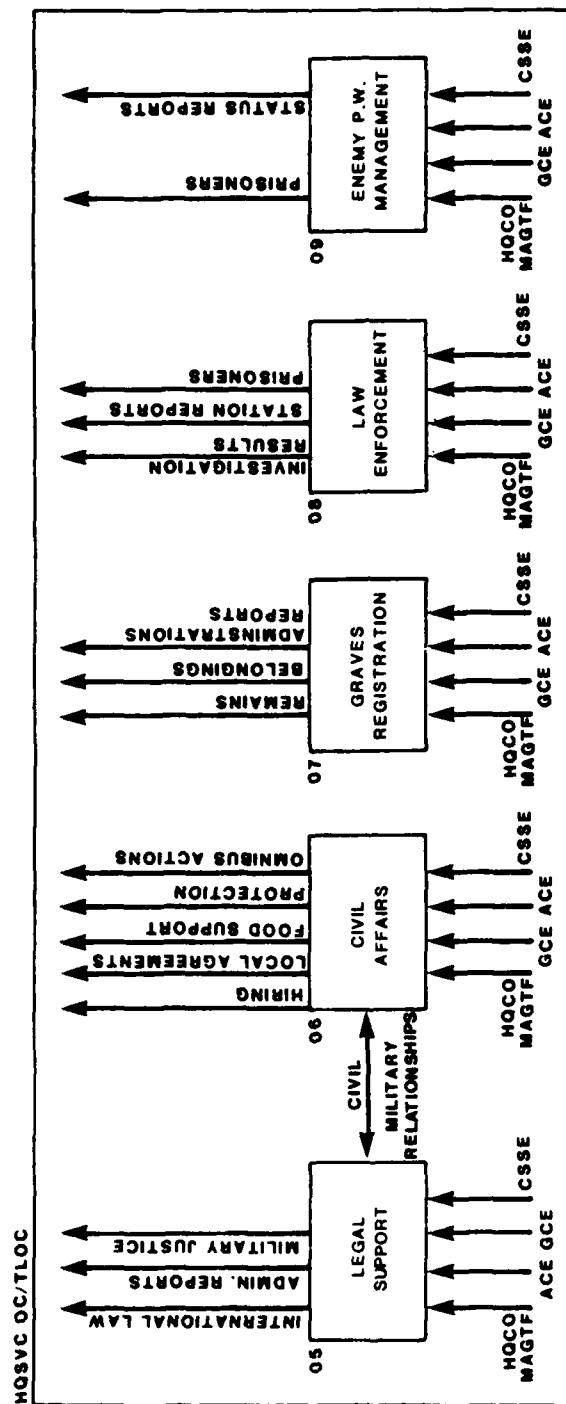


Figure 5-24. FUNCTION: Services SUBFUNCTION: Legal Support, Civil Affairs, Graves Registration, Law Enforcement, Enemy P.W.

presence. Information on civilian refugees is contained in the Military Police Periodic Status Report. This information is used to plan for proper medical care, feeding, shelter, transportation and security of refugees.

5.3.2.7 Subfunction: Graves Registration

TASKS: Identification, Registration, Temporary Interment, Cemetary Maintenance, Search and Recovery, Disinterment.

0-7 Each service is responsible for handling its own dead. The collection and handling of the dead, in accordance with proper care, is the responsibility of the MAGTF Commander. The recovery of the dead from the battle scene is the responsibility of the commander at the scene. Remains and the belongings of the deceased are evacuated from the scene to a collecting point. Identification should be made at the recovery scene if possible. In the graves registration area, remains are given a number for control purposes and are prepared for evacuation. Personal effects are collected, inventoried and identified. The graves registration unit provides for temporary burial, but in today's environment, remains are generally evacuated to the United States.

5.3.2.8 Subfunction: Law Enforcement

TASKS: Enforce law and Order, Personnel Security, Customs, Investigations, Laboratory Services, Polygraph Support, Liaison with Local Police, Limited Counterinsurgency Operations, Traffic Control, Correctional Facilities.

0-8 The Law Enforcement subfunction involves the drawing together, in one specialized organization, all of the personnel and facilities required to provide for law enforcement, criminal and other

investigative services, U.S. military prisoner confinement, terrorism counteraction, and canine handling and support. This service function is controlled by one operational facility which responds to one Commander, as shown in figure 5-24.

Law enforcement includes all of the personnel and facilities to train, handle and support military police handler/scout dogs. The law enforcement section receives input from all MAGTF elements requesting assistance in the execution of law enforcement tasks. The section provides output on each investigation as well as reports on U.S. prisoners status and prisoner movement. Other reports are submitted concerning canine security, offensive and counterinsurgency operations. The military police's periodic status report contains information concerning stragglers, traffic control, law enforcement, and correctional custody facilities.

5.3.2.9 Subfunction: Enemy PW Management

TASKS: Collection, Confinement, Guarding, Escorting/Evacuating

The Enemy PW Management subfunction is shown in figure 5-24.

0-9 The military police are assigned the responsibility of handling the enemy prisoners of war (PW) captured by the MAGTF. They are confined in secure facilities until the MAGTF intelligence and counterintelligence teams have obtained the maximum intelligence from them. They are then transported to the rear as quickly as possible. Information on prisoners of war is contained in the military police's periodic status report. Information from the report is used to plan for proper medical care, feeding, shelter, transportation and security of PWs.

5.3.2.10 Subfunction: Utilities Support

TASKS: Water Supply, Well Drilling, Electrical Power, Environmental Control, Baths, Laundry, Decontamination, Fumigation

The utilities support subfunction is shown in figure 5-25.

0-10 Providing water for drinking is central to the majority of the utilities support tasks. Water is also required for laundry, showers, decontamination and environmental control. Utility Support consists of engineer planning and of developing water supply points as close to the assault units as possible. Water points must be planned for and opened as soon as the tactical situation permits at sites located for easy access by all units in the area. The development of a water point may require the drilling of a well. Once the water point is opened by the Engineer Support Battalion, operation and maintenance of the site are performed by the parent engineer battalion. Engineers also provide assistance in installing and maintaining electric power. Details are submitted as a portion of the engineer's periodic situation report.

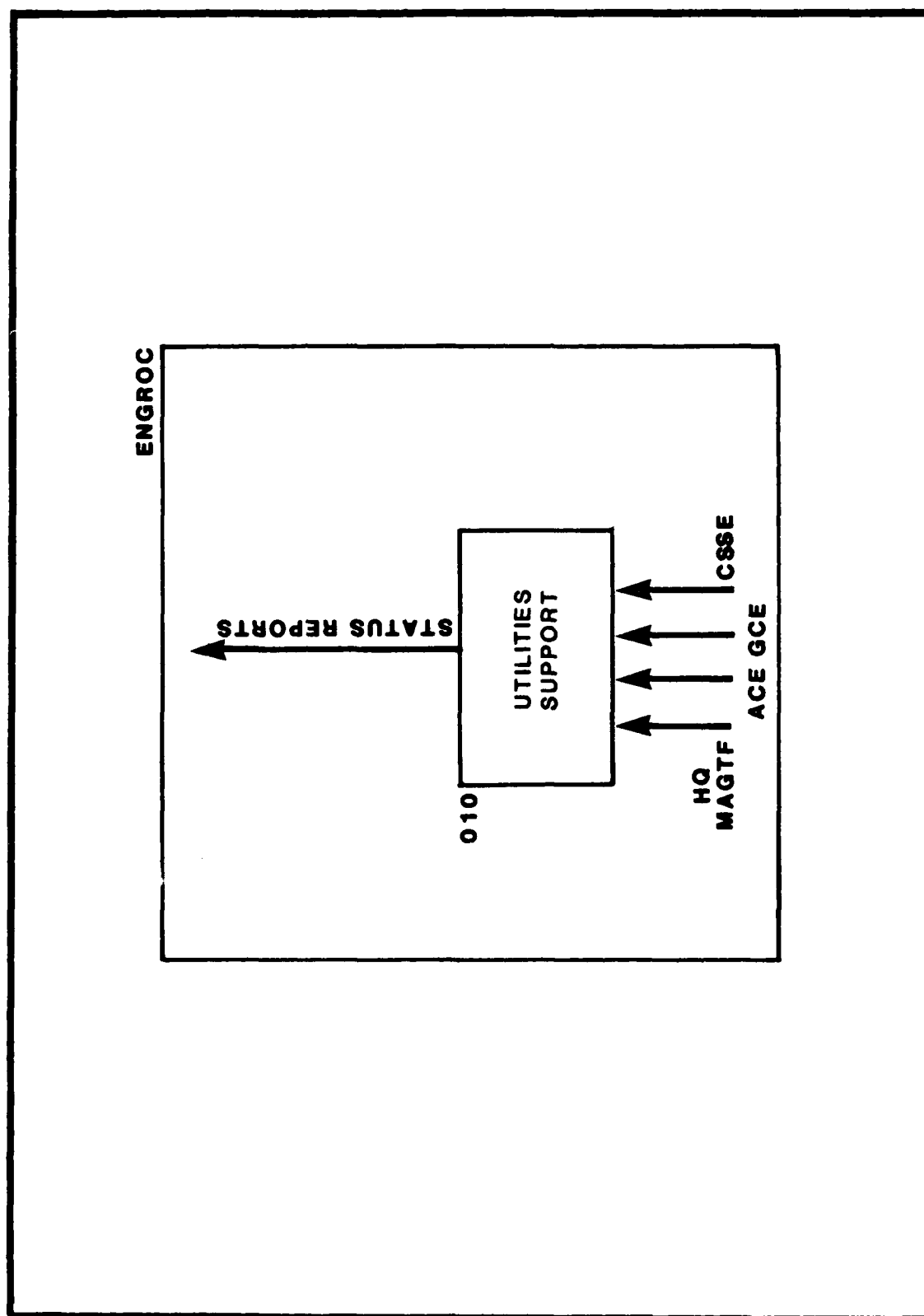


Figure 5-25. FUNCTION: Services SUBFUNCTION: Utilities Support

SECTION 6. CSS MESSAGE TYPES AND CONTENT

6.1 General

Section 3 identified the six CSS functions and decomposed them by subfunction, task and activity. Section 4 identified and defined the CSS Command and Control Facilities (C2FACs) used by the Commander to plan, direct, coordinate and control the six functions listed in section 3. Section 5 portrayed the flow of information among the C2FACs to support the Commander's requirements in each of the functional areas. This section identifies specific messages by type, format and content required to support the information flow developed in section 5.

6.1.1 CSS Message Types. The CSS message types can be broken down into three major categories; request, status and special reports.

A request is the most common message type and is used when a unit needs support in one of the six functional areas. It originates from a unit or a C2FAC in support of a unit's needs. Requests are submitted as required.

Status messages are situation reports submitted by CSS C2FACs via the chain of command to the MAGTF Commander to advise him of the capability to perform the CSS mission. Status reports are used to manage and control resources and are submitted periodically as determined by the Commander. A periodic status report may be updated if conditions warrant it.

Special reports are status reports based on particular events that do not lend themselves to being reported on a periodic basis, e.g., convoy movement, or damage assessment. Special reports are submitted as required.

6.2 Message Format and Content

The content of a message type is dependent upon the functional area it supports. Appendix B (Message Element Matrix) has been developed to display the message elements required in the exchange of information by functional area. This appendix was used to ensure that all elements of information were included in developing the message formats listed in this section. The remainder of this section explains the message format and content of each message type by functional area.

6.2.1 Supply. The Supply function is supported by both informal and formal supply requisitions. The informal requests are from users to the direct support CSSDs. Figure 6-1 is an example of the request that is used. Formal requisitions are for class IX items which are not available at the CSSD. Figure 6-2 is an example of the class IX formal request. This request is submitted by means of a 1348 card. The supply reports required to support the CSS supply functions are shown in figure 6-3, Periodic Dump Status Reports, submitted by all CSSDs to the CSSOC, and the Critical Supply portion of figure 6-4, Logistics Summary. Figure 6-4 is submitted by the SCC to the CSSOC. The CSSOC will combine this information with the Logistics Summary information submitted by the MOS as shown later in figure 6-11 and will forward a complete Logistics Summary Report to the MAGTF G-4 with information copies to the ACE, GCE and CSSE.

6.2.2 Transportation. The transportation function supports the transportation requirements of the MAGTF. Reports/requests are required to coordinate/allocate the available transportation resources to support the movement of people, equipment and supplies. These include the below listed four request/reports.

6.2.2.1 Availability. The MT/MHE Daily Availability Report, figure 6-5 is submitted daily by the MTOC to the CSSOC. The CSSOC uses this information to respond to IIT/MHE requests.

FROM: Requesting Unit
TO: (S91)
SUBJ: Supply Request

(LINE) (ITEM)

1. Requesting unit/call sign
2. Type of supply/National Stock Number (NSN)
 - a. Meal Ready to Eat (MRE) quantity by meal
 - b. Triozone quantity
 - c. Water by gallons and 5 gallon cans
 - d. Fuel by type/gallons preferred method
 - e. Class V by Department of Defense Identification Code (DODIC)
 - f. Batteries (quantity and nomenclature)
 - g. Other items
3. Destination
4. Call sign at destination
5. Desired time/date of pickup/delivery
6. Special instructions

Figure 6-1. Informal Supply Request

Supply Requisition

(LINE)	(ITEM)
1.	Unit
2.	Reporting Unit Code (RUC)
3.	Document Identifier
4.	Priority
5.	Document
6.	National Stock Number (NSN)
7.	Quality
8.	Unit of Issue
9.	Nomenclature
10.	End Item
11.	Send to

Figure 6-2. Formal Supply Request

FROM: CSSA/CSSD
TO: CSSOC
INFO: SOC/CSSA/CSSD

SUBJ: DUMP STATUS REPORT

(LINE) (ITEM)

1. Report Number: _____
2. Period Covered: From: _____ to _____
Date-Time Group (DTG) DTG
3. Classes of Supply
 - a. Class I: (Read in 3 columns)

<u>ITEM</u>	<u>QUANTITY REQUIRED</u>	<u>QUANTITY ONHAND (O/H) LOCATION</u>
(1) MRE Days of Supply (DOS)		
(2) HEAT TABLETS (DOS)		
(3) "B" RATIONS (DOS)		
(4) WATER		
 - b. Class III: (Read in 3 columns)

<u>ITEM</u>	<u>QUANTITY REQUIRED</u>	<u>QUANTITY ONHAND LOCATION</u>
(1) Motor Gas (MOGAS) Packaged (PKD) (DOS)		
(2) MOGAS BULK (DOS)		
(3) DIESEL PKD (DOS)		
(4) DIESEL BULK (DOS)		
(5) JP4/5 BULK (DOS)		
 - c. Class V: (Report Quantity only by DODIC.)
 - d. Other Classes: (Report only shortages/problems)

Figure 6-3. Periodic Dump Status Report

FROM: SOC
TO: CSSOC
INFO: MOS

SUBJ: LOGISTICS SUMMARY

(LINE) (ITEM)

1. Report Number: _____ (Sequential)

2. Period Covered: From _____ to _____
(DTG) (DTG)

4. Critical Supply Items. Read in 3 columns:

CLASS SUPPLY

CRITICAL ITEM

ACTION TAKEN

Figure 6-4. Logistics Summary - Supply

FROM:

TO:

INFO:

SUBJ: MOTOR TRANSPORT/MATERIAL HANDLING EQUIPMENT (MT/MHE) DAILY AVAILABILITY
REPORT

(LINE) (ITEM)

1. EQUIPMENT _____
2. TABLE OF ORGANIZATION (T/O) AUTHORIZED _____
3. ON HAND (O/H) _____
4. QUANTITY DEADLINED _____
5. STATUS _____
6. QUANTITY AVAILABLE _____
7. Remarks or additional comments: _____

Figure 6-5. MT/MHE Availability Report

6.2.2.2 Ground Requests. The MT/MHE Request, figure 6-6 is submitted by any unit requiring support beyond their capability. It is submitted to the CSSOC. The CSSOC determines the type of transportation to be used. The CSSOC determines if it is a valid request. If so, the request is forwarded to the MTOC.

6.2.2.3 Air Support Requests. The Aircraft Support Request, figure 6-7 is submitted by the CSSOC (LMCC) to the Tactical Air Command Center (TACC)/Direct Air Support Center (DASC), if it is determined that air movement is preferred over ground transportation.

6.2.2.4 Highway Clearance. The Highway Clearance Request/Report, figure 6-8, is submitted by the MTOC to the CSSOC (LMCC) (information copy provided to the HQSVCOC) on all motor transport convoys. The CSSOC will provide an information copy to all elements with area responsibility on the convoy route.

6.2.3 Maintenance

6.2.3.1 Contact Teams. The assignment of maintenance contact teams as the first interface for maintenance support is based upon the character and distribution of equipment in the MAGTF. Figure 6-9, The Maintenance Contact Team Request, contains the information necessary to provide contact team maintenance support to the unit. If the team responding to the request cannot make the repair, it requests transportation support and/or supply action using the normal transportation or supply request format.

6.2.3.2 Maintenance Support. The maintenance capability for support in the AOA is shown by figure 6-10, Maintenance Support Capabilities Report. This report is sent from the CSSDs and MOS to the CSSOC. The CSSOC consolidates the reports and submits them to the MAGTF G-4, the ACE, GCE, and CSSE.

FROM:
TO:
SUBJ: MT/MHE REQUEST

(LINE) (ITEM)

1. Requesting Unit: _____
2. Report To: (Name) _____
3. Location or Grid: _____
4. Time to Report: _____ Date to Report _____
5. Cargo (Troops) (Pallets) w/cube & weights: _____
6. Destination or Grid: _____
7. Date of Request: _____
8. MT () or MHE () Required: _____
9. Estimated Release Time: _____
10. Additional Remarks: _____

Figure 6-6 MT/MHE Request

FROM:
TO:
SUBJECT: AIRCRAFT SUPPORT REQUEST

(LINE)	(ITEM)		
1.	Request for		
2.	Helicopter	Fixed Wing	OV-10
	Mission Procedure		
3.	URGENT	PRIORITY	ROUTINE
4.	Type of Mission:	Troop List	Search and Rescue (SAR)
		Logistic	Unit Comdr
		Liaison	Photo
		MEDEVAC	
5.	Mission Description:		
		Number of Troops	
		Internal Cargo: Height/Cube	
		Largest Item: (WxHxL)	x x
		External Cargo: Weight	
6.	Instructions:	Pickup Time	Landing Zone Time
		Coordinates	Coordinates
	a.		
	b.		
	c.		
7.	LZ Description:	Size	Obstacles
		Wind Direction	
8.	LZ Will be	Unmarked	Marked with
			Panels
			Flares
			Smoke (Color)
			Other
9.	Communication (For Aircraft and Landing Zone Control Party/- Tactical Air Control Party (LZCP/TACP))		
		Pick Up Zone Call Sign Channel	(FM/UHF) FREQ
		LZ Call Sign Channel	(FM/UHF)
		FREQ	

Figure 6-7 Aircraft Support Request

FROM:
TO:
SUBJ: HIGHWAY CLEARANCE REQUEST/REPORT

(LINE) (ITEM)

1. CLEARANCE NUMBER _____
2. DEPARTURE TIME AND DATE _____
3. MOVING UNIT _____
4. ORIGIN _____
5. DESIGNATION _____
6. TOTAL VEHICLE _____ SIZE: 1/2 _____ 1-1/4 _____ 2-1/2 _____ TON _____ STANDARD
PICKUP _____ LOW/BOY _____
7. OTHER (Specify) _____
8. CONVOY COMMANDER _____
9. CARGO _____
(INITIAL TRIP) _____ RETURN TRIP _____
10. ESCORT REQUIREMENT _____
11. REQUESTED ROUTE _____ FROM _____ TO _____

- ASSIGNED ROUTE _____ FROM _____ TO _____

12. REMARKS _____

13. TIME OF MARCH _____
14. NUMBER SERIALS _____
15. NUMBER MARCH UNITS _____
16. TIME _____
17. TIME GAP SERIALS _____
18. MARCH UNIT _____

Figure 6-8 Highway Clearance Request/Report

FROM: Unit

TO: CSSE

SUBJ: CONTACT TEAM REQUEST

(LINE)	(ITEM)
1.	Requesting Unit:
2.	Nomenclature of Equipment:
3.	USMC Serial Number:
4.	Nature of Problem:
5.	NSN or Part Number of Defective Part:
6.	Location of Equipment: Grid coordinate
7.	Point of Contact: (Name, Rank, Call Sign, Frequency If Needed)
8.	Urgency of Request: (Priority)
9.	Remarks:

Figure 6-9 Maintenance Contact Team Request

FROM: CSSE
TO: CSSOC
INFO: MOS

SUBJECT: MAINTENANCE SUPPORT CAPABILITIES REPORT

(LINE) (ITEM)

1. Report Number: _____

2. Period Covered: From _____ to _____
(DTG) (DTG)

3. Maintenance Capability

<u>Category</u>	<u>% Capability Established</u>	<u>Remarks</u>
-----------------	---------------------------------	----------------

a. Comm-Elect

b. Engineer

c. Ordnance

d. Motor Transport

4. Rapid Request Support

CODE	TYPE SUPPORT	REQUESTS	REQUEST FILLED
------	--------------	----------	----------------

Figure 6-10 Maintenance Capabilities Report

6.2.3.3 Logistics Summary. The maintenance situation of the MAGTF is reported in the maintenance portion of figure 6-11, Periodic Logistics Summary Report. This report follows the same command chain as the Maintenance Capabilities Support Report.

6.2.4 Health Services. The Health Services functional area requires the types of requests and reports indicated below.

6.2.4.1 Medical Joining. Figure 6-12, The Medical Joining Report, is a one-time report that provides the baseline of beds, operating room facilities, blood, personnel, etc. The other reports then change this baseline as casualties and time dictate. The reports are submitted on a periodic basis or as conditions change.

6.2.4.2 Facilities Status. Figure 6-13, Facilities Spot Status Report, is normally submitted daily to the CSSOC and MSOC.

6.2.4.3 Bed/Patient Status. Figure 6-14, The Bed/Patient Status Report, is submitted daily after the Medical Treatment Facility becomes operational.

6.2.4.4 Blood Status/Request. Figure 6-15, the Blood Status/Request, is the single daily report that is used to manage blood supplies throughout the MAGTF. It is submitted by all medical treatment facilities to the Medical Regulating Control Officer at the MSOC.

6.2.4.5 Casualties. Figure 6-16, The Casualty Report, is submitted by the medical treatment facility to the CSSOC Health Services Support Unit (HSSU). The report is forwarded by the CSSOC to the MAGTF, ACE, GCE and CSSE for appropriate command support action.

FROM: CSSOC
TO: ACE, GCE MEF, MWSG, COC
INFO: INFO ENGROC, MTOC, MSOC

SUBJ: LOGISTICS SUMMARY

(LINE) (ITEM)

1. Report Number: _____
2. Period Covered: From _____ to _____
(DTG) (DTG)
3. Combat Essential Equipment (Required Only on Report #1) Read in 6 columns:

<u>TAM#</u>	<u>NOMEN</u>	<u>AUTH</u>	<u>POSS</u>	<u>DEADLINED</u>	<u>%READY</u>
-------------	--------------	-------------	-------------	------------------	---------------

4. Combat Essential Equipment Readiness Status. Read in 4 columns:

<u>AREA</u>	<u>AUTH</u>	<u>DEADLINED</u>	<u>MAJOR DISCREPANCY</u>
-------------	-------------	------------------	--------------------------

- a. Comm-Elect.
- b. Engineer
- c. Ordnance
- d. Motor Transport

Figure 6-11 Logistics Summary - Maintenance

FROM: UNIT
TO: CATF/CLF
INFO: TASK FORCE

SUBJ: MEDICAL JOINING REPORT (U)

- | (LINE) | (ITEM) |
|--------|---|
| A. | (OPORD/OPLAN) |
| 1. | (C) (NUMBER OF DEDICATED OPERATING ROOMS.) |
| 2. | (C) (NUMBER OF OTHER OPERATING AREAS EQUIPPED WITH SUITABLE EQUIPMENT NEEDED FOR THE PERFORMANCE OF BASIC SURGICAL PROCEDURES.) |
| 3. | (C) (NUMBER OF FIXED X-RAY MACHINES.) |
| 4. | (C) (NUMBER OF PORTABLE X-RAY MACHINES.) |
| 5. | (C) (NUMBER OF REFRIGERATORS IN SICKBAY SUITABLE FOR WHOLE BLOOD STORAGE/TOTAL CAPACITY OF SAME IN BLOOD UNITS.) |
| 6. | (C) (NUMBER OF WHOLE BLOOD UNITS ON HAND LISTED BY BLOOD (ABO/RH) TYPES.) |
| 7. | (C) (NUMBER OF WALKING BLOOD DONORS ON HAND LISTED BY ABO/RH TYPES.) |
| 8. | (C) (NUMBER OF INTENSIVE CARE UNIT (ICU) BEDS AVAILABLE.) |
| 9. | (C) (NUMBER OF OTHER SICKBAY BEDS AVAILABLE.) |
| 10. | (C) (NUMBER OF OVERFLOW BEDS SUITABLE FOR THE CARE OF CASUALTIES.) |
| 11. | (C) (LIST OF SHIP'S COMPANY MEDICAL/DENTAL PERSONNEL, INCLUDING RANK/RATE, FULL NAME, NAVAL OFFICER BILLET CODE/NAVAL ENLISTED CODE (NOBC/NEC.) |
| 12. | (C) (LIST OF EMBARKED MEDICAL REGULATING TEAM PERSONNEL IN SAME FORMAT AS ITEM 11.) |
| 13. | (C) (LIST OF EMBARKED MEDICAL/DENTAL PERSONNEL, NON-LANDING FORCE, IN SAME FORMAT AS ITEM 11.) |
| 14. | (C) (LIST OF EMBARKED LANDING FORCE MEDICAL PERSONNEL IN SAME FORMAT AS ITEM 11.) |

DECLAS:

Figure 6-12 Medical Joining Team

FROM: Medical Treatment Facility
TO: Medical Regulating Control Officer

FACILITIES SPOT STATUS REPORT AS OF (DTG).

(LINE)	(ITEM)
ALPHA:	(OPERATING BEDS)
BRAVO	(BEDS OCCUPIED)
CHARLIE	(MAJOR Operating Room)
	CHARLIE ONE: (BACKLOG PATIENTS)
	CHARLIE TWO: (BACKLOG HOURS)
DELTA:	(MINOR Operating Room)
	DELTA ONE: (BACKLOG PATIENTS)
	DELTA TWO: (BACKLOG HOURS)
ECHO:	(PATIENTS FOR LATERAL TRANSFER)
FOXTROT:	(PATIENTS FOR EVAC OUT OF AOA)
GOLF:	(REMARKS)

NOTE: 1. Omit lines not changed from previous report. Initial report must include all lines.

Figure 6-13 Facilities Spot Status Report

FROM: Medical Treatment Facility
 TO: Medical Regulating Control Officer
 SUBJ: BED/PATIENT STATUS REPORT FROM (___/___ 0001) TO (___/___ 2400)
 (LINE) (ITEM)
 ALPHA MEDICAL UNIT REPORTING
 BRAVO LOCATION (BY GRID COORDINATES) OF UNIT REPORTING.
 REPORT ONLY IF CHANGED FROM LAST REPORT.
 CHARLIE DTG AT END OF REPORTING PERIOD
 DELTA TOTAL BEDS AT END OF PERIOD
 DELTA ONE MEDICAL BEDS LANDING FORCE (LF) ONLY
 DELTA TWO SURGICAL BEDS (LF ONLY)
 DELTA THREE NEURO-PSYCHIATRIC (NP) BEDS (HOSPITAL COMPANY ONLY)
 DELTA FOUR ICU BEDS (AMPHIBIOUS TASK FORCE (ATF) ONLY)
 ECHO TOTAL ADMISSIONS: US/ALLIED/ENEMY/ENEMY CIVILIAN
 FOXTROT TOTAL UNOCCUPIED BEDS
 FOXTROT ONE MEDICAL BEDS UNOCCUPIED (LF ONLY)
 FOXTROT TWO SURGICAL BEDS UNOCCUPIED (LF ONLY)
 FOXTROT THREE NP BEDS UNOCCUPIED (HOSPITAL COMPANY ONLY)
 FOXTROT FOUR ICU BEDS (ATF ONLY)
 GOLF TOTAL PATIENTS REMAINING AT END OF PERIOD (BY SERVICE)
 HOTEL TOTAL PATIENTS RETURNED TO DUTY DURING PERIOD. LIST
 ONLY THOSE PATIENTS (BY SERVICE) ADMITTED THEN DIS-
 CHARGED BY FACILITY
 INDIA TOTAL PATIENTS EVACUATED DURING PERIOD
 JULIET TOTAL DEATHS (BY SERVICE) IN FACILITY DURING PERIOD

Figure 6-14 Bed/Patient Status Report

KILO	PATIENTS REQUIRING EVACUATION
LIMA	UNUSUAL INCIDENCES OCCURRENCE, DISEASE OR INJURY
MIKE	TOTAL OUTPATIENT VISITS DURING THIS PERIOD
NOVEMBER	UNRESOLVED MEDICAL LOGISTICAL PROBLEMS
OSCAR	UNRESOLVED MEDICAL LOGISTICAL PROBLEMS

NOTE:

1. Submitted initially by each LF MTF ashore when they become operational (above the aid/evacuation station level).
2. Subsequently, all ATF, LF MTF must submit the remaining reports daily at 0500 local, as of 2400, the night before.
3. When reporting delta lines, report only those beds set up and ready to receive patients.
4. Submit only those lines reflecting a change from the previous report.
5. Submitted in addition to the spot status report.

Figure 6-14 Bed/Patient Status Report (Continued)

FROM: Medical Treatment Facility
TO: Medical Regulating Control Officer

SUBJ: BLOOD STATUS/REQUEST

(LINE)	(ITEM)	(NOTE)
ALPHA ONE:	(DTG AT END OF REPORTING PERIOD)	2
ALPHA TWO:	(UNIT/FACILITY REPORTING)	
ALPHA THREE:	(UNIT LOCATION IF CHANGED)	1, 6
BRAVO ONE:	(NUMBER OF UNITS ON HAND)	1, 3
BRAVO TWO:	(EXPIRATION DATE BY OBO/RH OF LATEST)	1, 3
CHARLIE ONE:	(TOTAL UNITS TRANSFUSED DURING PERIOD)	1
CHARLIE TWO:	(TOTAL UNITS EXPENDED DURING PERIOD)	1
DELTA ONE:	(EST NO. UNITS REQUIRED NEXT TEN DAYS)	1, 3, 7
DELTA TWO:	(EST NO. UNITS BY ABO/RH NEXT TEN DAYS)	1, 3, 7
DELTA THREE:	(DESIRED DELIVERY DATE)	1
DELTA FOUR:	(DESIRED DELIVERY DESTINATION)	1, 5
DELTA FIVE:	(RECEIVING OFFICIAL AT DESTINATION)	1, 5

Figure 6-15. Blood Status/Request

NOTES:

1. Omit lines not applicable.
2. Report period is as of 2400 local.
3. If the BRAVO and DELTA lines need to be used more than once to report different number of units, groups, types, etc., information will be reported by separating with a "/".

Example: BRAVO ONE 10/20/30
 BRAVO TWO A+/B+/O+
 BRAVO THREE 10JAN/12JAN/11JAN

This is interpreted as:

on hand:
10 units A+ exp. date 10 JAN
20 units B+ exp. date 12 JAN
30 units O+ exp. date 11 JAN

4. Report desired delivery destination only if different from line ALPHA THREE.
5. Report receiving official only if other than laboratory personnel.
6. Report unit location in grid coordinates when possible and only if changed from last report.
7. Normally, estimated requirements will be for the day following the last day of supply on hand and on order. Supply levels will be announced in appropriate plans and orders.

Figure 6-15. Blood Status/Request (Continued)

FROM: MTF
TO: CSSOC (HSSU)
SUBJ: Casualty Report (Report #) For _____ Casualties

(LINE)	(ITEM)
A.	Name
B.	Rank/Rate
C.	SSN
D.	Status
E.	Prognosis

Repeat the same information for each casualty.

Figure 6-16. Casualty Report

6.2.4.6 Types of Medical Evacuation. There are two types of medical evacuation requests, surface and air. Both requests are submitted over the Medical Regulating Net as voice requests. The surface request shown in figure 6-17 is submitted by the requesting unit to the Medical Regulating Control Officer who dispatches the ambulance. The Air Casualty Evacuation Request shown in figure 6-18 is submitted to the Medical Regulating Control Officer at the MSOC and monitored by the Helicopter Direction Center (HDC) and the DASC. The Medical Regulating Control Officer informs the MEDEVAC helicopter where to take the casualties by adding a medical treatment facility destination to the request.

6.2.5 Deliberate Engineering. Six report/requests required to support the Deliberate Engineering Function are indicated below.

6.2.5.1 General Situation. Figure 6-19, The Engineer Situation Report, is a daily periodic status report by project. It includes every assigned project.

6.2.5.2 Special Situations. Figure 6-20, The Fragmentary Engineer Situation Report, is a special report used when a specific action is required that has not been previously planned for or reported on.

6.2.5.3 Requests. Figure 6-21, the Engineer Request, is submitted by the requesting unit to the Engineer Support Unit of the CSSOC as required.

6.2.5.4 Reconnaissance. Figure 6-22, The Engineer Reconnaissance Report, is submitted to the ENGROC daily from the engineer units assigned to sweep the roads. The ENGROC compiles the reports and submits them to the CSSOC. The CSSOC reports the roads have been swept to the MAGTF staff, ACE, GCE and CSSE. Two additional reports that must be submitted by the CSSE engineer include figure 6-23, Minefield Intent to Lay and the Minefield Completion Report, shown in figure 6-24. These reports are submitted as combat service support reports when the CSSOC directs CSS Engineers to lay a deliberate mine field in support of a requesting MAGTF unit.

FROM: UNIT REQUESTING MEDEVAC
TO: MEDICAL REGULATING CONTROL OFFICER

SUBJ: MEDEVAC REQUEST

(LINE)	(ITEM)
A.	PRIORITY
B.	NUMBER OF CASUALTIES (AMBULATORY OR LITTER)
C.	LOCATION AND REQUESTED PICK UP TIME

Figure 6-17. Surface Casualty Evacuation Request Format

FROM: UNIT REQUESTING MEDEVAC
TO: MRCO
INFO: HDC OR DASC

SUBJ: HELICOPTER MEDEVAC REQUEST

(LINE) (ITEM)

- A. PRIORITY
- B. NATURE OF INJURY AND NUMBER (AMBULATORY OR LITTER)
- C. GRID COORDINATES AND PICK UP TIME
- D. ZONE SECURITY
- E. LZ MARKING
- F. IN LZ TALK TO () ON FREQUENCY ()
- G. MEDICAL TREATMENT FACILITY DESTINATION

Figure 6-18. Air Casualty Evacuation Request Format

FROM:

TO:

SUBJ: ENGINEER SITUATION REPORT

(LINE) (ITEM)

1. Report Number: _____

2. Period Covered: From _____ to _____
(DTG) (DTG)

3. Operations:

<u>PROJECT NUMBER</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>	<u>START TIME/ DATE</u>	<u>PERCENT COMPLETED</u>	<u>EST TIME /DATE COMPLETED</u>

4. Equipment Status:

a. Items Deadlined

b. Equipment attached and detached during the 24 hour period.

c. Petroleum, Oils and Lubricants (POL) Status

5. Construction Material

<u>PROJECT NUMBER</u>	<u>ITEM & QUANTITY ON HAND</u>	<u>REQUIRED NEXT 24 HOURS</u>	<u>REQUEST FOR COMPLETION BY</u>
---------------------------	--	-----------------------------------	--------------------------------------

6. Engineer Intelligence Information.

7. General Engineer Comments.

Figure 6-19. Engineer Situation Report

FROM: ENGROC
TO: CSSOC Info: MAGTF G-4
SUBJ: Fragmentary Engineer Situation Report

(LINE)	(ITEM)
A.	Subject
B.	Location
C.	Time
D.	Action Taken
E.	Action Desired

Figure 6-20. Fragmentary Engineer Situation Report

FROM: Requesting Unit
TO: CSSOC
SUBJ: Engineer Request

(LINE)	(ITEM)
1.	Request ID
2.	Requesting unit
3.	Project description
4.	Location
5.	Start time required
6.	Completion time required
7.	Remarks
8.	Priority

Figure 6-21. Engineer Request

FROM: CSSOC
TO: Daily to MAGTF, ACE, GCE, CSSE COCS
SUBJ: Engineer Reconnaissance

(CODE LINE)	(ITEM)
1.	Report ID
2.	Description
3.	Location (coordinates)
4.	Completion time
5.	Start time
6.	Engineer Intelligence
7.	Action required

Figure 6-22. Engineer Reconnaissance

FROM: ENGROC
TO: CSSOC Info: MAGTF G-4
SUBJ: Minefield Intent to Lay

(LINE)	(ITEM)
ALPHA	Tactical Objective (Temporary Security Roadblock or Other)
BRAVO	Type of Minefield
CHARLIE	Estimated number and types of mines and whether surface - laid mines or mines with antihandling devices
DELTA	Location of minefield by coordinates
ECHO	Location and width of minefield lanes and gaps
FOXTROT	Estimated starting and completion Date/Time/Group

Figure 6-23. Minefield Intent To Lay

FROM:	ENGROC	
TO:	CSSOC	Info: MAGTF G-4
SUBJ:	Report of	Completion of Minefield
(LINE)		(ITEM)
ALPHA		Changes in information submitted in Intention to Lay Report
BRAVO		Total number and type of Antitank (AT) and Antipersonal (Apers) Mines Laid
CHARLIE		Date and time of completion
DELTA		Method laying mines (Buried, by Hand, by Machine)
ECHO		Details of lanes and gaps including their marking
FOXTROT		Details of perimeter marking
GOLF		Perimeter, lanes and gaps
HOTEL		Laying unit and individual authorizing laying of the field

Figure 6-24 Minefield Completion Report

6.2.6 Service. In all cases the information exchange unique to each service function is handled by mail, courier or by transmitted reports so infrequent that they have minimal impact upon CSS communications.

SECTION 7. COMMUNICATIONS

7.1 General

7.1.1 Background. The MAGTF Data Transfer Alternatives Study examined connectivity requirements for a Marine Amphibious Force in the 1986 to 1996 time frame. The thrust of that study was on connectivity requirements between major commands in the AOA and on pipeline requirements to senior commands outside the AOA. An in-depth analysis was conducted to determine if the Marine Corps Communications architecture could support the increased traffic load anticipated with the introduction of real time automated information systems. The Commandant of the Marine Corps concurred in the conclusions and recommendations of the study. The recommendations have been implemented or are in the process of being implemented. While the study provided a valuable analysis of intercommand trunking requirements it did not examine, in any depth, the communications flow within the combat service support element of the MAGTF. This section addresses that requirement.

7.1.2 Content. This section uses the scenario described in section 2 and examines the communications required by the CSSEs to support the execution of the scenario. Current communications doctrinal nets are discussed and equipments required to operate these nets are identified from the listing of equipment available to a CSSE. Circuits required are identified based on an analysis of the C2FDs contained in section 5. The equipment distribution to satisfy total communications requirements for the CSSE employed in the scenario completes this section.

7.2 Communications Baseline

7.2.1 Doctrinal Connectivity Requirements. In a tactical operation, responsiveness, flexibility, and reliability are paramount considerations in selecting the communications source. The commander has three main telecommunications means: wire, single channel radio, or multi-channel radio. The

commander may also rely on couriers, messengers, or (for non time-sensitive communications) mail. The Communications Electronics Officer (CEO) develops the communications plan for the commander based on the tactical scheme of maneuver. The CEO is guided in the preparation of the plan by the Marine Corps Communications architecture and the communications doctrine contained in FMFM 10-1, keeping in mind the principles of responsiveness, flexibility and reliability.

7.2.1.1 Scenario Baseline. The study team examined the scenario described above and applied appropriate doctrine and architecture to determine the baseline communications connectivity for the CSSE units involved. Figures 7-1 and 7-2 show the communications nets required for an FSSG and BSSG, respectively. Figures 7-3 and 7-4 show current multi-channel radio system availability for both an FSSG and BSSG. Figure 7-5 is a typical and current common user switch system diagram that emphasizes support for BSSG or FSSG CSS elements. The study team affirmed the validity of the net distribution and multichannel availability after examination of the communications annexes of previous exercise operations plans, and after receiving confirmation of the system capability through discussions with communications and CSS operations users at the three active FSSGs.

7.2.2 Communications Equipment Analysis. The study team matched communications equipment of the CSSEs to the baseline communications network established for BSSG and FSSG operations. The equipment list used in the match was drawn from the equipment shown in Appendix C. Appendix C, T/E by FSSG Battalion, is a list of major communications end items of equipment arranged according to FSSG battalion. The annex is in two parts. The first part shows the distribution of selected communications items for the FSSG which are currently authorized, and in addition, it shows approved, planned increases by year. The second part is a listing of the same selected items showing new T/E allowances that have been proposed by the FMF in response to an ongoing study of FSSG reorganization being conducted by HQMC. Equipment for the BSSG for scenario purposes comes out of the FSSG allowance. The baseline network

UNIT NET																				
	CSG	CSG BN 01	ENGR BN 01	SUPPLY BN 01	MT BN 01	MAINT BN 01	LS BN 01	MEG BN 01	SEPARATE COMPANIES	CSA	CSG	SEPARATE FRMS	MT CONVOYS	AMBULANCES	FSSG COMM CTR	REAR AREA SEC	REAR MO	ACE	GCE	SUPPORTING UNITS
LANDING FORCE CMD 1	X																			
LANDING FORCE CMD 2	X																			
LF ALERT BROADCAST		X																		
LF MOBILE CMD																				
LF HST CONTROL																				
LF CSS NET																				
LF DAMAGE CONTROL																				
LF MEDICAL REGULATING																				
LF TACTICAL 1																				
LF TACTICAL 2																				
LF INTEL																				
LF CONVOY CONTROL																				
LF COMM COORD																				
LF AIR OPS																				
CSS COMMAND																				
CSS ALERT/BROADCAST																				
CSS DAMAGE CONTROL																				
CSS REQUEST (MULTIPLE)																				
MEG BN EVAC CMD (GND)																				
MEG BN EVAC CMD (AIR)																				
ENGR BN CMD																				
SUPPLY BN CMD																				
MT BN CMD																				
MAINT BN CMD																				
LS BN CMD																				
ENGR COMPANY CMD																				
REAR CO. CMD																				
LF INTEL																				
CSS LOCAL SECURITY																				

LEGEND:
 V-VHF W-WIRE
 U-UHF * -AS REQUIRED
 H-HF

Figure 7-1. FSSG Tactical Radio Nets

UNIT NET	CS50C	SEPARATE DET.	CS5D/CSSA	MT CONVOYS	AMBULANCES	REAR AREA SECURITY	MEB HQ	ACE	GCE	SUPPORTING UNITS	BN. AID STA.	DASC	HDC	HELDS
MEB COMMAND 1	H						H	H	H					
MEB COMMAND 2	H						H	H	H					
MEB ALERT/BROADCAST	H						H	H	H					
MEB CSS NET	*H	*H					H	H	H					
MEB DAMAGE CONTROL	H	H					*H	*H	*H					
MEB MEDICAL REGULATING		H											H	
MEB TACTICAL 1	V						V	V	V					
MEB TACTICAL 2	V						V	V	V					
MEB INTEL	V						V	V	V					
MEB CONVOY CONTROL	V		V											
MEB COMM COORD	V						V	V	V					
MEB AIR OBS.	*U						U	*U	*U					
BSSG COMMAND	H	H	H											
BSSG ALERT/BROADCAST	H	H	H											
BSSG DAMAGE CONTROL	V	V	V											
BSSG REQUEST	V	V	V							V				
MED EVAC CMD (GND)	V									V				
MED EVAC CMD (AIR)	V									V			V	V
MEB LOCAL SECURITY	V					V								

LEGEND:
V-VHF U-UHF
H-HF *-AS REQUIRED

1. MEDICAL DETACHMENT ONLY

Figure 7-2. BSSG Tactical Radio Nets

<u>LOCATIONS</u>	<u>EQUIP</u>	<u>CHAN</u>	<u>LOCATIONS</u>	<u>EQUIP</u>	<u>CHAN</u>		
MEF	FSSG	MRC-135	8	MEF	FSSG	GRC-201	24
SYSCON - TECHCON			SYSCON - TECHCON				
100 WPM TTY, H/DUX (COMM.CEN)			WPM TTY H/DUX (COMM. CEN)				
G-4 - G-3			COC-CSSOC, HOT				
SUPO - SUPO			G-4 - G-3				
CU TRUNK			SUPO - SUPO				
CU TRUNK			CU TRUNK				
CU TRUNK			CU TRUNK				
CU TRUNK			CU TRUNK				
FSSG	DIV	MRC-135	8	CU TRUNK			
TECHCON - TECHCON			CU TRUNK				
100 WPM TTY, H/DUX (COMM.CEN)			CU TRUNK				
G-3 - G-4			CU TRUNK				
SUPO - SUPO			CU TRUNK				
CU TRUNK			CU TRUNK				
CU TRUNK			CU TRUNK				
CU TRUNK			CU TRUNK				
CU TRUNK			CU TRUNK				
FSSG	MAW	MRC-135	8	CU TRUNK			
TECHCON - TECHCON			CU TRUNK				
100 WPM TTY, H/DUX (COMM. CEN)			CU TRUNK				
G-3 - G-4			CU TRUNK				
CU TRUNK			CU TRUNK				
CU TRUNK			CU TRUNK				
CU TRUNK			CU TRUNK				
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Figure 7-3 Multi Channel Radio Allocation - FSSG

<u>LOCATIONS</u>	<u>EQUIP</u>	<u>CHAN</u>
MEB	BSSG	MRC-135
	8	
	SYSCON-TECHCON	
	100 WPM TTY HDUX (COMM.CEN)	
	G-4 - G-3	
	CU TRUNK	
	COC-CSSOC	
	CU TRUNK	
	CU TRUNK	
	CU TRUNK	
ACE	BSSG	MRC-135
	8	
	SYSCON-TECHCON	
	100 WPM TTY HDUX (COMM.CEN)	
	G-4 - G-3	
	CU TRUNK	
	COC-CSSOC	
	CU TRUNK	
	CU TRUNK	
	CU TRUNK	
GCE	BSSG	MRC-135
	8	
	SYSCON-TECHCON	
	100 WPM TTY HDUX (COMM.CEN)	
	CU TRUNK	
	G-4 - G-3	
	COC-CSSOC	
	CU TRUNK	
	CU TRUNK	
	CU TRUNK	

Figure 7-4. Multi Channel Radio Allocation - BSSG

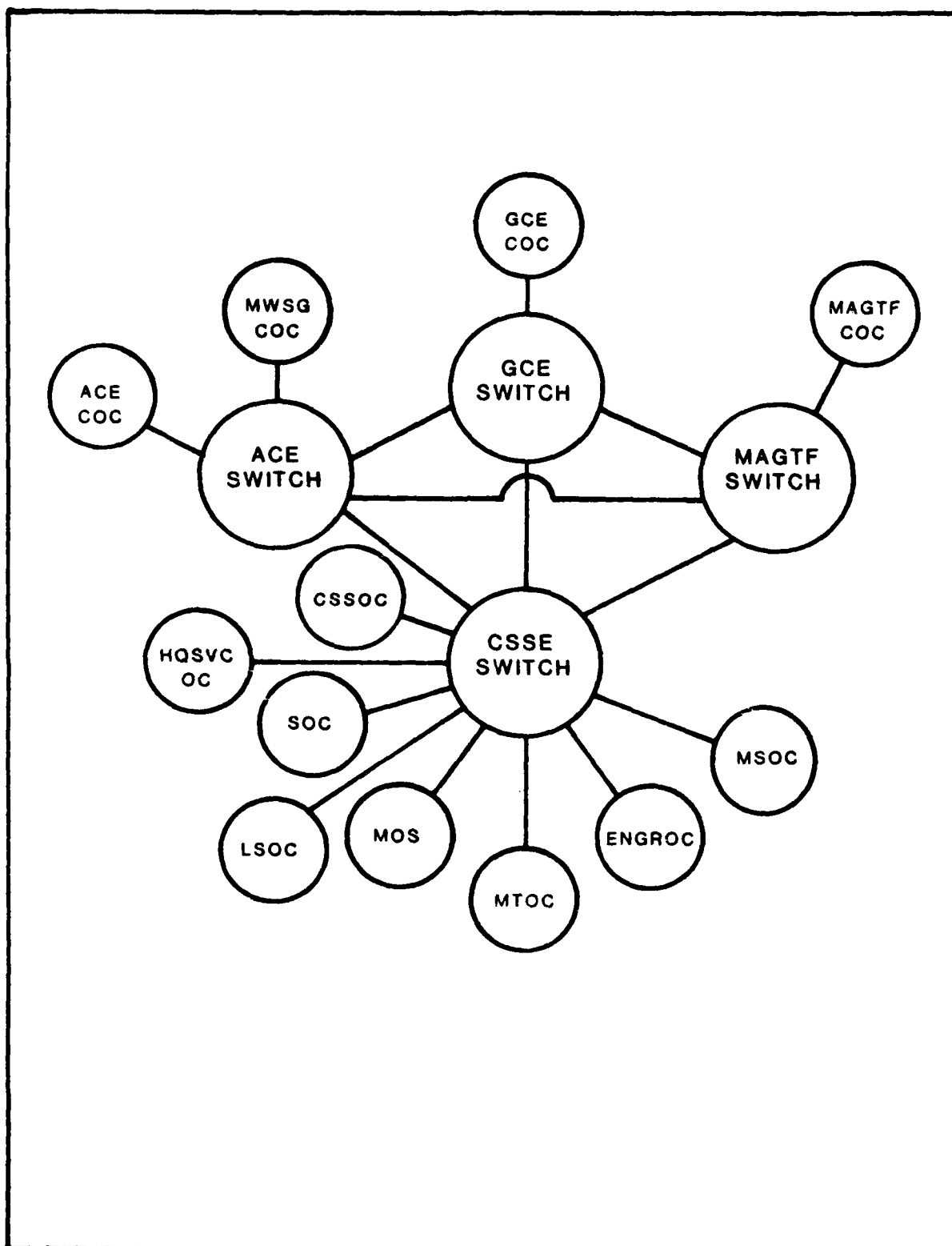


Figure 7-5. Typical Common User CSSE Switch System

previously described can be met by the equipment allowances shown in appendix C except for HF radios and modems. The results of the comparison are contained in section 7-4. Appendix D, Transmission Systems, lists technical characteristics of both current transmission systems and their replacements. In all cases, introduction of the new transmission systems into the Marine Corps inventory will increase the digital data throughput capacity. A comparison is not made between the old and the new systems since the old systems are described in terms of analog channels while the new systems are described in terms of digital throughput.

7.3 CSS Information Exchange Requirements

Section 4 of this study identified specific C2FACs required by CSS elements to support the 1B scenario. Section 5 developed the information need, by function, between the various C2FACs. Based on section 4 and 5, flowlines between C2FACs for the MPF CSSE, the MEB CSSE and the MEF CSSE were determined and are depicted next in this paragraph.

7.3.1 MPF Operations. MPF operations provide a means of rapidly deploying a force to an area where its introduction will be unopposed and is expected to remain unopposed through the arrival and assembly phase of the operation. The 1B scenario was modified by the Study Advisory Committee for this study to consider the insertion of the MEB through an MPF operation. Sections 2 and 4 contain definitions of the units and C2FACs required for an MPF operation. USMC Operational Handbook 7-6 contains the concept for the conduct of MPF operations. The MPF is a composite task force drawn from units of the MEB and attached Navy forces. The Arrival and Assembly Support Party, Arrival Airfield Control Group, Port Operations Group and Beach Operations Group are task organized around the Landing Support Company of the BSSG. The Arrival and Assembly Operations Element of the CSSE is task organized from elements of the Supply Battalion detachment of the BSSG. The communications equipment to operate required circuits is supplied by the Landing Support Company detachments or by the H&S Battalion. Information exchange requirement flowlines to

support the MPF operation are diagrammed in figure 7-6. Once the MPF operation is terminated the personnel and equipment revert to their parent command.

7.3.2 BSSG Operations. The CSSE supporting the MEB for the 1B scenario is a composite BSSG formed by task organizing detachments from the various battalions of the FSSG. The communications equipment required to support the BSSG mission is drawn from the parent battalions of the detachments. Figure 2-5 lists the detachments that compose the BSSG. Appendix C lists the communications equipment of the parent battalions that would be drawn down on to satisfy the BSSG requirement. In addition to the tactical information exchange requirements satisfied by the architecture discussed in paragraph 7.2, CSS information exchange needlines were examined based on the C2FDs depicted in section 5. Analysis of the C2FDs as they apply to a MEB size force revealed that the flow of specific CSS exchange of information can be overlayed on the previously established flow of tactical communications channels. Figure 7-7 diagrams the CSS connectivity required for the BSSG.

7.3.3 FSSG Operations. The CSSE supporting the MEF for the 1B scenario is an FSSG less the detachments used to form the MEB's BSSG. The communications equipment required to support the FSSG mission is the equipment organic to the individual FSSG battalions augmented by equipment and personnel from the Communications Battalion of the MEF. The augmented equipment and personnel provide the FSSG external AN/GRC-201 and AN/TSC-93 link to MEF. In addition to the tactical information exchange requirements satisfied by the architecture discussed in paragraph 7.2, CSS information exchange needlines were examined based on the C2FDs depicted in section 5. Analysis of the C2FDs as they apply to a MEF size force revealed that the flow of specific CSS exchange of information can be overlayed on the previously identified flow for tactical communications channels. Figure 7-8 diagrams the CSS connectivity required for the MEF.

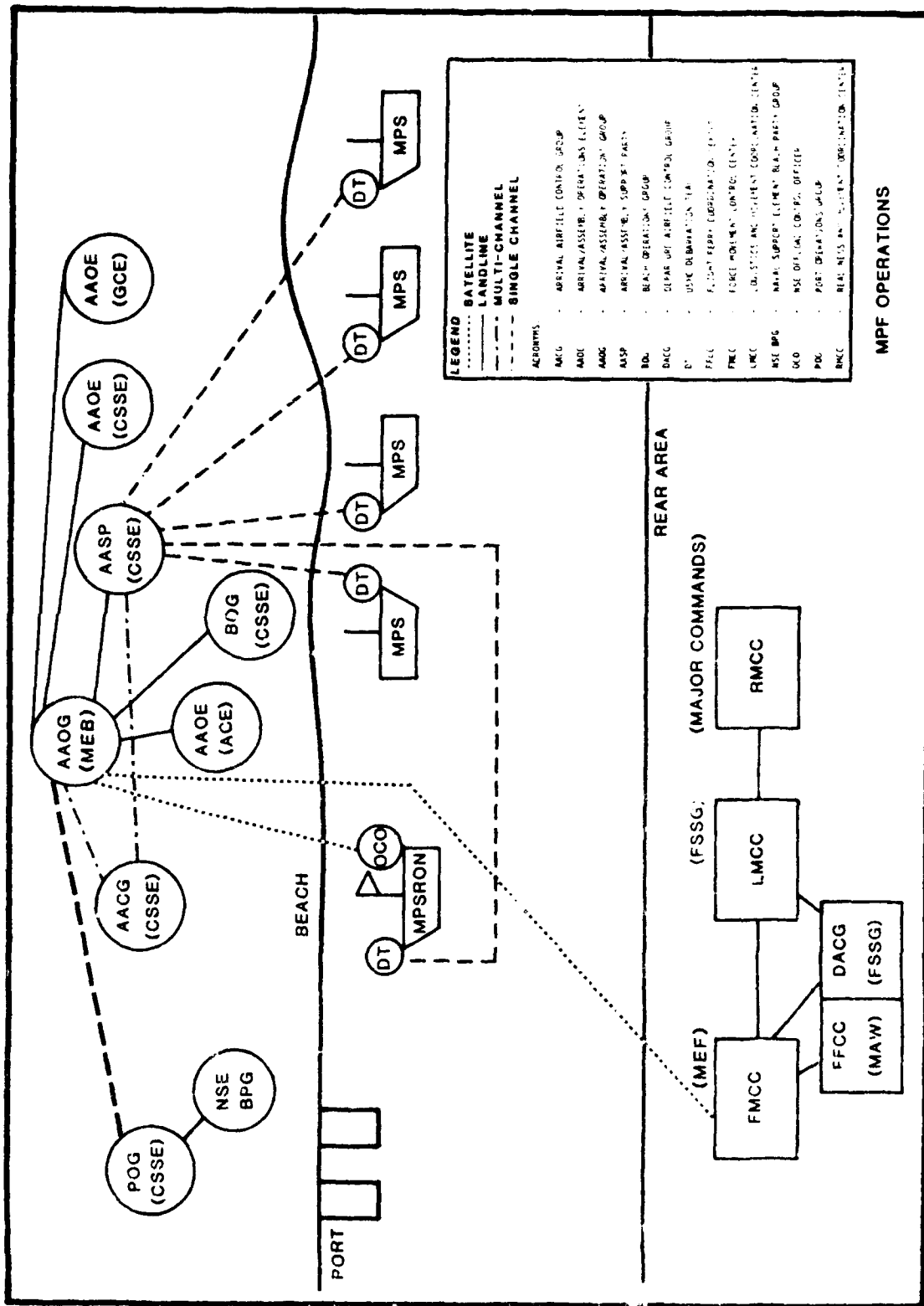


Figure 7-6. MPF MDSS Communications Flow Lines

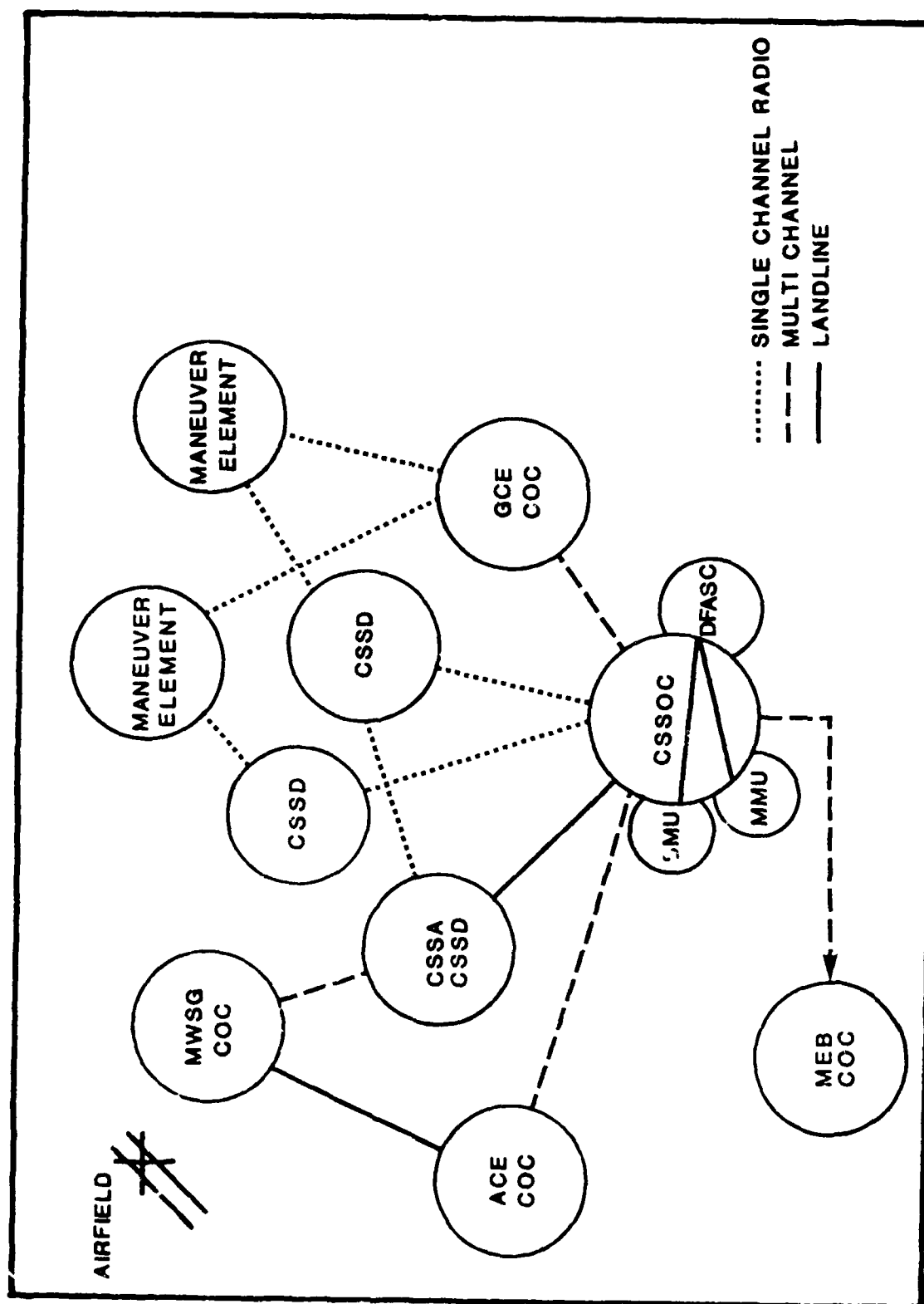


Figure 7-7. CSS Connectivity for MEB Operation

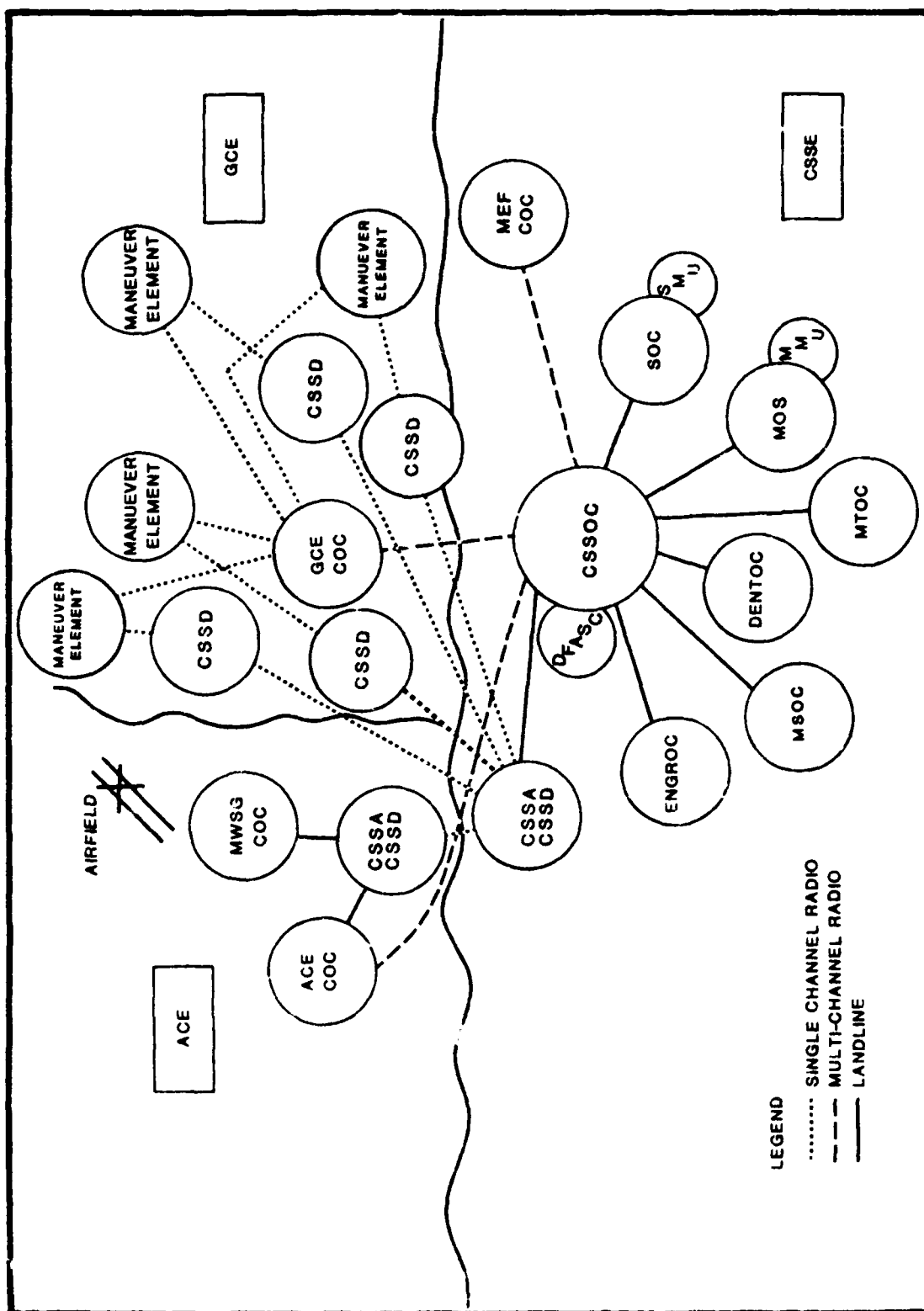


Figure 7-8. CSS Connectivity for MEF Operation

7.4 CSS Connectivity Analysis

7.4.1 MPF Operations. The MPF offload of equipment is an administrative evolution as opposed to a tactical operation. As such, the baseline tactical circuits discussed for the BSSG and FSSG are not established during this phase of a MAGTF operation. The circuits that are required for the CSS traffic are established by personnel of the Landing Support Company for the AASP, AACG, POG and BOG. Communications equipment and personnel attached to the Supply Battalion detachment are used to establish the AAOE link. Table 7-1 lists the links, equipment, number of channels and channel capacity available to support MPF operations for the BSSG. Primary communications for the offload is the MPF Decision Support System (MDSS), a Class I computerized system, which operates on COMPAQ 286 portable computers. Commercial modems are used to provide wire/radio interface. The secondary means of communications is voice, used mainly for coordination. Each primary circuit has the capacity to pass from one to two hundred megabits of information daily. A single channel is more than sufficient for each of the required links shown in table 7-1. A second channel is required for voice coordination. Because of the close proximity of C2FACs in this type of operation wire and VHF radio can be used extensively. The Landing Support Battalion has sufficient VHF assets to outfit its detachment without affecting its capability to perform its mission for the FSSG.

7.4.1.1 VHF Radio. A total of eleven VHF radios and four MRC-135s is required by the CSSE to provide MPF communications. MPS ships are equipped with only one VHF transceiver which is dedicated to ship-to-ship communications. The AN/MRC-135 multichannel radio identified for links 4 and 6 in table 7-1 could be replaced with VHF circuits if required. The AN/MRC-135 is recommended, however, to provide additional voice channels between these major C2FACs.

Table 7-1. MPF Communication Links

<u>LINK</u>	<u>EQUIP</u>	<u>REQUIRED CHANNELS</u>	<u>AVAILABLE CHANNELS</u>	<u>CHANNEL CAPACITY</u>
1. AAOG - AAOE (CSSE)	WIRE	1 Voice 1 Data	1 Voice 1 Data	2400 BPS/Voice
2. AAOG - AASP	WIRE	1 Voice 1 Data	1 Voice 1 Data	2400 BPS/Voice
3. AAOG - BOG	WIRE	1 Voice 1 Data	1 Voice 1 Data	1200 BPS/Voice
4. AAOG - AACG	MRC-135	1 Voice 1 Data	7 Voice 1 Data	1200 BPS/Voice
5. AAOG - POG	PRC-77	1 Voice 1 Data	1 Voice	2400 BPS/Voice
6. AASP - AACG	MRC-135	1 Voice 1 Data	7 Voice 1 Data	2400 BPS/Voice
7. AASP - Each DT (5)	GRC-160	1 Voice 1 Data	1 Voice	2400 BPS/Voice
NOTE:				
1. Data channels require the use of a modem.				

7.4.1.2 Modems 7th MEB has been testing an Esteem wireless modem for use with the MDSS. This modem has a receiver/transmitter built in, operating in the VHF spectrum between 72 and 73 MHZ. Over 50 channels can be selected within this range. The receiver/transmitter can operate up to 4800 BPS. Tests to date have only been successful up to 2400 BPS. The cost of the wireless modem is under two thousand dollars. Should this wireless modem be selected for MDSS use a total of 22 would be required for the MPF links. A total of 17 would be required for the CSSE ends of the links. This would not reduce the number of VHF, multichannel radios, or wire circuits required since a voice coordination capability is still necessary.

7.4.2 BSSG Connectivity Analysis

7.4.2.1 Equipment Usage. Table 7-2 is a breakdown of the single and multi-channel equipment requirements to support the baseline radio and multichannel links listed in figures 7-1 to 7-4. Since the BSSG assets would draw down on the FSSG equipment availability a comparison of the equipment required to the equipment allocation shown in appendix C becomes meaningful only when it is made in conjunction with the FSSG equipment requirement for the MEF. When compared with the overall requirement for the scenario the current/planned T/E can satisfy the equipment requirement. Specific comments, by equipment, are contained in section 7.4.3.

7.4.2.2 CSS Throughput. Table 7-3 is a compilation of the CSS data transfer requirements derived by analyzing each functional exchange requirement listed in section 5 and determining the number of message exchanges, using the message formats listed in section 6, that would occur in a 24 hour period. The frequency of submission for a report was derived from approved FMFMs and current SOPs. The frequency of submission for a request was derived from average transaction rates calculated in "A Packet Radio Logistic Network for a Marine Amphibious Landing Force," a Naval Post Graduate School thesis by Robert F. Cronin. The average transaction rates were verified by personnel from code LMM, Installations and Logistics Department, Headquarters Marine

Table 7-2. BSSG Equipment Requirements

	<u>HF</u>	<u>VHF</u>	<u>UHF</u>	<u>MULTI-CHANNEL</u>
H&S DETACHMENT	11	19	1	6
SUPPLY DETACHMENT	7			
MAINTENANCE DET.	4			
LANDING SUPPORT DET	4			
ENGINEERING SPT. DET	4			
MOTOR TRANSPORT DET.	4	6		
MEDICAL DET.	5			

TABLE 7-3. CSS Data Transfer Requirements - BSSG (Bits/Day)

<u>LINK</u>	<u>SUPPLY</u>	<u>MAINTENANCE</u>	<u>TRANSPORTATION</u>	<u>HEALTH</u>		<u>TOTAL</u>
				<u>SERVICES</u>	<u>ENGINEER</u>	
CSSOC - CSSD	1,083,552	73,536	129,216	73,222	976	1,360,502
CSSOC - GCE	2,008	22,000	245,408	27,192	62,528	359,136
CSSOC - ACE	2,008	22,000	308,960	27,192	62,528	422,688
CSSOC - CSSA CSSD	3,240,600	22,000	387,648	87,866	976	3,739,090
CSSOC - CSS DETACHMENTS	3,252,644	190,016	395,168	74,134	62,528	3,974,510*
CSSA CSSD - MMSG COC	1,085,768	61,592	129,216	14,644	976	1,292,196
CSSA CSSD - CSSD	1,085,768	73,536	129,216	73,222	976	1,362,718
CSSD - MANEUVER ELEMENT	1,077,416	58,240	129,216	73,222	976	1,339,070
CSSOC - MEB COC	2,008	22,000	308,960	27,192	62,528	422,688

*Valid figure for common user system. Otherwise refer to individual function figure for point-to-point circuit. Refer to Appendix E for example of data analysis process.

Corps. Appendix E provides, by example, the detailed analytical process used to determine the total number of bits per day for each of the functional areas. The functional area used in the example is the maintenance function for the FSSG. The analytical process is the same for all functional areas for both the BSSG and FSSG.

7.4.2.3 CSS Requirement vs. Baseline Network

7.4.2.3.1 Peripherals. The volume of traffic generated in the six CSS functional areas is too large to be handled over voice circuits with the communications equipment available. The need is also for semi-permanent or record capability. The FMF has recognized this and currently employs ADPE-FMF and commercial computers to assist in the transmission of CSS data. The AN/UGC-74 teletypewriter and AN/GXC-7 facsimile are also employed. Analysis to determine the sufficiency of communications equipment to support the BSSG connectivity requirements took into account the use of these peripheral devices. A total of 16 UGC-74/ADPE-FMF/GXC-7/computer equipments are currently being used to support the data transfer requirement of the BSSG. Since commercial computers are procured at the local level and are not T/E items this study is not authorized to comment on the sufficiency of commercial computer assets. There are, however, sufficient ADPE-FMFs, AN/GXC-7s and AN/UGC-74s to support the requirement.

7.4.2.3.2 Paths. Wire and multichannel radio circuits provide the majority of the paths required to pass CSS data. As was already indicated in figures 7-4, 7-5 and 7-7, direct dedicated wire circuits or common user locals can be used to handle CSS data from the CSSOC to the CSSA and functional battalion detachments. Sufficient channels are available to provide dedicated circuits to the ACE, GCE and MEB COC from the CSSOC. The MWSG to CSSA link can be satisfied via the common user network between FSSG and ACE. The links from the CSSDs to receive and pass their CSS traffic are the BSSG Command and the BSSG Request Net as shown in figure 7-2. The maneuver elements are on the BSSG Request Net, only. The BSSG Command net is normally used for command support

traffic. CSS traffic can be passed over this net as an alternate path using the AN/UGC-74 with an MD-1142 modem. At 75 bps, the CSS traffic would take over ten hours a day of straight transmission time. This method of transmission would require an increase of 6 MD-1142s to the FSSG T/E for BSSG use.

7.4.2.3.3 Modems. Currently there are no HF modems in the Marine Corps inventory that can provide an acceptable data rate for use with the ADPE-FMF or commercial computers over the BSSG Command Net. The introduction of the MD-1230 High Speed Serial Tone Modem will provide this capability in the 1990 time frame. A commercial Hayes modem for HF transmission has been successfully tested at 2d FSSG. Use of the commercial modem or the MD-1230 would reduce transmission time to under one hour per day. The primary net identified for passing CSS traffic is the BSSG Request net. This is a VHF net. No modems are currently in the Marine Corps inventory to allow digitized transmission over VHF, thus reducing the options to a voice only net. The average rate of transmission for a voice circuit is approximately 17 characters/words per minute. (The formula to derive this is: minutes per hour is equal to bits per second multiplied by (.0075) as determined in the LFICS Study, Final Report, LFICS Communications Requirements; Martin Marietta Corp., December, 1971.) A word/character is equal to 8 bits. This equates to 14 voice circuits required to transmit CSSD to CSSA/CSSOC CSS traffic and 7 voice circuits for the maneuver element to CSSD link. The commercial modem similar to that used with the MDSS system, discussed in section 7.4.1, is one solution to the problem. This modem permits voice and data traffic to be passed over the same circuit.

7.4.2.3.4 Digital Devices. Another option would be to program and use the AN/PSC-2 Digital Communications Terminal (DCT) with the VHF radios. This solution would require an increase of DCTs for the FSSG. A minimum increase of 10 DCTs would be required to support the BSSG Request net.

7.4.3 FSSG Connectivity Analysis.

7.4.3.1 CSS Throughput. Table 7-4 is a compilation of the CSS data transfer requirements for the FSSG. The requirements were determined using the same methodology discussed in section 7.4.2.2.

7.4.3.2 CSS Requirement vs. Baseline Network. The data volumes listed in table 7-4 were applied to the scenario baseline network described in section 7.2.1.1. A traffic flow analysis was conducted to determine if the identified network could absorb this additional traffic. The MAGTF Data Transfer Alternatives (1986-1996) was validated and used to determine circuit availability for multichannel connectivity. Analysis revealed that the baseline network could absorb the CSS data except for the maneuver elements to the CSSDs, and the CSSDs to the CSSA and CSSOC links in the voice mode. Modems to allow digital transfer of data are required.

7.4.3.3 Equipment Availability. Table 7-5 lists the FSSG equipment requirements for the MEF employed in the IB scenario. Appendix C lists the current/planned and proposed T/Es for FSSG equipment. Communications equipment to support the BSSG assigned to the MEB and the FSSG assigned to the MEF in the IB scenario would be drawn from the assets listed in Appendix C. Paragraph 7.4.3 discusses areas of concern/interest in relation to equipment densities noted by the study team as a result of the information exchange analysis. In examining equipment availability, the BSSG and FSSG requirements were combined. Table 7-6 displays the total requirement in support of the IB scenario by equipment type.

7.4.3.3.1 Multichannel Equipment. The AN/MRC-135 and AN/TRC-166 are scheduled for replacement by the AN/MRC-() Digital Wideband Transmission System in 1992. While this system will increase the throughput capacity, the quantity of eight for H&S Battalion in the proposed T/E is not considered sufficient to support all requirements. Four systems would be required by the Landing Support detachment during MPF operations and six for the MEB and MEF

Table 7-4. CSS Data Transfer Requirements - FSSG (Bits/Day)

<u>LINK</u>	<u>SUPPLY</u>	<u>MAINTENANCE</u>	<u>TRANSPORTATION</u>	<u>HEALTH SERVICES</u>	<u>ENGINEER</u>	<u>TOTAL</u>
CSSOC - ACE	5,020	46,620	337,728	119,340	196,080	704,788
CSSOC - GCE	5,020	46,620	210,624	119,340	196,080	577,684
CSSOC - MEF	25,900	46,620	813,504	120,252	196,080	1,202,356
CSSOC - CSSA	6,591,780	515,500	1,053,120	99,264	976	8,260,640
CSSOC - SOC	6,591,780	166,060	59,904	-	196,080	7,013,824
CSSOC - MOS	1,548,764	515,500	59,904	-	196,080	2,320,248
CSSOC - MTOC	25,900	46,420	849,240	-	196,080	1,117,640
CSSOC - MSOC	25,900	29,860	59,904	139,376	196,080	451,120
CSSOC - ENGROC	25,900	29,860	59,904	-	196,080	311,744
CSSA CSSD - CSSD	1,318,356	103,100	210,624	218,208	976	1,851,264
CSSD - MANEUVER ELEMENT	1,318,356	103,100	91,680	158,144	976	1,672,256
CSSD - MMSG COC	1,318,356	29,860	59,904	118,944	196,080	1,723,144
SOC - MOS	86,400	--	--	--	--	86,400

Refer to Appendix E for example of data analysis process.

Table 7-5. FSSG Equipment Requirements

	<u>HF</u>	<u>VHF</u>	<u>UHF</u>	<u>MULTI CHANNEL</u>
H&S BN.	11	25	1	6
SUPPLY BN.	15	7		
MAINTENANCE BN.	3	4		
LANDING SUPPORT BN.	4	4		
ENGINEER SUPPORT BN.	5	10		
MOTOR TRANSPORT BN.	3	10		
MEDICAL BN.	8	8		

Table 7-6. MARCOR 1B Equipment Requirements

	<u>HF</u>	<u>VHF</u>	<u>UHF</u>	<u>MULTICHANNEL</u>
H&S BN.	22	44	1	12
SUPPLY BN.	22	7		
MAINTENANCE BN.	7	4		
LANDING SUPPORT BN.	8	4		
ENGINEER SUPPORT BN.	9	10		
MOTOR TRANSPORT BN.	7	16		
MEDICAL BN.	13	8		

during operations ashore. It is recognized that the assets from the H&S Battalion can support the Landing Support detachment and revert back to H&S Battalion detachment control upon BSSG establishing ashore. However, the AN/MRC-() assets would have to be split, with four assigned for BSSG operations and four for FSSG operations. Since MPF operations alone require four equipments, a four and four split would not allow for any reserve for the MPF operation or for any possible overlap when the BSSG establishes ashore. Long haul multichannel requirements (AN/GRC-201, AN/TRC-170, AN/TSC-93) still need to be met with Communications Battalion assets over established links.

7.4.3.3.2 Single Channel Radio Equipment. There are sufficient HF assets within the FSSG with one exception. Supply Battalion does not have an HF allowance and would have to be supported by H&S Battalion. H&S Battalion does not have sufficient HF assets to provide the Supply Battalion requirement. An allowance would have to be established for Supply Battalion or the H&S Battalion allowance would have to be increased. There are more than enough VHF and UHF assets within the current and proposed FSSG T/E to support the IB scenario requirements.

7.4.3.3.3 Switching Equipment. The FSSG has sufficient assets listed in its T/E to support the IB scenario switching requirement.

7.4.3.3.4 Modems. The Marine Corps does not currently have in its inventory modems to allow for the operation of data terminal equipment over HF single channel, VHF single channel or the AN/MRC-135 multichannel radios. This is considered a major deficiency considering the increased reliance on computers by the combat service support elements. The Marine Corps has recognized the need for a modem in the HF range and is actively engaged in the U.S. Army MD-1230 High Frequency Radio, Serial Tone Modem program. These modems will not be available to the Marine Corps until fiscal year 1993. The T/Es in Annex C do not reflect an allowance for the FSSG, however. As an interim solution in the HF arena, commercial modems are available and have been tested by 2d FSSG. There is no ongoing program for VHF modem

capability. While the SINCGARS radio family has the capability to pass digital traffic it is not programmed for the Marine Corps until 1992. As an interim solution 1st FSSG has successfully used commercial modems with VHF radios. Commercial modems are also used with the AN/MRC-135 at 1st and 2d FSSG. A modification kit to modify the AN/MRC-135 in order to give it a data communications capability has successfully passed developmental and operational testing. This modification may be available in fiscal year 1989. Modified AN/MRC-135s will provide the needed data capability until the AN/MRC-() replaces it in the mid-1990s.

SECTION 8. CONCLUSIONS AND RECOMMENDATIONS

This section presents the conclusions and recommendations of the study by summarizing the specific task assignments based on the statement of work. The study recommends courses of action to be taken, where appropriate.

8.1 Conclusions

8.1.1 Combat Service Support Operational Functions, Subfunctions and Tasks

8.1.1.1 Summary. Section 3 of this report identifies function, subfunctions, tasks and activities associated with Combat Service Support. Based on extensive research and interviews with Fleet Marine Force personnel engaged in combat service support operations, section 3 of this study links specific tasks and activities to the related subfunction and hence to its function.

8.1.1.2 Conclusions. The hierarchy of CSS functions, subfunctions, tasks and activities, shown in table 3-1, adequately and accurately represents actual CSS requirements. Performance of all identified subfunctions is sufficient to satisfy functional requirements, and performance of all tasks for every designated subfunction is sufficient to satisfy each of those subfunctions as indicated. The logic structure thus evolved is sufficiently substantial to serve as a foundation upon which to build the additional elements of the study.

8.1.2 Combat Service Support Force Structure

8.1.2.1 Summary. The study effort examined the current and proposed combat service support structure in relation to the Marine Corps IB scenario. Section 2 of this study developed a force structure and identified command relationships that were used by the study team to analyze communications requirements for combat service support elements.

8.1.2.2 Conclusion. The force structure in the modified MARCOR 1B Scenario involving the employment of a MEF and separate MPF MEB is adequate to identify all organizational relationships which require a CSS communication capability. The relationships thus identified are sufficiently comprehensive as to illuminate all required needlines.

8.1.3 The Forward Basing Concept Impact on the Combat Service Support Structure

8.1.3.1 Summary. CSS communications requirements for MPF operations differ from CSS communications requirements for a tactical amphibious operation. CSS organizations as described in sections 2 and 4 of this study are composed of unique organizational structures. Upon establishment of the CSSE of the MEB ashore the CSSE portion of the MPF organization dissolves and detachments return to their parent commands.

8.1.3.2 Conclusions. Communications for the CSS element of an MPF operation are drawn mainly from the Landing Support Battalion. Their assets are insufficient to satisfy the requirement. MPF operations are heavily dependent on digital data transfer of information. The Landing Support Battalion has sufficient analogue terminal equipment to satisfy the requirement, but proper modems should be available in order to convert to digital data for high speed transmission.

8.1.4 CSS C2FAC Identification, Definition and Analysis

8.1.4.1 Summary. CSS C2FACs were identified and defined in section 4 of this study. Tasks and activities associated with each CSS C2FAC were identified based on an analysis of the functions and subfunctions listed in section 3 and through extensive discussions with HQMC, I&L representatives and FMF combat service support personnel.

8.1.4.2 Conclusion. An exchange of information is required between CSS functional area operations centers, the combat operation center of the CSSE, and C2FACs of the ACE, GCE and MAGTF command element. CSS information must be transmitted over the same Marine Corps communications network used for command support and combat information. Information requirements must be considered in their aggregate in order to make an accurate evaluation of their combined impact on the network. Common units of measurement and standard methods of configuration, quantifying traffic loads and sizing of other communications phenomena are mandatory in order to design the complete network and to accurately measure the effect of changes. The identification of CSS C2FACs and their information exchange requirements is a key step towards a standard configuration and enables the communications planner to consider CSS information exchange on a common basis with tactical command support and command information exchange requirements.

8.1.5 CSS Information Exchange Requirements between C2FACs

8.1.5.1 Summary. Command and control flow diagrams (C2FDs) were developed for each CSS function and subfunction. The tasks which were performed in each C2FAC were diagrammed in section 5 of this study. The type of information to be exchanged between C2FACs was also shown. These two steps identified the information exchange requirements between the C2FACs of major elements of the MAGTF and the subordinate elements of the CSSE. This information was used in section 6 to analyze the message exchange requirements by message type, format and content.

8.1.5.2 Conclusion. C2FDs provide a structured method for determining information flow and exchange requirements. Extensive development of C2FDs for tactical systems has been accomplished for the applicable areas of warfare listed in JCS Pub 12. This concept is equally applicable to CSS.

8.1.6 Message Exchange Requirements

8.1.6.1 Summary. The message exchange requirements are shown in sections 5 and 6 of this study.

8.1.6.2 Conclusion. Section 5 of this study identified the CSS C2FACs that required information exchange to accomplish their mission. Section 6 showed that this information exchange occurs in three different message types; requests, status reports and special reports. With information from these message types, the CSS commander and his staff have a current picture of the CSSE combat support capability and are able to provide that support in the most effective manner possible. These message types have been developed so they can be standardized which, in turn, supports the JCS in its standardization efforts.

8.1.7 External Connectivity Requirements in the MAGTF Data Transfer Alternatives Study

8.1.7.1 Summary. External connectivity requirements previously discussed in the MAGTF Data Transfer Alternatives Study were examined in light of connectivity requirements identified in this study. Additional data transfer requirements identified in section 7 of this study were considered between the ACE, GCE, CSSE and MAGTF command elements.

8.1.7.2 Conclusion. The external connectivity identified in the MAGTF Data Transfer Alternatives Study is sufficient to absorb the additional data transfer requirements.

8.1.8 Command and Control Flow Diagrams and CSS C2FAC Information Exchange

8.1.8.1 Summary. Command and Control Flow Diagram were developed in section 5 of this study. The C2FDs identified the operational interface requirements among C2FACs and CSS C2FACs.

8.1.8.2 Conclusion. C2FDs provide a structured method for determining information flow and exchange requirements. Extensive use of C2FDs has been accomplished for the Tactical Data Systems supporting the applicable areas of warfare listed in JCS Pub 12 and are presented in the TIDP. They are also used to support interoperability actions among services. The application of C2FDs and the information flow lines with exchange requirements are equally applicable to CSS areas of warfare.

8.1.9 CSS C2FAC Communications Requirements

8.1.9.1 Summary. CSS elements require a combination of single channel, multichannel and wire communications to transmit CSS information electronically. The CSS elements are dependent on the Marine Corps Communications architecture arrangements and the T/E equipment associated with them. As such, CSS information must compete with all other information transfer requirements within the MAGTF.

8.1.9.2 Conclusions. The information transfer requirements for CSS are voluminous and cannot be accommodated in a timely manner over Marine Corps Communications System voice circuitry. A need exists to provide data transmission capability within the Marine Corps Communications System structure to handle the large amounts of information transfer required for CSS operations over portable VHF and HF transmission systems. While the Marine Corps intends to procure the MD-1230, High Speed Serial Tone Modem, for HF radio communications, there are no current plans to procure a service approved VHF modem.

8.2 Recommendations

8.2.1 Recommendation. That the Marine Corps adopt and procure a modem to allow for transmission of digital data over current VHF assets. Further, that a testing program should be conducted with the SINCGARS radio family and Marine Corps EUCE to determine compatibility.

8.2.2 Recommendation. That the Marine Corps include consideration of CSS C2FACs as part of the documentation requirement in the Technical Interface Concept where appropriate, and consider CSS information exchange requirements in future Marine Corps Communications architecture modifications. Additionally, that system developers should consider CSS C2FACs information exchange requirements in future Telecommunications Support Plans.

8.2.3 Recommendation. That C2FDs appearing in this report should be incorporated into the Technical Interface Design Plan (TIOP). They will provide a basis for review and comment as CSS requirements are developed and standardized by the JCS.

8.2.4 Recommendation. That the three message types identified in section 6 of this report should be used as a contribution by the Marine Corps for the JCS standardization effort. The types presented should be adopted as standard message formats.

8.2.5 Recommendation. That priority should be given in the PPBS process to expedite fielding of the SINCGARS family of VHF equipment and the AN/MRC-() Digital Wideband Transmission System (DWTS). The modification to the AN/MRC-135 multichannel radio equipment to provide a digital data capability should be installed as an interim solution to providing a digital capability until the DWTS can be fielded. Additionally, based on the equipment analysis for the IB scenario, the proposed T/E for H&S Battalion of the FSSG should be increased by eight AN/MRC-()s. The proposed T/E would support the H&S Battalion and Supply Battalion requirement for HF communications but would not allow for a reserve allowance in case of equipment failure. Therefore, it is recommended that the H&S Battalion proposed T/E be increased by 6 AN/PRC-104s and 2 AN/MRC-138s.

8.2.6 Recommendation. That the informal programs for testing and approving a variety of commercial modems to support HF and VHF transmission of data should be brought under centralized control and formalized at the Marine Corps

Research, Development and Acquisition Command. Any modem selected should be modified/ruggedized to military specifications. An operational handbook should be published instructing the FMF on proper use of modems. Priority should be given to fielding the MD-1230 and any other selected modems.

8.2.7 Recommendation. That the Marine Corps investigate using the Digital Communications Terminal (DCT) which allows burst transmission of pre-formatted bit oriented messages and stores up to 84 kilobits of information in memory for CSS applications. The message formats contained in section 6 of this study could be preprogrammed into the DCT to allow for rapid transmission of critical CSS information by maneuver elements. The DCT is being procured in large quantities (1714 to be procured in FY88) for tactical use in the Marine Corps. This device has been successfully tested with the current inventory of UHF, VHF and HF equipments.

APPENDIX A
REFERENCES

REFERENCES

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3. MCO 3900.4C, Marine Corps Operational Requirements Document.
4. MCO 3900.11C, USMC Research, Development, Test and Evaluation Work Directives.
5. MCO P3902.1A, The Marine Corps Studies System.
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7. MCO P4110.1B, Acquisition Management, Standard Integrated Support Management System.
8. MCO 4130.2, Configuration Management of Computer Aided Tactical Systems.
9. MCO 4700.3, Implementation of Reliability Maintenance in the Marine Corps.
10. MCO P4790.1B, MIMMS Field Procedures Manual.
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35. FMFM 6-2, Marine Infantry Regiment.
36. FMFM 6-3, Marine Infantry Battalion.
37. FMFM 7-1, Fire Support Coordination.
38. FMFM 7-2, Naval Gunfire Support.
39. FMFM 7-4, Field Artillery Support.
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44. OH 2-1, Marine Air-Ground Intelligence System (MAGIS).
45. OH 3, Command and Control Systems.
46. OH 3-3, Communications (draft).
47. OH 4-1, CSS Operations.
48. OH 4-3, Landing Support.
49. OH 4-9, Motor Transport.
50. OH 4-10, Legal Services Support.
51. OH 5, The Marine Aviation Combat Element.
52. OH 6-2A, Fire Support Coordinators Guide.
53. OH 6-9, Marine Antitank Battalion.
54. OH 12, Control Procedures for Tactical Exercises.

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55. Analysis of Marine Corps Combat Service Support Structure; Center for Naval Analysis, November 1985.
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74. U.S. Army Combat Service Support Mission Area Analysis Report; Part 10.

APPENDIX B

MESSAGE ELEMENTS

Message Elements

MESSAGE ELEMENTS	MESSAGE TYPES														
	ENGINEER SITUATION REPORT	FRAGMENTARY ENGINEER SITUATION REPORT	ENGINEER REQUEST	ENGINEER RECONNAISSANCE	ENGINEER MINIFIED REPORT	MINIFIED REPORT TO LAY INTENT	DAILY BLOOD STATUS REPORT	MEDICAL REF/PATIENT STATUS	SURFACE CASUALTY TRANSPORTATION REQUEST	AIR CASUALTY TRANSPORTATION REQUEST	MEDICAL JOINTING REPORT	MEDICAL SPOD STATUS REPORT	CASUALTY REPORT	MAINTENANCE SITUATION REPORT	MAINTENANCE SITUATION REPORT
REPORT IDENTIFICATION															
PERIOD COVERED															
PROJECT IDENTIFICATION															
DESCRIPTION															
LOCATION (COORDINATE)															
START TIME & COMPLETION															
COMPLETION TIME															
EQUIPMENT ATTACHED															
EQUIPMENT DEADLINED															
POL STATUS															
CONSTRUCTION MATERIAL ON HAND															
MATERIAL RQR NEXT 24 HOURS															
RQR FOR COMPLETION BY															
ENGINEER INTELLIGENCE															
REMARKS															
GERMANE TIME															
ACTION DESIRED															
ACTION TAKEN															
DATE/TIME															
DISTRIBUTION															
MAP SHEETS															
NATO CLASS															
DEPTH															
LANES, GAPS															
NO. OF STRIPS															
NO. OF OPERATING ROOMS															
NO. OF OTHER OPERATING AREAS															
NO. OF FIXED X-RAY															
NO. OF PORTABLE X-RAY															
NO. OF REFRIGERATORS FOR WHOLE BLOOD															
AMT OF WHOLE BLOOD BY TYPE															
NO. OF BLOOD DONORS															
NO. OF ICU BEDS															
NO. OF SICKBAY BEDS															
NO. OF OVERFLOW BEDS															
SHIP MEDICAL PERSONNEL ATTACHED															
NAME															
RANK, RATE															

Message Elements

MESSAGE TYPES																										
MESSAGE ELEMENTS		ENGINEER SITUATION REPORT	FRAGMENTARY ENGINEER SITUATION REPORT	ENGINEER REQUEST	ENGINEER RECONNAISSANCE	ENGINEER MINEFIELD REPORT	MINEFIELD REPORT TO LAY INTENT	DAILY BLOOD STATUS REPORT	MEDICAL BED/PATIENT STATUS	SURFACE CASUALTY TRANSPORTATION REQUEST	AIR CASUALTY TRANSPORTATION REQUEST	MEDICAL JOINING REPORT	MEDICAL SPOT STATUS REPORT	CASUALTY REPORT	MAINTENANCE CONTACT TEAM REQUEST	MAINTENANCE SITUATION SUMMARY	MAINT. SUPPORT CAPABILITY REPORT	SUPPLY SITUATION SUMMARY	INFORMAL SUPPLY REQUEST	FORMAL SUPPLY REQUEST	SUPPLY DUMP STATUS	TRANSPORTATION DAILY AVAILABILITY REPORT	HIGHWAY CLEARANCE REQUEST	HT/TIME REQUEST	AIRCRAFT SUPPORT REQUEST	
NOBC/NEC																										
LF MEDICAL/ENTAL PERSONNEL																										
NAME																										
RAIK, RATE																										
NOBC/NEC																										
NO. CF BEDS OCCUPIED																										
MAJOR OPERATING ROOMS																										
BACKLOG OPERATING ROOM PATIENTS																										
BACKLOG OPERATING ROOM HOURS																										
LATERAL TRANSFER																										
EVACUATED OUT OF AOA																										
PICK UP TIME																										
NO. OF CASUALTIES																										
PRIORITY																										
ZONE SECURITY																										
LZ MARKING																										
LX TALK TO																										
FREQ.																										
NO. BLOOD UNITS ON HAND																										
EXPIRATION DATE																										
TOTAL UNITS TRANS. ON PERIOD																										
TOTAL UNITS EXPENDED ON PERIOD																										
EST. NO. UNITS NEXT 10 DAYS																										
EST. NO. UNIT ABC/RH NEXT 10 DAYS																										
DESIRED DELIVERY DATE																										
DESIRED DELIVERY DISTINCTION																										
RECEIVING OFFICER AT DISTINCTION																										
NO. OF SURGICAL BEDS																										
NO. OF I-H BEDS																										
NO. OF NP BEDS																										
ADMISSIONS																										
US/ALLIED/EN/EN CIV																										
TOTAL UNOCCUPIED BEDS																										
MEDICAL BEDS OCCUPIED																										
SURGICAL BEDS OCCUPIED																										
NP BLDS OCCUPIED																										
ICU BELS OCCUPIED																										
TOTAL PATIENTS ATTEND PERIOD BY SERVICE																										

Message Elements

MESSAGE TYPES		MESSAGE ELEMENTS																									
		ENGINEER SITUATION REPORT	FRAGMENTARY ENGINEER SITUATION REPORT	ENGINEER REQUEST	ENGINEER RECONNAISSANCE	ENGINEER MINIFIELD REPORT	MINIFIELD REPORT TO LAY INTENT	DAILY BLOOD STATUS REPORT	MEDICAL REG/PATIENT STATUS	SURFACE CASUALTY TRANSPORTATION REQUEST	AIR CASUALTY TRANSPORTATION REQUEST	MEDICAL JOINING REPORT	MEDICAL SPOB STATUS REPORT	CASUALTY REPORT	MAINTENANCE CONTACT TEAM REQUEST	MAINTENANCE SITUATION SUMMARY	MAINT. SUPPORT CAPABILITY REPORT	SUPPLY SITUATION SUMMARY	MEDICAL SUPPLY REQUEST	GENERAL SUPPLY REQUEST	GENERAL SUPPLY STATUS	TRANSPORTATION AVAILABILITY REPORT	COMBAT CASUALTY REPORT	GENERAL REQUEST	GENERAL SITUATION REQUEST		
TOTAL PATIENTS BY SERVICE RETURNED TO DUTY DURING PERIOD																											
TOTAL PATIENTS BY SERVICE EVACUATED DURING PERIOD																											
TOTAL DEATHS (BY SERVICE) DURING PERIOD																											
PATIENTS REQUIRING EVACUATION																											
OCCURRENCE, DISEASE UNUSUAL INCIDENTS																											
TOTAL OUTPATIENTS VISITS																											
UNRESOLVED MEDICAL LOGISTICS PROBLEMS																											
UNRESOLVED MEDICAL PERSONNEL PROBLEMS																											
ADMISSIONS																											
QUANTITY AVAILABLE																											
NOMENCLATURE																											
UNIT OF ISSUE																											
REPORTING UNIT CODE (HUC)																											
END ITEM																											
STATUS																											
PRIMARY DIAGNOSIS																											
SECONDARY DIAGNOSIS																											
SSN																											
CONDITION & PROGNOSIS																											
DATE OF REQUEST																											
MT () OR MHE ()																											
MEDICAL SERVICE REFERRAL																											
% READY																											
CLASS SUPPLY																											
CRITICAL ITEM																											
EQUIPMENT																											
AREA (COUNTRY)																											
AUTHORIZED																											
DEADLINE																											
MAJOR DISCREPANCY																											
REQUEST FOR																											
TYPE SUPPORT																											
REQUESTS																											
REQUEST FOLLOWS																											
NSA																											

Message Elements

MESSAGE ELEMENTS \ MESSAGE TYPES																
	ENGINEER SITUATION REPORT	FRAGMENTARY ENGINEER SITUATION REPORT	ENGINEER REQUEST	ENGINEER RECONNAISSANCE	ENGINEER HINTERLAND REPORT	MINERFIELD REPORT TO LAY INTENT	DAILY BLOOD STATUS REPORT	MEDICAL BED/PATIENT STATUS	SURFACE CASUALTY TRANSPORTATION REQUEST	AIR CASUALTY TRANSPORTATION REQUEST	MEDICAL JOINING REPORT	MEDICAL SPOT STATUS REPORT	CASUALTY REPORT	MAINTENANCE CONTACT TEAM REQUEST	MAINTENANCE SITUATION SUMMARY	MAINT. SUPPORT CAPABILITY REPORT
IRE BY HEAL																
TRIDORANE QUANTITY																
WATER BY GALLON AND 5 GAL CAN																
FUEL BY TYPE																
CLASS V BY DODIC																
BATTERIES (QUANTITY & NON.)																
OTHER ITEMS																
CALL SIGN AT DESTINATION																
DESTINATION																
DESIRED TIME OF DELIVERY																
DESIRED TIME OF PICKUP																
SPECIAL INSTRUCTIONS																
ITEM:																
QUANTITY REQUIRED																
QUANTITY ON HAND																
OPERATING LEVEL																
DOS																
PRIORITY																
DEPARTURE TIME AND DATE																
MOVING UNIT																
ORIGIN																
TOTAL VEHICLE																
VEHICLE TYPE																
CARAVY COMMANDER																
CARGO - INITIAL TRIP																
CARGO - RETURN TRIP																
ESCORT REQUIREMENT																
REQUESTED ROUTE																
ASSIGNED ROUTE																
FROM TO																
TIME OF MARCH																
NUMBER SERIALS																
NUMBER MARCH UNITS																
TIME LENGTH																
TIME GAP SERIALS																
MARCH UNIT																
REQUESTING UNIT																

APPENDIX C

TABLE OF EQUIPMENT

BY

FSSG BATTALION

PART I

CURRENT AND PLANNED

TABLE OF EQUIPMENT

CURRENT AND PLANNED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS
1ST FSSG/ 2nd FSSG/ 3RD FSSG

TAM NUMBER	NOMENCLATURE	H&S BN 1st 2d 3d	SUPPLY BN 1st 2d 3d	MAINTENANCE BN 1st 2d 3d	LANDING SUPPORT BN 1st 2d 3d	ENGINEERING SUPPORT BN 1st 2d 3d	MOTOR TRANSPORT BN 1st 2d 3d	MEDICAL BN 1st 2d 3d	DENTAL BN 1st 2d 3d
A0008	ANDVT/MINTERM FY87	19 19 19			8 8 8	2 2 2	2 2 2	7 7 7	
A0009	ANDVT TACTERM-CV2591 FY87	8 8 8		2 5 2	3 3 3	9 9 9	4 4 4	2 2 2	
A0080	ADPE, F FHF CURRENT	29 40 28	9 8 9	7 9 7	2 2 2	2 2 2	1 1 1	1 1 1	1 1 1
A0081	ADPE-COMM MSG PROCESSOR FY87	1 1 1							
A0246	CENTRAL OFFICE, TELEPHONE AUTO, 600 LINE AN TCC-38(V)/2 CURRENT	1 1 1							
A0260	COMMAND COMMUNICATIONS SYSTEM AN/MSQ-115 CURRENT			1 1 1					

CURRENT AND PLANNED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS
1ST FSSG/ 2nd FSSG/ 3RD FSSG

TAM NUMBER	NOMENCLATURE	HQS BN 1st 2d 3d	SUPPLY BN 1st 2d 3d	MAINTENANCE BN 1st 2d 3d	LANDING SUPPORT BN 1st 2d 3d	ENGINEERING SUPPORT BN 1st 2d 3d	MOTOR TRANSPORT BN 1st 2d 3d	MEDICAL BN 1st 2d 3d	DENTAL BN 1st 2d 3d
A0268	COMMUNICATION CENTRAL AN/TCG-37 CURRENT	1 1 1							
A0284	COMMUNICATIONS TERMINAL AN/UGC-74A(V)3 CURRENT FY88	14 14 14		5 5 5	2 2 2				
A0311	CONTROL CENTRAL, COMMUNICATION TECHNICAL AN/TSQ-84 CURRENT	1 1 1							
A0437	DATA COMMUNICATIONS TERMINAL AN/TYC-5A(V) CURRENT	1 1 1							
A0497	DIGITAL NON-SECURE VOICE TERMINAL (DNVT) TA954 FY87	492 492 492			52 52 52				
A0498	DIGITAL COMM TERMINAL AN/PSC-2 FY89			4 4 4					
A0659	FACSIMILE SET AN/GXC-7A CURRENT	3 3 3							
A0890	LIGHTWEIGHT DIGITAL FACSIMILE AN/LDC-7 FY88	10 10 13			2 2 2				

CURRENT AND PLANNED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS
1ST FSSG/ 2nd FSSG/ 3RD FSSG

TAM NUMBER	NOMENCLATURE	H&S BN 1st 2d 3d	SUPPLY BN 1st 2d 3d	MAINTENANCE BN 1st 2d 3d	LANDING SUPPORT BN 1st 2d 3d	ENGINEERING SUPPORT BN 1st 2d 3d	MOTOR TRANSPORT BN 1st 2d 3d	MEDICAL BN 1st 2d 3d	DENTAL BN 1st 2d 3d
A0925	MARINE CORPS FIBER OPTIC MULTIPLEXER SYS FY90	15 15 15			2 2 2				
A0980	MODEM DIGITAL DATA MD-1142/UGC FY87	4 4 4							
A1078	MULTIPLEXER TD-1234()/TTC FY87	12 12 12			2 2 2				
A1795	RADIO SET AN/GRC-193 CURRENT FY91			2 2 2 2 0 0					
A1815	RADIO SET AN/GRC-160 CURRENT	25 29 24		7 7 10	12 6 12	7 7 7	10 10 10	32 32 29	
A1930	RADIO SET AN/MRC-110A CURRENT	14 14 9			4 4 4	9 9 9	6 6 6		
A1935	RADIO SET AN/MRC-138A CURRENT	8 8 7			3 3 3	9 9 9	4 4 4	2 2 2	
A1955	RADIO TERMINAL SET AN/MRC-139(XN-) FY90	16 16 16							
A2030	RADIO SET AN/PRC-68A CURRENT FY87	0 6 0		8 0 16 8 16 0	15 15 15	12 12 0			

CURRENT AND PLANNED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS
1ST FSSG/ 2nd FSSG/ 3RD FSSG

TAM NUMBER	NOMENCLATURE	H&S BN			SUPPLY BN			MAINTENANCE BN			LANDING SUPPORT BN			ENGINEERING SUPPORT BN			MOTOR TRANSPORT BN			MEDICAL BN			DENTAL BN		
		1st	2d	3d	1st	2d	3d	1st	2d	3d	1st	2d	3d	1st	2d	3d	1st	2d	3d	1st	2d	3d	1st	2d	3d
A2040	RADIO SET AN/PRC-75B CURRENT	2	2	2							2	2	2	1	1	1									
A2050	RADIO SET AN/PRC-77 CURRENT	70	70	54	6	4	6	35	50	35	35	50	35	15	15	15	7	7	5						
A2051	RADIO SET PLRS FY87	10	10	10							6	6	6	2	2	2	6	6	6						
A2065	RADIO SET AN/PRC-104 CURRENT FY89 FY90	19	19	15				2	2	2	11	11	11	2	2	2	4	4	4	8	8	7			
A2069	RADIO SET, UHF AN/PRC-113(V)3 CURRENT FY90	3	3	3							2	2	2	1	1	1									
A2070	RADIO SET AN/PRC-119 FY90	87	87	71				6	4	6	35	50	35	35	35	35	15	15	15	7	7	7			
A2072	RADIO SET AN/HRC-1388 FY90	8	8	7							3	3	3	9	9	9	4	4	4	2	2	2			
A2073	RADIO SET AN/PRC-1048 FY90	19	19	15				2	2	2	11	14	11	3	3	3	4	4	4	8	8	7			
A2074	RADIO SET AN/GRC-1938 FY90							2	2	2															
A2150	RADIO SET AN/VRC-47 CURRENT	6	6	5				4	0	2															

CURRENT AND PLANNED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS
1ST FSSG/ 2nd FSSG/ 3RD FSSG

TAM NUMBER	NOMENCLATURE	H&S BN 1st 2d 3d	SUPPLY BN 1st 2d 3d	MAINTENANCE BN 1st 2d 3d	LANDING SUPPORT BN 1st 2d 3d	ENGINEERING SUPPORT BN 1st 2d 3d	MOTOR TRANSPORT BN 1st 2d 3d	MEDICAL BN 1st 2d 3d	DENTAL BN 1st 2d 3d
A2167	RAU10 SET AN/VRC-88 FY90	15 15 10		8 7 10	12 6 12	7 7 7	10 10 10	32 32 29	
A2170	RADIO SET AN/VRC-91() FY90			9 8 4					
A2183	RADIO TERMINAL SET AN/IRC-135A CURRENT	13 13 11			4 4 4				
A2184	RADIO TERMINAL SET AN/TRC-166 CURRENT	4 4 4		4 7 4	6 6 6				
A2240	RECEIVING SET AN/GRR-17 CURRENT	4 4 4		2 2 2	1 1 1	2 2 2	1 1 1	2 2 2	
A2241	RECEIVER, GP HF R-2174(P)/URR FY87	3 3 3		6 6 5	2 2 2	3 3 3	2 2 2		
A2296	REPEATER REGENERATIVE HX-9331B/URC CURRENT	5 5 5		1 19 1	1 1 1	1 1 1	2 2 2	1 1 1	
A2480	SWITCHBOARD, TELEPHONE, MANUAL SB-22A/PT CURRENT	8 8 10		3 2 2	6 8 0	4 4 3	4 4 4	13 13 13	
A2500	SWITCHBOARD TELEPHONE, CORDLESS MANUAL SB-3082(V)2/GT CURRENT	2 2 2		1 1 1	3 3 3				

CURRENT AND PLANNED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS
1ST FSSG/ 2nd FSSG/ 3RD FSSG

TAM NUMBER	NOMENCLATURE	HQS BN 1st 2d 3d	SUPPLY BN 1st 2d 3d	MAINTENANCE BN 1st 2d 3d	LANDING SUPPORT BN 1st 2d 3d	ENGINEERING SUPPORT BN 1st 2d 3d	MOTOR TRANSPORT BN 1st 2d 3d	MEDICAL BN 1st 2d 3d	DENTAL BN 1st 2d 3d
A2505	SWITCHBOARD TELEPHONE AUTOMATIC SB-3614(V)TT CURRENT FY88	6 6 5			3 3 3				
A2506	SWITCHING SET, MESSAGE, AUTOMATIC, AN/GYC-7 FY87	2 2 2		0 1 1					
A2508	SWITCHING UNIT, TELEPHONE AUTOMATIC SB-3865 FY87	6 6 6			2 2 2				
A2520	TACTICAL COMMUNICATIONS CENTER AN/TGC-() FY91	1 1 1							
A8081	ADVANCED NARROWBAND DIGITAL VOICE TERMINAL TSEC/KYV-5 FY87	8 8 7		2 5 2	3 3 3	9 9 9	4 4 4	2 2 2	
A8083	DIGITAL SECURE VOICE TERMINAL TSEC/KY-68 FY87				4 2 2				

PART II

PROPOSED

TABLE OF EQUIPMENT

PROPOSED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS

TAM NUMBER	NOMENCLATURE	H&S BN	SUPPLY BN	MAINTENANCE BN	LANDING SUPPORT BN	ENGINEERING SUPPORT BN	MOTOR TRANSPORT BN	MEDICAL BN	DENTAL BN
A0008	ANDVT/MINTERM FY87	22			11	2	2		
A0009	ANDVT TACTERM-CV2591 FY87	8		2	3	9	4		
A0080	ADPE, F FME CURRENT	41	26	7	2	3	15		
A0081	ADPE-COMM MSG PROCESSOR FY87	1							
A0246	CENTRAL OFFICE, TELEPHONE AUTO, 600 LINE AN TCC-38(V)/2 CURRENT	1							
A0260	COMMAND COMMUNICATIONS SYSTEM AN/MSQ-115 CURRENT								

PROPOSED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS

TAM NUMBER	NOMENCLATURE	H&S BN	SUPPLY BN	MAINTENANCE BN	LANDING SUPPORT BN	ENGINEERING SUPPORT BN	MOTOR TRANSPORT BN	MEDICAL BN	DENTAL BN
A0268	COMMUNICATION CENTRAL AN/TC-37 CURRENT	1							
A0284	COMMUNICATIONS TERMINAL AN/UGC-74A(V)3 CURRENT FY88	14			2				
A0311	CONTROL CENTRAL, COMMUNICATION TECHNICAL AN/TSQ-84 CURRENT	1							
A0437	DATA COMMUNICATIONS TERMINAL AN/TYC-5A(V) CURRENT	1							
A0497	DIGITAL NON-SECURE VOICE TERMINAL (DNVT) TA954 FY87	492			52				
A0498	DIGITAL COMM TERMINAL AN/PSC2 FY89			4					
A0659	FACSIMILE SET AN/GXC-7A CURRENT	6							
A0890	LIGHTWEIGHT DIGITAL FACSIMILE AN/UXC-7 FY88	10			2				

PROPOSED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS

TAM NUMBER	NOMENCLATURE	H&S BN	SUPPLY BN	MAINTENANCE BN	LANDING SUPPORT BN	ENGINEERING SUPPORT BN	MOTOR TRANSPORT BN	MEDICAL BN	DENTAL BN
A0925	MARINE CORPS FIBER OPTIC MULTIPLEXER SYS FY90	15							
A0980	MODEM DIGITAL DATA MD-1142/UGC FY87	4			2				
A1078	MULTIPLEXER TD-1234 ()/TTC FY87	12			2				
A1795	RADIO SET AN/GRC-193 CURRENT FY91			3					
A1815	RADIO SET AN/GRC-160 CURRENT	20		7	12	7	10	45	
A1930	RADIO SET AN/MRC-110A CURRENT	22			4	22	5		
A1935	RADIO SET AN/MRC-138A CURRENT	8				12	4	2	
A1955	RADIO TERMINAL SET AN/MRC-139(XN-) FY89	8							
A2030	RADIO SET AN/PRC-68A CURRENT FY87	11		16	15	32			

PROPOSED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS

TAN NUMBER	NOMENCLATURE	H&S BN	SUPPLY BN	MAINTENANCE BN	LANDING SUPPORT BN	ENGINEERING SUPPORT BN	MOTOR TRANSPORT BN	MEDICAL BN	DENTAL BN
A2040	RADIO SET AN/PRC-75B CURRENT	5		6	4	2			
A2050	RADIO SET AN/PRC-77 CURRENT	89		6	50	35	15	20	
A2051	RADIO SET PLRS FY87	10				2	6		
A2065	RADIO SET AN/PRC-104 CURRENT FY89 FY90	24		4		2			
A2069	RADIO SET, UHF AN/PRC-113(V)3 CURRENT FY90	5			4 (FY88)	1 1 (FY87)			
A2070	RADIO SET AN/PRC-119 FY90	89		6	50	88	15		
A2072	RADIO SET AN/MRC-1388 FY90	8			3	9	4		
A2073	RADIO SET AN/PRC-104B FY90	24			14	3	3		
A2074	RADIO SET AN/GRC-1938 FY90								
A2150	RADIO SET AN/VRC-47 CURRENT	6		4					

PROPOSED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS

TAM NUMBER	NOMENCLATURE	H&S BN	SUPPLY BN	MAINTENANCE BN	LANDING SUPPORT BN	ENGINEERING SUPPORT BN	MOTOR TRANSPORT BN	MEDICAL BN	DENTAL BN
A2167	RADIO SET AN/VRC-88 FY90	34		83	12	7	10	45	
A2168	RADIO SET AN/VRC-89 FY90			4					
A2170	RADIO SET AN/VRC-91() FY90			9					
A2183	RADIO TERMINAL SET AN/VRC-135A CURRENT	13			4				
A2184	RADIO TERMINAL SET AN/TRC-166 CURRENT			4	6				
A2240	RECEIVING SET AN/GRR-17 CURRENT	4		2	1	2			
A2241	RECEIVER, GP HF R-2174(P)/URR FY87	3		6	2	3	2		
A2298	REPEATER REGENERATIVE MX-9331B/URC CURRENT	5			1		2	1	
A2480	SWITCHBOARD, TELEPHONE, MANUAL SB-22A/PT CURRENT	10		3	8	4	3	15	
A2500	SWITCHBOARD TELEPHONE, CORDLESS MANUAL SB-3082(V)2/GT CURRENT	2		1	3				

PROPOSED T/E BY FSSG BATTALION - SELECTED COMMUNICATIONS ITEMS

TAM NUMBER	NOMENCLATURE	H&S BN	SUPPLY BN	MAINTENANCE BN	LANDING SUPPORT BN	ENGINEERING SUPPORT BN	MOTOR TRANSPORT BN	MEDICAL BN	DENTAL BN
A2505	SWITCHBOARD TELEPHONE AUTOMATIC SB-3614(V)TT CURRENT FY88	6							
A2506	SWITCHING SET, MESSAGE, AUTOMATIC, AN/GYC-7 FY87	2							
A2508	SWITCHING UNIT, TELEPHONE AUTOMATIC SB-3865 FY87	6			2				
A2520	TACTICAL COMMUNICATIONS CENTER AN/TGC-() FY91	1							
A8081	ADVANCED NARROWBAND DIGITAL VOICE TERMINAL TSEC/KYV-5 FY87	8				9	4	2	
A8083	DIGITAL SECURE VOICE TERMINAL TSEC/KY-68 FY87	141			2				

APPENDIX D

TRANSMISSION SYSTEMS

TRANSMISSION SYSTEMS

The following transmission systems are those systems, current and planned, required to support CSS data transfer requirements. The AN/GRC-201, AN/TRC-170 and AN/TSC-93 are currently, or planned to be, provided by the Communications Battalion. All other equipments are T/E items in the FSSG:

Radio Set AN/PRC-77

DESCRIPTION: The AN/PRC-77 is a single channel, manpacked VHF/-FM radio set which can provide wideband secure voice operation. When operated with Amplifier, Power Supply Group OA-3633A/GRC it is referred to as AN/GRC-160 and may be vehicular mounted.

TECHNICAL CHARACTERISTICS:

Modulation - FM

Frequency Range - 30 to 75.95

Type Transmission - Voice, secure voice

Operating Mode - LOS, FM VHF

Channels - single channel, 920 channel selection, 50 KHz spacing

Radio Set AN/MRC-110

DESCRIPTION: The AN/MRC-110 is a vehicular mounted AN/VRC-49 radio set which provides two-way, FM transmitting and receiving. Two receiver-transmitters provide the capability for monitoring one channel while transmitting on another.

TECHNICAL CHARACTERISTICS:

Modulation - FM

Frequency Range - 30 to 75.95 MHz

Type Transmission - Voice, secure voice

Operating Mode - LOS, FM VHF

Channels - single channel, 920 channel selection, 50 KHz spacing

SINGARS Family of Radios

DESCRIPTION: The single channel ground and airborne (SINGARS) radio family is a frequency hopping, FM, spread spectrum system which provides secure voice and data operation in jamming environments. It is operationally compatible in the single channel mode with existing 30 to 75.95 MHz radios. The FSSG will employ the AN/PRC-119, manpack; the AN/VRC-88, vehicular short range, dismountable; and the AN/VRC-91, vehicular long range/dismountable short range.

TECHNICAL CHARACTERISTICS:

Modulation - FM (binary or analog)

Frequency Range - 30 to 97.975 MHz

Type Transmission - Voice, Data (75 bits to 16 Kb/s), TTY

Operating Modes - single channel and frequency hopping (with internal ECCM module)

Channels - 2320 selectable at 25 KHz increments

Radio Set AN/MRC-138 (AN/PRC-104 family)

DESCRIPTION: The AN/MRC-138 is a single side band radio set designed for vehicular use. It provides transmission and reception in upper sideband, lower sideband, continuous wave and compatible AM. The set is a vehicular mounted AN/GRC-193. The basic RT-1209 forms the manpacked, AN/PRC-104. The radio set AN/PRC-104 replaces the AN/VRC-47 which is still used as a limited standard.

TECHNICAL CHARACTERISTICS:

Modulation - SSB, suppressed carrier

Frequency Range - 2 to 29.999 MHz

Type Transmission - Voice, teletype

Operating Mode - USB, LSB, FSK, DPSK

Channels - 280,000 selection, 100 Hz channel spacing, automatic tuning

Radio Set AN/PRC-113

DESCRIPTION: The AN/PRC-113 is a manpack ground-to-air radio containing an internal frequency hopping, anti-jam capability. It will replace the AN/PRC-75 UHF radio which is at the end of its service life.

TECHNICAL CHARACTERISTICS:

Modulation - AM

Frequency Range - 116 to 149.975 (VHF) and 225 to 399.975 (UHF)

Type Transmission - Voice, secure voice

Operating Mode - AM, VHF or UHF LOS

Channels - VHF: 1360 selectable

UHF: 7000 selectable

Radio Terminal Set AN/MRC-135

DESCRIPTION: The AN/MRC-135 is a vehicular mounted, VHF/FM multichannel analog radio set. It can provide an orderwire, eight teletype, and eight 3-KHz telephone channels between two terminal sets, utilizing the component AN/VCC-2 Telegraph-Telephone Terminal.

TECHNICAL CHARACTERISTICS:

Modulation - FM

Frequency Range - 30 to 75.95 MHz

Type Transmission - Voice, FSK

Operating Mode - LOS, FM

Channels - 8 telephone, 8 telegraph, 1 orderwire

Radio Terminal Set AN/MRC-135 (Modified)

DESCRIPTION: The AN/MRC-135 (modified) replaces 4 telephone and 4 teletype channels with 2 16 Kb/s channels in the AN/MRC-135.

TECHNICAL CHARACTERISTICS:

Modulation - Same as unmodified

Frequency Range - Same as unmodified

Type Transmission - Voice, FSK, Data

Operating Mode - Same as unmodified

Channels - 4 telephone, 4 telegraph, 1 orderwire, 2 data, 16 Kb/s

Radio Terminal Set AN/TRC-166

DESCRIPTION: The AN/TRC-166 is a team transportable multichannel voice and teletypewriter terminal.

TECHNICAL CHARACTERISTICS:

Modulation - FM

Frequency Range - 30 to 75.95 MHz

Type Transmission - Voice, TTY/FSK

Operating Mode - LOS, FM

Channels - 4 telephone, 4 telegraph, 1 orderwide

Radio Set AN/MRC-()

DESCRIPTION: The AN/MRC-() provides secure, line-of-sight, digital trunking capability. It is specifically designed to support the Unit Level Circuit Switches. It provides increased channel throughput over the AN/MRC-135 and AN/MRC-135 (Modified), transmission security through bulk encryption and increased emission security.

TECHNICAL CHARACTERISTICS:

Modulation - FM

Frequency Range - 1.35 to 1.85 GHz

Type Transmission - Voice/data, wideband, digital

Operating Mode - LOS, FM

Channel Capacity - 144, 288, 576 Kb/s (equivalent of 36 16
Kb/s channels)

Radio Set AN/GRC-201

DESCRIPTION: The AN/GRC-201 transmits and receives voice and data signals in troposcatter and line-of-sight modes. It provides 12/24 channels of time division multiplexing/pulse code modulation traffic. The capability for 12/24 channels of frequency division multiplexing requires the use of the Telephone Terminal Set, AN/TCC-72 or AN/TCC-72A. When used in conjunction with the AN/TCC-72A it can operate at 16/32 kilobits per second as well as multiplex 12 channels of low speed data (45.5 to 9600 baud).

TECHNICAL CHARACTERISTICS:

Modulation - FM

Frequency Range - 4.4 to 5.0 GHz

Type Transmission - Voice/Data (with AN/TCC-72A)

Operating Mode - LOS, Troposcatter

Channels - Any mix of analog, 16 Kb/s or 32 Kb/s up to 24 channels, or 23 analog, 16 Kb/s or 32 Kb/s channels and 12 channels of low speed data

Radio Terminal Set AN/TRC-170(V)3

DESCRIPTION: The AN/TRC-170(V)3 is a super high frequency radio set which can provide up to 2304 Kb/s of traffic capacity for secure multichannel voice and data at ranges up to 100 miles. It is a replacement for the AN/GRC-201.

TECHNICAL CHARACTERISTICS:

Modulation - FM

Frequency Range - 4.4 to 5.0 MHz

Type Transmission - Voice (digital or analog), Data (digital)

Operating Mode - Troposcatter

Channel Capacity - accepts secure digital data trunk rates of 128, 256, 512 and 1024 Kb/s or 144, 228, 576 and 1152 to a maximum of 2304 Kb/s over channels of 16 or 32 Kb/s

**Ground Mobile Forces Satellite
Communications Terminal AN/TSC-93A**

DESCRIPTION: The AN/TSC-93A is the non-nodal terminal employed with the AN/TSC-85A in a "hub-spoke" configuration. It will provide up to 12 voice channels or one TRI-TAC group.

TECHNICAL CHARACTERISTICS:

Modulation - FM (Analog voice) BPSK, QPSK (Data)

Frequency Range - receive: 7.250 to 7.750 GHz

transmit: 7.900 to 8.400 GHz

Type Transmission - Voice, data

Operating Mode - Point-to-Point Satellite

Channel Capacity - 12 voice or one (16/32 Kb/s) TRI-TAC group

APPENDIX E

ANALYSIS OF MAINTENANCE FUNCTION

MAINTENANCE FUNCTION

E.1 General

Data transfer requirements depicted in figure 7-4 for the maintenance function were determined by analyzing the flow of data required to satisfy the below-listed request and report requirements:

- a) Maintenance Contact Team Request (section 6, figure 6-9);
- b) Maintenance Capabilities Report (figure 6-10); and
- c) Logistics Summary-Maintenance (figure 6-11).

The flow path of the data was determined from the command and control diagrams (C2FDs) developed by the study team in section 5.

E.2 Traffic Density

E.2.1 Request Rate. The request rate used in the analysis was provided from rates calculated in "A Packet Radio Logistic Network for a Marine Amphibious Landing Force," a Naval Post Graduate School thesis by Robert F. Cronin (1987) since actual data from operations or exercises was not available.

E.2.1.1 Calculated Rates. The calculated rate for maintenance requests, based on a MEF total monthly demand rate, is extracted from the previously-mentioned thesis. These rates were validated by personnel from code LMM, Installation and Logistics Department, Headquarters Marine Corps. The thesis author's explanation of the rate calculation is reproduced here for analytic purposes:

"It is difficult to compute how long it will take to process a request and provide status back to the customer without actually writing the programs and without knowing the programming language used. It seems reasonable, however, to assume that the computer processing will not take longer than the required five minutes. The greatest delay, of course, will be caused by the operator making the

decisions. Another factor that must be considered is the traffic density. Will queues of packets develop at network nodes waiting for terminal equipment processing? To answer this question we must analyze the expected traffic and the service or processing time. In order to perform this analysis, we will examine a "worst case" scenario. Basing our analysis on a ten hour day, then taking current garrison supply operations and multiplying this by two and one half for combat operations, we can estimate the number of requests generated per minute for the largest type landing force. These figures are contained in Table 2 and are developed for the central node where all requests are sent if they are not filled at a lower echelon."

The table 2 figures referred to in the extract are as follows:

<u>Transaction Type</u>	<u>Number/Minute</u>	<u>Transaction Type</u>	<u>Number/Minute</u>
Supply Parts	7	Supply Ammo	1
Supply Float	1/3	Maintenance	1/6
Supply Other	1/6	Engineer	1/6
Supply Rations	1/3	Medical	1/6
Supply Fuel	1/3	Paragraph	1/6
Supply Medical	1/6	Motor Transport	1/6

E.2.2 Report Rate. The report rate used in the analysis is the frequency of report submissions as determined from interviews with Fleet Marine Force (FMF) Personnel and from a review of FMF standard operating procedures.

E.3 Request Analysis

The request analysis is based on figures 5-15 and 6-9. The number of characters per message are multiplied by 8 bits per character times 10 messages per hour (one every 6 minutes) times 24 hours for a total of 349,440 bits per day. This is the total number of bits received by the central node, in this case the CSSOC. Since a maintenance contact team request originates from the maneuver element and there are 5 maneuver elements in the 1B Scenario, as shown in section 4, each maneuver element is determined to originate one fifth of the total traffic or 69,888 bits per day. The next step in the analysis

involved tracing the path of the maintenance team requests from the originator to the central node, and from the central node to other nodes of the MAGTF requiring the information. The path is determined from figure 5-15. This has provided the following traffic density:

a) Maneuver Element to CSSD	69,888
b) CSSD to CSSA CSSD	69,888
c) CSSA CSSD to CSSOC	349,440
d) CSSOC to MOS	349,440

E.4 Reports Analysis

The reports analysis is based on two reports; the Maintenance Support Capabilities Report, figure 6-10, and the maintenance portion of the Logistics Summary Report, figure 6-11.

E.4.1 Maintenance Support Capabilities. The information required to prepare the Maintenance Support Capabilities Report originates from each direct support CSSD and is transmitted to the CSSOC and to the maneuver element it supports. The flow of information is depicted in figures 5-14 and 5-15. The number of bits transmitted to the CSSOC is 3352 bits times one transmission per day times the number of direct support CSSDs, which in this case number five. The information is transmitted via the CSSA CSSD. The CSSOC passes the received reports to all nodes less the MOSOC and ENGROC for planning and information purposes. Traffic density breaks out as follows:

a) CSSD to CSSA CSSD	3,352
b) CSSA CSSD to CSSOC	16,760
c) CSSD to Maneuver Element	3,352
d) CSSOC to MOS	16,760
e) CSSOC to SOC	16,760
f) CSSOC to MTOC	16,760
g) CSSOC to ACE, GCE, MEF	16,760

E.4.2 Logistic Summary.

E.4.2.1 Information Required. The information required to prepare the maintenance portion of the Logistics Summary Report, figure 6-11, also originates at the direct support CSSDs. The information transmitted is based on the number of combat essential items deadlined and therefore varies from report to report. As shown in figure 6-11, the original submission requires a listing of all combat essential items. All future submissions are based on equipment deadlined. Statistically valid bit rates for deadlined equipment were not available because of the numerous stochastically-derived values of those variables which are required to determine both the probability and the percentage of combat essential equipment that might be deadlined at any given time in an intense combat environment. A heuristically derived bit rate of 29,860 is used, therefore, to represent a worst case scenario.

E.4.2.2 Information Transmitted. The information from the direct support CSSDs is passed via the CSSA CSSD and forwarded to the CSSOC. The CSSOC forwards the individual reports to the SOC and MOS and consolidates the information into one report which is sent to the ACE, GCE, MEF and MTOC for information purposes. The traffic density breaks out as follows:

a)	CSSD to CSSA CSSD	29,860
b)	CSSD to Maneuver Element	29,860
c)	CSSA CSSD to CSSOC	149,300
d)	CSSOC to MOS	149,300
e)	CSSOC to SOC	149,300
f)	CSSOC to MTOC	29,860
g)	CSSOC to ACE, GCE, MEF	29,860

E.5 Total Maintenance Data Transfer Requirements

The total maintenance transfer densities between CSS C2FACS and between CSS C2FACS and C2FACS are determined by combining the density requirements for the requests and reports described above. The totals appear under the maintenance column in table 7-4.

APPENDIX F

GLOSSARY

GLOSSARY

AAA	Arrival Assembly Area
AACG	Arrival Airfield Control Group
AAOE	Arrival and Assembly Operations Element (Operations Center)
AAOG	Arrival and Assembly Operations Group
AASP	Arrival/Assembly Support Party (Operations Center)
ACE	Air Combat Element
ADP/E	Automated Data Processing/Equipment
ADPE-FMF	Automated Data Processing-Fleet Marine Force
AIS	Automated Information System
AOA	Amphibious Objective Area
ATF	Amphibious Task Force
BOG	Beach Operations Group
BPS	Bits Per Second
BSSG	Brigade Service Support Group
C2E	Command and Control Elements
C2FACS	Command and Control Facilities
C2FD	Command and Control Flow Diagrams
CATF	Commander Amphibious Task Force
CC	Coordination Center
CCATF	Combined Commander Amphibious Task Force
CCLF	Combined Commander Landing Force
CLF	Commander Landing Force
CSS	Combat Service Support
CSSA	Combat Service Support Area
CSSD	Combat Service Support Detachments
CSSE	CSS Element
CU	Common User
DACG	Departure Airfield Control Group
DASC	Direct Air Support Center
DCT	Digital Communications Terminal
DENTOC	Dental Operations Center
DFASC/MASC	Deployable Force Automated Service Center/MAGTF Automated Service Center
DODIC	Department of Defense Identification Code
DOS	Days of supply
DT	Debarcation Team (USMC)
DTG	Date-Time Group
DWTS	Digital Wideband Transmission System
ENGROC	Engineer Operations Center
EUCE	End User Computer Equipment
FFCC	Flight Ferry Coordination Center
FIE	Fly in Element

FM	Frequency Modulation
FMCC	Force Movement Control Center
FMF	Fleet Marine Force
FMFM	Fleet Marine Force Manual
FSSG	Force Service Support Group
GCE	Ground Combat Element
GND	Ground
H/DUX	Half Duplex
HDC	Helicopter Direction Center
HF	High Frequency (3-30 MHz)
HQSVCOC	Headquarters and Service Operations Center
H&S	Headquarters and Service
HSSU	Health Services Support Unit
ICU	Intensive Care Unit
I&L	Installation and Logistics
IMM	Integrated Material Manager
JCS	Joint Chiefs of Staff
LF	Landing Force
LFICS	Landing Force Integrated Communications System
LMCC	Logistics and Movement Coordination Center
LSOC	Landing Support Operations Center
LZ/CP	Landing Zone/Control Party
MAGTF	Marine Air-Ground Task Force
MCDEC	Marine Corps Development and Education Command
MDSS	MPF Decision Support System
MEB	Marine Expeditionary Brigade
MEDEVAC	Medical Evacuation
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Unit
MHE	Material Handling Equipment
MHz	Megahertz
MLRP	Marine Corps Long Range Plan
MMU	Material Management Unit
MOGAS	Motor Gas
MOS	Maintenance Operations Section
MPF	Maritime Prepositioning Force
MPSON	Maritime Prepositioning Squadron
MRE	Meal Ready to Eat
MSOC	Medical Support Operations Center
MSSG	Marine Amphibious Unit Service Support Group
MT	Motor Transport
MTF	Medical Treatment Facility

MTOC	Motor Transport Operations Center
MWSG	Marine Wing Support Group
NOMEN	Nomenclature
NSE	Navy Support Element
NSN	National Stock Number
NSERPG	Navy Support Element Beach Party Group
OBS	Observation
OC	Operations Center
OCO	NSE Offload Control Officer
OCU	Offload Control Unit
OCs	Operation Centers
O/H	On Hand
OPP	Offload Preparation Party
PEI	Principal end item
PHIBGRU	Amphibious Group
POG	Port Operations Group
PPBS	Planning-Programming-Budgeting System
PP&P	Packing, preservation and packaging
PW	Prisoner of War
RASC	Regional Automated Service Center
RMCC	Readiness and Movement Coordination Center
RUC	Reporting Unit Code
SAC	Study Advisory Committee
SAR	Search and Rescue
SINGARS	Single Channel Ground-to-Air Radio System
SLRP	Survey Liaison Reconnaissance Party
SMU	SASSY Management Unit
SOC	Supply Operations Center
SOP	Standard Operating Procedure
SSN	Social Security Number
SUPO	Supply Officer
TACC	Tactical Air Command Center
TACLOG	Tactical-Logistics Group
TACP	Tactical Air Control Party
TAM	Table of Authorized Material
TAOC	Tactical Air Operations Center
T/E	Table of Equipment
TIC	Technical Interface Concept
T/O	Table of Organization
TTY	Teletypewriter
UHF	Ultra High Frequency (300-3000 MHz)

VHF

Very High Frequency (30-300 MHz)

WPM

Words Per Minute

WWMCCS

Worldwide Military Command and Control System