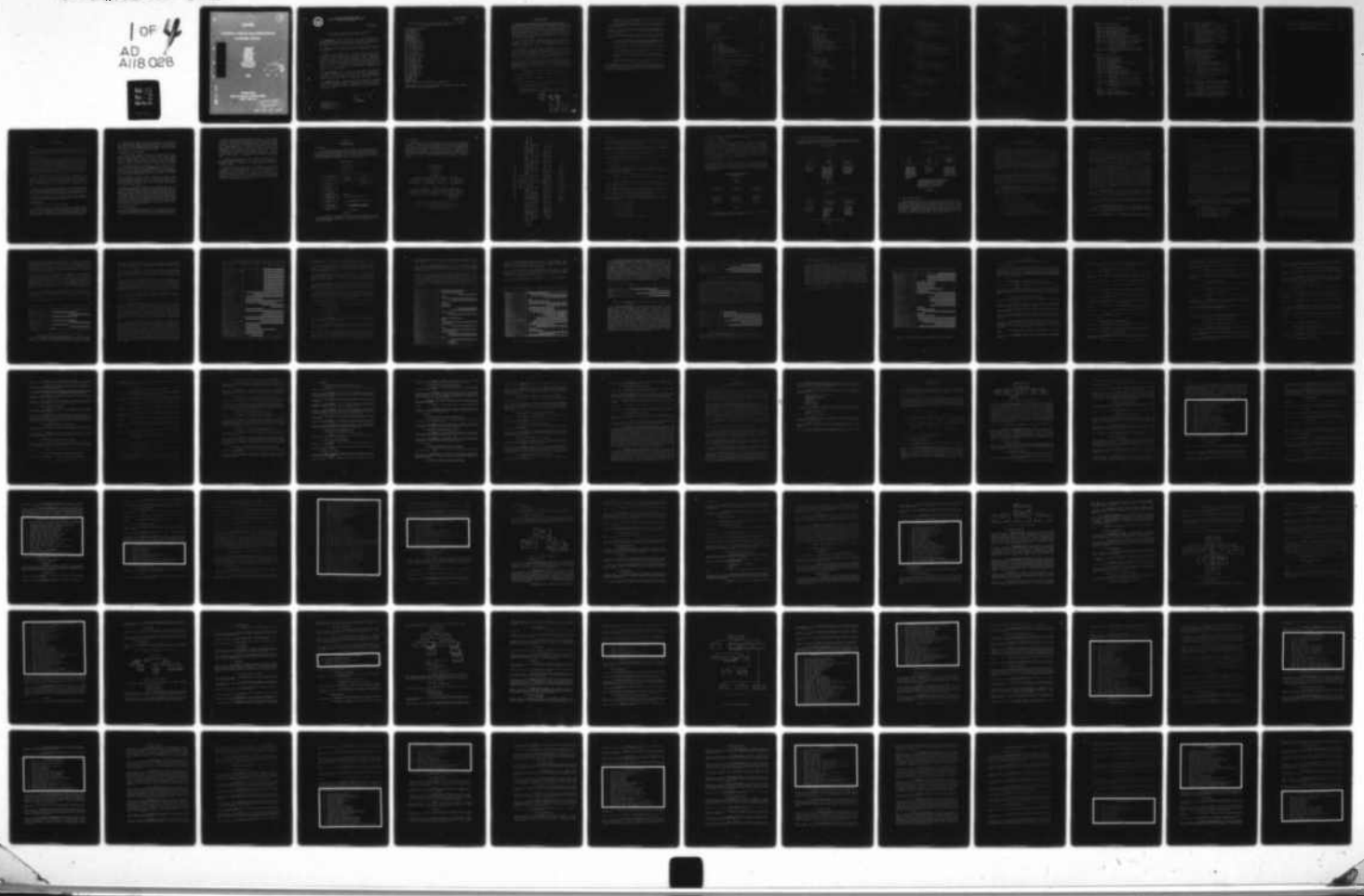
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Landing Force Organization Systems Study (LFOSS)
Annual Report for 1979 (LFOSS-79)

1. INTRODUCTION. This annual report of the Landing Force Organizational Systems Study provides continued visibility to the projected impact of the current Marine Corps research and development program on the future Fleet Marine Force.

2. PURPOSE. The purpose of the LFOSS is to provide a comprehensive review of the Marine Corps R&D program over the next 15 years.

3. SCOPE. The report first considers the 1979 baseline organization and equipments of the FMF. Against that background, 15 years of development are presented by quinquenniums (Q-periods), i.e., five year periods of time. Projected weapons, equipment, and systems are related to the prospective recipient organization in the FMF according to the year in which the initial operational capability is desired. To the extent feasible, the impact of future weapons, equipment and systems on FMF organizations, missions, and concepts of employment is identified.

4. APPLICABILITY. This study is not directive in nature, but provides information of interest to the Fleet Marine Force. In order to permit review by the maximum number of personnel, addressees are requested to effect the widest dissemination possible among their staffs and subordinate commands.

5. RECOMMENDATIONS. Comments and recommendations on LFOSS are invited and encouraged. Correspondence should be addressed to the Commanding General, Marine Corps Development and Education Command (Director, Development Center), Quantico, Virginia 22134.

A. M. GRAY
Deputy for Development

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EXECUTIVE SUMMARY

Landing Force Organizational Systems Study-79 (LFOSS-79) is a report and review of a continuous study which relates the research and development products of the future to the organizations within the Fleet Marine Force that will use them. The purpose of LFOSS is to provide a single reference document with which to prepare for future organizational changes resulting from research and development. It is hoped that LFOSS-79 will fulfill its intended purpose by encouraging top and middle-level commanders to look ahead, by inducing staffs to anticipate and plan for changes, by identifying areas for study and resolution, and by providing assistance to Marine Corps research and development decision makers.

It is intended that the expanded "Baseline" section in this issue will serve to better inform the reader by providing in one document a comprehensive compilation of the organizational structures of the Fleet Marine Force, their missions and a selected representation of the tables of equipment.

The introduction of new systems and equipments is presented in three quinquenniums covering the period 1979-1993. It follows the schema of LFOSS-78 and readers of that issue will note but few changes in the information contained in this year's issue. This is to be expected since the development cycle is now averaging five to ten years for many systems, and little change in the overall R&D picture occurs within the one year cycle of publication of LFOSS.

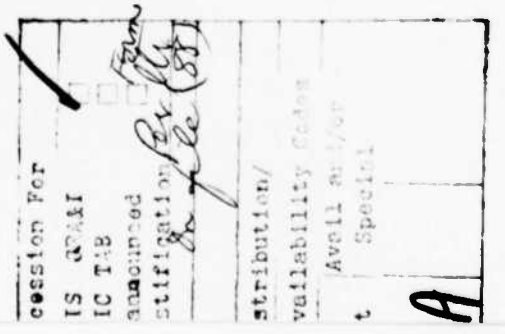
Section 5, Analysis and Conclusions was originally intended to provide a view of the development of the various systems which make up MTACCS. However, the review of the status of the development of these systems led to the much broader issues of the Marine Corps' research, development and acquisition strategy and the systems acquisition management process. To properly address these subjects the following areas are discussed:

- o the manpower implications of our current R&D strategy,
- o life cycle costing and time as factors in actually fielding equipment and systems,
- o the impact of constrained budgets on our attempts to modernize,

Then several areas deserving of further attention are highlighted.

- o Are field commanders correct in feeling that technology is often pursued as an end in itself?
- o Is the Marine Corps on a path away from simplicity and ruggedness/reliability to sophistication and reduced mobility, with an attendant increase in the support to supported ratio?

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- Will this result in a concomitant reduction rather than an increase in war fighting ability?

- Are the revolutionary capabilities provided by MTACCS/LFICS still desirable and affordable in light of funding constraints and manpower reductions?

- Can the Marine Corps afford the grade/quality "creep" which appears to accompany the increasing complexity/sophistication of emerging systems?

- Does Marine Corps systems acquisition management need a major overhaul, merely fine tuning, or should things be left as they are?

  - Are we in step with the new and rigorous management practices and planning requirements being instituted by the Executive Department and the Department of Defense?

  - Should the Marine Corps establish an "R&D Systems Acquisition Executive"?

  - Should we convert from our present acquisition management system to the "Program Manager Method"?

  - How can we more fully integrate manpower and training requirements and planning into the systems acquisition process?

  - Should we greatly expand our training requirement for personnel engaged in acquisition management?

The intent is not to resolve the foregoing issues, but to give a voice to potential problems and provide a point of departure for further discussion. It is hoped that ultimately this will contribute to a more effective R&D process as measured by the actual fielding of new and improved systems and equipment.

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INTRODUCTION

Purpose

The purpose of the Landing Force Organizational Systems Study (LFOSS) is to provide increased visibility on the current Marine Corps research and development (R&D) program and the possible impact that this program may have on the future Fleet Marine Forces.

Nature of the Study

LFOSS brings together the items of equipment that emanate from R&D with the organizations that will eventually use them. Through this association of equipment and organization, certain predictions can be made as to the total organizational impact at any particular time. In some instances, it becomes apparent that an item of equipment or the aggregation of new equipments portends a change in organization and/or mission. When the organizational impact can be clearly identified, LFOSS has achieved its intended goal. More often, equipment shifts indicate a requirement for an in-depth assessment. Such in-depth efforts are beyond the capability of LFOSS, and, where appropriate, the conclusions will so indicate.

In this report, the word system has been used in two ways. With respect to its use in the title, all FMF tactical organizations are regarded as systems in the sense that they combine men, equipment, weapons, and procedures to carry out their missions. The second usage refers to a named system such as the Marine air-ground intelligence system (MAGIS), which is an organized assembly of resources and procedures, formally designated as a system and so indicated in its title.

LFOSS is a continuing study designed to prevent unprogrammed changes to the FMF structure that could result from an accumulation of unrelated research and development projects. LFOSS can be instrumental in effecting orderly, programmed changes brought about by the introduction of new equipment and the application of new concepts.

LFOSS addresses itself to top-level and mid-level FMF commanders of today and of the future, and to the Marines and civilians within the Marine Corps Systems Acquisition Activities.

Study Methodology

The study was conducted as a team effort.

The first task was to validate the baseline portions of LFOSS through a review of all current T/O's and T/E's. The primary sources for each item of equipment were the work directive, the required operational capability (ROC), and the operational requirement (OR). Once the basic information was verified, the development project officer (DPO) was contacted for updated information and projections.

Developments in communications and the Marine tactical command and control systems (MTACCS) were written against the background of the Landing Force Integrated Communications System (LFICS) Architecture and the MTACCS Master Plan, respectively. Descriptions and projections on major aircraft systems and selected ground equipments were requested from various HQMC representatives.

Organization of the Study Report

The LFOSS study report is divided into sections, each dealing with a major command existing in the Marine Corps today--the Marine division, Marine aircraft wing, and force service support group. Within a section, the major command is depicted in its 1979 baseline form, to include mission, concept of employment, logistic capabilities, T/O totals, and major T/E items. The sections that follow project 15 years of forthcoming R&D products relating to that command.

This 15-year period is subdivided into three 5-year intervals, with each 5-year period called a quinquennium or, for brevity, a Q-period. Thus, the reader will be informed on Marine Corps developments related to a type of command and its subordinate organizations that occur in the Q-1 period (1979-1983), the Q-2 period (1984-1988), and the Q-3 period (1989-1993). (This use of Q-periods is in keeping with the approach used in LFOSS 1978.)

Items of equipment are placed within a quinquennium according to their initial operational capability (IOC). Within the Q-1 period, every battalion/squadron and higher organization will be specified, even if no significant developments exist for a particular organization. Periods Q-2 and Q-3 will only list those organizations for which new or improved equipments exist.

Section 1, The Fleet Marine Force is an exception to the previously explained Q-period format. It was devised to deal with the areas of development that do not lend themselves to being described in relation to a single type of command or subordinate organization. For example, the major developmental areas of communications and logistics developments were of such wide-ranging impact, covering the spectrum of the three Q-periods, that it seemed ill-advised to divide them into increments. Therefore, the FMF section will explain communications developments as well as some logistical and automated systems developments over the entire 15-year LFOSS study period, while the organizational Q-periods will only highlight the more significant items. Additionally this issue provides baseline information on the FMF's and on the Marine Air-Ground Task Forces.

Assumptions/Limitations

A basic assumption of LFOSS is the IOC's, as published in updated ROC/OR's, are accurate and will be met. While experience has reflected that they frequently slip or advance, the published IOC's provide a consistent means of placing items within the appropriate quinquennium.

The Q-1 period contains only those items which, given adequate funding in the POM, will arrive in the FMF according to the IOC. The Q-2 period includes some developmental items for which the Marine Corps has a need, the technical capability exists, and funds are being disbursed, but upon which a final procurement decision can be made only after development is more complete. In the Q-3 period (1989-1993), LFOSS presents some items for which there is a need and an expenditure of R&D funds, but the scientific capability has not been determined (e.g., the landing vehicle experimental, (LVX)). However, in the main, exploratory developments have not been used as a source of information because of the inability to determine the specific project impact prior to its entrance into the advanced development state.

In order to facilitate ease of use, handling, and distribution to its target audience, LFOSS does not include details on weapons and equipment that are classified. This limitation has not markedly affected the utility of LFOSS, as the fully classified projects are limited in number.

The reader should note that, due to the geographical distribution of FMFPAC units, the organization of FMFLANT and FMFPAC differs considerably. Additionally, time and manpower constraints in preparing this report necessitated a cutoff in incorporating all of the changes taking place within our dynamic force structure. It was therefore determined that the 1979 baseline would reflect FMFLANT organizations and include as many modifications as practicable. Variations where they may exist should not materially detract from serving the stated purpose of this report.

SECTION 1A

FLEET MARINE FORCE
1979 BASELINE

101. GENERAL

a. The Fleet Marine Force (FMF) constitutes the principal element of the operating force of the Marine Corps. An FMF is an integral part of a U.S. fleet, having the status of a fleet "Type Command" under the operational control of the respective fleet commander. Administrative control and responsibility for individual, as well as intra-unit training, remain with the Commandant of the Marine Corps. (Refer Fig. 1-1.)

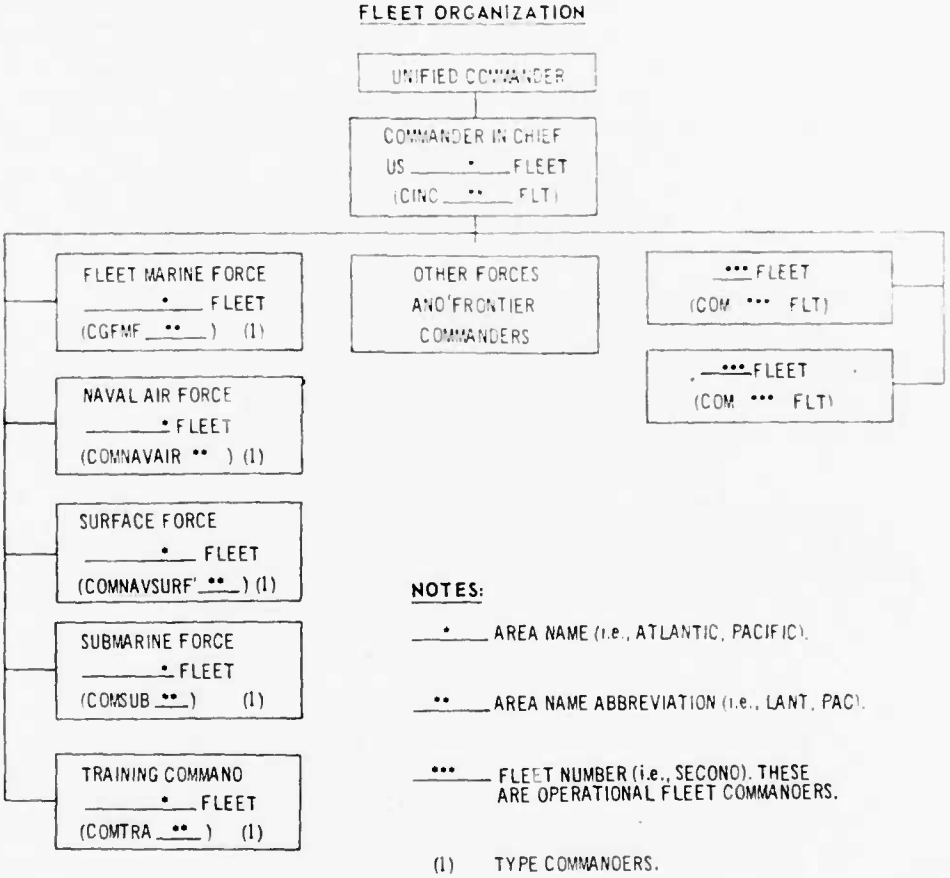
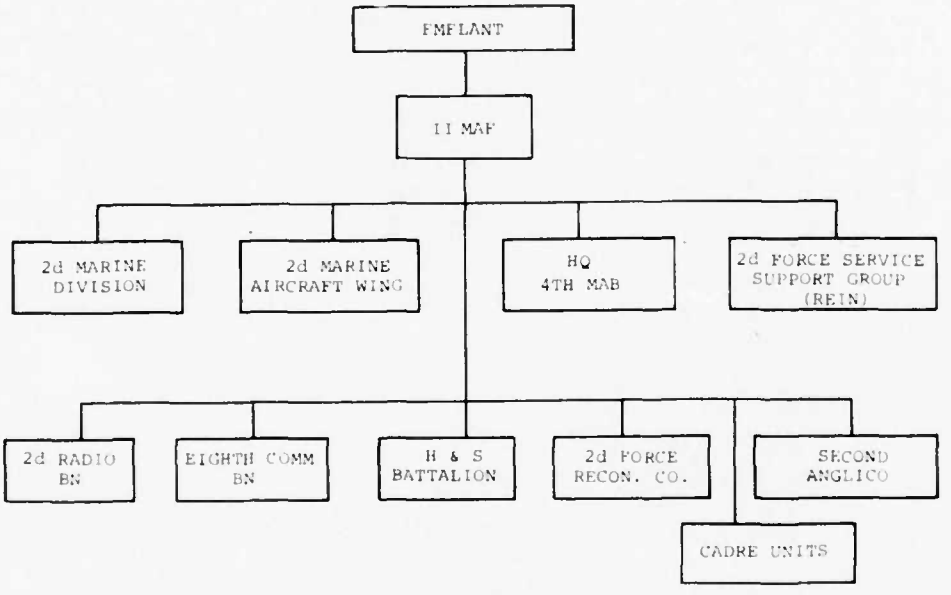


Figure 1-1

b. The FMF is multi-capable, but it is basically organized for, and specifically skilled in, amphibious operations. It constitutes the principal means the United States has for projecting combat power ashore in a hostile environment.

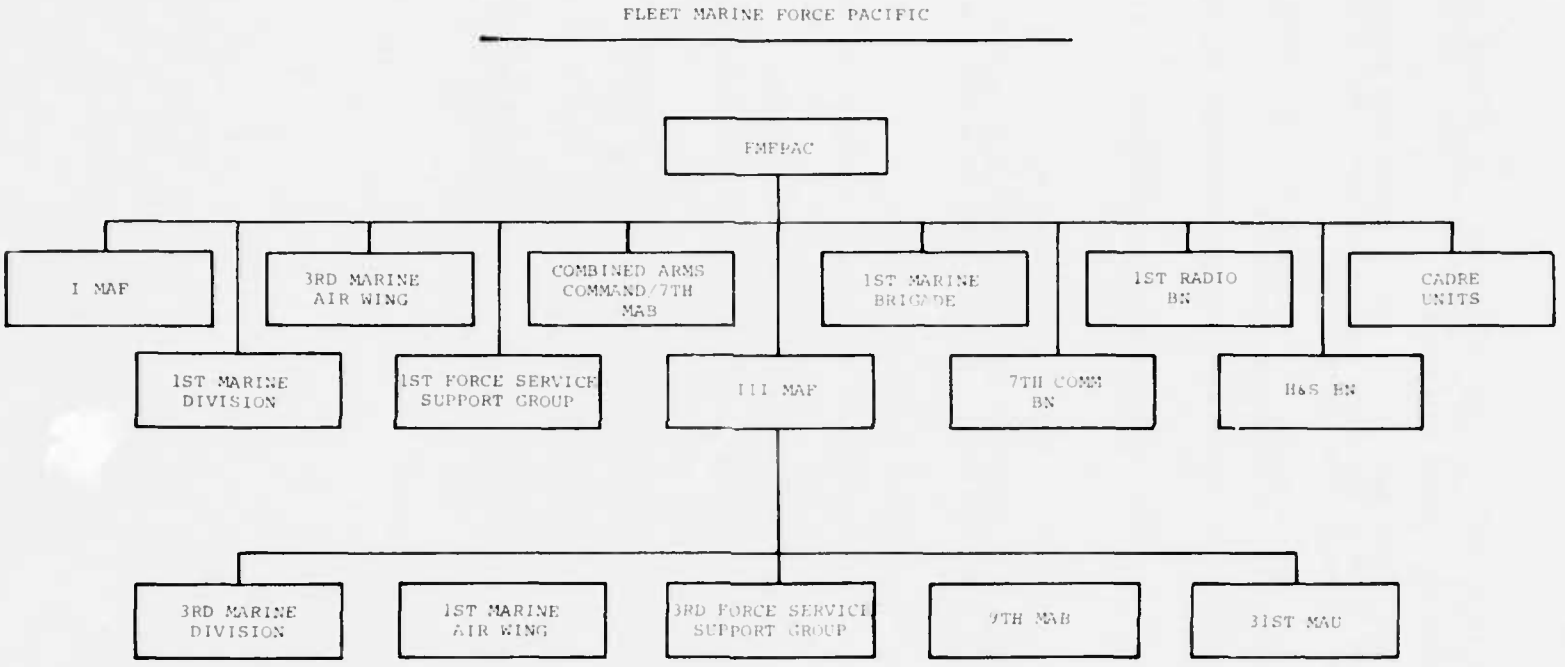
102. DEFINITION

A Fleet Marine Force is a balanced force of combined air and ground arms primarily trained, organized, and equipped for offensive amphibious employment. It may consist of a headquarters, force service support group (FSSG), one or more Marine divisions, one or more Marine aircraft wings, and may include one or more Marine brigades. At the present time there are two such forces in existence: Fleet Marine Force, Atlantic (FMFLANT), with headquarters at Norfolk, Virginia, and Fleet Marine Force, Pacific, (FMFPAC), with headquarters at Camp H.M. SMITH, Hawaii. The administrative and training organization of Fleet Marine Force, Atlantic, is shown schematically in fig. 1-2, while Fleet Marine Force, Pacific is shown in fig.1-3.



1. SECOND RADIO BN - OPCON TO FMFLANT: ADCON SECOND FSSG
2. EIGHT COMM. BN - OPCON TO FMFLANT: ADCON SECOND FSSG
3. SECOND FORCE RECON CO. - OPCON ADCON. SECOND FSSG: OPERATIONAL TASKING FROM CG FMFLANT VIA SECOND FSSG
4. SECOND ANGLICO - OPCON ADCON. SECOND FSSG: OPERATIONAL TASKING FROM CG FMFLANT VIA SECOND FSSG
5. CADRE UNITS ARE: CMBT ENGR CO, SRCHLIGHT BTY, RECON CO.

Figure 1-2.



1. 1ST RADIO BN - OPCON TO FMFPAC; ADCON TO 1ST MARBDE
2. 7TH COMM BN - OPCON TO FMFPAC; ADCON TO 3RD MARDIV
3. 9TH COMM BN - OPCON TO FMFPAC; ADCON TO 1ST FSSG
4. CADRE UNITS - FORCE RECON CO; 2 DIV RECON CO's; 2 CMBT ENGR CO's 9TH COMM BN(-), 1ST ANDLICO, SPCHLIGHT BTRY, CIVIL AFFAIRS GRU

FIGURE 1-3

103. MISSIONS

a. The FMF serves with the fleet in the seizure or defense of advanced naval bases and in the conduct of such land operations as may be essential to the prosecution of a naval campaign.

b. As directed by the Commandant of the Marine Corps, The FMF participates in the development of doctrine, tactics, techniques, and equipment used by the landing forces in amphibious operations.

c. As directed by the Commandant of the Marine Corps, the FMF trains and equips Marine Corps forces for airborne operations.

d. The FMF trains sufficient numbers of personnel to meet the expansion that may be required in time of war.

e. The FMF performs such other duties as may be directed.

104. REQUIREMENTS

To carry out its mission, a Fleet Marine Force must be:

a. Organized, trained and equipped for effective combat essential to the prosecution of a naval campaign to seize objectives from the best and most modernly equipped enemy.

b. A balanced force of combined arms and services.

c. Primarily trained, organized, and equipped for offensive employmemnt.

d. Adaptable to the active defense of advanced naval bases.

e. Prepared, equipped, and ready for prompt and effective employment in any climate or terrain.

f. Trained and equipped for airborne operations as required, in acordance with policies and doctrines of the Joint Chiefs of Staff.

g. Provided with sufficient combat service support forces to maintain combat efficiency in the execution of normal missions.

h. Provided with organic aviation units primarily organized, trained and equipped for support of ground units in amphibious operations and capable of performing:

(1) Offensive Air support.

(2) Anti-air warfare.

(3) Assault Support.

(4) Aerial reconnaissance.

(5) Electronic Warfare.

(6) Control of aircraft and missiles.

i. Organized so that rapid expansion in time of war can be accomplished with a minimum disruption of combat efficiency.

105. CONCEPT OF EMPLOYMENT

The FMF is composed of two elements: Fleet Marine Force Atlantic (FMFLANT) and Fleet Marine Force Pacific (FMFPAC), which are reservoirs of ground combat, air, combat support, and combat service support elements from which task forces are organized and assigned for specific missions. All task-organizing is based on the fully integrated Marine air-ground task force (MAGTF) concept. This concept is designed to exploit the combat power inherent in closely integrated air and ground operations. The size, composition, and combat power of a MAGTF will vary, based upon need, but *each MAGTF will always* contain four basic elements: a command element, a ground combat element, an aviation combat element, and a combat service support element (including Navy support elements).

106. MARINE AIR-GROUND TASK FORCES

a. Fleet Marine Force elements are typically employed as Marine Air-Ground Task Forces for the purpose of performing amphibious assault operations. Such task forces may vary in size from a force composed of a battalion and a squadron to two or more Marine divisions and two or more Marine aircraft wings, plus supporting troops. For a typical organization, see figure. 1-4.

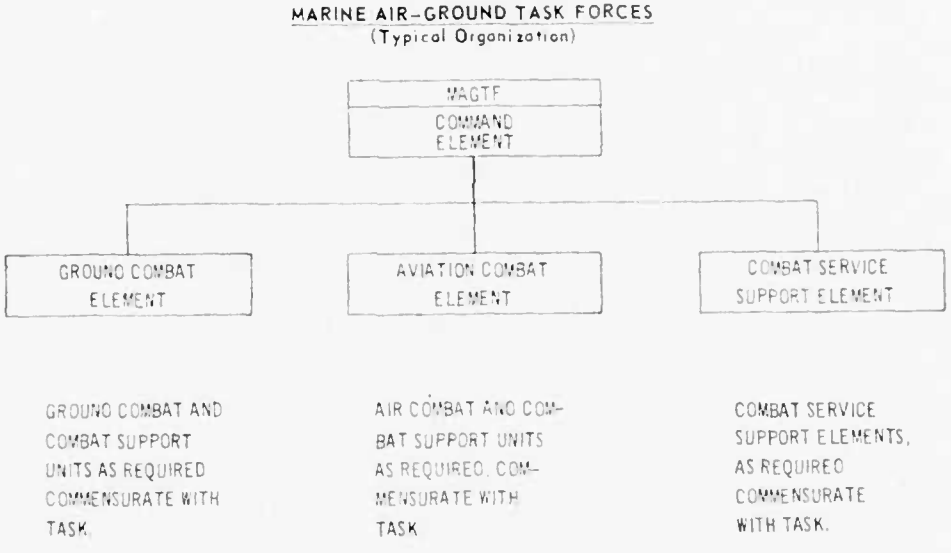


Figure 1-4

b. A detailed explanation of the structure and types of Marine Corps Air-Ground Task Forces is contained in FMFM 0-1.

107. TYPES OF MARINE AIR-GROUND TASK FORCES

There are three types of Marine Air-Ground Task Forces among the task organizations provided by the Fleet Marine Force. Normally, each type is composed of forces shown in figs. 1-5, 1-6, and 1-7.

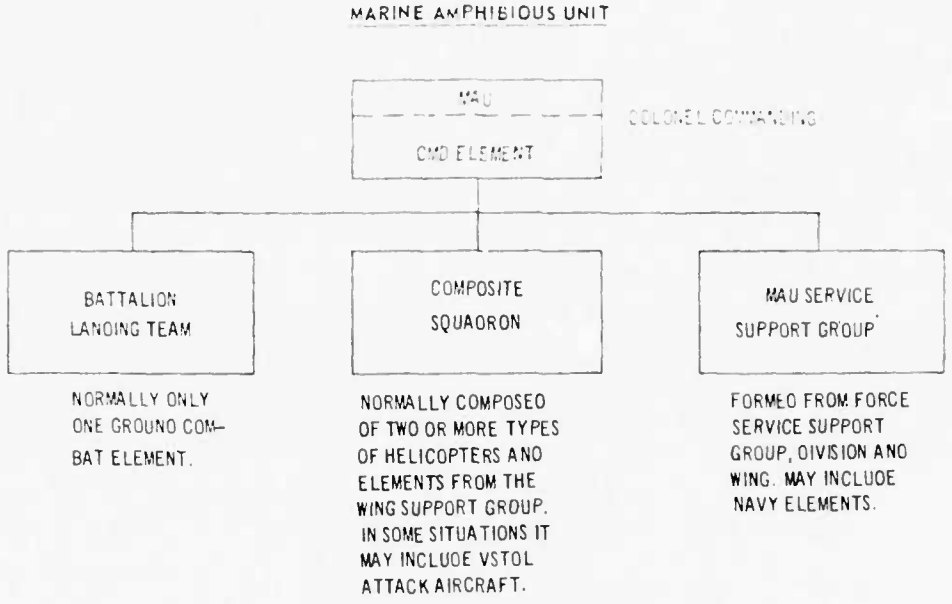


Figure 1-5

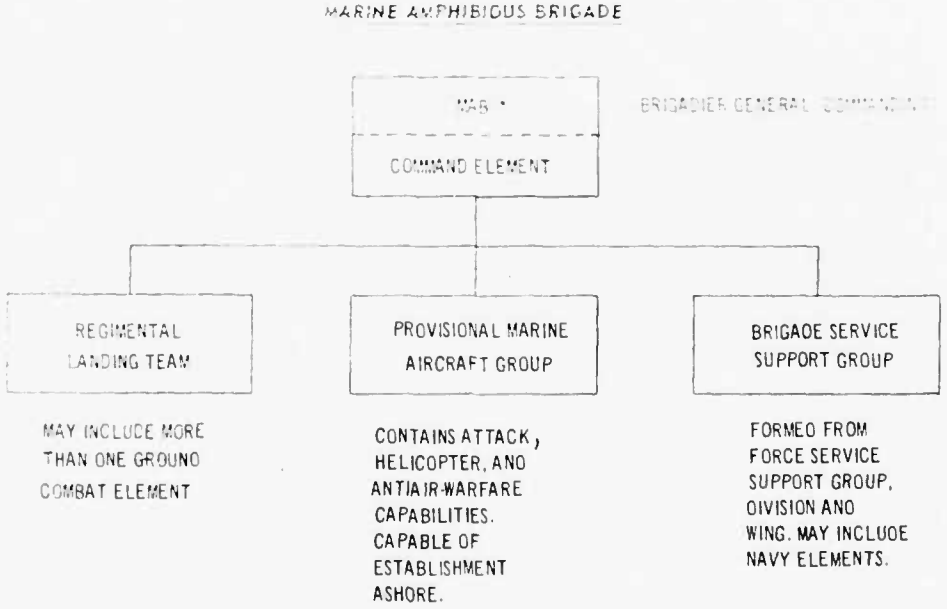


Figure 1-6

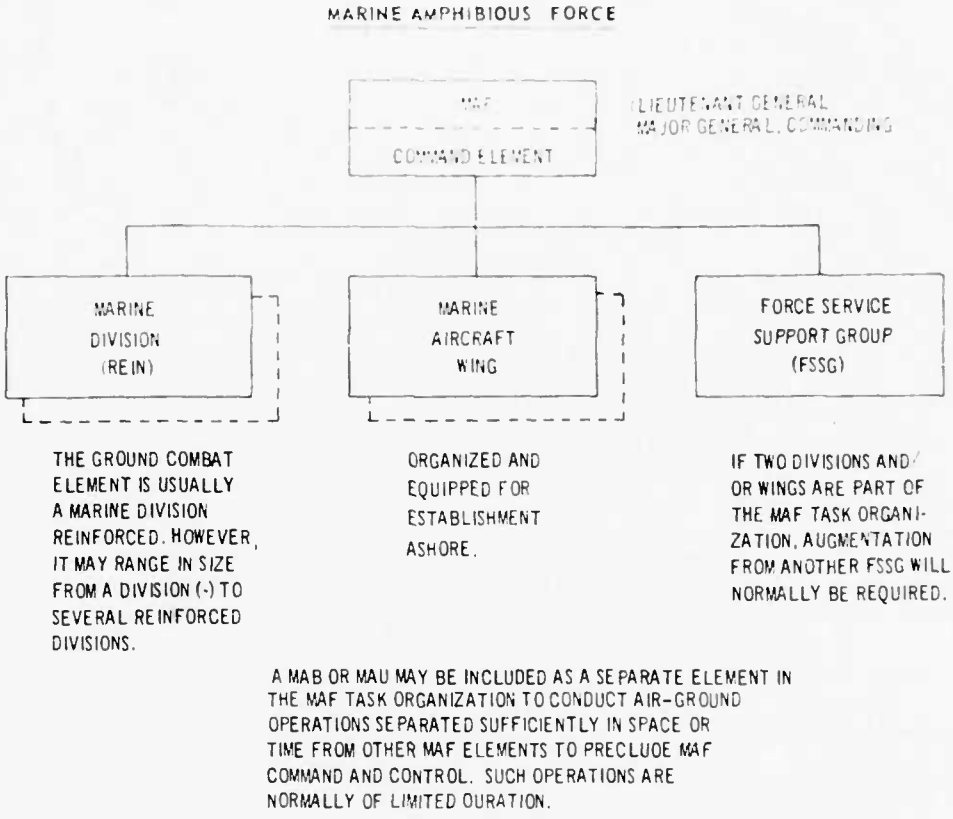


Figure 1-7

108. EQUIPMENT DEVELOPMENTS

As previously indicated, there are some areas of equipment development that cross organizational lines to a degree that they will impact on all subordinate commands of the FMF. For this reason, Marine Tactical Command And Control System (MTACCS) was described in Section 1B of LFOSS-78 and communications developments will be described herein in Section 1B. These subjects are discussed in relation to the entire period covered by LFOSS-79 (1979-1993). The key items of communications equipment with each of the subordinate systems within MTACCS will again be highlighted herein within the applicable Q-period of the division, wing, and FSSG sections.

SECTION 1B

FLEET MARINE FORCE
COMMUNICATIONS EQUIPMENT DEVELOPMENT (1979-1993)

109. GENERAL

Many new items of communications equipment will enter the inventory during the 1979-1993 time frame. This is a result of Presidential Directives which stipulate the requirement for end-to-end security of all communications within a specified time frame. Since there is no pure analog encryption capability in existance today, digital communications devices are being constructed to meet the requirement. Before these developments are discussed, reference must be made to the communications system within the FMF, entitled the Landing Force Integrated Communications System (LFICS). LFICS encompases those communications assets which allow the FMF commander to exercise command and control of assigned tactical forces. This developing system is reviewed annually and a descriptive document entitled the Landing Force Integrated Communications System (LFICS) Architecture is published annually. While LFOSS will highlight communications developments through 1993, the LFICS Architecture can provide the interested reader with information in greater and more technical detail.

Significant developments for LFICS will occur in the folowing areas:

a. Electronic Equipment Design Development.--The progression in electronic development is from tubes to transistors to integrated circuits. This produces equipment that is lighter and more operationally capable, but usually more expensive. Modular construction is a design goal, providing quicker and easier repair and less downtime, but often is more expensive to logistically support. However, this trend has begun to change in the past few years and we are seeing integrated circuits mass produced in tremendous quantities at a very low cost.

b. Digital Communications.--The basic design goal of LFICS is toward an all-digital communications environment in consonance with the philosophies adopted by the joint Services. At present, the predominant tactical communications networks are analog. Analog and digital modes are the two means of transmission. The advantages of digital over analog include the following characteristics:

- Easier to secure and switch.
- Less susceptible to noise.
- Capable of better quality retransmission.
- Capable of sophisticated error detection and correction.
- Better protection against electronic warfare (EW).
- The capability of realizing less complex equipment at low cost.
- The capability of realizing lighter weight, small size and lower power requirements.

In 1978, LFOSS stated that there are two serious disadvantages with digital communications.

- o Incompatibility with existing analog equipment.
- o Can be more costly in dollars and use of the electromagnetic spectrum.

However, these comments have been rebuked from within the Development Center and the following information is provided. Digital communications does not have to be more costly in dollars, and in fact is proving to be less costly than analog communications. The control of digital communications through proper spectral filtering is used to control the spectral content, or more definitively, the spectral density. As for incompatibility with existing analog equipment, it is no longer true since this can be satisfied through digital processing and conversion, such that the two can talk to each other very easily. One major disadvantage of digital communications is encountered when high resolution is required with respect to a source of analog information, such as photographic reconnaissance.

c. Tactical Data Systems (TDS).--This is the age of the computer and its impact is strongly felt in communications. For example, the computer makes possible the long-sought-after progression from manual to automatic operation in such areas as switching and message processing. In addition to communications equipment, TD systems are proliferating on the battlefield in all areas. Examples are MTACCS (including 8 systems), Signals Intelligence Analysis System (SIAS), Joint Tactical Information Distribution System (JTIDS), and Global Positioning System (GPS). These systems are designed to collect, display, evaluate, and disseminate data for the purpose of assisting commanders in the battle area in the conduct of their combat and combat support functions. Most of these TD systems do not contain organic communication and depend on LFICS to provide the communication links. Compared with the equipment tactical commanders are familiar with, they provide much more capability, but are apt to be heavier, require more space, take longer to install and move, and they will require a power source and some form of transport.

d. Interoperability.--In an overall design to accomplish joint-service interoperability, several service and joint-service programs have been instigated. Although not always impacting on R&D in the form of equipment development, they nevertheless impact on R&D dollars in the form of software and studies. Examples are briefly described below.

(1) TRI-TAC.--The Joint Tactical Communications (TRI-TAC) office was established in 1971 to provide architectural, engineering and centralized management for development of tactical communications within the Department of Defense.

(2) JINTACCS (formerly GAMO).--In 1971, a program was established by the Joint Chiefs of Staff to effect joint interoperability of tactical command and control systems in support of ground operations (short title: GAMO). This program is now called Joint Interoperability of Tactical Command and Control Systems (JINTACCS).

(3) TACS/TADS.--In 1973, the JCS-directed Tactical Air Control System/Tactical Air Defense System (TACS/TADS) began testing to provide the

capability to exchange air control and air defense digital data between and among the joint-services.

(4) TACSIIP.--The Marine Corps Tactical Systems Inter/Intraoperability Program (TACSIIP) was established in 1976 to ensure that Marine tactical command and control systems are both inter- and intra operable in joint-service operations.

e. COMSEC.--In consonance with national policy, a LFICS goal is to provide end-to-end security for its subscribers. The intent is to ensure that the transition from the largely unsecure analog environment of today to the secure digital world of tomorrow is as smooth as possible. An effort is under way during the 1979-1993 time frame to provide security for all forms of communications including radios, telephones, and data devices.

f. Miscellaneous.--Other R&D efforts in communications include technical control facilities and computer devices to enable communications personnel to monitor and control communications systems, to monitor and select optimum operating frequencies, and to provide overall assistance in the management of communications. Various means of emission are being developed to provide more reliable communications and better protection from enemy EW. Multi-purpose, multi-application power sources are being developed to provide more standardization, maximum interoperability, improved operational capability, and fewer logistical problems.

What all of the foregoing communications developments will mean to the commander on the battlefield is best shown by the following illustration: At present, for a battalion commander to place a telephone call to a distant field command post, the call must proceed through several manual switchboards and manually switched single or multichannel transmission media. The result is a time-delayed communication connection which is not secure. If he wants a secure voice capability, the commander must be physically located near the COMSEC device and utilize radiotelephone procedure. In the future he will be able to pick up his telephone, dial the distant number, and almost immediately obtain secure voice communications with a distant party. He will have this type of rapid, secure communications whether he wishes to talk to regiment, division, or into joint-service networks. The capability will be obtained by a series of automatic terminal, switching, transmission, interface, and COMSEC devices.

110. COMMUNICATIONS EQUIPMENT TERMINOLOGY

a. General.--Communications equipment development will be discussed under eight categories commonly used throughout LFICS. This organization for presentation was chosen in order to gain a grasp on a technical subject and present it in a nontechnical manner. The eight categories, which will be detailed in the following pages, are:

(1) Switching equipment.
(2) Multichannel transmission equipment.
(3) Single channel transmission equipment.
(4) Terminal devices.
(5) Technical and system control equipment.
(6) Satellite communication equipment.
(7) Interface equipment.
(8) Communication security devices.

b. Equipment Description Definitions.--Within categories, there will usually be included a term to denote size and employment, such as "manpack" or "shelter-mounted." The most commonly used terms are defined and illustrated below:

(1) Hand-held.--Portable, capable of being operated, held by hand (e.g., AN/PRC-68).

(2) Manpack.--Portable, capable of being carried by one man (e.g., AN/PRC-77).

(3) Teampack.--Portable, requires more than one man (e.g., AN/PRC-47).

(4) Bench-Mounted.--Not portable, designed to be operated on the ground or mounted on a bench, table, etc., (e.g., AN/TRC-75).

(5) Vehicle-Mounted.--Designed to be operated in a vehicle, but the vehicle is not part of the equipment (e.g., AN/GRC-160).

(6) Vehicular.--The vehicle is part of the equipment (e.g., AN/MRC-87).

(7) Shelter-Mounted.--The equipment is mounted within a shelter or enclosure (e.g., AN/UYQ-3 used for the DASC). The shelters vary with these types of equipment; for example, it could be a collapsible shelter common to MAW units or one of the new family of standard shelters. (Both are truck and helo-transportable.)

III. COMMUNICATIONS EQUIPMENT PROGRESSION

The following paragraphs show the progression of the communications equipment development that will take place during the 1979-1993 time period. The equipment is discussed in the eight categories previously mentioned. While the text describes mainly those items considered to have the greatest impact on the FMF, all items being replaced, their replacements, and items offering new capabilities are shown in the figures within this section. The matrixes will display the items of equipment, their dates of introduction (if new), and their life-spans (within the 1979-1993 time period). This depicted relationship is important so that a continuity can be established between different items of equipment. In later sections of LFOSS, communication equipment items will be identified with the owning, and/or using unit. Items of equipment which were scheduled for entry into the FMF during the 1977-1978 time frame may not yet be reflected in the major items of equipment listings in subsequent sections of this document. This is due to the natural time lag in T/E updating. In order to cover this shortfall the key 1977-1978 entry items will be mentioned within this section.

a. Switching Equipment.--This category includes all equipments performing a switching function, for example, manual and automatic telephone switchboards and equipment performing circuit or message switching. Telephone or circuit switches transfer one line to another or signal the line is "busy." A message switch will store the message until a free line is available. In the past, commanders were familiar with the time delay in-

volved in the manual switching necessary to switch telephone calls, patch a radio circuit into a telephone line, or switch a teletype circuit from one line to another. The future goal for switching is to progress from manual to automatic and eliminate the majority of the time delay. Among the automatic switches are Unit-Level Circuit Switches (ULCS) and Unit-Level Message Switches (ULMS). These switches are of paramount importance because they are used to interface the various elements of MTACCS. They will be available during the mid-1980 time frame.

(1) The familiar manual, cord switchboards (SB-22 and SB-86) have been augmented by a manual cordless switchboard, the SB-3082, which also has more capacity. The SB-3082 will be phased out, but the SB-22, because of its small size and versatility, will still remain in use to service users where switching speed is not critical. Another switchboard, the SB-3614, entered the inventory in 1978. This cordless switchboard has an automatic switching capability. In 1985, with communications phased into the digital world, the SB-3865 (a ULCS) will be introduced, replacing the SB-3082 and SBN-3614. The TTC-38 is a fully automatic switching central office intended for deployment at MAF, division, and wing hedquarters. IOC is 1980.

(2) Unit Level Message Switches (ULMS) will be introduced around 1985 when the AN/GYC-7, a two-man transportable message switch, will be fielded. This will give automatic message switching a broader, more tactical capability than that provided by centrals presently housed in larger, heavy shelters.

(3) The foregoing developments and their span of use are illustrated in Figure 1-8 below.

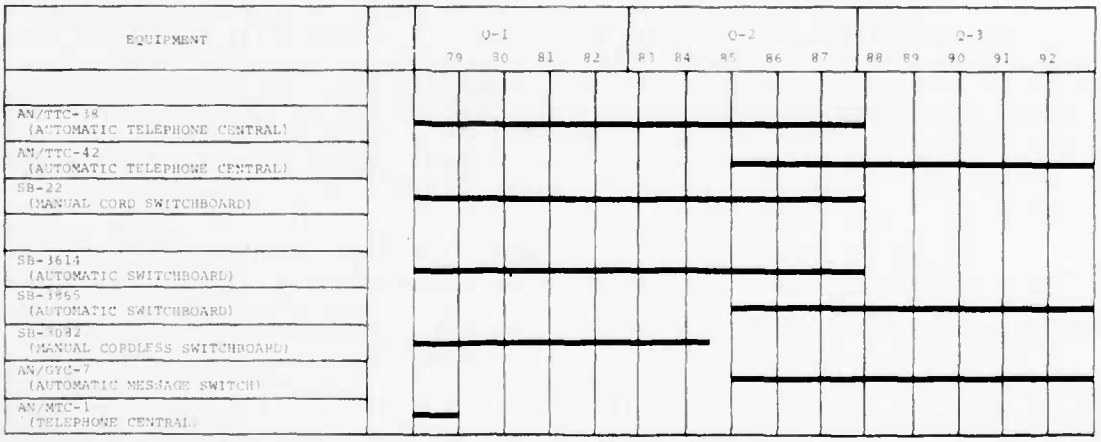


Figure 1-8.--Switching Equipment Evolution (1979-1993).

b. Multichannel Transmission Equipment.--This equipment provides more than one channel of communication simultaneously--voice, teletype, data, etc. It includes multichannel radio equipment (less satellite equipment) and the various multiplex and modem equipment related to multichannel

transmission. A multichannel capability can be provided by equipment that is capable of multiplexing several channels of communication on one transmitter or is capable of transmitting several channels of communication using separate transmitters.

(1) The AN/TSC-95, when introduced, will provide a deployed landing force commander with a more reliable entry (FMF mobile command net) to the Defense Communication System (DCS) than the AN/TSC-15 used previously for this function. Other equipments entering the FMF are the TDM (Multiplex equipment), and AN/TCC-72 MOD (multiplex telephone terminal).

(2) In Q-1, a multichannel digital radio, the AN/GRC-201, a modified version of the AN/TRC-97 presently in the Marine Corps inventory will provide a digital multiplexing capability. The AN/TRC-97 will be phased out by 1985. The AN/MRC-( ) will be available in 1984 providing a bench-mount multichannel radio capability for short range communications. The Digital Wideband Transmission System (DWTS) will also be introduced in 1984 presenting a lightweight, vehicle mounted, multichannel voice or data capability. During the 1979 to 1982 period, an influx of devices necessary for the introduction of digital equipment will begin to appear.

(3) Air-ground multiradio equipment, the AN/UYQ-4 and AN/TRA-( ) will be fielded in 1980 and 1984 respectively to complement new equipment already in the aviation community.

(4) All of these equipments and their IOC's are shown in Figure 1-9 on the following page.

c. Single Channel Equipment.--These are radios that provide only one channel of communication, either voice, teletype, data, etc. Single channel transmission equipment has its most important use in combat maneuver elements. Because of the high degree of mobility required, communication from the infantry battalion must be conducted predominantly by single channel radio. Multichannel transmission systems and the attendant switches will be available, but only in those situations when the command post will remain static long enough to permit the engineering and installation necessary for their effective use. Generally, this operational philosophy prevails at any level. Several significant developments will take place concerning single channel transmission equipment during the 1979-1993 time frame:

(1) A developmental move toward standardization will be initiated. For example, in the area of HF communications a new manpack radio, the AN/PRC-104, will be introduced in 1979-80. The AN/PRC-104 will replace the AN/PRC-47, presently in the Marine Corps inventory. The AN/PRC-104 is lighter (30 pounds vice 82 pounds for the AN/PRC-47). Therefore, it is manpack vice teampack; it is also more reliable and much simpler to operate. The basic receiver-transmitter for the AN/PRC-104 will be used in the future fielding of several other HF equipments. Some examples are: The AN/PRC-105 has a more powerful amplifier (100 watts versus 20 watts for the AN/PRC-104), and is due in 1985. The AN/GRC-193 has a 400-watt amplifier and is configured for bench or vehicular mounting. It should be introduced in 1980 and is to replace the AN/TRC-75. The AN/MRC-138 is an AN/GRC-193 with a vehicle and is due in 1980 to replace the AN/MRC-83. To replace the AN/MRC-87 and the AN/MRC-123, the AN/MRC-138 with a UHF radio (AN/PRC-41) will be added.

(2) A new VHF hand-held radio will be available in 1982. The AN/PRC-68 will be small enough to fit in the breast pocket. It will also have a secure voice capability. This radio has a wide range of possible

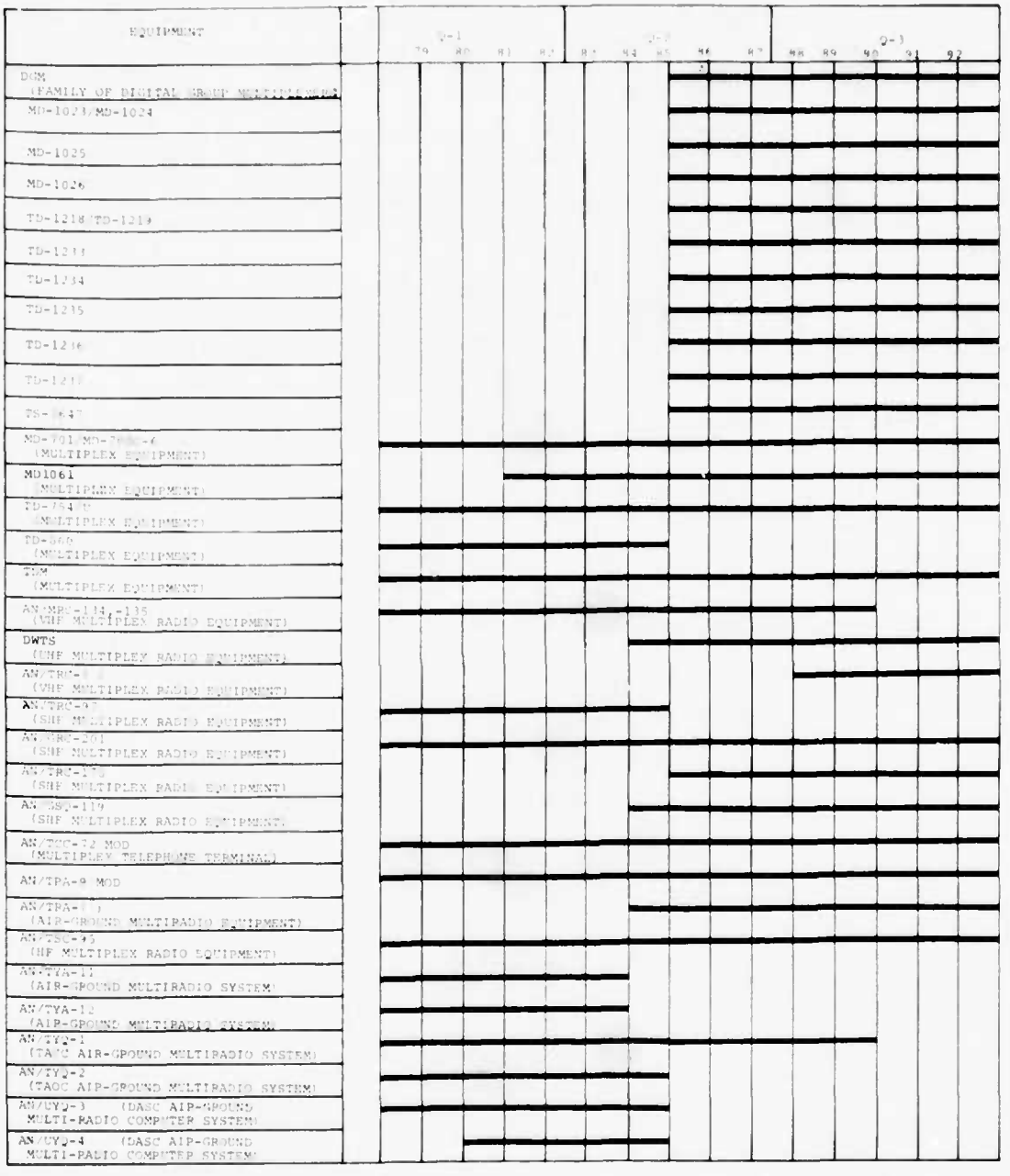


Figure 1-9.--Multichannel Transmission Equipment Evolution (1979-1993)

applications to include squad level communications, communications for security personnel, a radio for personnel on emergency call, etc.

(3) The long awaited helicopterborne command and control communications central AN/ASC-26 will be introduced to the field in 1982. These centrals will be easily installed in the UH-IN helicopter and give the embarked ground commander one secure UHF and two secure VHF radios plus a secure retransmission capability.

(4) Several present UHF radios (e.g., AN/GRC-112, -134) will be replaced in 1982 by a family of UHF radios evolving from a U.S. Navy-sponsored development called the Navy Growth Radio Program. The basic nomenclature to identify this family is the AN/URC-93. Interchangeable modules will provide an interface for satellite or other line-of-sight communications.

(5) Around 1989, the U.S. Army-developed single-channel ground-air radio system (SINCGARS) family of equipments will begin to be introduced to the field. The AN/GRC-( ) will be the VHF basic unit of several radio equipments that will replace various VHF radios presently in the field, for example AN/PRC-77, AN/MRC-109, -110.

This will be the first single-channel radio system specifically designed to counter an electronic jamming threat. This will be accomplished by using what is called a frequency hopping, spread-spectrum technique. Instead of the radio transmitting on one assigned frequency, the transmission is time divided onto several different frequencies.

Single-channel equipment developments during the 1979-1993 time span are reflected in Figure 1-10.

d. Terminal Devices.--This category consists of the following:

- o Telephone equipment
- o Teletype equipment
- o Data equipment
- o Facsimile equipment
- o Radar equipment. (Radar equipment--ground surveillance, counter battery, air control, etc.--will be covered separately under Marine Division and Marine Air Wing Sections).

(1) Key terminal devices added to the FMF inventory during 1977 were the AN/TYC-5A (AUTODIN terminal), and the TA-838 and -938 (telephones). The AN/TGC-46 (teletype central) originally due in 1977 is now scheduled for 1979.

(2) A concept currently being pursued by the Marine Corps is that of using "simple to operate" tactical record terminal devices. Beginning in 1979, from regiment to battalion, facsimile devices (AN/GXC-7A) will be used for record and narrative traffic reports plus graphics (photos, overlays, etc). Facsimile will be used above regimental level for graphics. This use of facsimile in the Communication and Operations Center

3F

will augment and possibly replace the teletypewriter (AN/TGC-14, AN/TGC-29). The equipment will be capable of interface with telephone or radio communications.

(3) The tactical telephones in the field at present, including those with a dialing capability (TA-838 and -939), will be replaced by digital phones around 1985 with the digital nonsecure voice terminal (DNVT) TA-954 and its secure counterpart, the digital subscriber voice terminal (DSVT) TSEC/KY-68.

(4) In the past, the teletypwriter possessed a severely limited information rate compared to the transmission channel capability. As the capability increases to transmit data at greater speeds, so must the capability to provide hard copy printout and magnetic storage. The modular input/output terminal AN/IGC-74, due around 1981, will, augmented by facsimile devices, ultimately replace teletypwriters. It is planned to consist of a display unit, keyboard, processor, and magnetic storage, and is capable of displaying and storing alphanumeric and graphic information at a rapid rate.

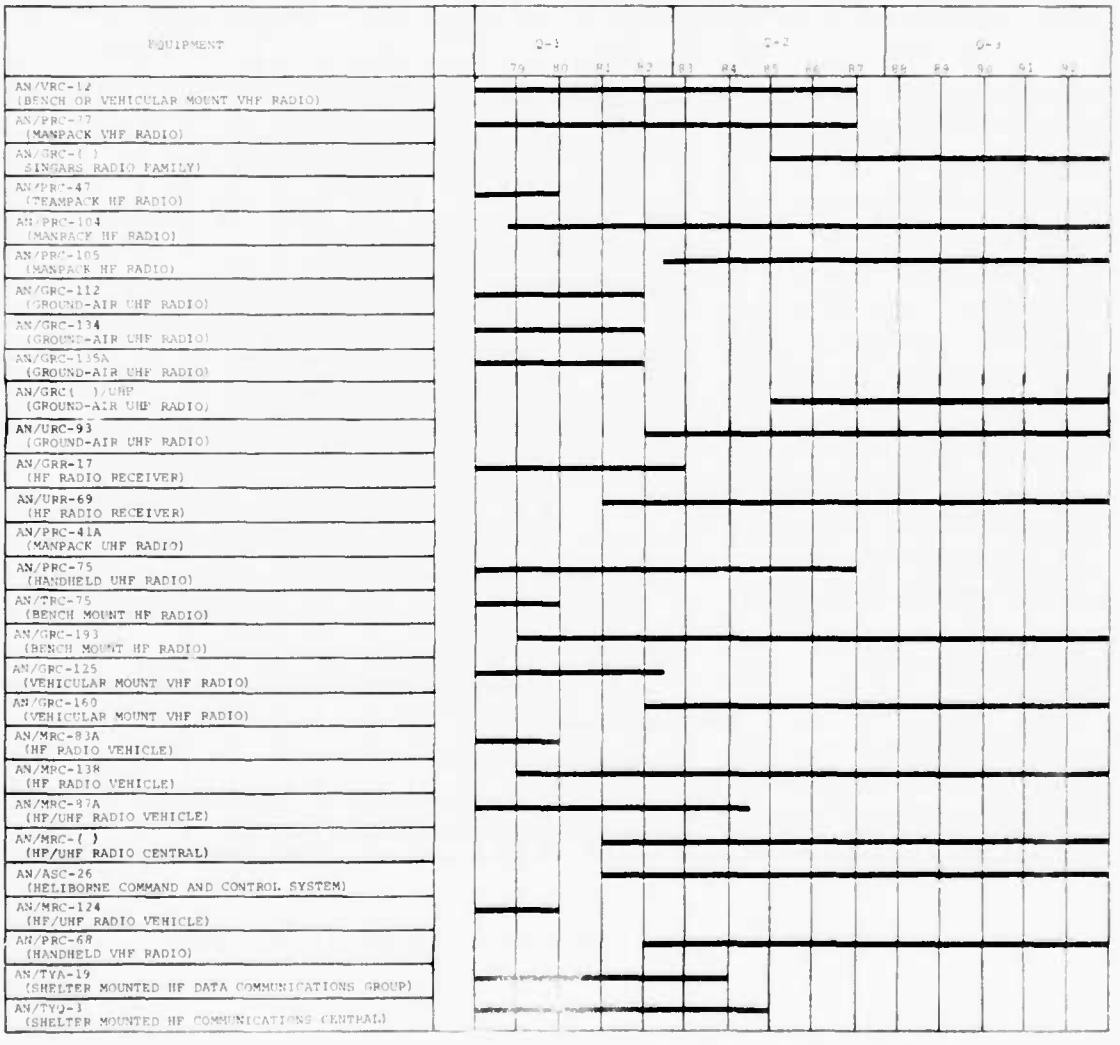


Figure 1-10.--Single-Channel Equipment Evolution (1973-1993).

(5) The Automatic Message Entry System (AMES) AN/MSQ-( ) will augment the AUTODIN terminal (AN/TYC-5A) in 1984, allowing specially typed messages to be handled automatically via an optical character reader (OCR). This will minimize operator handling of message traffic, a giant step toward the ultimate automatic communication center.

(6) A handheld Digital Communications Terminal (DCT) is under development. This will provide combat units with the capability to burst transmit digital data to the MTACCS systems using existing and proposed communications devices. The capability will also include DCT to DCT burst communication of standard or free text messages.

(7) The foregoing new developments and product improvements, with their IOC's are reflected in Figure 1-11.

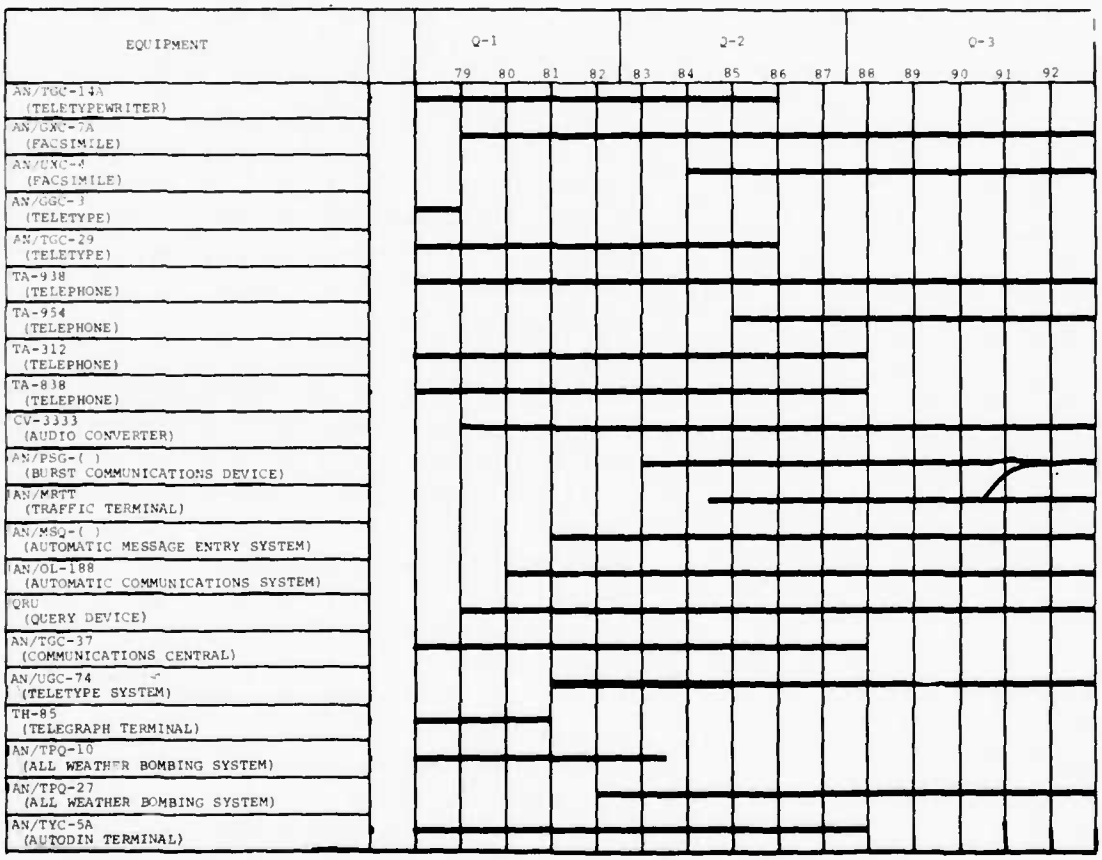


Figure 1-11.--Terminal Devices Evolution (1979-1993).

e. Technical and System Control Equipment.--This is equipment used by communications-electronics personnel to engineer, monitor, test, and control communication circuits and systems. This type of equipment is new to the Marine Corps with the first item, the communications technical control center AN/TSQ-84 ( ) fielded in 1977. These developments in the area of communications technical and systems control will affect the battlefield commander by vastly improving his overall communications. Circuits will be engineered and managed better. For example, the tactical frequency management systems (TFMS) AN/TRQ-35 will allow optimum HF communications through the use of constant spectrum analysis. The communication technical control center AN/TSQ-84 and its replacement, the AN/TSQ-111 due in 1985, will enable the communications officer to continually monitor, test, restore, reassign, and generally control and manage communication circuits to ensure the most reliable, secure, and rapid communications possible. The foregoing, plus other control devices, are shown in Figure 1-12.

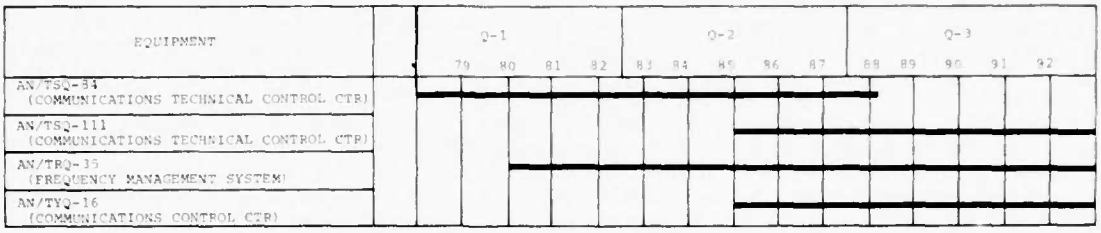


Figure 1-12.--Technical and Systems Control Equipment Evolution (1979-1993).

f. Satellite Equipment.--This relatively new development of using satellites for tactical communications is presently being listed as a separate category. In the future, this equipment may be listed under either single channel or multichannel radio equipment. During 1981, Satellite Communications (SATCOM) will begin to be used by the landing force with the introduction of shelter mounted SATCOM radios, the AN/TSC-85, and the AN/TSC-93. These radios will be used for multichannel long-range communications requirements, augmenting or replacing HF radio equipment. Other SATCOM equipment to be fielded are the AN/TSC-96 in 1981, and a manpack radio, an AN/PSC-1, around 1985. The two SATCOM systems to be used by the landing force will be the Fleet Satellite Communication (FLTSATCOM) UHF system and the Ground Mobile Forces (GMF) UHF and SMF system. The FLTSATCOM system will be used by the Commander of the Landing Force (CLF) primarily for communications external to his forces. The GMF system will be used to link the MAF, division, wing, and FSSG. Secure voice, teletype, and data transmission will be available via SATCOM and will provide a considerable improvement over HF in circuit quality and anti-jam capability. SATCOM developments and their IOC's are shown in Figure 1-13.

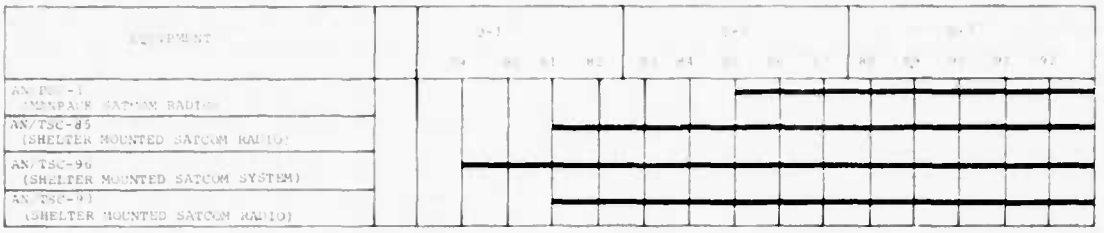


Figure 1-13.--Satellite Communications Equipment Evolution (1979-1993).

g. Interface Equipment.--This category defines remote control equipment and data control equipment. Remotes allow radio equipment to be controlled from a point other than the radio equipment itself. Data control equipment allows one type of equipment to operate with another equipment not normally compatible, for example, analog to digital. Significant developments in this category include the radio set control group AN/GRA-39B due in 1978. This is the third development of the AN/GRA-39, which now allows remote control of both VHF and HF equipment. This will phase out the AN/GRA-6, previously used for HF. In approximately 1980, the Radio Set Control C-6709 will be introduced. This is a Net Radio Interface (NRI) device which will enable a Marine with a radio to talk to an individual through a telephone switchboard or vice versa. In about mid-1981, the AN/GRA-( ) will be fielded, allowing control of both the radio and the COMSEC device from a remote position (not capable with the AN/GRA-39, -39A, or -39B). The foregoing items, and the remainder of developments in interface equipments with their IOC's and life spans within the 1979-1993 time frame, are shown in Figure 1-14.

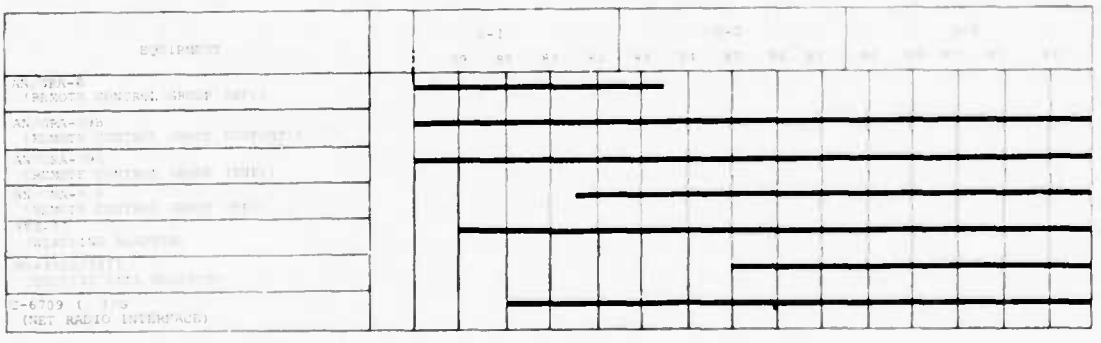


Figure 1-14.--Interface Equipment Evolution (1979-1993).

h. Communication Security Devices.--This category encompasses all the communication security (COMSEC) equipment, for example, KY-28/-38 NESTOR. It also includes those ancillary items necessary for the hookup of a COMSEC system. All items of this category will be listed in the chart

following this text, but only those considered to be of significant interest to the reader will be described.

(1) Of significant interest in COMSEC development is the introduction of PARKHILL (TSEC/KY-65) in 1979, which allows securing of HF voice circuits. Also in 1979, VINSON (TSEC-/KY-57, -58) augments and will be the ultimate replacement of NESTOR (TSEC/KY-8-28, -38) for covered VHF/UHF. NESTOR and VINSON are not compatible and careful planning for systems employment will be necessary during the transition. In 1981, the COMSEC device TSEC/KYV-2 will be available for the hand-held VHF radio AN/PRC-68. It will be compatible with VINSON. In 1984, BANCROFT (TSEC/KY-67) will be introduced. This VHF radio, with built-in COMSEC, is being considered as a candidate for secure voice for tracked vehicles and is also compatible with VINSON. In 1985 the Digital Subscriber Voice Terminal (DSVT) (TSEC/KY -68) will provide a significant step toward end-to-end security of all communications by introducing the first tactical secure voice telephone. In 1986, another secure voice telephone, the ANDVT (Advanced Narrowband Digital Voice Terminal), will extend the secure voice and data communications over narrowband net radio links.

(2) The full spectrum of COMSEC developments and their lifespans are shown in Figure 1-15.

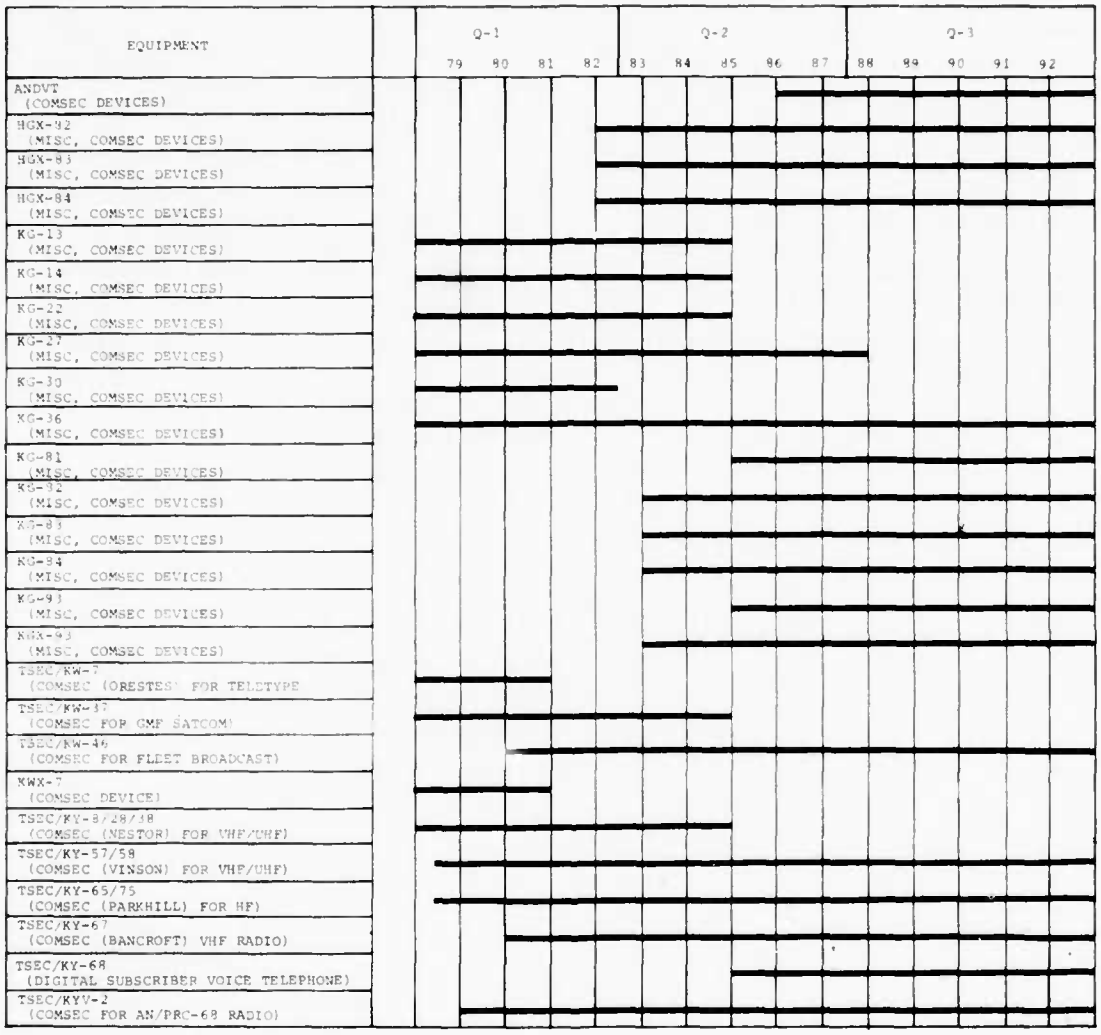


Figure 1-15.--Communications Security Devices Evolution (1979-1993).

SECTION 1C

FLEET MARINE FORCE
AUTOMATED SYSTEMS AND SOFTWARE DEVELOPMENT (1979-1993)

112. COMMON EQUIPMENT

While Marine Tactical Command and Control System (MTACCS) represents several Marine Corps tactical data systems, a number of other automated systems will come into being during this time period. The impact of these developments on the FMF will be further defined as a result of the Marine Air-Ground Task Force (MAGTF) Teleprocessing Requirements Study (1980-1985). Below is a list of automated systems and software developments now existing or under development.

a. Aviation

(1) Flight Readiness Evaluation Data System (FREDS)

(a) Purpose. Collects, analyzes, and evaluates aviation flight data for use in decision making.

(b) Function. Will measure the combat readiness percentage; will provide a measure of aircraft use; will maintain flight records of aircrewmen; will be means of reviewing training and readiness requirements; will provide and assist with information to perform advance planning tasks.

(2) Multiple Activity Processing System (MAPS)

(a) Purpose. Provide UADPS-type management and information to selected activities.

(b) Function. Provides a cost-effective means of providing support to smaller activities and enables them to obtain standard automated supply and 3-M support by satelliting on UADPS-SP.

(3) Naval Aviation Logistics Command Management Information System (NALCOMIS)

(a) Purpose. Will eventually encompass the entire aviation supply and management processes, such as SUADPS-EU, 3M, and FREDS. Module I will support the QMA, IMA and SSC, and is intended to support the NAMP of the 1980's.

(b) Function. Will increase aircraft readiness by improving the aircraft carrier's and the Marine Air Group's current management information system; will result in a manpower reduction from current requirements to operate the MIS; will effect a reduction in rotatable pool inventories; will increase systems capability to determine aircraft sorties available.

(4) Naval Aviator Naval Flight Resource Management System (NANFORMS)

(a) Purpose. Stores flight time information on designated naval aviators, naval flight officers, or aviation ground officers/enlisted.

(b) Function. Periodically, or on demand, displays flight time reports on individuals or groups of individuals which assist in pilot transition boards, flight status selection, and related areas.

(5) Shipboard Non-Tactical ADP Program (SNAP)

(a) Purpose. SNAP I upgrades and replaces the U-1500-AM/UYK-5(V) computer system.

(b) Function. SNAP II provides automated support for approximately 350 smaller ships and activities that have no present ADP capability.

(6) Shipboard Uniform Automated Data Processing System for End Use (SUADPS-EU)

(a) Purpose. Automates supply and fiscal management for aviation units.

(b) Function. Capable of developing inventory information, processing requisitions, as well as aiding in fiscal management activities.

(7) Navy Maintenance and Material Management System (3M)

(a) Purpose. Collects, stores, and retrieves maintenance as well as material and usage data for aviation activities.

(b) Function. Aids the commander in producing various aviation management reports, such as part failures, work output, aircraft readiness as well as determining parts requirements.

(8) Uniform Automated Data Processing System for Stock Points (UADPS-SP)

(a) Purpose. Uniform automated data processing system for stock points.

(b) Function. Automates supply and fiscal management for aviation users at the "wholesale" level.

b. FINANCIAL

(1) Automated Leave and Pay System (ALPS)

(a) Purpose. Gives local commands the capability to pay civilians as well as maintaining their leave records.

(b) Function. Pay computations and payroll records are performed by the computer for civilian employees; maintains leave records.

(2) Bonds and Allotment System (B&A)

(a) Purpose. Provides for the payment of all allotments of military pay and allowances and provides for U.S. Savings Bond issuance and safekeeping services.

(b) Function. Provides for the control and updating of the

master allotment file on all active allotments and allotment stop history and provides for the issuance, cancellation of treasury checks and savings bonds authorized by appropriate directives.

(3) Navy Register System/Centralized Expenditure Reimbursement Procesing System (CERPS)

(a) Purpose. To provide various administrative/responsible offices and accountable activities with financial data.

(b) Function. The system accumulates, selects, and reports accounting data pertaining to disbursements, reimbursements for all Marine Corps disbursing offices, stock fund issues, and international balance of payments.

(4) Class I Allotment Accounting

(a) Purpose. Automatic allotment accounting in conjunction with Class I Prime.

(b) Function. Provides an automated means of accounting and reporting for funds appropriated by other than O&MMC.

(5) Class I Standard Budget System

(a) Purpose. Meets management reporting requirements of FMF, posts, and stations.

(b) Function. Provides centralization of development, standardization and integration of an automated financial management and reporting system using decision unit packages by priority ranking at the lowest field management level desired by the user.

(6) Depot Maintenance Management System, Cost Accounting and Production Reporting Systems (DMMS/CAPRS)

(a) Purpose. Records, stores, and reports cost of depot level maintenance.

(b) Function. Identifies any work performed in depot maintenance with its related cost; classifies and reports this information by a specific category, such as an identifiable weapons system.

(7) Disbursing Officer Voucher System (DOV)

(a) Purpose. Mechanizes the extraction of disbursing transactions to meet subsequent reporting requirements.

(b) Function. Provide Marine Corps Disbursing Offices a system for editing accounting, balancing transactions producing NAVCOMPT forms, voucher listings, and expenditure reports.

(8) Financial Accounting System/Headquarters Priority Management Efforts (FAS/HQ PRIME)

(a) Purpose. An automated system providing a means of collecting, processing, and submitting financial data and is utilized at 13 selected major posts and stations.

(b) Function. Provides managers a system which includes monetary and quantitative financial information that enables management to effectively and efficiently manage available resources.

(9) Financial Integrated Management Information System (FIMIS)

(a) Purpose. Merges three major subsystems--Headquarters Accounting Subsystem, Bureau Accounting Subsystem, and Management Information Subsystem.

(b) Function. Will perform document level accounting for all HQMC held funds; will accomodate output from all Marine Corps field level accounting systems and generate reports for DOD, NAVCOMPT, and SECNAV for various Marine Corps appropriations; and will provide a management information tool for HQMC required reports.

(10) Five Year Defense Program (FYDP)

(a) Purpose. Collects, processes, and reports the USMC portion of DON FYDP.

(b) Function. Provides programming, planning, and budget information at the program, program element, resource category level.

(11) Joint Uniform Military Pay System/Manpower Management System (JUMPS/MMS)

(a) Purpose. To administer and coordinate the DOD policies and objectives for the development, test, evaluation and maintenance of JUMPS.

(b) Function. An integrated personnel and pay system, JUMPS/MMS utilizes reports of personnel changes, entered into the system by unit diaries, to change the pay data. Changes are entered into the system by unit diaries, documents prepared by the reporting unit disbursing officer, or both.

(12) Marine Air Ground Financial Accounting and Reporting System (MAGFARS)

(a) Purpose. Records, stores, and reports fiscal transactions.

(b) Function. Provides such data as transaction reports, unfilled orders, and general ledger reports.

(13) Marine Corps Industrial Fund (MCIF)

(a) Purpose. Provides a means of financing, budgeting, and billing for work performed by the industrial fund.

(b) Function. The MCIF is a mechanized accounting system designed to meet DOD, DON, HQMC, and actively level requirements peculiar to industrial fund accounting requirements.

(14) Procurement Marine Corps (PMC)

(a) Purpose. Produces accounting ledgers for the PMC appropriation and produces reports by procurement line number and subhead.

(b) Function. A mechanized financial system for HQMC which provides for the recording, accumulation, reporting and administrative control of funds for the PMC appropriation.

(15) Project Prime (Priority Management Effort) Mechanized Financial Procedures for Selected Marine Corps Posts and Stations) (PRIME)

(a) Purpose. An automated system providing a means of collecting, processing, and submitting financial data. It is utilized at selected major posts and stations.

(b) Function. Provides managers a system which includes monetary and quantitative financial information that enables management to effectively and efficiently manage available resources.

(16) Retired Pay/Personnel System

(a) Purpose. To provide for the payment of retired pay, retainer pay, and annuities for survivors of deceased Marine Corps members and Fleet Marine Corps Reservists.

(b) Function. The system provides a record for each retired member, Fleet Marine Corps Reservist, and annuitant whenever a change occurs in an account; monthly checks for the listed categories of personnel; numerous reports to include accumulated taxable income and federal tax withheld for issuance of W-2's, and W-2P's; and microfiche listing of the monthly retired pay account.

(17) Single Financial Management System (SFMS)

(a) Purpose. Will provide a standard mechanized financial system for use by all authorized operating budget/allotment holders within the Marine Corps.

(b) Function. Will replace PRIME for major posts and stations and MAGFARS for operating forces, and incorporate the Class I zero base budgeting system and allotment accounting system into a single financial management system.

(18) Standard General Ledger System (STAGELS)

(a) Purpose. Post all financial transactions for appropriations for 1106 and 1107 to general ledger accounts which are used to produce the NAVCOMPT 2199 report and data bank cards at posts and stations, and FMF commands throughout the Marine Corps.

(b) Function. Fully incorporates PRIME, MAGFARS, and FIMIS systems.

(19) Tactical Airlift Requirements System (TAC AIRLIFT)

(a) Purpose. Provides budget estimates relating to the cost of air transportation for FMF units engaged in unit deployment.

(b) Function. Enables appropriation sponsors to analyze

and include budget estimates in the total apropriation budget requirements provided annually to higher authority.

c. LOGISTICS

(1) Logistics Management Information System (LMIS)

(a) Purpose. To assist the DC/S I&L in management of principal end items (PEI) during the acquisition phase and within the framework of the planning, programming and budgeting system.

(b) Function. Computes inventory objectives for PEI and ammunition; monitors asset balances; provides source data for table of authorized material (TAM) and unit table of equipment (T/E) publications.

(2) Marine Air Ground Task Force Requirement and Logistic Planning Model (MAGTF Lift)

(a) Purpose. Will automate lift requirements for baseline and notational MAGTF's, determine logistic planning factors, and create data for use in the Joint Operational Planning System.

(b) Function. Will give logistical profile with respect to weight and cube, personnel, and transportation for MAGTF; it is a mathematical model.

(3) Marine Corps Integrated Maintenance Management System (MIMMS)

(a) Purpose. Creates an equipment maintenance management system for ground units of the regular establishment as well as for aviation and ground units of the Marine Corps Reserve and Depot Maintenance activities.

(b) Function. Provides maintenance management and readiness information for the management of ground equipment in the Marine Corps units at both field and headquarters levels.

(4) Mechanized Embarkation Data System (MEDS)

(a) Purpose. Automates the clerical tests associated with embarkation.

(b) Function. Assists in embarkation through the production of various rosters and documents.

(5) Marine Standard Supply System (M3S)

(a) Purpose. To provide a single supply system encompassing both retail and wholesale functions, for FMF units.

(b) Function. M3S will be a user-oriented supply system providing support to both the FMF and supporting establishment. It will replace the current SASSY, MIMMS, DSSC, material support portion of the DMS, and base property control systems. Source data automation equipment will be utilized at using unit levels, with non-deployable regional ASC's providing base level support.

(6) Marine Corps Unified Material Management System (MUMMS)

(a) Purpose. Acts as a supply management system with respect to obtaining and disposing of material as well as indicating the availability of material for Marine Corps managed items and for most controlled items.

(b) Function. Handles inventory control, procurement, warehousing; responsible for operation of direct support control point; accounts for the storage of all Marine Corps material not in the hands of the using unit.

(7) Pre-positioned War Reserve Management System (PWRMS)

(a) Purpose. Assists commanders in computing requirements for war reserve material; analyzes and indicates Pre-D Day requirements.

(b) Function. Permits insertion of staff studies into system while a program of war reserve material requirements is being maintained or determined; aids the commander with its computer communication capability in the rapid analysis and dissemination of requirements; assists Marine Corps Reserve in the event of mobilization.

(8) Supported Activities Supply System (SASSY)

(a) Purpose. Functions as supply management for the direct support echelon of the Marine Corps Supply System in the FMF.

(b) Function. Accomplishes supply accounting functions for the Service Support unit and the commanders at the direct support echelons which includes FMF MAG's, battalions, and separate companies. Determines requirements, controls material, provides asset visibility and furnishes a data base for management information required by the commander in the performance of his missions.

(9) Transportation of Personal Property System (TOPS)

(a) Purpose. To develop a standard system for accomplishing the movement or storage of personal property of DOD service members and civilian employees.

(b) Function. Through a combination of source data and base level ADPE, inputs will be made by personal property shipping offices (PPSO). TOPS will provide: standardized formats inquiry capability, carrier selection, identification of costs, carrier cost evaluation, and format information for transmission between PPSO's. Periodic reports will be generated.

(10) Weapons Systems/Equipment Support Management (WS/ESM)

(a) Purpose. To assist HQMC and MCLSBLant in management of weapons systems/equipment.

(b) Function. Will provide on demand information on asset visibility, readiness, logistics performance, operating support costs, and maintenance costs.

d. MANPOWER

(1) Leadership Evaluation Analysis Program (LEAP)

(a) Purpose. Provided as voluntary leadership aid to company level commanders.

(b) Function. Provide small unit commanders with the techniques and procedures by which they can assess leadership concerns, determine the level of unit combat readiness, and evaluate the effectiveness of the decision-making process.

(2) Joint Uniform Military Pay System/Manpower Management System (JUMPS/MMS)

(a) Purpose. Exists as a major subsystem of the Manpower Management Information System. It is comprised of each regular Marine's complete personal and pay record as well as leave data.

(b) Function. Provides manpower management reports, permits local commanders having access to an Automated Services Center (ASC) to extract manpower information; enhances the creation of a summary file from which HQMC can retrieve certain items of personnel data.

(3) Real-Time Finance and Manpower Management Information System (REAL FAMMIS)

(a) Purpose. Will provide a single, centralized, automated pay and manpower management information system. Will replace JUMPS/MMS.

(b) Function. Will integrate manpower and pay information and record keeping requirements and provide immediate access for query and update to manpower and financial information as it occurs.

(4) Table of Manpower Requirements (TMR)

(a) Purpose. Automates the production of T/O's.

(b) Function. Produces Tables of Organization as well as updating existing T/O's on a monthly basis.

(5) Unit Level Training Management

(a) Purpose. Will be an inquiry system to automate an individual's training record.

(b) Function. Could answer questions relating to individual qualifications or skills.

e. OPERATIONS AND TRAINING

(1) Marine Automated Readiness Evaluation System/Force Status and Identity Report (FORSTAT)

(a) Purpose. Automates the unit's reporting of its operational readiness.

(b) Function. Reflects the state of readiness for each Marine unit with respect to personnel, equipment and training.

(2) Joint Operations Planning System (JOPS)

(a) Purpose. Provides automated support in the development of joint operation plans.

(b) Function. Through simulation, will test the plan's feasibility and then provide an evaluation; will deal with such considerations as material, personnel and movement requirements, the status of lift forces and mobility of support, physical characteristics of equipment as well as air and sea lift planning factors.

(3) Marine Corps Combat Readiness Evaluation System Software Application (MCCRESSA)

(a) Purpose. Aids the commander in scoring MCCRES evaluations.

(b) Function. A stand-alone computer processing model that provides a means of evaluating FMF command readiness, and assists in the formulation of unit training objectives.

f. SHIPBOARD

(1) Amphibious Support Information System (ASIS)

(a) Purpose. Acts as an information retrieval system for the CATF/CLF aboard LCC class ships.

(b) Function. Provides data such as target list information, personnel information as well as other similar data necessary for the Landing Force Commanding during an amphibious landing.

(2) Management Information System (MIS)

(a) Purpose. A general purpose storage and retrieval subsystem of the Integrated Tactical Amphibious Warfare Data System (ITAWDS) which supports the CATF/CLF aboard LHA class ships.

(b) Function. Provides data such as target list information, personnel information as well as other similar data necessary for the Landing Force Commander during the amphibious landing.

g. TACTICAL

(1) Tactical Air Operations Center-85 (TAOC-85)

(a) Purpose. Will assist in the command and control of Marine Aviation.

(b) Function. Will evolve from the current MACCS into a semi-automated center or system of centers to provide the commander with the means to achieve the control of aircraft in conducting offensive or defensive operations.

(2) Marine Air Ground Intelligence System (MAGIS)

(a) Purpose. Will assist the commanders by providing more timely and accurate intelligence.

(b) Function. Will assist in processing and interpretations of aerial imagery; processing and evaluation of electronic warfare support measures (ESM) data; managing and collection of information; processing information into finished intelligence and dissemination of intelligence to users.

(3) Marine Integrated Fire and Air Support System (MIFASS)

(a) Purpose. Will assist in the control and coordination of supporting arms.

(b) Function. Will provide integrated control and coordination of the MAF's fire support, both ground and air; will include mortars naval gunfire, artillery, and direct air support; will provide accurate target information, reduce reaction time, and allow greater efficiency in reaction time as well as some of the functions of the present fire direction centers.

(4) Marine Integrated Logistics System (MILOGS)

(a) Purpose. Will assist combat service support units and MAGTF's G-4's with respect to command and control.

(b) Function. It is anticipated that MILOGS will be the tactical arm of MUMMS, MIMMS, and SASSY.

(5) Marine Integrated Personnel System (MIPS)

(a) Purpose. Will fulfill the need to provide personnel information of the MAGTF.

(b) Function. Will provide personnel information such as skill shortages and requirements, both present and future; will help in determining anticipated losses and probable future capabilities and effectiveness; will supplement MMS.

(6) Position Location Reporting System (PLRS)

(a) Purpose. Will be a means for providing the commander with precise locations of friendly forces, and will equip users with accurate position information and navigational aid.

(b) Function. Will provide position location information from PLRS equipped ground/air units to Landing Force Commanders for use in fire support, control and coordination. Will provide the individual tactical user with his own position for use in navigation and conflict avoidance. Will provide a digital data link between user and command level.

(7) Signal Intelligence Analysis System (SIAS)

(a) Purpose. Assist the FMF comander by providing more timely and accurate intelligence.

(b) Function. Will provide FMF units with computer assistance in signal intelligence analysis functions.

(8) Tactical Combat Operations (TCO)

(a) Purpose. Will enhance the capability of the commander and his staff to plan and conduct combat operations.

(b) Function. Will give the commander the capability to analyze large amounts of data for advance planning; will draw upon updated information from other aspects of MTACCS to permit the commander immediate access to current information in a centralized combat operations center.

(9) Tactical Warfare Simulation Evaluation and Analysis System (TWSEAS)

(a) Purpose. Will assist in the operation of tactical exercises.

(b) Function. A computer assisted system for the design, conduct and control, and evaluation of FMF tactical exercises and tests.

(10) Source Data Automation (SDA)

(a) Purpose. Provides programmable data processing equipment to lower echelons of the FMF in order to increase administrative effectiveness.

(b) Function. Will provide an easily deployable capability to improve input to existing and future automated data systems and will provide automated support for management and staff functions.

(11) Joint Tactical Information Distribution System (JTIDS).--The joint tactical information distribution system (JTIDS) is a secure, jam resistant, digital information system with relative navigation and positive user identification capabilities for the 1980's. It is primarily air oriented with specific command, control, and communications functions for air-to-air and surface-to-air applications. The system does not require a master processing unit. Connection of users beyond line-of-sight is accomplished by retransmission by other aircraft having the JTIDS terminal. Among the objectives of the system is the requirement for the system to have joint-service and NATO interoperability. The Marine Corps and Army have been directed by DOD to join with the Navy and Air Force in the development of JTIDS. While similar to PLRS, in that it provides communications, navigation and information (CNI), the two systems are not electronically compatible. With an IOC of 1984, JTIDS is programmed for MAF, division (down to regiment), wing (down to group) and MAB levels.

(12) Global Positioning System (GPS).--The global positioning system (GPS) is a highly accurate positioning and navigation system, using satellites for continuous world coverage. The system, primarily space-and air-oriented, also has surface applications. The system has no reporting capability, but a signal is produced that could be interfaced with some external information distribution such as JTIDS. GPS terminal-equipped users could also serve to anchor the relative PLRS or JTIDS grid to an absolute coordinate system. Providing a capability down to the battalion/squadron level (and possibly lower), the GPS has an IOC of 1985.

SECTION 1D

FLEET MARINE FORCE
LOGISTICS DEVELOPMENTS (1979-1993)

113. FIELD LOGISTICS SYSTEM

A new field logistics systems (FLS) with major components consisting of the Marine Corps Expeditinary Shelter System (MCESS), a standard family of cargo containers, and a new vehicle fleet is currently under development. The FLS shelters and vehicles will, in the main, be phased into the FMF as existing shelters and vehicles reach the end of their life expectancies. Therefore, the introduction of the FLS beginning in Q-1 will extend into the third Q-period. The following subparagraphs provide a brief description of the major components of the FLS.

a. Marine Corps Expeditionary Shelter System (MCESS).--The MCESS consists of four small and three large shelters that are designed to meet international organization for standardization(ISO) requirements for shipping and provide a capability for complexing to allow almost unlimited functional arrrangements. The four small shelter-types are: 8' x 8' x 20' rigid, knockdown, and EMI shielded, and 8'x 8'x 10' EMI shielded. The large shelters, all knockdown, are 20' x 33', 32' x 73', and 60' x 128'. The small shelters are helicopter transportable and all shelters, large and small, are equipped with integral lighting fixtures and convenience outlets. These shelters will be used throughout the FMF and, where appropriate, will replace all existing shelters, including tents.

b. Containers.--The container component of the FLS consists of four cargo containers and a fuel and water module all of which meet ISO criteria.

o A commercial 8' x 8' x 20' container will provide a high, dry cargo throughput capability to meet resupply requirements.

o The intermediate size container (QUADCON) will be approximately 82" x 57-1/2" x 96" and will be capable of being latched into arrays of four to allow handling identical to commercial containers. They can also be handled individually on military aircraft or amphibious ships. The QUADCON can also be used to unitize bulk supplies and support storage and movement requirements for organizational property.

o The pallet-size container (PALCON) will be used at all force levels to support storage and movement of organizational property and will have the capability of being latched into arrays for more efficient handling. Approximate size will be 41" x 40" x 48".

o The fourth cargo container is a mount-out sized box, bin container, which can be used individually for storage or as a bin insert in both the QUADCON and PALCON. Its dimensions are 10" x 17" x 45".

o The fuel and water module is 96" x 80" x 48", will hold approximately 1,000 gallons of liquid, and can be connected into arrays of up to six modules. The required number of modules, together with one of two pumping modules available, can be mounted on the trailers discussed below to provide a fuel or water tanker of the desired size. This container called a SIX-CON will also double as an outside/oddshape miscellaneous items shipping package when not utilized for fuels or water.

c. FLS Vehicle Fleet.--The present motor transport vehicles will be phased out and replaced by the new vehicle fleet, consisting of seven vehicles consisting of two types of high mobility tactical trucks, and two prime movers for three types of trailers.

o A light High Mobility Tactical Truck of 1-1/4 ton capacity to replace the present 1/4, 3/4, and 1-1/4 ton class vehicles to fill the primary mission roles of:

Weapons platform (Anti-armor, etc.)
Command and Control
Communications Vehicle
Recon/Scout
Ambulance
Personnel Carrier
General Purpose

o A Heavy High Mobility Tactical Truck of 5 ton capacity to replace the present 2-1/2 and 5 ton trucks in all of their mission roles such as:

Tactical Personnel Carrier
Artillery Prime Mover
Cargo
Small Shelter Transporter

o A Medium Prime Mover and 12-1/2 ton trailers to transport shelters, modules, QUADCON's arrays of PALCON's and commercial containers weighing up to 12-1/2 tons.

o A Heavy Prime Mover and 22-1/2 ton trailer to transport fully loaded commercial containers as well as the loads carried by the 22-1/2 ton trailers.

o A 65 ton heavy equipment transporter for such loads as tanks, LVT's, and engineer equipment with a Heavy Prime Mover to tow it.

SECTION 2A

MARINE DIVISION
1979 BASELINE

201. PRIMARY MISSION

The primary mission of the Marine division is to execute the amphibious assault and such other operations as might be directed, supported by Marine aviation and the force service support group (FSSG).

202. CONCEPT OF EMPLOYMENT

The Marine Division is employed, in conjunction with the Marine Aircraft Wing (MAW), as an integral part of the Marine Amphibious Force (MAF) in amphibious operations and in land operations ashore in general war or situations short of general war. It is organized and equipped for operations under the threat of nuclear, biological, and chemical (NBC) warfare. The division requires combat service support (CSS) from the FSSG for sustained operations ashore.

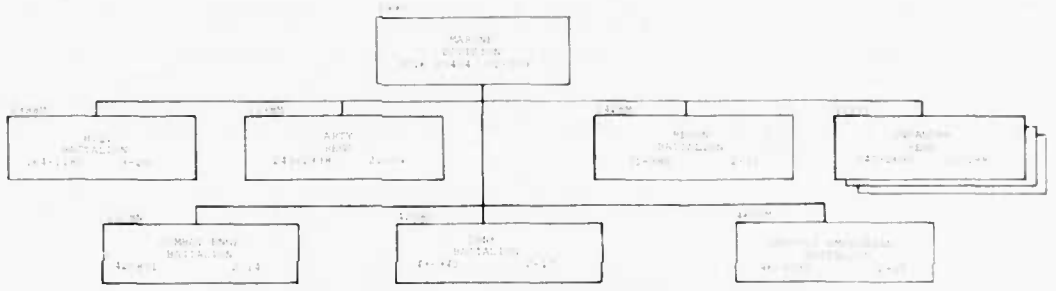


Figure 2-1.--Marine Division

203. DIVISION ORGANIZATION (See Figure 2-1.)

a. Headquarters Battalion

(1) Mission.--To exercise command, control, and administration of a Marine division and attached units.

(2) Concept of Organization.--For tactical operations, the headquarters will be divided into three echelons: a command echelon (Command Group A), an alternate command post (CP) (Command Group B), and an administrative CP. The command echelon will consist of the division commander general staff sections (less elements of the alternate CP),communication-electronics section (less elements of the alternate CP), engineer section, headquarters commandant section, motor transport section, provost marshal, shore part officer, and fire support coordination center (FSCC). (See Figure 2-2).

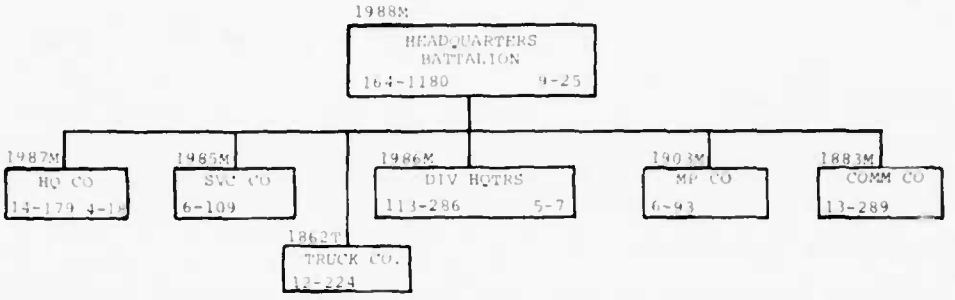


Figure 2-2.--Headquarters Battalion.

(3) Concept of Employment. The alternate CP will be located at the artillery regimental headquarters and will be manned by the assistant division commander, the division inspector as chief of staff, two officers and one or more enlisted from each of the general staff sections, and representatives from the communications-electronics section. The alternate CP will monitor the division tactical situation at all times and be prepared to take command of the division in the event the division CP is neutralized or destroyed. Continued exercise of command by alternate CP will require augmentation from subordinate division elements. The division CP does not have the capability to continue operations while displacing. The division commander and key members of his staff will exercise command from the alternate CP while the division CP displaces. The administrative CP is located in a separate area to the rear and contains the special staff sections not heretofore mentioned.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistic Capabilities.--Capable of organic supply of the battalion; capable of organizational maintenance (first echelon) on all general supply materiel and organizational maintenance (second echelon) on motor transport, engineer, ordnance, radar, test equipment, and sensor/sensor-related equipment. Capable of third echelon maintenance on all communications-electronics equipment less radar, test equipment, and sensor/sensor related equipment. Maintenance capability for cryptographic equipment is contained in MCO 4408.2D.

(6) Headquarters Company

(a) Mission.--To provide command, administrative, and security functions for the headquarters battalion and band support for the Marine division, and to provide a remote sensor surveillance employment capability within the Marine division.

(b) Concept of Organization

1 Organized into functional groupings to provide for:

a A battalion headquarters which directs and coordinates the actions of the entire battalion.

b A command post security platoon which performs

security functions for the headquarters battalion.

c A division band which provides band support for the entire division.

d A company headquarters which provides the necessary security, and limited logistics support of the company.

e A sensor control and management platoon (SCAMP) which provides control and management of remote sensors and surveillance equipment, inspects and maintains sensor surveillance equipment, stocks sensor devices for anticipated requirements, prepares sensors for employment, provides sensor employment squads and teams as required, provides sensor training, and conducts sensor testing as required.

2 Command and Control (Company)

a Command and Staff.--The company commander and his small staff direct and control all matters pertaining to the logistic support, and security of the company.

b Communications.--Internal communications are limited to telephone and messenger service.

c Intelligence.--Not applicable.

3 Firepower.--Firepower available to the company commander is represented by a command post security platoon augmented by personnel from the division band, both armed with light infantry weapons and capable of defending the division headquarters against infiltration by small groups of the enemy.

4 Mobility.--The basic means of ground mobility of the company is by foot. All elements are helicopter transportable and are compatible with other means of transportation (amphibious vehicle, motor transport, fixed-wing aircraft, and ships).

5 Logistics.--Principal logistic support for the company is provided by the service company, headquarters battalion.

(c) Concept of Employment

1 The company headquarters is employed primarily to provide internal administration, logistics, security, and working space facilities for the company. The physical layout, support, and displacements incident to the battalion headquarters are directed toward providing the battalion commander and his staff with the most effective means of directing and controlling the battalion.

2 The security unit of this company functions in an operational role within the entire battalion and not the company itself and is normally employed in support of the tactically disposed headquarters battalion.

3 The band unit of this company functions either in an administrative role in support of the entire division or in an operational role within the entire battalion and not the company itself, and is normally employed in support of the tactically disposed headquarters bat-

talion.

4 The sensor platoon will establish the capability for remote sensor surveillance employment in amphibious operations and support contingency operations, and will conduct sensor surveillance training and testing as required. SCAMP will be established at the division and function under the staff cognizance of the assistant chief of staff, G-2. The platoon headquarters is capable of operating a tactical surveillance center (TSC) at division level. Sensor employment squads are utilized to support infantry regiments with sensor employment teams (SET) functioning in support of subordinate infantry battalions.

5 The major items of equipment are shown below.

HEADQUARTERS COMPANY, HEADQUARTERS BATTALION

10	Detecting Set, Seismic Intrusion, AN/PSR-1A
1	Ground Sensor Set, Unattended
6	Radar Set, (LBSR) AN/PPS-15 (V) 2
1	Radiac Computer Indicator, CP95A/PD
2	Radiac Set, AN/PDR-56G
40	Radio Frequency Monitor Set, Portable AN/USQ-46A
4	Radio Set, Control Group, AN/GRA-39A
3	Radio Set, AN/GRC-160
12	Radio Set, AN/PRC-77
20	Recorder, Signal Data, RO-376A/USQ
12	Repeater Set, Radio, AN/GRQ-16(V)1
40	Repeater Set, Radio, IGSS, AN/GRQ-21
3	Sensor, Monitoring, Central AN/USQ-66(V)
1	Shelter, Elec. Equip, S-126A/G
1	Shelter, Electronics Main. Spt, AN/GRM-86
3	Air Conditiner, MCS, Vertical, 60Hz, 18,000BTU, A/E, 32C-17
1	Air Conditiner, MC, Std, Skd-Mtd, A/E, 32C-39
4	Photo Interpretation Set, Team
1	Photo Interpretation Set, Unit
1	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
4	Machine Gun, 7.62mm, M60
2	Telescope, Observation, W/E, M49

(d) Administrative Capabilities. None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a All elements of the company are capable of providing organizational maintenance (first echelon) on all assigned equipment.

b Organizational maintenance (second echelon) is provided by the service company, headquarters battalion, on all battalion engineer, motor transport, and ordnance (less fire control) materiel.

c Capable of organizational maintenance (second echelon) on all sensor/sensor associated equipment authorized to the sensor control and management platoon.

d Second and third echelon maintenance on organic communications-electronic equipment, less sensor and sensor related equipment, will be provided by communications company, headquarters battalion.

2 Medical.--The battalion medical section provides for emergency treatment and preparation for evacuation by external means of all casualties within the battalion requiring hospitalization. The medical section is capable of operating a field dispensary for treatment of minor illnesses and injuries. It also exercises technical supervision of measures for the prevention and control of disease.

3 Transportation

a The company has no organic motor transportation capability.

b Necessary vehicular transportation support is normally provided by the service company, headquarters battalion.

4 Supply

a The battalion receives supplies from division service elements and provides for distribution within the battalion.

b The company headquarters receives supplies for internal support of the headquarters company and arranges for distribution.

5 Food Service

a The company has no organic capability to establish a company dining facility.

b Headquarters battalion either operates a battalion mess or furnishes cooks and equipment to the company from service company, headquarters battalion, for the operation of company mess.

(7) Service Company

(a) Mission.--To provide organic supply, food service, and motor transport support for the headquarters battalion, and to provide reproduction and photographic services support for a Marine division.

(b) Concept of Organization.--The company is organized into a company headquarters containing a reproduction section and photographic section, motor transport platoon, and a service platoon containing a supply section and a dining section.

1 Command and Control.--The company commander exercises command and control of the company.

2 Firepower.--Limited to individual weapons for personal security.

3 Mobility.--Organic capability to displace is provided by the motor transport platoon for the company and headquarters battalion of the Marine division.

4 Communications.--None organic; support is provided by communications company, headquarters battalion of the Marine division.

(c) Concept of Employment.--The company headquarters primarily provides internal logistics, security, and working space facilities for the company. The motor transport and service platoons provide transportation, supply, and food service support for the headquarters battalion of the division while the battalion is employed in support of combat operations of division units or elements of the MAF. The major items of equipment are shown below.

SERVICE COMPANY, HEADQUARTERS BATTALION

2	Air Conditioner, MCS, Horizontal, 60Hz, 9,000 BTU, MC9HAL6-208
8	Air Conditioner, MCS, Vertical, 60Hz, 18,000 BTU, A/E, 32C-17
3	Air Conditioner, MC, Standard, Skd-Mtd, A/E, 32C-39
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M12lAl
1	Lightweight Reproduction Facility, MARDIV
1	Photographic System, Combat-non aerial
1	Reproduction Equipment Set, Topographic, Trlr Mtd.
2	Tactical Intelligence Imagery Processor
1	Torch Outfit, Cutting and Welding
1	Cleaner, Steam Pressure Jet, Trlr-Mtd, JOM-1
39	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
7	Trailer, Cargo, 3/4T, 2-Whl, M101Al
10	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
3	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
1	Truck, Ambulance, 1/4T, 4x4, M718A1
10	Truck, Cargo, 1-1/4T, 4x4, M880
14	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
3	Truck, Cargo, 5T, 6x6, M54A2C
2	Truck, Tank, Fuel Servicing, 1,200 Gal, 2-1/2T,6x6, w/Wn, M49A2C
49	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
6	Machine Gun, Cal.50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60

(d) Administrative Capability.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first echelon) maintenance on all authorized equipment. Capable of providing organizational (second echelon) maintenance of motor transport and ordnance equipment authorized the battalion.

b Support.--None.

2 Supply.--The company operates the organic supply account for the battalion.

3 Medical.--None organic; support is provided by headquarters company of the Marine division.

4 Transportation.--Organic capability provided by the motor transport platoon.

5 Food Service.--Organic capability provided for all of headquarters battalion by the dining section of the service platoon.

(8) Division Headquarters

(a) Mission.--To direct and coordinate the operations of the division.

(b) Administrative Capabilities.--Not capable of self-administration.

(c) Logistical Capabilities.--Not capable of logistical support.

(9) Military Police Company

(a) Mission.--To provide beach and traffic control, prisoner-of-war stockade guard, general guard duty, and local security for a Marine division.

(b) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(c) Logistical Capabilities.--Capable of organizational maintenance (first echelon) on all materiel authorized the company. Second and third echelon maintenance of organic communications-electronic equipment will be provided by communication company, headquarters battalion. The major items of equipment are shown below.

MILITARY POLICE COMPANY, HEADQUARTERS BATTALION

3	Radio Set, Control Group, AN/GRA-39A
7	Radio Set, AN/GRC-160
6	Radio Set, AN/MRC-109
17	Radio Set, AN/PRC-77
6	Delineation Equipment
1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
4	Truck, Cargo, 1-1/4T, 4x4, M880
1	Truck, Utility, 1/4T, 4x4, M151A2
4	Machine Gun, 7.62mm, M60
4	Night Vision Sight, Individual Served Weapon, AN/PVS-4
2	Revolver, Cal.38, S&W, Rnd Butt, 2-inch Barrel, M10
6	Shotgun, 12 Ga, M870/MK1

(10) Communication Company

(a) Mission.--To install, operate, and maintain the communication systems for a Marine division headquarters.

(b) Tasks

1 Install, operate, and maintain communication center facilities for the division headquarters.

2 Maintain radio stations on command and control, administrative, logistics, and other radio nets as required.

3 Install, operate, and maintain switchboard and telephone services for the division headquarters.

4 Install, operate, and maintain multichannel radio terminals for support of internal division communication links as required.

5 Provide communication support for the division naval gunfire officer, division air officer, and division FSCC.

(c) Concept of Organization.--The division communication company is organized into functional groupings to provide for:

1 A company headquarters which directs and coordinates the actions of the entire company.

2 Six platoons organized along functional lines tailored to support the primary mission and tasks listed above.

(d) Concept of Employment.--The division communication company will furnish communications for the division CP, alternate division CP, and the administrative CP. Multichannel radio will be the primary means of communications with major subordinate units. Duplicate facilities will be maintained at the division CP and alternate CP which will provide multichannel communications to the three infantry regiments, division service battalion, direct air support center (DASC), and between the division CP and alternate CP. Wire communications will not normally be installed to major subordinate units but may be installed to separate battalions if located within approximately 1 mile of the division CP; otherwise wire service will be restricted to internal CP installations for local telephone, teletype, and multichannel lines. Only minimum continuity of communications can be provided during echeloned displacement of the division CP. The major items of equipment are shown on the following page.

(e) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(f) Logistical Capabilities.--Capable of organizational maintenance (first echelon) on all materiel authorized the company; organizational maintenance (second echelon) on engineer, motor transport, and electronic equipment; provide intermediate (third echelon) maintenance on communications-electronic equipment less radar, test equipment, and sensor/sensor related equipment organic to headquarters battalion. Maintenance capability for cryptographic equipment is contained in MCO 4408.2D.

(11) Truck Company

(a) Mission.--To provide the Marine division with sufficient general support motor transport to produce the initial logistic support necessary to conduct limited tactical mobility.

(b) Concept of Organization.--The truck company consists of a company headquarters, operations section, three truck platoons containing two truck sections each, a maintenance platoon, and a communication section.

COMMUNICATION COMPANY, HEADQUARTERS BATTALION

2	Central Computer Group, AN/TYA-5, TAOC
1	Central Office, Telephone, Auto, 300 lines, AN/TTC-38(V)1
2	Communication Central, AN/MRC-87A
2	Communication Central, AN/TGG-37(V)
5	Communication Central, AN/TSC-15
1	Control Central Communication Technical, AN/TSQ-84
25	Control Radio Set, AN/GRA-6
1	Data Communications Terminal, AN/TYC-5A(V)
18	Radio Set, Control Group, AN/GRA-39A
15	Radio Set, Trk-Mtd, AN/MRC-83A
6	Radio Set, AN/MRC-110
15	Radio Set, AN/MRC-123
16	Radio Set, AN/PRC-47
8	Radio Set, AN/PRC-75A
15	Radio Set, AN/PRC-77
26	Radio Terminal Set, AN/MRC-135
8	Radio Terminal Set, AN/TRC-166
6	Receiving Set, Radio, AN/GRR-17
2	Recorder Repro Set, Sound, AN/UNH-3A
2	Shelter, Elec. Equip, S-126A/G
2	Shelter, Electronics Main Spt. AN/GRM-86
2	Shop, Electronic, AN/GRM-94
9	Switchboard, Telephone, Manual, SB-22/PT
7	Switchboard, Telephone, Automatic, SB-3614 (V) TT
8	Teletypewriter Set, AN/GGC-3-A
28	Terminal, Telephone-Telegraph, TH-85A/GCT
1	Air Conditioner, MCS, Horizontal, 60Hz, 9,000 BTU, MC9HAL6-208
2	Air Conditioner, MCS, Horizontal, 60Hz, 18,000 BTU, MC18HA6-208
4	Air Conditioner, MCS, Vertical, 60Hz, 18,000 BTU, A/E, 32C-17
3	Air Conditioner, MCS, Vertical, 60Hz, 36,000 BTU, A/E, 32C-24
2	Air Conditioner, MCS, Skd-Mtd, A/E, 32C-39
5	Frequency Converter, Solid State, 10kW, 60-400Hz,
2	Frequency Converter, Solid State, 4Kw, 60-400Hz, CV-3231/U
13	Generator Set, 3kW, 60Hz, Skd-Mtd, MEP-016A
9	Generator Set, 3kW, 400Hz, Skd-Mtd, MEP-021A
2	Generator Set, 10kW, 60Hz, Skd-Mtd, MEP-003A
4	Generator Set, 10kW, 400Hz, Skd-Mtd, MEP-112A
4	Generator Set, 30kW, 60Hz, Skd-Mtd, MEP-005A
2	Generator Set, 30kW, 400Hz, Skd-Mtd, MEP-114A
1	Generator Set, 60kW, 60Hz, Skd-Mtd, MEP-006A
1	Generator Set, 100kW, 60Hz, Skd-Mtd, MEP-007A
1	Light Set, General Illum, Lg.
7	Chassis, Trailer, GP, 3-1/2T, 2-Whl, M353
17	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
18	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
18	Trailer, Flatbed, 3/4T, 2-Whl, M762
2	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
10	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
19	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
1	Machine Gun, 7.62mm, M60

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited

to individual and automatic weapons for security.

3 Mobility.--Possesses organic capability to accomplish displacement.

(c) Concept of Employment.--The company provides a pool of transportation support for the Marine division. It is capable of transporting the assault elements of two infantry battalions simultaneously. Truck platoons are structured to be attached to or placed in support of infantry regiments. The truck platoons are capable of sustained operations on a 24-hour basis. The major items of equipment are shown below.

TRUCK COMPANY, HEADQUARTERS BATTALION

1	Communication Central, AN/MRC-87A
1	Radio Set, Control Group, AN/GRA-39a
2	Radio Set, AN/GRC-160
4	Radio Set, AN/MRC-109
4	Radio Set, AN/PRC-77
5	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
57	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
13	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
1	Truck, Cargo, 1-1/2T, 4x4, M880
100	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
3	Truck, Tank, Fuel Servicing, 1,200 Gal, 2-1/2T, 6x6, w/Wn, M49A2C
12	Truck, Utility, 1/4T, M151A2
3	Truck, Wrecker, 5T, 6x6, M543A2
30	Machine Gun, Cal.50, Browning, Hb Flexible, M2
14	Machine Gun, 7.62mm, M60
5	Night Vision Sight, Crew Served Weapon, AN/TVS-5

(d) Administrative Capability.--None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first echelon) maintenance on all assigned equipment. Organizational (second echelon) maintenance on all assigned equipment is provided by the service company. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--None organic; support is provided by the service company.

3 Medical.--None organic; support is provided by the headquarters company.

4 Transportation.--Capable of providing organic motor transport incident to the accomplishment of the company's primary mission.

5 Food Service.--None organic; support is provided by

the service company.

b. Infantry Regiment

(1) Mission.--To locate, close with, and destroy the enemy by fire and maneuver or to repel his assault by fire and close combat.

(2) Concept of Organization

(a) The infantry regiment consists of a headquarters company and three infantry battalions. The infantry battalions are the basic tactical units with which the regiment accomplishes its mission. When combined with other combat support and combat service support units, it forms a regimental landing team (RLT). (See Figure (2-3)

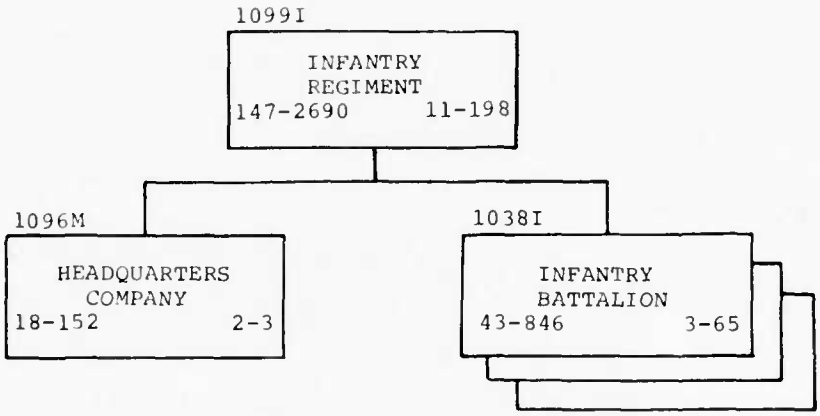


Figure 2-3.--Infantry Regiment.

(b) Command and Control

1 Command and Staff.--Command and staff functions for the regiment are exercised through a compact operational command group consisting of the commander and an executive staff. The staff is capable of integrating the efforts of attached and supporting units. The staff can support an alternate command post during displacement.

2 Communications.--Within the regiment there is an organic capability of providing reliable contact links between all levels of command for continuous control of subordinate units as necessary and for communications to higher headquarters by radio. The organic communications permit independent operations. Communications are provided by higher headquarters for the establishment of radio relay terminals at the regimental command posts, and by the regiment at each of the subordinate battalion command posts to provide multichannel voice and teletype communications between these headquarters.

3 Intelligence.--The regimental headquarters directs

the collection effort of subordinate and supporting units, forwards intelligence information to higher echelons, and disseminates processed intelligence. It is capable of limited processing of information collected.

(c) Firepower.--There is no fire support element at the regimental level.

(d) Mobility.--The basic means of ground mobility of the regiment is by foot, supplemented by small, lightweight vehicles for the transportation of electronics equipment, weapons, and limited amounts of ammunition and supplies. All elements are helicopter transportable and are compatible with other means of transportation (amphibious vehicle, motor transport, fixed-wing aircraft, and ships).

(e) Logistics.--Logistic support is provided by service support elements of the division to the regimental headquarters company and infantry battalions.

(3) Concept of Employment.--The infantry regiment is the major element of close combat power of the Marine division. The regiment, with appropriate attachments, is capable of independent, sustained operations.

(4) Administrative Capabilities

(a) Subordinate elements of the regiment are capable of self-administration.

(b) The regiment is responsive to an administrative concept in which fiscal, personnel, supply, and maintenance functions and transactions usually proceed directly from subordinate elements to the division.

(5) Logistical Capabilities

(a) Maintenance.--There is no regimental level capability of providing maintenance for subordinate elements. Subordinate elements are capable of first and second echelon organizational maintenance of all equipment authorized (less fire control instruments).

(b) Medical

1 The chain of medical evacuation does not include the regimental echelon. The regimental medical section provides technical supervision and coordination of all medical activity within the regiment.

2 The medical platoon of each subordinate battalion is capable of administering emergency treatment and preparation for evacuation, by means provided from external sources, of casualties requiring hospitalization.

(c) Transportation

1 Subordinate units of the regiment are equipped with a minimum number of vehicles to support combat actions. Vehicular transportation consists of small, lightweight, general purpose vehicles, all helicopter transportable.

2 When required, a light helicopter is provided to the regimental commander on a daily basis for command, liaison, and obser-

vation purposes.

(d) Supply.--The regiment does not provide supply support to subordinate elements. Supplies are provided by supporting division service elements direct to using units, including the headquarters company of the regiment.

(e) Food Service.--The headquarters company and subordinate battalions of the regiment are capable of self-feeding in garrison or in the field, as practicable.

(6) Headquarters Company

(a) Mission.--To provide the regimental commander with the facilities for effective command and control.

(b) Concept of Organization

1 The company is organized into functional groupings to provide for:

a A regimental headquarters which directs and coordinates the actions of the entire regiment.

b A communication platoon which provides the necessary communication links for exercising control and coordination.

c A company headquarters which provides the necessary administrative, security, and logistic support of the company.

d A scout-sniper platoon to provide a specially trained and equipped unit capable of rendering sniper support in combat operations, by providing personnel trained to kill individual enemy soldiers with single rifle shots from positions of concealment.

2 Command and Control (Company)

a Command and Staff.--The company commander and his small staff direct and control all matters pertaining to the administration, logistics, and security of the company.

b Communications.--Internal communications are limited to telephone and messenger service.

c Intelligence.--Not applicable.

3 Firepower

a There is no fire support element at regimental level.

b Firepower available to the company commander is represented by a small security section, armed with light infantry weapons, capable of defending the regimental headquarters against infiltration by small groups of the enemy.

4 Mobility.--The basic means of ground mobility of

the company is by foot, supplemented by organic, small, lightweight vehicles for the transportation of electronic equipment, a limited number of the headquarters group, and limited amounts of internal supplies and equipment. All elements are helicopter transportable and are compatible with other means of transportation (amphibious vehicle, motor transport, fixed-wing aircraft, and ships).

5 Logistics.--Logistic support of the company is provided through internal distribution of supplies, simple supply procedures, and limited organizational maintenance. Company service platoon carries authorized allowance only. Additional supplies, maintenance, medical support, and transportation are provided by service support units of the division.

(c) Concept of Employment.--The company headquarters is employed primarily to provide internal administration, logistics, security, and working space facilities for the company. The physical layout, support, and displacements incident to the regimental headquarters are directed toward providing the regimental commander and his staff with the most effective means for directing and controlling the regiment. The scout-sniper platoon can be employed as a unit or broken down into squads and teams for attachment to any sized tactical unit within the regiment. Individual sniper teams of two men are the smallest integral unit of the platoon. Each team is equipped with one high-powered sniper rifle with a telescopic sight and a wide angle binocular, which is used for observing and seeking targets for the other member of the team. Team members relieve each other in performing the duties of sniper and observer.

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logistical Capabilities

1 Maintenance

a All elements of the company are capable of providing orgainzational maintenance (first echelon) on assigned equipment.

b Organizational maintenance (second echelon) is provided by company headquarters on company motor transport and ordnance, and communications-electronic equipment.

2 Medical.--The medical personnel of the company provide for emergency treatment and preparation for evacuation by external means of all casualties within the company requiring hospitalization. These personnel are capable of operating an aid station for treatment of minor illnesses and injuries, and exercise technical supervision of measures for the prevention and control of disease.

3 Transportation

a Transportation for the headquarters company is provided from a pool of small general purpose vehicles maintained within the company headquarters. Vehicles are allocated within the company for the purpose of providing transportation for command, staff and liaison personnel, communication equipment, limited medical evacuation, and internal supply distribution.

b When required, a light helicopter is provided to the regimental commander, on a daily basis, for command, liaison, and observation purposes.

4 Supply.--The company receives supplies from supporting division service elements and provides for distribution within the company.

5 Food Service.--Company headquarters operates a dining facility for the company in garrison, or in the field, as practicable.

(f) Major Items of Equipment.--The major items of equipment are shown below

HEADQUARTERS COMPANY, INFANTRY REGIMENT

2	Communication Central, AN/MRC-87A
8	Control Radio Set, AN/GRA-6
1	Radiac Computer Indicator, CP95A/PD
2	Radiac Set, AN/PDR-56
12	Radio Set, Control Group, AM/GRA-39A
3	Radio Set, AN/GRC-160
2	Radio Set, TRK MTD, AN/MRC-83A
2	Radio Set, AN/MRC-110
5	Radio Set, AN/PRC-47
2	Radio Set, AN/PRC-75A
10	Radio Set, AN/PRC-77
8	Radio Terminal Set, AN.MRC-135
4	Radio Terminal Set, AN/TRC-166
1	Receiving Set, Radio AN/GRR-17
2	Switchboard, Telephone, Manual, SB-22/PT
3	Switchboard, Telephone, Automatic SB-3614(V) TT
3	Teletypewriter Set, AN/GCC-3-A
1	Tactical Intelligence Imagery Processor
10	Trailer, Amphib, Cargo, 1/4T, 2-Whl, M416
1	Truck, Ambulance, 1/4T, 4x4, M718A1
12	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, 7.62mm, M60
20	Night Vision Goggles, Individual, AN/PVS-5
1	Night Vision Sight, Tripod mtd, AN/TVS-4
2	Night Vision Sight, Individual Served Weapon AN/PVS-4
36	Shotgun, 12 gauge, M870/MK1

c. Infantry Battalion

(1) Mission.--To locate, close with, and detroy the enemy by fire and maneuver, or to repel his assault by fire and close combat.

(2) Concept of Organization

(a) The infantry battalion consists of a headquarters and service company, a weapons company, and three rifle companies. The rifle companies are the basic tactical units with which the battalion accomplishes its mission. (See Figure 2-4). When the battalion is combined with combat support and combat service units, it forms a battalion landing team (BLT).

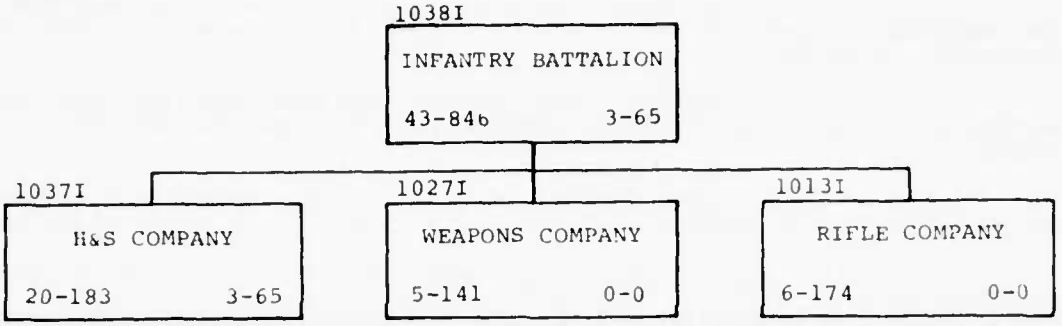


Figure 2-4.--Infantry Battalion.

(b) Command and Control

1 Command and Staff.--Command and staff functions are exercised through a compact operational command group consisting of the commander and executive staff. The staff is capable of integrating the efforts of attached and supporting units, utilizing representatives of these elements provided for this purpose. The staff is capable of supporting an alternate command post during displacement. All fires in support of the battalion are coordinated under the staff cognizance of the operations officer. Advice in fire support coordination matters is provided by liaison personnel from supporting or attached units.

2 Communications.--Communication means are provided to maintain reliable and continuous communication channels to subordinate or attached units or to higher headquarters. The primary method of communications to subordinate units is by voice radio. Communications to higher and adjacent units is by voice radio, continuous wave (CW), teletype, and when furnished by higher headquarters, radio relay. Alternate methods of communications are by messenger (helicopter, vehicle, foot), wire, and visual.

3 Intelligence.--Organized to provide surveillance, reconnaissance, and target acquisition commensurate with fire and maneuver capabilities of the battalion, and responsive to the reaction time available to the commander. Information, collected by subordinate units as an integral by-product of their normal combat functions, is translated rapidly and informally into intelligence in the formulation of routine command decisions. The organic intelligence section of battalion headquarters is capable of limited intelligence processing. Intelligence data collected is forwarded to higher echelons.

(c) Firepower.--In addition to individual weapons, the organic battalion firepower consists of medium mortars, direct fire assault/antitank weapons, Dragon antitank weapons, and flame weapons. A direct support artillery battery is normally in support of the battalion to provide essential heavier fire support.

(d) Mobility.--The basic means of mobility is by foot, supplemented by use of organic, small, lightweight vehicles for the transportation of electronics equipment, weapons, and limited amounts of ammunition

and supplies. All elements are helicopter transportable and are compatible with other means of transportation (amphibian vehicle, motor transport, fixed-wing aircraft, and ships).

(e) Logistics.--Logistical capability is compatible with the mobility and combat power of the battalion. The battalion is structured on the basis of unit distribution of supplies to and within the battalion.

(3) Concept of Employment.--The battalion is the basic tactical unit of ground combat power and the nucleus of the battalion landing team (BLT). As a balanced firepower and maneuver team, it attacks and destroys all targets in the assigned area of responsibility. With attachments, it is capable of independent sustained operations for periods of several days as permitted by combat conditions. It is capable of conducting a coordinated deliberate defense.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance.--Performs organizational maintenance (first echelon) of all materiel authorized the battalion, and organizational maintenance (second echelon) of motor transport, ordnance (less fire control instruments), and electronics materiel authorized the battalion.

(b) Medical.--Provides emergency treatment and preparation for evacuation by external means of all casualties requiring hospitalization; provides a battalion aid station for treatment of minor illnesses and injuries and exercises technical supervision of measures for the prevention and control of disease.

(c) Transportation

1 Transportation means organic to the battalion consists of small, general purpose, helicopter transportable vehicles for command, communication, and medical.

2 When required, a light helicopter is provided to the battalion commander on a daily basis for command, liaison, and observation purposes.

(d) Supply.--Capable of organic supply functions. It carries limited resupply for the companies preloaded on platform vehicles.

(e) Food Service.--Capabale of operating a battalion dining facility in garrison or in the field, as practicable. When required, it furnishes equipment and cooks to rifle companies for the operation of a limited number of company dining facilities.

(6) Headquarters and Service (H&S) Company

(a) Mission.--To provide the battalion commander with the facilities for effective comand control and to provide limited amounts of service support for subordinate elements of the battalion.

(b) Concept of Organization.--(See Figure 2-5.)

1 Organized into functional groupings to provide for:

a A battalion headquarters which directs and coordinates the actions of the entire battalion.

b A communication platoon which provides the communication channels necessary in exercising control and coordination of the battalion.

c A surveillance and target acquisition platoon to provide a capability to collect limited amounts of information and to detect personnel and vehicular targets during conditions of reduced visibility and darkness.

d Service support elements which provide limited service support to the battalion.

e A company headquarters which provides the necessary administration, security, and logistic support of the company.

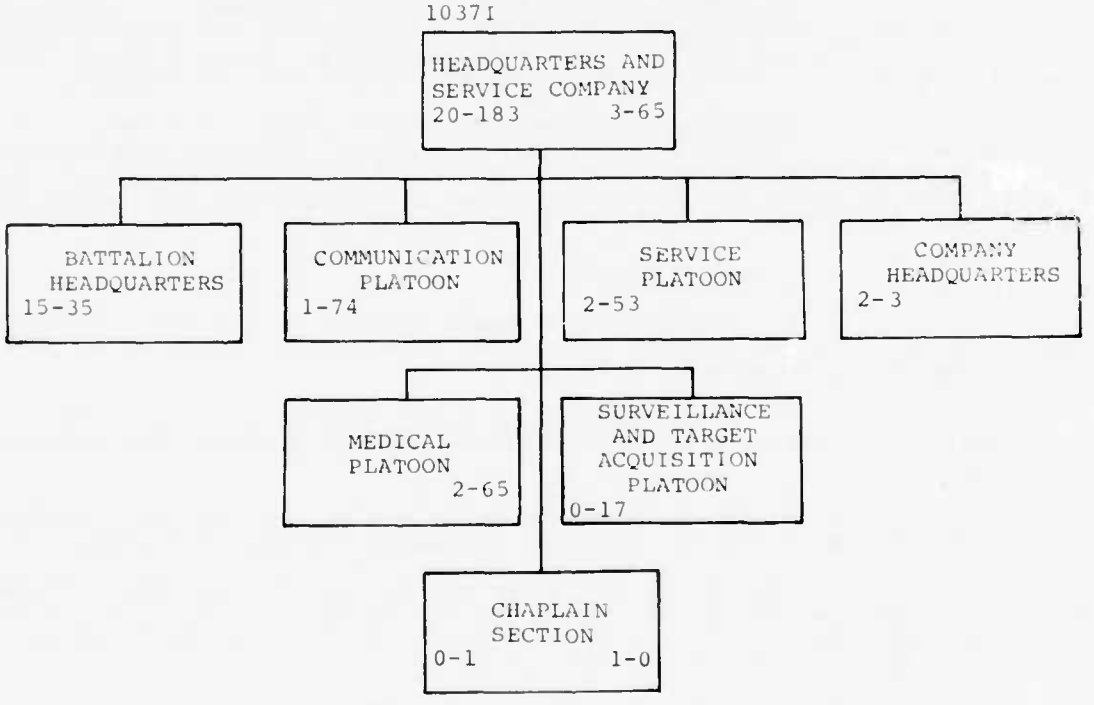


Figure 2-5.--Headquarters and Service Company.

2 Command and Control

a Command and Staff.--The company commander and his small staff direct and control all matters pertaining to the adminis-

tration, logistic support, and security of the company.

b Communications.--Internal communications are limited to telephone and messenger service.

c Intelligence.--Limited information collection, processing, and dissemination capabilities exist within the surveillance and target acquisition platoon and S-2 section of the battalion headquarters.

3 Firepower.--Firepower available to the company commander is represented by security elements, and armed with light infantry weapons, capable of defending the battalion headquarters against infiltration by small groups of the enemy.

4 Mobility.--The basic means of ground mobility for the company is by foot, supplemented by organic, small, lightweight vehicles for the transportation of electronic equipment, a limited number of the headquarters group, and supplies and equipment necessary to sustain the company on a daily basis. All elements are helicopter transportable and are compatible with other means of transportation (amphibian vehicle, motor transport, fixed-wing aircraft, and ships).

5 Logistics.--Logistical support for the company is provided by battalion level service support elements.

(c) Concept of Employment.--The company headquarters is employed primarily to provide internal logistics, security, and working space facilities for the company. The physical layout, support, and displacements incident to the battalion headquarters are directed toward providing the battalion commander and his staff with the most effective means for directing and controlling the battalion. The communications, medical, and service units of this company function in operational roles within the entire battalion and not the company itself and are normally employed in support of the tactically disposed rifle companies. The major items of equipment are shown on the following page.

(d) Administrative Capabilities.--None. Centralized under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a All elements of the company are capable of providing organizational maintenance (first echelon) on all assigned equipment.

b Organizational maintenance (second echelon) is provided by the service platoon on all battalion motor transport and ordnance (less fire control instruments), by the communication platoon on all battalion communication equipment, and by the S-2 section on battalion surveillance radars.

HEADQUARTERS AND SERVICE COMPANY, INFANTRY BATTALION

1	Communication Central, AN/MRC-87A
12	Control Radio Set, AN/GRA-6
25	Detecting Set, Seismic Intrusion AN/PSR-1A
1	Heliport Lighting Set, Portable
8	Radar Set, (LBSR) AN/PPS-15 (V) 2
2	Radar Set, AN/PPS-6
1	Radiac Computer Indicator
15	Radio Set, Control Group, AN/GRA-39A
11	Radio Set, AN/GRC-160
2	Radio Set, Trk-Mtd, AN/MRC-83A
2	Radio Set, AN/MRC-109
5	Radio Set, AN/PRC-47
5	Radio Set, AN/PRC-75A
58	Radio Set, AN/PRC-77
2	Radio Set, AN/VRC-47
2	Radio Terminal Set, AN/MRC-135
2	Radio Terminal Set, AN/TRC-166
1	Receiving Set, Radio AN/GRR-17
3	Switchboard, Telephone, Manual, SB-22/PT
1	Teletypewriter Set, AN/GGC-3-A
2	Transponder Set, Forward Air Control AN/PPN-18
1	Decontaminating Apparataus, PD, Skd-Mtd, 500 Gal, M121A1
1	Tactical Intelligence Imagery Processor
22	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
1	Truck, Ambulance, 1/4T, 4x4, M718A1
2	Truck, Cargo, 1-1/4T, 4x4, M880
3	Truck, Cargo, 1-1/4T, 6x6, w/Wn, M561
22	Truck, Platform, Utility, 1/2T, 4x4, M274A5
24	Truck, Utility, 1/4T, 4x4, M151A2
17	Launcher, Grenade, 40mm, M203
5	Machine Gun, 7.62, M60
60	Night Vision Goggles, Individual, AN/PVS-5
4	Night Vision Sight, Tripod Mtd, AN/TVS-4
4	Night Vision Sight, Individual Served Weapon, AN/PVS-4
10	Telescope, Observation, W/E, M49

2 Medical.--The battalion medical platoon provides for emergency treatment and preparation for evacuation by external means of all casualties within the battalion requiring hospitalization. The medical platoon is capable of operating an aid station for treatment of minor illnesses and injuries. It also exercises technical supervision of measures for the prevention and control of disease.

3 Transportation.--Transportation for the headquarters and service company is provided from a pool of small general purpose vehicles maintained within the service platoon. Vehicles are allocated within the company for the purpose of providing transportation for command, staff, and liaison personnel, communication equipment, crew-served weapons and their basic load of ammunition, limited emergency medical evacuation and supply distribution within the battalion headquarters and to rifle companies.

4 Supply

a The service platoon receives supplies from division service elements and provides for distribution within the battalion.

b The company headquarters receives supplies for internal support of the headquarters and service company and provides for distribution.

5 Food Service

a The service platoon operates a dining facility for the entire battalion while in garrison and in the field, as practicable.

b When required, the service platoon furnishes cooks and equipment to rifle companies for the operation of a limited number of company dining facilities.

(7) Rifle Company

(a) Primary Mission.--To locate, close with, and destroy the enemy by fire and maneuver or to repel his assault by fire and close combat.

(b) Concept of Organization.--(See Figure 2-6.)

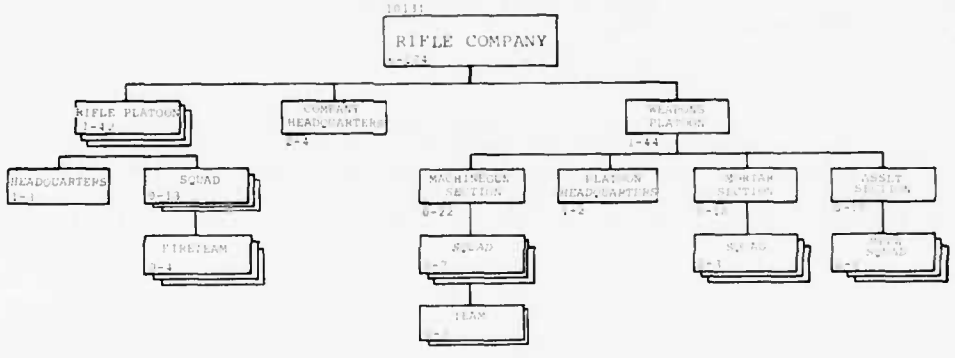


Figure 2-6.--Rifle Company.

1 The rifle company consists of a company headquarters, a weapons platoon and three rifle platoons.

2 Command and Control

a Command and Staff

(1) A company commander with his small company headquarters performs command and staff functions necessary for efficient planning, direction and supervision, in execution of assigned missions.

(2) When the company forms the basic unit of a task groupment, the supporting unit commanders will have additional functions as advisors in their supporting roles to the company commander.

b Communications

(1) Communication equipment provided by battalion.

(2) When equipped, capable of effecting rapid and reliable communications between the company headquarters and subordinate and higher headquarters.

(3) Primary method of communications is voice radio with alternate means by messenger, wire, and visual devices.

(4) Company voice radio net links with the rifle and weapons platoon headquarters.

c Intelligence

(1) Combat intelligence at the company level is inseparably linked to combat operations. Processing is limited to expediting the transmission of information to the battalion command post.

(2) The rifle company collects information by direct observation, patrolling, and uncovering enemy personnel and materiel. There is no organic specialized reconnaissance or surveillance capability within the rifle company.

3 Firepower

a The rifle platoons possess a family of individual point fire weapons capable of effective semiautomatic and automatic fire and an individual area type weapon system. In addition, the rifle platoons possess a limited capability for attacking fortified positions and close-in defense against armor by use of hand held anti-tank/assault weapons.

b The weapons platoon possesses:

(1) Machine guns to provide supporting fires for maneuvering elements in the offense and for the support of immediate and deliberate defenses.

(2) Assault/anti-tank weapons to provide effective assault fires against enemy fortified areas and obstacles and close-in anti-tank fires.

(3) Multi-shot portable flame weapons (MPFW) to provide flame capability at the company level.

(4) Demolitions for destruction and reduction of fortified positions and obstacles.

4 Mobility.--The rifle company is helicopter transportable. Its organic capability to displace is baded on foot mobility.

5 Logistics.--A small supply section carries a basic load and handles the internal distribution of supplies for the company.

Supply support of the company is by unit distribution with transportation and medical support provided by battalion or other external sources.

(c) Concept of Employment

1 The company normally operates as a maneuver element of the infantry battalion. It can be employed independently for short periods, and with the attachment of supporting elements, may form a task unit for special operations.

2 In the attack the rifle elements of the company, assisted by organic and/or external supporting fires, maneuver to a position from which they can close with and defeat the enemy. Effects of enemy fires will be minimized through surprise, rapidity of movement, dispersion, and use of supporting fires.

3 In the defense, the rifle company defends as part of a larger force to deny a vital area, to protect a flank, to gain time, to economize forces, or to disorganize and destroy the enemy. The company can operate as part of the mobile defense, position defense, or combination of the two.

4 The major items of equipment are shown below.

RIFLE COMPANY, INFANTRY BATTALION

3	Demolition Equipment, Indiv.
28	Launcher, Grenade 40mm, M203
3	Launcher, Rocket, 66mm,4-Tube, M202A1
8	Machine Gun, 7.62mm, M60
4	Mortar, Infantry, 60mm, M19
6	Night Vision Sight, Individual Served Weapon, AN/PVS-4

(d) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance.--Performs organizational maintenance (first echelon) of authorized materiel.

2 Medical.--Provided by battalion.

3 Transportation.--Provided by battalion.

4 Supply.--The company does not possess a supply stocking capability but is capable of receiving and distributing supplies.

5 Food Service.--When practicable, service platoon of battalion may furnish cooks and equipment for operation of a company dining facility.

(8) Weapons Company

(a) Mission.--To provide medium mortar, and anti-mechanized assault for the infantry battalion and its subordinate elements.

(b) Concept of Organization.--The weapons company consists

of a company headquarters, an 81mm mortar platoon, and a DRAGON platoon. (See Figure 2-7.)

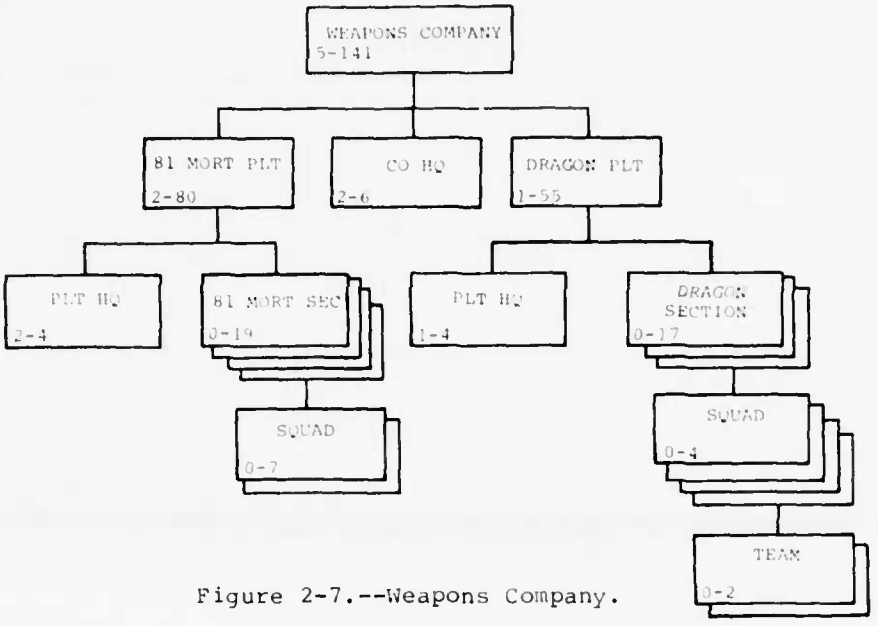


Figure 2-7.--Weapons Company.

1 Weapons Company

a Company headquarters.

b DRAGON platoon.

(1) Platoon headquarters.

(2) Three DRAGON sections of four squads in each section (two teams per section). Although the Dragon may be tactically employed by squads, there is no squad leader in the T/O. If required, the section leader designates a squad leader for tactical employment.

c 81mm mortar platoon.

(1) Platoon headquarters.

(2) Four 81mm mortar sections with an FO and two 81mm mortar squads in each section.

2 Command and Control

a Command and Staff

(1) Subordinate elements of the company are employed in support of the battalion or attached, as directed by the battalion commander.

(2) A company commander with a company headquarters performs the functions necessary for efficient planning, direc-

tion, and supervision in execution of assigned missions. The company commander functions as the fire support coordinator (FSC) for the battalion commander.

b Communications

(1) Communication equipment is provided by the battalion.

(2) The primary means of communication for subordinate elements of the company is voice radio supplemented by wire, messenger, and visual signals.

(3) Subordinate elements of the company are capable of using voice radio communications internally, with the battalion command post and with supported units when equipped with communication equipment provided by the battalion.

c Intelligence

(1) There is no specialized reconnaissance or surveillance capability within the weapons company.

(2) The subordinate elements of the company collect information in the course of operations by direct observation and from enemy personnel and materiel. Processing is limited to expediting the transmission of information to the battalion command post.

3 Firepower

a The firepower of the weapons company consists of medium mortars, medium and light antimechanized/assault weapons, and individual weapons.

b The 81mm mortar platoon contains eight medium mortars capable of providing indirect fire support.

c The DRAGON platoon contains antitank guided missile systems capable of providing medium antimechanized/assault support to the battalion and its subordinate elements.

4 Mobility.--The basic means of ground mobility for the weapons company is by foot, supplemented by the use of vehicles organic to the battalion for the transportation of weapons and limited amounts of ammunition and supplies. All elements are helicopter transportable and are compatible with other means of transportation (assault amphibian vehicles, fixed-wing aircraft, and ships).

5 Combat Service Support.--The weapons company is capable of movement of a basic load. The internal distribution of supplies to the company is by unit distribution with transportation and medical support provided by battalion or other external sources.

(c) Concept of Employment

1 During operations, the subordinate elements of the weapons company are employed as directed by the battalion commander. The company commander of the weapons company functions as the battalion fire

support coordinator. The weapons company headquarters coordinates service support to the company.

2 The 81mm mortar platoon is normally employed as a unit under centralized control of the battalion commander. When required, the 81mm mortar platoon is capable of providing mortar sections for attachment to rifle companies.

3 The DRAGON platoon is employed under centralized control of the battalion commander, by attachment, or a combination of both, as sections, squads, or teams.

4 The major items of equipment are shown below.

WEAPONS COMPANY, INFANTRY BATTALION

1	Circle, Aiming, M2
3	Demolition Equipment, Indiv.
9	Launcher, Grenade, 40mm, M203
3	Launcher, Rocket, 66mm, 4-Tube, M202A1
6	Machine Gun, 7.62mm, M60
8	Mortar, Infantry, 81mm, W/Mt, M23A3, M29E1

(d) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities.--The weapons company is capable of performing organizational maintenance (first echelon) of all authorized materiel and organizational maintenance (second echelon) of the Dragon weapons system.

d. Artillery Regiment

(1) Missions and Tasks.--To provide artillery support to the Marine division in the amphibious assault and subsequent operations ashore.

(2) Concept of Organization.--The regiment is organized into a headquarters battery and five artillery battalions. (See Figure 2-8.)

(3) Concept of Employment.--The regiment is normally employed in support of the Marine division. The artillery battalions are capable of independent operations. The regiment is capable of exercising tactical fire direction of organic and attached units.

(4) Administrative Capabilities.--Subordinate units are capable of self-administration.

(5) Logistical Capabilities.--The regiment's logistical capabilities are the sum of the individual subordinate unit's capabilities.

(6) Headquarters Battery, Artillery Regiment

(a) Missions and Tasks.--To provide the regimental commander with the facilities for effective command and control of the regiment in the amphibious asssault and subsequent operations ashore.

(b) Concept of Organization.--The battery is organized into functional groupings to provide for:

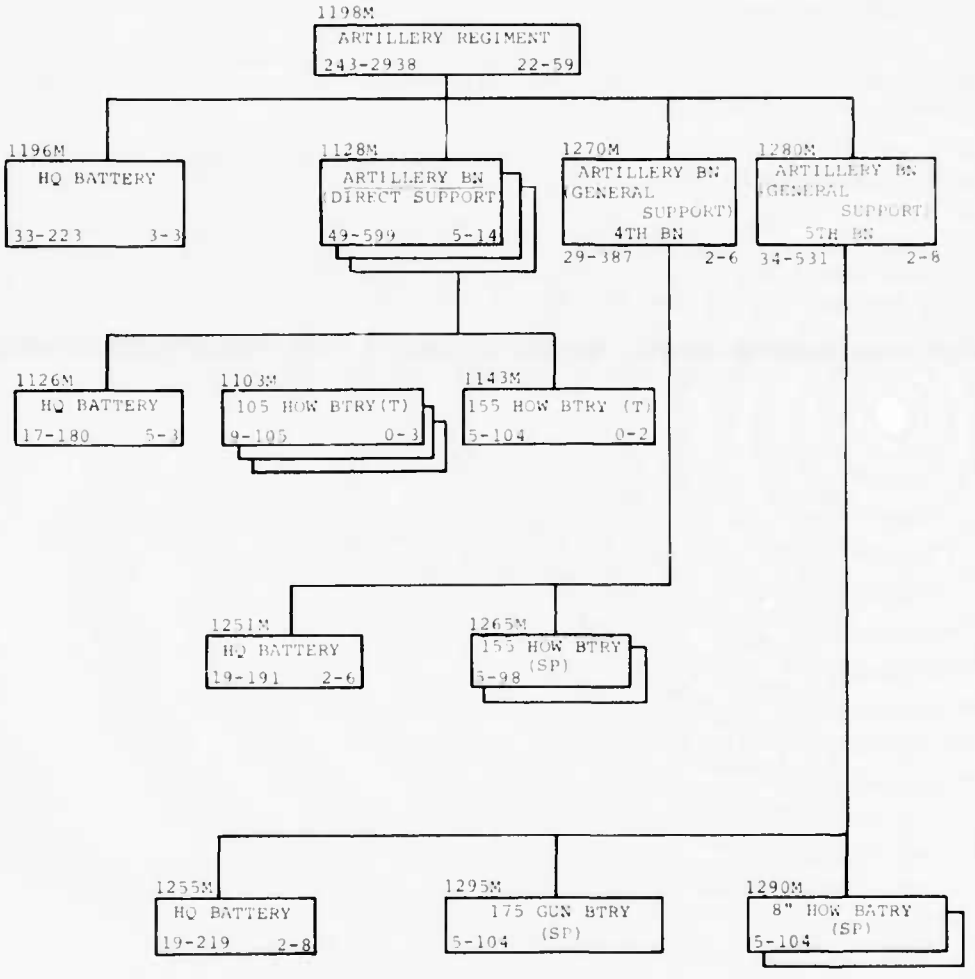


Figure 2-8 ARTILLERY REGIMENT

Figure 2-8.--Artillery Regiment

1 A regimental headquarters for command, direction, and coordination of the actions of the entire regiment, including attached or reinforcing units.

2 An operations platoon which provides the commander the means to direct and coordinate the intelligence and operation activities of the regiment.

3 A communication platoon which provides the necessary communication links for the exercise of command, control, and coordination.

4 A battery headquarters which provides the necessary command, administrative, security, and logistic support of the battery.

(c) Concept of Employment.--The battery operates only with the artillery regiment. Personnel of the battery may be assigned to a subordinate battalion to provide necessary support when the battalion is operating independent of the regiment. The major items of equipment are shown below.

HEADQUARTERS BATTERY, ARTILLERY REGIMENT

2	Communication Central, AN/MRC-87A
3	Distance Measuring Equipment MRA-301
13	Control Radio Set, AN/GRA-6
3	Radar Set, w/TRLR accessory & RVR unit, V-475,AN/MPQ-4A
1	Radiac Computer Indicator, CP95A/PD
16	Radio Set, Control Group, AN/GRA-39A
4	Radio Set, AN/GRC-160
5	Radio Set, Trk Mtd, AN/MRC-83A
2	Radio Set, AN/MRC-109
2	Radio Set, AN/MRC-110
7	Radio Set, AN/PRC-47
2	Radio Set, AN/PRC-75A
16	Radio Set, AN/PRC-77
14	Radio Terminal Set, AN/MRC-135
6	Radio Terminal Set, AN/TRC-166
1	Receiving Set, Radio, AN/GRR-17
6	Switchboard, Telephone, Manual, SB-22/PT
1	Switchboard, Telephone, Cordless Manual, SB-3082 (v) 2/GT
2	Teletypewriter Set, AN/GCC-3-A
14	Generator Set, 3kw, 60hz, skid-mtd 15
28	Generator Set, 3kw, 400hz, skid-mtd, MEP-021A
12	Generator Set, DE, 10kw, 60hz, skid-mtd, PU-669/AG
6	Generator Set, DE, 10kw, 400hz, skid-mtd, PU-670/A
5	Generator Set, 30kw, 60hz, PU-708/G
8	Generator Set, 60kw, 60hz, skid-mtd, PU-712/G
4	Generator Set, 100kw, 60hz, MEP-007A
3	Motor Generator, 2.5kw, 60-400hz, PU-449/U
4	Motor Generator Power Supply, 30kw, JH-32G
2	Surveying Set, Astronomic Azimuth
1	Surveying Set, Field, ArtyBn
1	Theodolite Surveying, T-16
15	Tractor, Full-tracked w/multi-purpose bucket, MC-1150
12	Truck, Forklift, rough terrain, MC-4000

6F

HEADQUARTERS BATTERY, ARTILLERY REGIMENT (continued)

13	Chassis, Trailer, 3-1/2T, M353
3	Semitrailer, low bed, 2-1/2T, 2-Whl, M172A1
11	Trailer, amphib, cargo, 1/4T, 2 Whl, M416
5	Trailer, Cargo, 1-1/2T, 2 Whl, M105A2
39	Trailer, Flatbed, 3/4T, 2 Wwhl, M762
2	Trailer, Tank, Water, 400 gal, M149A1
1	Truck, Ambulance, 1/4T, 4x4, M718A1
2	Truck, Cargo, 1/4T, 6x6, w/winch, M561
13	Truck, Cargo, Dropside, 2-1/2T, 6x6, w/ow, W/PTO M35A2C
1	Truck, Tank, Fuel Servicing, 1200gal, 2-1/2T, 6x6 M49A2C
3	Truck, Tractor, 5T, 6x6, w/o winch, W/PTO
12	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
3	Circle, Aiming M2
2	Computer, Gun Direction M18
10	Launcher, Grenade, 40mm, M203
4	Machine Gun, Cal.50, Browning, H13 Flexible M2
4	Machine Gun, 7.62mm, M60
1	Meteorlogical Station Manual, AN/TMQ-4
6	Mortar, Arty, 107mm, M30
6	Night Vision Goggles, Individual AN/PVS-5
2	Night Vision Sight, Individual Served Weapon AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon AN/TVS-5
2	Radar Chronograph Set, M36 AN/GPS-5
1	Radiosonde Baseline Check Set AM/GMN-1A
1	Radiosonde Recorder AN/TMQ-5C
1	Rawin Set AN/GMD-1A
1	Reproducer, Signal Data AN/GSQ-64

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logistical Capabilities

1 Maintenance.--All elements of the battery are capable of providing organizational maintenance (first and second echelon) on all equipment assigned the battery, and maintenance (third echelon) on field artillery digital automated computer (FADAC) equipment. The countermortar section is capable of providing field maintenance (fourth echelon) on countermortar radar equipment.

2 Medical.--The medical personnel provide for emergency treatment and preparation for evacuation of all casualties within the battery requiring hospitalization. Medical personnel are capable of operating a small field dispensary for treatment of minor illnesses and injuries. The medical personnel exercise technical supervision throughout the regiment of measures for the prevention and control of disease.

3 Transportation.--Transportation for the battery is provided from a pool of general purpose vehicles maintained within the battery for the purpose of providing transportation for command and staff personnel, communication equipment, limited medical evacuation, and internal supply distribution.

4 Supply.--The battery headquarters receives supplies

for internal support of the battery and provides for distribution.

5 Food Service.--The battery headquarters is capable of operating a dining facility for the battery in garrison and in the field, as practicable.

(7) Direct Support Artillery Battalion

(a) Mission and Tasks.--To provide direct support, general support, and reinforcing artillery fires to units of a Marine division in the amphibious assault and subsequent operations ashore.

(b) Concept of Organization.--The battalion is organized into a headquarters battery, three 105mm howitzer batteries, and a 155mm howitzer battery (towed (T)).

(c) Concept of Employment.--The battalion is normally employed in support of an infantry regiment and will normally operate as an integral unit. The howitzer batteries are capable of operating independently of the battalion when provided appropriate service and support personnel from the headquarters battery. The battalion is capable of exercising tactical and technical fire direction of organic attached firing units.

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logistical Capabilities.--The battalion's logistic capabilities are the sum of the individual subordinate unit's capabilities.

(f) Headquarters Battery

1 Missions and Tasks.--To provide the facilities with which the battalion commander directs, controls, and coordinates the tactical operations of the battalion in the amphibious assault and subsequent tactical operation and technical fire direction ashore. To provide limited amounts of appropriate service and support for subordinate elements of the battalion.

2 Concept of Organization.--The battery is organized into functional groupings to provide:

a A battalion headquarters for command, direction, and coordination of actions of the entire battalion, including attached or reinforcing units.

b An operations platoon which provides the commander the means for technical fire direction control of subordinate units, intelligence, observation, survey, and meteorological information to these units and liaison to the supported infantry regiment.

c Naval gunfire liaison and spotting elements for coordination and control and naval gunfire in support of the supported infantry regiment.

d A service platoon for logistics, supply, motor transport, food service, and medical support to the battalion.

e A communication platoon which provides the necessary communications for the exercise of battalion command functions.

f A battery headquarters for command of the battery.

3 Concept of Employment.--The battery operates only with the artillery battalion. Personnel of the battery may be assigned to a firing battery to provide necesary support when the firing battery is operating independent of the battalion. The major items of equipment are shown below.

HEADQUARTERS BATTERY, D/S BATTALION

10	Control Radio Set, AN/GRA-6
1	Radiac Computer Indicator, CP95A/PD
12	Radio Set, Control Group, AN/GRA-39A
6	Radio Set, AN/GRC-160
5	Radio Set, Trk Mtd, AN/MRC-83A
2	Radio Set, AN/MRC-110
8	Radio Set, AN/PRC-47
5	Radio Set, AN/PRC-75A
39	Radio Set, AN/PRC-77
12	Radio Terminal Set, AN/MRC-134
6	Radio Terminal Set, AN/TRC-166
1	Receiving Set Radio, AN/GRR-17
5	Switchboard, Telephone, Manual, SB22/PT
2	Surveying Set, Field Arty Bn.
4	Theodolite Surveying, T-16
7	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
2	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
1	Trailer, Tank, Water, 400 gal, M149A1
1	Truck, Ambulance, 1/4T, 4x4, M718A1
9	Truck, Cargo, 1-1/4T, 6x6, w/winch, M561
3	Truck, Cargo, Dropside, 2-1/2T, 6x6, w/o Winch, w/PTO, M35A2C
1	Truck, Tank, Fuel Servicing, 1200gal, 2-1/2T, 6x6, M49A2C
8	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
2	Circle, Aiming M2
4	Computer, Gun Direction M18
1	Integrated Observation Sys. AN/GSQ-184
10	Launcher, Grenade, 40mm, M203
4	Machine Gun, Cal. 50, Browning, HB Flexible M2
4	Machine Gun, 7.62mm, M60
1	Meteorological Station Manual, AN/TMQ-7
4	Night Vision Sight, Individual Served Weapons, AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon, AN/TVS-28
2	Night Vision Sight, Individual Served Weapon, AN/PVS-4
2	Night Vision Sight, Crew Served Weapon, AN/TVS-5
1	Reproducer, Signal Data AN/GSQ-64

4 Administrative Capabilities.--None, Consolidated under battalion S-1/adjutant section.

5 Logistical Capabilities

a Maintenance.--The battery is capable of organizational maintenance (first echelon) of all materiel authorized the battery and organizational maintenance (second echelon) of ordnance (less fire control), communication, and motor transport materiel authorized. The communications platoon provides (second echelon) maintenance support to the howitzer batteries as required.

b Medical.--Medical field technicians are organic to the battery to provide for emergency medical treatment of minor illnesses and injuries, preparation of casualties for evacuation, and supervision of measures for the prevention and control of disease. The battalion medical section is capable of operating a small field dispensary, when supplemented by medical personnel from the batteries.

c Transportation.--Transportation for the headquarters battery is provided from a pool of general purpose vehicles maintained within the battery headquarters. Vehicles are allocated within the battery for the purpose of providing transportation for command, staff and liaison personnel, communication equipment, survey teams, limited emergency medical evacuation, and supply distribution within the battalion headquarters and to firing batteries.

d Supply.--The battery is capable of organic supply functions. All classes of supplies will be maintained at the minimum level essential for continuous operations as prescribed by higher headquarters. The battery relies on unit distribution except for class V.

(1) The battery headquarters receives supplies for internal support of the battery and provides for distribution.

(2) The battalion supply section receives supplies (less class V) from division service elements and provides for distribution within the battalion.

e Food Service

(1) The battery is capable of operating a battery dining facility when provided limited food service facilities and food service personnel from the battalion food service section.

(2) The battalion food service section is capable of operating a battalion dining facility when in garrison and in the field as practicable.

(3) When required, the battalion food service section furnishes cooks and equipment to firing batteries for the operation of battery dining facilities.

(g) 105mm Howitzer Battery

1 Missions and Tasks.--To provide direct support artillery fires to units of a Marine division in the amphibious assault and subsequent operations ashore.

2 Concept of Organization.--The battery is organized into a battery headquarters and a firing battery. Command, control, communications, fire direction, and liaison are executed by the battery head-

quarters. Firepower and mobility are provided by the howitzers and organic transportation.

3 Concept of Employment.--The battery will normally operate as an integral firing element of the battalion; however, it is capable of deploying with an infantry battalion. The major items of equipment are shown on the following page.

105 MM HOWITZER BATTERY

6	Howitzer, Light Towed, 105mm, w/e, M101A1
1	Radiac Computer Indicator, CP95A/PD
6	Radio Set, Control Group, AN/GRA-39A
2	Radio Set, AN/GRC-160
2	Radio Set, AN/MRC-109
14	Radio Set, AN/PRC-77
3	Switchboard, Telephone, Manual, SB-22/PT
7	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
3	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
1	Trailer, Tank, Water, 400gal, M149A1
1	Truck, Cargo, 1-1/4T, 6x6, w/winch, M561
10	Truck, Cargo, Dropside, 2-1/2T, 6x6, w/ow, w/PTO, M35A2C
7	Truck, Utility, 1/4T, 4x4, M151A2
4	Circle, Aiming M2
7	Collimator, Infinity Aiming, Reference M1
10	Launcher, Grenade, 40mm, M203
4	Machine Gun, Cal. 50, Browning, HB Flexible M2
4	Machine Gun, 7.62mm, M60
8	Night Vision Goggles, Individual, AN/PVS-5
4	Night Vision Sight, Individual Served Weapons, AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon, AN/TVS-28
2	Night Vision Sight, Individual Served Weapon, AN/PVS-4
2	Night Vision Sight, Crew Served Weapon, AN-TVS-5

4 Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

5 Logistical Capabilities.--The battery is capable of organizational maintenance (first echelon) of all organic equipment and organizational maintenance (second echelon) of communications-electronics, ordnance (less fire control), and motor transport equipment; organic supply; battery level food sevice when provided cooks and equipment from headquarters battery; displacement by organic vehicles; and emergency treatment of minor illnesses and injuries.

(h) 155mm Howitzer Battery (Towed)

1 Missions and Tasks.--To provide general support and reinforcing artillery fires to units of a Marine division in an amphibious assault and subsequent operations ashore.

2 Concept of Organization.--The battery is organized into a battery headquarters and a firing battery. Command, control, communications, fire direction, and liaison are executed by the battery headquarters. Firepower and mobility are provided by the howitzers and organic transportation.

3 Concept of Employment.--The battery will normally operate as an integral firing element of the battalion. The major items of equipment are shown on the following page.

4 Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

155MM HOWITZER BATTERY (T)

6	Howitzer, Med Towed, 155mm, w/e M114A1
1	Radiac Computer Indicator, CP95A/PD
1	Radiac Set, AN/PDR-56
8	Radio Set, Control Group, AN/GRA-39A
2	Radio Set, AN/GRC-160
2	Radio Set, AN/MRC-110
6	Radio Set, AN/PRC-77
2	Switchboard, Telephone, Manual, SB22/PT
6	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
7	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
1	Trailer, Tank, Water, 400gal, M149A1
1	Truck, Cargo, 1-1/4T,6x6, w/winch, M561
14	Truck, Cargo, 5T, 6x6, w/o winch, w/PTO, M54A2C
5	Truck, Utility, 1/4T, 4x4, M151A2
4	Circle, Aiming M2
7	Collimator, Infinity Aiming, Reference M1
10	Launcher, Grenade, 40mm, M203
4	Machine Gun, Cal. 50, Browning, HB, Flexible, M2
4	Machine Gun, 7.62mm, M60
4	Night Vision Sight, Individual Served Weapons AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon, AN/TVS-5

5 Logistical Capabilities.--The battery is capable of organizational maintenance (first echelon) of all organic equipment and organizational maintenance (second echelon) of communications-electronics, ordnance (less fire control), and motor transport equipment; organic supply; battery level food service when provided cooks and equipment from headquarters battery; displacement by organic vehicles; and emergency treatment of minor illnesses and injuries.

(8) General Support Artillery Battalion, 8" Howitzer (Self-Propelled (SP)

(a) Mission.--To provide general support artillery to a landing force in the amphibious assault and subsequent operations ashore, and to reinforce the fire of other artillery units. To direct and coordinate the tactical operations of its subordinate batteries. To provide nuclear fire support when required.

(b) Concept of Organization.--The general support artillery battalion, 8" howitzer (SP) is composed of a headquarters battery, two 8" howitzer batteries (SP), and a 175mm gun battery. The battalion is organized to provide general support artillery to a landing force. Trained maintenance personnel are assigned based on the equipment organic to the battalion.

1 Command and Control

a Command and Staff.--Command functions are discharged through a command group consisting of the commander and executive officer and an executive staff. The executive staff provides functions identified as personnel, intelligence, operations, and logistics. This staff is organized to permit required command and control over the battalion and additional units or elements attached to it. The staff is capable of echelonment to provide for an alternate command post during displacement.

b Communications.--The battalion is capable of entering the radio nets of the artillery regiment, supplemented by wire when feasible. The battalion is capable of providing communications between all levels of its command. The primary method of communications to subordinate batteries will be by wire where feasible, otherwise by voice radio. The battalion is capable of entering the radio nets of reinforced and supporting units.

c Intelligence.--The battalion has limited target acquisition capabilities. Primary sources of target information are external agencies such as infantry and landing force intelligence sections, artillery and division air observers, forward observers of reinforced direct support artillery units, and the artillery regimental fire direction center. Aerial photos are used extensively. An operational intelligence section is provided in the operations platoon for close and rapid coordination of target information derived from battalion sources and received through intelligence channels. The communications capability exists for a direct link with the artillery regiment countermortar/counterbattery radar section.

d Fire Direction.--The battalion operations platoon contains a fire direction section with personnel and equipment to establish a fire direction center for the computation of gunnery data for the firing batteries under centralized technical fire direction. Decentralized technical fire direction capability also exists with the fire direction centers at battery level. For sustained periods of centralized technical fire direction, howitzer batteries provide fire direction personnel and equipment to augment the battalion fire direction center.

2 Firepower.--The battalion, in general support of a landing force, provides fire support at longer ranges and with greater lethality than the weapons of the lighter artillery battalions. There is a capability to control the organic fires of batteries and to mass two or more batteries on target. Firepower of the battalion includes capabilities for direct, normal, and high angle fire at a minimum range of 500 meters and a maximum range of 32,000 meters. In addition to individual weapons, other infantry crew-served weapons are provided each battery for security patrol and local defense.

3 Mobility.--The battalion has self-propelled weapons and sufficient vehicles to permit displacement of the battalion with all organic equipment in one echelon.

4 Logistics.--All logistic functions within the battalion are centralized under the cognizance of the S-4. The battalion requisitions, stores, and distributes supplies. The battalion is structured

on the basis of unit distribution (less class V), organizational level maintenance, and initial management of casualties. The howitzer/gun batteries carry a basic allowance of ammunition, handle internal distribution of supplies, and perform authorized organizational maintenance (first echelon). All other logistic functions; i.e., dining, embarkation, medical, etc., are provided at battalion level.

(c) Concept of Employment.--The battalion operates as a separate artillery entity providing fire on designated targets. The battalion neutralizes or destroys targets assigned by higher echelon and fires missions requested by a reinforced direct support artillery unit. The battalion will retain the capability to deploy one battery and one platoon for independent operations for limited periods.

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logistical Capabilities

1 Maintenance.--The battalion is capable of organizational maintenance (first echelon) on all materiel authorized the battalion, and organizational maintenance (second echelon) of ordnance (less fire control), motor transport, electronics, and engineer materiel authorized the battalion. Subordinate batteries conduct first echelon maintenance only. Second echelon maintenance is conducted at battalion level.

2 Medical.--The battalion is capable of administering emergency treatment and preparation for evacuation of battalion casualties requiring hospitalization by organic or external means. It also exercises technical supervision of measures for prevention and control of disease.

3 Transportation.--The battalion has organic transportation means to displace all batteries in a single echelon. This includes the capability of carrying the basic load.

4 Supply.--The battalion has the organic capability of providing its own supply requirements. Stock levels of supply are maintained at a level directed by higher echelon commensurate with the tactical situation.

5 Food Service.--The battalion is capable of providing a battalion dining facility in garrison or in the field and of providing limited food service facilities and personnel to the firing batteries for independent operations when required.

(f) Headquarters Battery, General Support Artillery Battalion, 8" Howitzer (SP)

1 Mission.--To provide the means by which the battalion commander directs, controls, and coordinates the tactical operations and the technical fire direction of the battalion; to provide appropriate logistics and service support to subordinate elements of the battalion.

2 Concept of Organization.--The battery is organized into functional groupings to provide:

a A battalion headquarters for command, direction, and coordination of the entire battalion, including attached or reinforcing units.

b An administrative platoon to provide administrative services to subordinate units and to provide chaplain services as requested.

c An operations platoon which gives the battalion commander the means to provide technical fire direction, intelligence, survey support, and radiosonde meteorological information to subordinate units. Firing batteries provide fire direction personnel and equipment to augment the battalion fire directin center for centralized technical fire direction.

d A service platoon to provide supply maintenance, motor transport, engineer, food sevive, and medical support to the battalion.

e A communication platoon which provides the necessary communication equipment and personnel for the exercise of battalion command functions.

f A battery headquarters for command of the battery.

3 Concept of Employment.--The battery operates with the artillery battalion or can be deployed independently. Headquarters battery personnel are assigned to a howitzer/gun battery to provide necessary support when that battery is operating independently of the battalion. The major items of equipment are shown below.

HEADQUARTERS BATTERY, GENERAL SUPPORT BATTALION, 8" HOWITZER (SP)

8	Control Radio Set, AN/GRA-6
3	Distance Measuring Equipment, MRA-301
39	Radio Set, Control Group, AN/GRA-39A
2	Radio Set, AN/GRC-160
5	Radio Set, Trk-Mtd, AN/MRC-83A
3	Radio Set, AN/MRC-109
4	Radio Set, AN/PRC-47
4	Radio Set, AN/PRC-75A
15	Radio Set, AN/PRC-77
9	Radio Terminal Set, AN/MRC-134
4	Radio Terminal Set, AN/TRC-166
3	Receiving Set, Radio AN/GRR-17
3	Switchboard, Telephone, Manual, SB-22/PT
1	Switchboard, Telephone, Automatic, SB-3614/TT
1	Surveying Set, Astronomic Azimuth
3	Surveying Set, Field Arty Bn.
2	Theodolite Surveying T-16
6	Tractor, Medium, Full-Tracked 82-30FA-M3
3	Truck, Forklift, Rough Terrain MC-4000
3	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
2	Trailer, Tank, Water, 400 gal, M149A1
7	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
3	Truck, Tank, Fuel Servicing, 1200 gal, 2-1/2T, 6x6, M49A2C
9	Truck, Utility, 1/4T, 4x4, M151A2

HEADQUARTERS BATTERY, GENERAL SUPPORT BATTALION, 8" HOWITZER (SP)
(continued)

6	Truck, Cargo, 1-1/4T, 6x6, w/Winch, M561
6	Truck, Cargo, Dropside, 5T, 6x6, M54A2C
1	Truck, Ambulance, 1/4T, 4x4, M718A1
1	Truck, Van, 2-1/2T, 6x6, M109A3
1	Truck, Wrecker, 5T, 6x6, w/wn, M543A2
2	Circle, Aiming M2
4	Computer, Gun Direction M18
10	Launcher, Grenade 40mm, M203
4	Machine Gun, Cal. 50, Browning, HB, M2
4	Machine Gun, 7.62mm, M60
1	Meteorological Station Manual AN/TMQ-7
2	Night Vision Sight, Individual Served Weapns AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon AN/TVS-2B
3	Recovery Vehicle, Full Tracked,Light M578
1	Reproducer, Signal Data AN/GSQ-64

4 Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

5 Logistical Capabilities

a Maintenance.--The battery is capable of organizational maintenance (first echelon) of all authorized material. The battery is capable of and responsible for all (second echelon) maintenance of ordnance (less fire control), motor transport, engineer, and communication equipment of the battalion.

b Medical.--The battalion medical section is capable of operating a small field dispensary. Medical field technicians are assigned to firing batteries as required.

c Transportation.--Transportation support is provided from a pool of general purpose vehicles maintained within the battery headquarters. Motor transport assets are allocated to provide transportation for command and staff personnel, communication personnel and equipment, survey teams, medical evacuation, and supply distribution.

d Supply.--The battery is capable of organic supply functions. All classes of supplies are maintained at minumum prescribed levels. The battalion receives supplies (less class V) and provides for distribution within the battalion.

e Food Service

(1) The battalion food service section is capable of operating a battalion dining facility in garrison or in the field as applicable.

(2) If required, the battalion food service section furnishes personnel and equipment to firing batteries for the operation of a battery dining facility. The battalion can support one battery in addition to operating a battalion dining facility.

(g) 8" Howitzer Battery (SP), General Support Artillery Battalion, 8" Howitzer (SP)

1 Mission.--To provide general support and reinforcing fires to the amphibious assault and subsequent operations ashore.

2 Concept of Organization.--The battery is organized into a battery headquarters and firing battery with six 8" howitzers (SP). The battery headquarters contains the headquarters, fire direction, maintenance, and communication section. The firing battery contains the headquarters, ammunition, and six howitzer sections.

a Command and Control

(1) Command and Control.--Command and control are exercised at the battalion level. The battery commander is responsible for efficient planning, direction, and supervision in the execution of assigned missions.

(2) Communications.--Internal communications are normally accomplished by wire with voice radio as a supplemental means. External communications will be by wire where feasible, otherwise by voice radio.

(3) Fire Direction.--The battery headquarters is capable of establishing a fire direction center to provide either battery level technical fire direction or a centralized battalion level fire direction center. To accomplish the latter, firing batteries provide augmenting personnel and equipment for that purpose.

b Firepower.--The battery consists of six 8" howitzer (SP). Each howitzer has a nuclear delivery capability. The battery has as organic equipment, machine guns and individual weapons for perimeter security.

c Mobility.--The howitzers are tracked vehicles capable of moving independently. The remainder of the organic battery elements are transported by organic vehicles supplemented, if necessary, by additional vehicles from battalion headquarters.

3 Concept of Employment.--The battery will normally operate as an integral firing unit of the battalion. With augmentation from battalion assets, the entire battery, or portions thereof, may be deployed in support of larger amphibious units. The major items of equipment are shown on the following page.

4 Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

5 Logistical Capabilities

a Maintenance.--The battery is capable of organizational maintenance (first echelon) on all organic equipment. All second echelon maintenance of ordnance (less fire control), communication equipment, engineer equipment, and motor transport assets is performed at battalion level.

b Transportation.--The battery is capable of displacement by utilizing organic vehicular assets.

c Medical.--All medical services are provided by battalion headquarters. Field service technicians are provided to howitzer batteries as required.

d Supply.--Supply functions are performed at battalion level. Distribution of supply items to howitzer batteries is provided by the headquarters battery supply section.

e Food Service.--Food service capabilities are centralized at battalion level. All food service requirements are provided to howitzer/gun batteries as required.

8-INCH HOWITZER BATTERY (SP)

6	Howitzer, 8-inch, SP w/Radio Set AN/VRC-75, M110
2	Control Radio Set, AN/GRA-6
3	Radio Set, Control Group AN/GRA-39A
2	Radio Set, AN/GRC-160
2	Radio Set, AN/MRC-109
1	Radio Set, AN/MRC-110
2	Radio Set, AN/PRC-47
8	Radio Set, AN/PRC-77
4	Switchboard, Telephone, Manual, SB-22/PT
1	Surveying Set, Astronomic Azimuth
2	Surveying Set, Field Arty Bn.
2	Theodolite, Surveying T-16
4	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
6	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
1	Trailer, Tank, Water, 400 gal, M149A1
3	Truck, Cargo, 1-1/4T, 6x6, w/winch, M561
10	Truck, Cargo, 5T, 6x6, w/o W, w/PTO, M54A2C
5	Truck, Utility, 1/4T, 4x4, M151A2
4	Circle, Aiming M2
7	Collimator, Infinity Aiming, Reference M1
10	Launcher, Grenade 40mm M203
5	Machine Gun, Cal. 50, Browning, HB, Flexible, M2
4	Machine Gun, 7.62mm, M60
2	Night Vision Sight, Individual Served Weapons AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon AN/TVS-2B
1	Reproducer, Signal Data AN/GSQ-64

(h) 175mm Gun Battery (SP), General Support Artillery, 8" Howitzer (SP)

1 Mission.--To provide general support and reinforcing fires to the amphibious assault and subsequent operations ashore.

2 Concept of Organization.--The battery is organized into a battery headquarters and firing battery with six 175mm guns (SP). The battery headquarters contains the headquarters, maintenance, fire direction, and communications sections. The howitzer battery contains the headquarters, ammunition, and six gun sections.

a Command and Control

(1) Command and Control.--Command and control are exercised at the battalion level. The battery commander is responsible for efficient planning, direction and supervision in the execution of assigned missions.

(2) Communications.--Internal communications are normally accomplished by wire with voice radio as a supplemental means. External communications will be by wire where feasible, otherwise by voice radio.

(3) Fire Direction.--The battery headquarters is capable of establishing a fire direction center to provide either battery level technical fire direction or a centralized battalion level fire direction center. To accomplish the latter, the battery provides augmenting personnel and equipment for that purpose.

b The battery consists of six 175mm guns (SP). The battery has machine guns and individual weapons as organic equipment for perimeter security.

c Mobility.--The guns are tracked vehicles capable of moving independently. The remainder of the organic battery elements are transported by organic vehicles supplemented, if necessary, by additional vehicles from battalion headquarters.

3 Concept of Employment.--The battery will normally operate as an integral firing unit of the battalion. With augmentation from battalion assets, the entire battery, or portions thereof, may be deployed in support of larger amphibious units. The major items of equipment are shown on the following page.

4 Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

5 Logistical Capabilities

a Maintenance.--The battery is capable of organizational maintenance (first echelon) on all organic equipment. All second echelon maintenance of ordnance (less fire control), communications equipment, engineer equipment and motor transport assets is performed at battalion level.

b Transportation.--The battery is capable of displacement by utilizing organic vehicular assets.

c Medical.--All medical services are provided by battalion headquarters. Field service technicians are provided to the battery as required.

d Supply.--Supply functions are performed at battalion level. Distribution of supply items to the battery is provided by the headquarters battery supply section.

e Food Service.--Food service capabilities are centralized at battalion level. All food service requirements are provided to the battery as required.

175MM GUN BATTERY

6	Gun, Self-Propelled, FT, 175mm, W/E, M107
2	Control Radio Set, AN/GRA-6
3	Radio Set, Control Group, AN/GRA-39A
2	Radio Set, AN/GRC-160
2	Radio Set, AN/MRC-109
1	Radio Set, AN/MRC-110
2	Radio Set, AN/PRC-47
8	Radio Set, AN/PRC-77
4	Switchboard, Telephone, Manual, SB-22/PT
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M12lA1
4	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
6	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
1	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
3	Truck, Cargo, 1-1/4T, 6x6, w/winch, M561
10	Truck, Cargo, 5T, 6x6, M54A2C
5	Truck, Utility, 1/4T, 4x4, M151A2
4	Circle, Aiming, M2
7	Culliminator, Infinity Aiming, Reference M1
1	Demolition Equipment, Indiv.
10	Launcher, Grenade, 40mm, M203
5	Machine Gun, Cal. 50, Browning, HB Flexible, M2
4	Machine Gun, 7.62mm, M60
2	Night Vision Sight, Individual Served Weapon, AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon, AN/TVS-2B
2	Periscope, BC, W/E M65
1	Plotting Equipment, Arty Fire, Direction, Complete W/Chest
1	Reproducer, Signal Data, AN/GSQ-64

(9) General Support Artillery Battalion, 155mm Howitzer (SP)

(a) Mission.--To provide general support artillery to a landing force in the amphibious assault and subsequent operations ashore, and to reinforce the fires of other artillery units. To provide nuclear fire support when required. To direct and coordinate the tactical operations of its subordinate units.

(b) Concept of Organization.--The general support artillery battalion, 155mm howitzer (SP) is composed of a headquarters battery and two 155mm howitzer batteries (SP). The battalion is organized to provide medium range general support artillery to a landing force. Trained maintenance personnel are assigned based upon the equipment organic to the battalion.

1 Command and Control

a Command and Staff.--Command functions are discharged through a command group consisting of the commander, executive officer, and executive staff. The executive staff provides functions identified as personnel, intelligence, operations, and logistics. This staff is organized to permit required command and control over the battalion and additional units or elements attached to it. The staff is capable of echelonment to provide an alternate command post during displacement.

b Communications.--The battalion is capable of entering the radio nets of the artillery regiment, supplemented by wire when feasible. The battalion is capable of providing communications be-

tween all levels of its command. The primary method of communications to subordinate batteries will be by wire if feasible, otherwise by voice radio. The battalion is capable of entering the radio nets of units it is reinforcing or supporting.

c Intelligence.--The battalion has limited target acquisition capabilities. Primary sources of target information are external agencies such as infantry and landing force intelligence sections, artillery and division air observers, forward observers of reinforced direct support artillery units, and the fire direction center of the artillery regiment. An operational intelligence section is provided in the operations platoon for close and rapid coordination of target information derived from battalion sources and received through intelligence channels. The communication capability exists for a direct link with artillery regiment countermortar/counterbattery radar section.

d Fire Direction.--The battalion operations platoon contains a fire direction section with personnel and equipment to establish a fire direction center for computation of gunnery data for the firing batteries under centralized technical fire direction. Decentralized technical fire direction capability also exists with the fire direction centers at battery level. For sustained period of centralized technical fire direction, howitzer batteries provide fire direction personnel and equipment to augment the battalion fire direction center.

2 Firepower.--The battalion in general support of a landing force provides fire support at longer ranges with greater lethality than the weapons of the lighter artillery battalions. There is a capability to control the organic fires of the batteries and to mass two or more batteries on a target. Firepower of the battalion includes capabilities for direct, normal, and high angle fire at a minimum range of 200 meters and a maximum range of 18,100 meters (23,500 meters with the RAP round). In addition to individual weapons, other infantry crew-served weapons are provided each battery for security patrols and local position defense.

3 Mobility.--The battalion has self-propelled weapons and sufficient vehicles to permit displacement of the battalion with all organic equipment in one echelon.

4 Logistics.--All logistics functions within the battalion are centralized under the cognizance of the S-4. The battalion requisitions, stores, and distributes supplies. The battalion is structured on the basis of unit distribution (less class V), organizational level maintenance, and initial management of casualties. The howitzer batteries carry a basic allowance of ammunition, handle internal distribution of supplies, and perform authorized organizational maintenance (first echelon). All other logistic functions; i.e., dining, embarkation, medical, etc., are provided at the battalion level.

(c) Concept of Employment.--The battalion operates as a separate artillery entity providing like-caliber fire on designated targets. The battalion neutralizes or destroys targets assigned by higher echelon and executes fire missions requested by a reinforced direct support artillery unit. The battalion will normally operate as an integral unit; however, the battalion will retain the capability to deploy one battery and one platoon for independent operations for limited periods. The battalion has the flexibility of assuming control over one or more additional 155mm howitzer batteries, self-propelled or towed.

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logistical Capabilities

1 Maintenance.--The battalion is capable of organizational maintenance (first echelon) of all material authorized the battalion and organizational maintenance (second echelon) of ordnance (less fire control), motor transport, electronics, and engineer material authorized the battalion. Howitzer batteries conduct first echelon maintenance only. Second echelon is conducted at battalion level.

2 Medical.--The battalion is capable of administering emergency treatment and preparation for evacuation of battalion casualties requiring hospitalization by organic or external means. It also exercises technical supervision of measures for the prevention and control of disease.

3 Transportation.--The battalion has organic transportation means to displace headquarters and howitzer batteries in a single echelon. This includes the capability of carrying the basic load of ammunition.

4 Supply.--The battalion has the organic capability of providing its own supply requirements. Stock levels of supply are maintained at a level directed by higher echelons commensurate with the tactical situation.

5 Food Service.--The battalion is capable of providing a battalion dining facility when in garrison or in the field, and of providing limited food service facilities and dining personnel to the howitzer batteries for independent operations when required.

(f) Headquarters Battery, General Support Arillery Battalion, 155mm Howitzer (SP)

1 Mission.--To provide the means by which the battalion commander directs, controls, and coordinates the tactical operations and the technical fire direction of the battalion. To provide appropriate logistic and service support to subordinate elements of the battalion.

2 Concept of Organization.--The battery is organized into functional groupings to provide:

a A battalion headquarters for command, direction, and coordination of the entire battalion, including attached or reinforcing units.

b An administrative platoon to provide administrative services to subordinate units and to provide chaplain services as requested.

c An operations platoon which provides the battalion commander the means with which to provide technical fire direction, intelligence, survey support, and radiosonde meteorological information to subordinate units. Howitzer batteries provide fire direction personnel and

equipment to augment the battalion fire direction center for centralized technical fire direction.

d A service platoon to provide supply, maintenance, motor transport, engineer, food services, and medical support to the battalion.

e A communication platoon which provides the necessary communications equipment and personnel for the exercise of battalion command functions.

f A battery headquarters for command of the battery.

3 Concept of Employment.--The battery operates with the artillery battalion or can be deployed independently. Headquarters battery personnel are assigned to a howitzer battery to provide necessary support when that battery is operating independently of the battalion. The major items of equipment are shown on the following page.

4 Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

5 Logistical Capabilities

a Maintenance.--The battery is capable of organizational maintenance (first echelon) of all authorized material. The battery is capable of and responsible for all second echelon maintenance of ordnance (less fire control), motor transport, engineer, and communication equipment of the battalion.

b Medical.--The battalion medical section is capable of operating a small field dispensary. Medical field technicians are assigned to howitzer batteries as required.

c Transportation.--Transportation support is provided from a pool of general purpose vehicles maintained within the battery headquarters. Motor transport assets are allocated to provide transportation for command and staff personnel, communication personnel and equipment, survey teams, medical evacuation, and supply distribution.

HEADQUARTERS BATTERY, GENERAL SUPPORT BATTALION,
155MM, HOWITZER (SP)

7	Control Radio Set, AN/GRA-6
3	Distance Measuring Equipment MRA-301
10	Radio Set, Control Group, AN/GRA-39A
2	Radio Set, AN/GRC-160
5	Radio Set, Trk Mtd, AN/MRC-83A
2	Radio Set, AN/MRC-109
1	Radio Set, AN/MRC-110
4	Radio Set, AN/PRC-47
4	Radio Set, AN/PRC-75A
15	Radio Set, AN/PRC-77
7	Radio Terminal Set, AN/MRC-134
4	Radio Terminal Set, AN/TRC-166
2	Receiving Set, Radio, AN/GRR-17

HEADQUARTERS BATTERY, GENERAL SUPPORT BATTALION,
155MM, HOWITZER (SP)
(continued)

1	Switchboard, Telephone, Automatic SB-3614/TT
3	Switchboard, Telephone, Manual, SB-22/PT
1	Surveying Set, Astronomic Azimuth
2	Surveying Set, Field Arty Bn.
2	Theodolite, Surveying T-16
4	Tractor, Medium, Full Tracked, 82-30FA-M3
2	Tractor, Rubber Tired, Articulated Steer 72-31MP
7	Trailer, Amphibious Cargo, 1/4T, 2-whl, M416
3	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
2	Trailer, Tank, Water, 400 gal, M149A1
1	Truck, Ambulance, 1/4T, 4x4, M718A1
6	Truck, Cargo, 1-1/4T, 6x6, w/winch, M561
6	Truck, Cargo, 5T, 6x6, w/o winch, w/PTO, M35A2C
3	Truck, Tank, Fuel Servicing, 1200 gal, 2-1/2T, 6x6, M49A2C
1	Truck, Van, 2-1/2T, 6x6, M109A3
9	Truck, Utility, 1/4T, 4x4, M151A2
2	Truck, Wrecker, 5T, 6x6, M543A2
2	Circle, Aiming M2
3	Computer, Gun Direction M18
10	Launcher, Grenade 40mm, M203
4	Machine Gun, Cal. 50, Browning, HB, Flexible M2
4	Machine Gun, 7.62mm, M60
1	Meteorological Station, Manual AN/TMQ-7
2	Night Vision Sight, Individual Served Weapons AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon AN/TVS-2B
2	Recovery Vehicle, Full Tracked, Light, M578
1	Reproducer, Signal Data AN/GSQ-64

d Supply.--The battery is capable of organic supply functions. All classes of supplies are maintained at minimum prescribed levels. The battalion receives supplies (less class V) and provides for distribution within the battalion.

e Food Service

(1) The battalion food service section is capable of operating a battalion dining facility in garrison or in the field as applicable.

(2) If required, the battalion food service section furnishes personnel and equipment to howitzer batteries for the operation of a battery dining facility. The battalion can support one battery in addition to operating a battalion dining facility.

(g) 155mm Howitzer Battery (SP), General Support Artillery Battalion

1 Mission.--To provide general support and reinforcing fires to the amphibious assault and subsequent operations ashore.

2 Concept of Organization.--The battery is organized into a battery headquarters and a firing battery with six 155mm howitzers (SP). The battery headquarters contains the headquarters, fire direction,

communications, and maintenance sections. The howitzer battery contains a headquarters section, six howitzer sections, and an ammunition section.

a Command and Control

(1) Command and Control.--Command and control are exercised at the battalion level. The battery commander is responsible for the efficient planning, direction, and supervision in the execution of assigned missions.

(2) Communications.--Internal communications are normally accomplished by wire with voice radio as a supplemental means. External communications will be by wire where feasible, otherwise by voice radio.

(3) Fire Direction.--The battery headquarters is capable of establishing a fire direction center to provide either battery level technical fire direction or a centralized battalion level fire direction center. To accomplish the latter, the battery provides personnel and equipment for this purpose.

b Firepower.--The battery consists of six 155mm howitzers (SP). Each howitzer has a nuclear delivery capability. The battery has as organic equipment machine guns and individual weapons for perimeter security.

c Mobility.--The howitzers are tracked vehicles capable of moving independently. The remaining battery elements are transported by organic vehicles, supplemented, if necessary, by additional vehicles from the battalion headquarters.

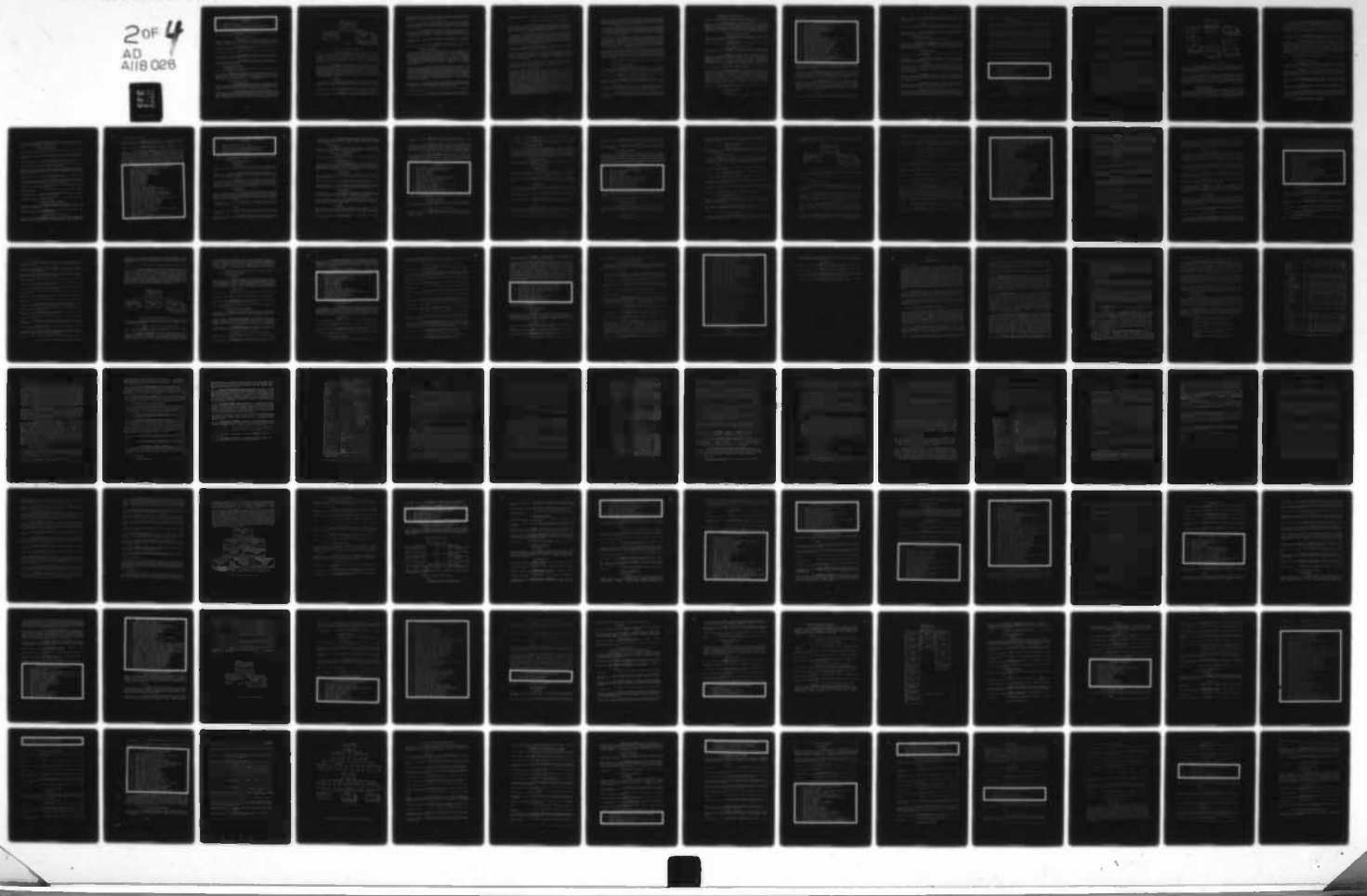
3 Concept of Employment.--The battery will normally operate as an integral firing unit of the battalion. With augmentation from battalion assets, the entire battery, or portions thereof, may be deployed in support of larger amphibious units. The major items of equipment are shown below.

155MM HOWITZER BATTERY (SELF-PROPELLED)

6	Howitzer, Medium, SP, 155mm, W/Radio Set VRC-47, M109A1
2	Control Radio Set, AN/GRA-6
3	Radio Set, Control Group, AN/GRA-39A
2	Radio Set, AN/GRC-160
2	Radio Set, AN/MRC-109
1	Radio Set, AN/MRC-110
2	Radio Set, AN/PRC-47
8	Radio Set, AN/PRC-77
4	Switchboard, Telephone, Manual SB-22/PT
4	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
6	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
1	Trailer, Tank, Water, 400 gal, M149A1
3	Truck, Cargo, 1-1/4T, 6x6, w/winch, M561
10	Truck, Cargo, 5T, 6x6, w/o winch, w/PTO, M54A2C
5	Truck, Utility, 1/4T, 4x4, M151A2
4	Circle, Aiming M2
7	Collimator, Infinity Aiming, Reference M1
10	Launcher, Grenade, 40mm, M203

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155MM HOWITZER BATTERY (SELF-PROPELLED
(Continued)

4	Machine Gun, Cal. 50, Browning, HB Flexible, M2
4	Machine Gun, 7.62mm, M60
2	Night Vision Sight, Individual Served Weapons AN/PVS-2A
2	Night Vision Sight, Crew Served Weapon AN/TVS-2B
1	Reproducer, Signal Data AN/GSQ-64

4 Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

5 Logistical Capabilities

a Maintenance.--The battery is capable of organizational maintenance of all organic equipment. All second echelon maintenance of ordnance (less fire control), communication equipment, engineer equipment, and motor transport assets is performed at battalion level.

b Transportation.--The battery is capable of displacement by utilizing organic vehicular assets.

c Medical.--All medical services are provided to the battery as required.

d Supply.--Supply functions are performed at battalion level. Distribution of supply items to the battery is provided by the headquarters battery supply section.

e Food Service.--Food service capabilities are centralized at battalion level. All food services requirements are provided to the battery as required.

e. Reconnaissance Battalion

(1) Mission.--To conduct reconnaissance in support of the Marine division and its subordinate elements.

(2) Concept of Organization.--The reconnaissance battalion is the sole table of organization unit specially trained and equipped for the conduct of reconnaissance in support of a Marine division and its subordinate elements. The battalion consists of a headquarters and service company and four reconnaissance companies . (See Figure 2-9.)

(a) Command and Control

1 Command and Staff.--The staff is organized to assist the battalion commander to exert maximum command and control over the battalion and such elements as may be attached to it. This command level operates with general/specific direction from higher headquarters.

2 Communications.--Capable of providing reliable communications for continuous control of subordinate units as necessary. The primary method of communications to subordinate units will be by voice radio. Communications to higher and adjacent units will be by voice or CW radio, with teletype to division when feasible. Alternate methods of com-

munications will be messenger (helicopter, vehicle, foot), wire, and visual.

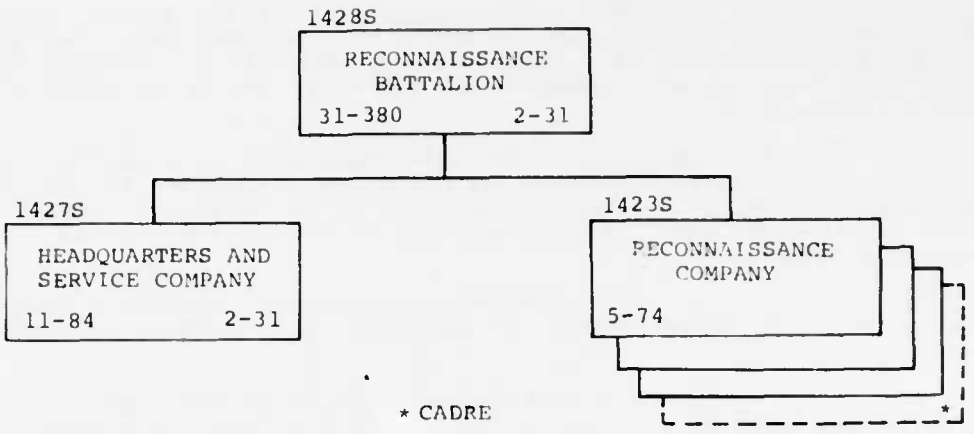


Figure 2-9.--Reconnaissance Battalion.

3 Intelligence.--Intelligence requirements of the battalion are met through an intelligence section integrated within the battalion operations section. The battalion's operational activities are primarily concerned with the collection of intelligence information, and consequently, intelligence considerations are intimately connected with, and usually determine operational decisions. Information affecting the immediate reconnaissance operations of the battalion is evaluated as necessary.

(b) Firepower.--Weapons provided reconnaissance elements are primarily for individual protection and to facilitate withdrawal in the event of discovery, thus they are limited to automatic rifles which are relatively lightweight and have a high volume of burst fire. In addition, M60 machine guns are provided to the headquarters and service company. he reconnaissance battalion is not equipped or organized for reconnaissance-in-force or routine combat assault missions. It does, however, have a limited capability to conduct small scale operations such as limited-scale raids, rescues, and evacuations.

(c) Mobility

1 The command and control and reconnaissance elements of the battalion are helicopter transportable, but are limited to foot mobility and light vehicle transport of their basic load when helicopter-lifted.

2 The foot mobility of the reconnaissance companies is supplemented by the following ground vehicles and helicopter support.

a Headquarters and service company is authorized nineteen 1/4-ton trucks to enable one complete reconnaissance company, or

the equivalent, to be vehicular mounted for road and route reconnaissance missions. In addition, sufficient cargo trucks are available to move the personnel of one complete reconnaissance company.

b A simultaneous lift of the patrol elements of one reconnaissance company, or the equivalent, is required. This capability may be provided by 12 assault support helicopters. Further augmentation, when required for increased air mobility, may be provided by transport helicopters.

(d) Logistics.--Logistic capability is compatible with the mobility of the battalion. The battalion is structured on the basis of unit distribution of supplies to and within the battalion, organizational level maintenance, and initial management of casualties, carried out in the following manner:

1 The reconnaissance company carries a basic load, handles internal distribution of supplies, and performs organizational maintenance.

2 All other organic logistic functions are provided at battalion level by elements of headquarters and service company.

(3) Concept of Employment

(a) The reconnaissance battalion, or elements thereof, will be employed primarily to gain intelligence information in support of the Marine division or subordinate task organizations. It is not equipped for decisive or sustained combat and must accomplish its reconnaissance mission through stealth, maneuver, and rapid reporting. It is not capable of screening or counterreconnaissance missions. The battalion is dependent upon extensive use of helicopters to provide necessary mobility. Elements of the battalion have a limited capability to conduct small scale operations such as limited scale raids, rescues of noncombatants or hostages, and evacuations.

1 Maximum effectiveness is achieved by employing the reconnaissance battalion as a unit directly under division control. This method of employment provides for maximum efficiency and exploits to the fullest extent the mobility and extensive communications of the battalion. Unit employment makes maximum use of the battalion staff in the detailed planning required of reconnaissance operations and utilizes the battalion logistic and maintenance system with greatest effectiveness. When operating under division control, the battalion commander will receive mission-type orders from the division commander and will render his report directly to the division commander.

2 One or more of the companies of the battalion may be attached to or in support of subordinate units of the division or specially task organized Marine Amphibious Units (MAU's) and Marine Amphibious Brigades (MAB's). Such employment is normally required when:

a A regimental landing team (RLT) is employed on an independent mission.

b An RLT is assigned an area of responsibility or zone of action of such size that acquisition of enemy terrain and target

information is beyond the capabilities of organic battalion patrol activity.

c An MAB or MAU is assigned an independent mission.

3 Specially task organized battalion landing teams, operating independently of the division, may be supported by company or smaller-size units of the reconnaissance battalion when the mission, or area of operations, presents a reconnaissance requirement beyond the organic capability of the infantry battalion to perform.

(b) The concept of operations of the reconnaissance battalion emphasizes directed reconnaissance rather than passive surveillance. Combining great tactical mobility and flexibility with reliable communication equipment, the battalion is capable of maintaining surveillance over extended areas or conducting detailed area reconnaissance missions as required. The battalion utilizes its organic foot and vehicular mobility, or helicopter lifted patrols, or combinations thereof, to conduct route, zone, or area close and distant reconnaissance.

(c) During amphibious operations, all or part of the battalion may be introduced ashore prior to H-hour, at H-hour, or during the landing of nonscheduled units as the situation dictates.

1 A pre-H-hour landing is used primarily to place reconnaissance elements in the area of greatest reconnaissance necessity prior to the assault landing. This is normally accomplished by landing units of platoon size or smaller by helicopter. The battalion also possesses an organic inflatable boat capability as an alternate means for prior to H-hour landings.

2 Post-H-hour landings are made when the immediate introduction of reconnaissance elements is not required, or is not feasible due to the terrain or the situation, or both. Certain elements of the battalion may be landed in the pre-H-hour landing while the majority of the battalion lands as a nonscheduled unit.

(d) In conducting reconnaissance missions in areas of intelligence interest beyond walking distance, reconnaissance patrols will rely primarily on helicopter support. These aircraft will be used to emplace and retract early warning and observation/listing posts on critical terrain overlooking logical avenues of approach into the division positions. When elements of the division are in the approach march, helicopters will be employed to leapfrog observation posts (OP's) and patrols ahead of the moving division, and to emplace and retract OP's and patrols placed to either flank and to the rear, while the main body of the column remains on the move. All such elements may be changed at will, and reliefs will normally be effected by exploitation of the flexibility of the helicopter. During periods of good visibility, patrols will cover the front, flanks, and possibly the unassigned interior area of the division from low-flying helicopter formations, landing for physical reconnoitering on foot as required. By this combination of large area coverage and pinpoint reconnaissance, helicopterborne patrols will be able to cover satisfactorily the large areas in which a Marine division must operate in landing operations conducted under threat of nuclear attack.

(e) Weather minimums, visibility factors, and helicopter unavailability will frequently necessitate conduct of patrolling operations primarily limited to foot mobility and reliance upon stealth for protection. Such operations will be characterized by severely limited flexibility, responsiveness, and scope or area of activity.

(f) Tactical 1/4-ton vehicles authorized headquarters and service company permit one entire reconnaissance company or one platoon of each company to be vehicular mounted. These vehicles serve to extend the range and flexibility of the battalion. Motorized patrols may be augmented with tanks, antitank weapons, LVT's, combat infantry, and close air support for road reconaissance missions.

(g) Reconnaissance operations by the division reconnaissance battalion require communications among the several elements of the battalion and reconnaissance liaison teams at the headquarters of the unit being supported. Information gained by any subdivision of the reconnaissance battalion is transmitted directly to the liaison officer at the headquarters of the supported unit where it may be acted upon without delay. Coordination between the division air observers and helicopterborne and landed scout teams will be effected whenever possible.

(h) Division reconnaissance elements may execute terminal guidance for initial helicopter waves. Scouts check and verify selected landing sites. The usable portions of the area are pinpointed and marked with emplaced visual, electronic, or pyrotechnic signals to provide guidance for initial helicopter waves. This pathfinder terminal guidance capability of the reconnaissance units does not include landing zone traffic control functions.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance.--Performs organizational maintenance (first echelon) of all materiel authorized the battalion, and organizational maintenance (second echelon) of engineer, motor transport, ordnance (less fire control), and electronics materiel authorized the battalion.

(b) Medical.--Capable of administering emergency treatment and preparation for evacuation of battalion casualties.

(c) Transportation.--Transportation means organic to battalion consist of light wheeled, helicopter transportable vehicles for command, communications, medical and high usage resupply and cargo trucks for logistics support.

(d) Supply.--Capable of organic supply functions for the battalion. Provides limited resupply to the companies and prepares supplies for unit distribution by helicopter or organic transportation as required. Maintains one-day level of supply within the battalion.

(e) Food Service.--Capable of operating a battalion dining facility in garrison or in the field, and furnishing adequate galley facilities for the reconnaissance companies in the field when the tactical situation permits.

(6) Headquarters and Service Company

(a) Mission.--To provide the reconnaissance battalion commander with the facilities for effective command and control.

(b) Concept of Organization.--Headquarters and service company is organized into functional groupings to provide for a battalion headquarters which directs and coordinates the actions of the entire battalion; a communication platoon which provides the necessary links in exercising control and coordination; service support elements which provide limited service and support to the battalion; and a company headquarters which provides the necessary security, and logistic support of the company.

1 Command and Control (Company)

a Command and Staff.--The company commander and his small staff direct and control all matters pertaining to the logistic support, and security of the company.

b Communications.--Internal communications are limited to telephone and messenger service.

c Intelligence.--Not applicable.

2 Firepower.--Firepower is limited to individual weapons and M60 machine guns to provide security for command post and supply installations.

3 Mobility.--The basic means of gound mobility of the company is by foot, supplemented by organic, small, lightweight vehicles for the transportation of a limited number of the headquarters group and supplies and equipment necessary to sustain the company on a daily basis. All elements, with the exception of logistic vehicles, are helicopter transportable and are compatible with other means of transportation (amphibious vehicle, motor transport, fixed-wing aircraft, and ships).

4 Logistics.--Logistic support for the company is provided by battalion level service support elements.

(c) Concept of Employment.--The company headquarters is employed primarily to provide logistics, security, and working space facilities for the battalion headquarters. The physical layout, support, and displacements incident to the battalion headquarters are directed toward providing the battalion commander and his staff with the most effective means for directing and controlling the battalion. The communications, medical, and service units of this company function in operational roles within the entire battalion and not the company itself and are normally employed in support of the reconnaissance companies. Major items of equipment are shown on the following page.

(d) Administrative Capabilities.--None. Consolidated under battalion S-2/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a All elements of the company are capable of pro-

viding organizational maintenance (first echelon) on all assigned equipment.

HEADQUARTERS AND SERVICE COMPANY

2	Communication Central, AN/MRC-87A
3	Control Radio Set, AN/GRA-6
1	Radiac Computer Indicator, CP95A/PD
3	Radio Set, Control Group AN/GRA-39A
2	Radio Set, Trk Mtd, AN/MRC-83A
2	Radio Set, AN/MRC-109
6	Radio Set, AN/PRC-47
4	Radio Set, AN/PRC-75A
6	Radio Set, AN/PRC-77
2	Receiving Set Radio, AN/GRR-17
1	Switchboard, Telephone, Automatic SB-3614 (V) TT
1	Teletypewriter Set AN/GCC-3-A
14	Tactical Intelligence Imagery Processor
28	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
5	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
3	Trailer, Tank, Water, 400 gal, M149A1
1	Truck Ambulance, 1/4T, 4x4, M718A1
8	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
30	Truck, Utility, 1/4T, 4x4, M151A2
72	Launcher, Grenade, 40mm, M203
2	Machine Gun, Cal. 50, Browning, HB Flexible M2
12	Machine Gun, 7.62mm, M60
30	Night Vision Goggles, Individual AN/PVS-5
2	Night Vision Sight, Tripod Mounted, AN/TVS-4
2	Night Vision Sight, Crew Served Weapon, AN/TVS-5
4	Telescope, Observation W/E M49
1	Viewing Set, Infra-Red AN/SAR-7A

b Organization maintenance (second echelon) is provided by the service platoon on all battalion motor transport and ordnance (less fire control instruments); communication platoon on all battalion communication equipment.

2 Medical.--The battalion medical section provides for emergency treatment and preparation for evacuation by external means of all casualties within the battalion requiring hospitalization. The medical section is capable of operating a field dispensary for treatment of minor illnesses and injuries. It also exercises technical supervision of measures for the prevention and control of disease.

3 Transportation.--Transportation for the headquarters and service company is provided from a pool of small general purpose vehicles maintained within the service platoon. Vehicles are allocated within the company for the purpose of providing transportation for command, staff and liaison personnel, communication equipment, limited emergency medical evacuation, and supply distribution within the battalion headquarters and to reconnaissance companies.

4 Supply

a The service platoon receives supplies from division service elements and provides for distribution within the battalion.

b The company headquarters receives supplies for internal support of the headquarters and service company and provides for distribution.

5 Food Service

a The service platoon operates a dining facility for the entire battalion while in garrison and in the field, as practicable.

b When required, the service platoon furnishes cooks and equipment to reconnaissance companies for the operation of a limited number of company dining facilities.

(7) Reconnaissance Company

(a) Mission.--To conduct ground reconnaissance.

(b) Concept of Organization.--The reconnaissance company, reconnaissance battalion is a lightly armed, highly mobile, specially trained and equipped organization designed to obtain intelligence information through reconnaissance. It consists of a company headquarters and two reconnaissance platoons.

1 Command and Control

a Command.--The company commander directs and assigns tasks to subordinate platoons.

b Communications.--Capable of providing reliable communications for continuous control of subordinate units as necessary. Primary method of communications is by voice radio, with CW radio, visual, and messenger as alternative means.

c Intelligence.--Though the entire organization is primarily a collector of intelligence information, there is no system of evaluation within the company. It must receive all finished intelligence from higher authority. Information obtained is normally reported via the reconnaissance battalion chain of command and to the supported/affected unit, if appropriate.

2 Firepower.--Weapons provided reconnaissance elements are for individual protection and to facilitate breaking contact and withdrawal; thus, they are limited to automatic rifles having relatively light weight and high volume of burst fire. Support personnel carry the basic infantry weapons.

3 Mobility.--The company is helicopter transportable but organically is limited to foot mobility. Sufficient vehicles are authorized headquarters and service company to permit one complete reconnaissance company, or equivalent, to be vehicular mounted.

4 Logistics.--The reconnaissance company logistic organization is based on unit distribution of supplies, simple supply procedures, and limited organizational maintenance. Company headquarters carries a basic load and handles the internal distribution of supplies for the company. Additional supplies, maintenance, medical support, and transpor-

tation are provided by battalion or from other external sources.

(c) Concept of Employment

1 The company either operates as part of the reconnaissance battalion or in direct support of an RLT. Platoons normally operate under company control, but are capable of task organization support of BLT's.

2 Generally, the basic element operating beyond friendly lines is the four-man scout team. In some circumstances, an entire platoon may be employed in enemy terrain in operations favoring use of a patrol base for several patrols. The company, when mounted in vehicles provided by battalion (and task organized, if required, with tanks, antitank weapons, and combat infantry), performs road and route reconnaissance.

3 Whenever possible, patrols are helicopter lifted into assigned areas and conduct foot patrols and/or man observation posts to complete the assigned mission. They report directly to higher authority or through company headquarters as the situation or equipment available may require. In addition to this ground reconnaissance function, helicopter-borne reconnaissance patrols will augment the air observation and surveillance effort of the division, landing for physical reconnoitering as appropriate.

4 The company possesses a capability to conduct pathfinder terminal guidance missions in helicopter landing areas. This capability does not include landing zone traffic control functions.

5 The company possesses a limited underwater swimming capability to insert reconnaissance teams covertly against a hostile shore.

6 The major items of equipment are shown below.

RECONNAISSANCE COMPANY

1	Control Radio Set, AN/GRA-6
7	Radio Set, Control Group AN/GRA-39A
4	Radio Set, AN/GRC-160
5	Radio Set, AN/PRC-47
13	Radio Set, AN/PRC-77
4	Night Vision Sight, Individual Served Weapon AN/PVS-4
6	Telescope, Observation W/E M49
3	Viewing Set, Infra-Red AN/SAR-7A

(d) Adminsitration.--None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance.--Capable of first echelon maintenance.

2 Medical.--None (corpsman attached from H&S company)

3 Transportation.--None. (Provided by battalion as required).

4 Supply.--Receives and distributes supplies from higher headquarters; carries basic load only.

5 Food Service.--None (provided by battalion).

i. Tank Battalion

(1) Mission.--To provide combat support for the Marine division in the amphibious assault and subsequent operations ashore utilizing mobility, armor protected firepower, and shock power to close with and destroy enemy forces, fortifications, and materiel, and to provide antimechanized support for the Marine division.

(2) Concept of Organization.--The tank battalion consists of a headquarters and service company, four tank companies, and an antitank (tube launched, optically tracked, wire command link, guided missile system (TOW)) company. Each tank company consists of three platoons of five tanks each. The antitank (TOW) company consists of 3 platoons of 24 TOW/missile systems each. The tank companies and the antitank (TOW) company are the primary tactical units with which the battalion accomplishes its mission. (See Figure 2-10.)

(a) Command and Control

1 Command and Staff.--Responsibilities are discharged through a compact operational command group consisting of the command executive staff. The staff is capable of effective control of the battalion and gives required support to the companies operating in a direct support or attached status. The staff is capable of supporting an alternate command post during displacement.

2 Communications.--Capable of providing reliable contact links between all levels of the command for continuous control of subordinate units as necessary and to higher headquarters. The primary method of communications to subordinate units is by voice radio down to the individual tank and TOW vehicles. Communications to higher headquarters will be by voice radio and teletypewriter utilizing net or point-to-point radio channels and, when furnished by higher headquarters, radio relay channels. Alternate methods of communications include manual radio-telegraphy, messages (helicopter, vehicles, foot), wire, and visual.

3 Intelligence.--Organized to provide surveillance, reconnaissance, and target acquisition commensurate with the fire and maneuver capabilities of the battalion. Information, collected by subordinate units as an integral byproduct of their normal combat and security functions, is translated rapidly and informally into intelligence in the formulation of routine command decisions. The organic intelligence section of battalion headquarters is capable of limited intelligence processing. Finished intelligence is disseminated, and information collected is forwarded to higher echelons and to adjacent units.

(b) Firepower.--Organic battalion firepower consists of 70 gun tanks and 72 TOW/missile systems. Light infantry weapons are organic to the battalion for security of the battalion headquarters and the tank/antitank company headquarters.

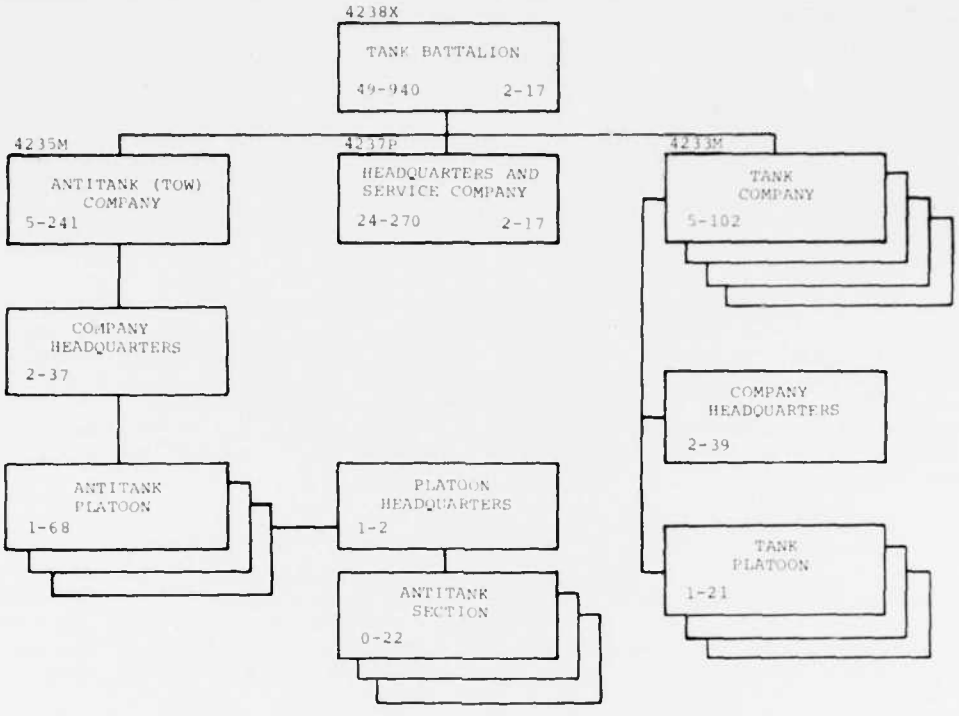


Figure 2-10.--Tank Battalion

(c) Mobility.--The basic means of ground mobility is provided by the tank and the M151A2 1/4-ton truck. The motor transport platoon of headquarters and service company provides additional transportation support to the companies to augment the mobility provided by the tanks and small general purpose vehicles.

(d) Logistics.--Logistic capability is compatible with the mobility and combat power of the battalion. The battalion is structured for supply point distribution to the battalion and unit distribution within the battalion. The tank and antitank companies carry a basic allowance, handle internal distribution of supplies, perform organizational maintenance, and provide organic dining. All other organic logistic functions are provided at battalion level by elements of headquarters and service company.

(3) Concept of Employment

(a) Battalion Organization for Combat.--The battalion will be assigned to, under the operational control of, attached to, or in support of the Marine amphibious force (MAF). Under normal circumstances, subordinate elements of the battalion will be placed in support of subordinate units of the MAF. This method of organization provides for the maximum use of the battalion staff, facilities, and supporting capabilities.

(b) Tank Company Organization for Combat.--The tank company is a compact organization capable of deployment, removed from the battalion for limited periods of time. Usually the company will be attached to, or placed in support of, a MAU or a MAB. The prime consideration in selecting the method of organization is the ability of the parent unit (i.e., tank battalion) to provide logistic support. The service and support rendered, other than the logistic support required by the company, will be the same in either case, whether the company is attached or placed in support of the MAU or MAB.

(c) Tank Platoon Organization for Combat.--The tank platoon is the basic unit of the battalion and provides the immediate combat support capability during the amphibious assault and operations ashore.

(d) Antitank Company Organization for Combat.--The company is employed as part of the division antimechanized defense system closely coordinated with other fire support means, such as air, artillery, and tanks. As required by the situation and scheme of maneuver, antitank elements may be placed in support of or attached to infantry regiments or battalions. Additionally, the company may be employed as an entity in the division antimechanized defense system or, in smaller or dispersed operations in a supporting role with an infantry unit. When engaged in antimechanized missions, TOW is employed in the greatest possible mass and echeloned in depth consistent with the situation.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance.--Capable of organizational maintenance (first and second echelon) on all equipment organic to the battalion and, within the limits of personnel and materiel allowances, third echelon intermediate maintenance on tanks and TOW/missiles system.

(b) Medical.--Provides emergency treatment and prepares for evacuation by external means all casualties within the battalion requiring hospitalization. Provides a field dispensary for treatment of minor illnesses and exercises technical supervision of measures for the prevention and control of disease.

(c) Transportation.--Transportation means organic to the battalion consist of a sufficient number of trucks and small general purpose vehicles for command, communications, medical, and high usage resupply.

(d) Supply.--Capable of organic supply functions for the battalion. Maintains a limited level of supply for the companies within the battalion supply platoon.

(e) Food Service.--Capable of operating company dining facilities in garrison or in the field, as pacticable, and of consolidating company dining facilities to provide a battalion dining facility in garrison or in the field, as practicable. A battalion dining facility is normal in garrison.

(6) Headquarters and Service Company

(a) Mission.--To provide the battalion commander with the facilities for effective command and control. To provide service support for subordinate elements of the battalion.

(b) Concept of Organization

1 Functional Groupings.--Organized into functional groupings to provide for:

a A battalion headquarters which directs and coordinates the actions of the entire battalion and contains the following subsections.

(1) Headquarters section which contains the command and staff elements and its necessary administrtive support.

(2) Communication section which provides the necessary link in exercising control and coordination.

(3) Medical section which provides for treatment of minor illnesses and injuries, emergency treatment of battle casualties and their preparation for evacuation, and technical supervision of sanitation measures.

(4) A gun tank section which provides the battalion commander with a mobile command post capability.

b A motor transport platoon which operates and controls organic wheeled vehicles of H&S company and provides the necessary technical assistance required by the gun tank companies.

c A maintenance platoon which provides maintenance support for all vehicles of the battalion.

d A supply platoon which provides supply support for the battalion.

e An H&S company headquarters which provides the necessary logistical support for the company.

f A TOW augmentation section which provides maintenance support for the TOW missile.

2 Command and Control (Company)

a Command and Staff.--The company commander and his small staff direct and control all matters pertaining to logistics and security of the company.

b Communications.--Internal communications are limited to telephone and messenger service.

c Intelligence.--Not applicable.

3 Firepower.--Firepower available to the company commander is represented by security elements, armed with light infantry weapons, capable of defending the battalion headquarters against infiltration

by small groups of the enemy.

4 Mobility.--The basic means of mobility of the company is provided by trucks, lightweight vehicles, and command and control vehicles organic to the motor transport platoon of the company.

5 Logistics.--Logistic support (except mess) for the command is provided by battalion level service support elements.

(c) Concept of Employment.--The company headquarters is employed primarily to provide internal logistics, security, and working space facilities for the company. The physical layout, support, and displacements incident to the battalion headquarters are directed toward providing the battalion commander and his staff with the most effective means for directing and controlling the battalion. The comunications, firepower, medical, and service units of this company function in operational roles within the entire battalion and not the company itself and are normally employed in support of the tactically disposed tank companies. The major items of equipment are shown below.

HEADQUARTERS AND SERVICE COMPANY, TANK BATTALION

2	Tank, Combat, Full Tracked, 105mm gun, w/e M60A1
1	Communication Central AN/MRC-87A
2	Control Radio Set, AN/GRA-6
1	Radiac Computer Indicator, CP95A/PD
10	Radio Set, Control Group, AN/GRA-39A
3	Radio Set, AN/GRC-160
2	Radio Set, AN/MRC-83-A
1	Radio Set, AN/MRC-109
2	Radio Set, AN/MRC-110
1	Radio Set, AN/PRC-47
4	Radio Set, AN/PRC-75A
9	Radio Set, AN/PRC-77
1	Radio St, AN/VRC-12
1	Receiving Set Radio, AN/GRR-17
1	Switchboard , Telephone, Manual SB-22/PT
1	Switchboard, Telephone, Automatic SB-3614 (V)TT
1	Teletypewriter Set, AN/GCC 3-A
2	Generator Set, 3kW, 400Hz, Skid-mtd, MEP-021A
1	Generator Set, DE, 10kW, 60Hz, Skid-mtd, MEP-003A
2	Generator Set, 10kW, 60Hz, Skid-mtd, MEP-005A
1	Truck, Forklift, RT, 05-3354
2	Chassis, Trailer, General Purpose, 3-1/2T, 2-Whl, M353
4	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
21	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
3	Trailer, Flatbed, 3/4T, 2-whl, M762
8	Trailer, Tank, Water, 400gal, M149A1
1	Truck Ambulance, 1/4T, 4x4, M718A1
3	Truck, Cargo, 1-1/4T, 4x4, M880
38	Truck, Cargo, 5T, 6x6, M54A2C
7	Truck, Tank, Fuel Servicing 1200gal, 2-1/2T, 6x6, M49A2C
9	Truck, Utility, 1/4T, 4x4, M151A2
2	Truck, Wrecker, 5T, 6x6, M543A2
1	Circle, Aiming M2
10	Launcher, Grenade, 40mm, M203
15	Machine Gun, Cal. 50, Browning, HB, Flexible M2
6	Machine Gun, 7.62mm, M60

HEADQUARTERS AND SERVICE COMPANY, TANK BATTALION
(Continued)

2	Machine Gun, 7.62mm, F/Tanks M-60E2
2	Machine Gun, Cal. 50, M85
5	Night Vision Sight, Individual Served Weapon, AN/PVS-4
6	Night Vision Sight, Crew Served Weapon AN/TVS-5
1	Recovery Vehicle, Full Tracked, Medium w/e M88A1
2	Searchlight Set, Infrared, AM/VSS-3A
2	Telescope, Observation w/e M49

(d) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a All elements of the company are capable of providing organizational maintenance (first echelon) of all assigned equipment.

b Organizational maintenance (second echelon) is provided by the maintenance platoon on all battalion motor transport engineer, tank, and ordnance equipment and by the communication section on all battalion communication equipment.

2 Medical.--The battalion medical section provides for emergency treatment and preparation for evacuation by external means of all casualties within the battalion requiring hospitalization. The medical section is capable of operating a field dispensary for treatment of minor illnesses and injuries. The section also exercises technical supervision of measures for prevention and control of disease.

3 Transportation

a Transportation for headquarters and service company is provided by the motor transport platoon. Vehicles are allocated within the company for the purpose of providing transportation for command, staff and liaison personnel, communication equipment, limited emergency medical evacuation, and supply distribution within the battalon headquarters and to the tank companies.

b When required, a light helicopter is provided the battalion commander, on a daily basis, for command, liaison, and observation purposes.

4 Supply

a The battalion supply platoon receives supplies from division service elements and provides for distribution within the battalion.

b The company headquarters receives supplies for internal support of the headquarters and service company and provides for distribution.

5 Food Service.--The company headquarters operates a company dining facility and, when augmented by cooks from the tank companies, operates a battalion dining facility either in garrison or in the field as practicable.

(7) Tank Company

(a) Mission.--To provide combat support for Marine infantry units, utilizing mobility, firepower and shock power to close with and destroy enemy forces, fortifications and material.

(b) Concept of Organization

1 The company consists of a company headquarters and three platoons of five tanks each.

2 Command and Control

a Command and Staff.--The company commander with his small company headquarters, performs command and staff functions necessary for efficient planning, direction and supervision in the execution of assigned missions, either as part of the battalion or as a company attached to, or in direct support of, an infantry unit.

b Communications

(1) Capable of effecting rapid and reliable communications between the company headquarters and subordinate, supported and higher headquarters.

(2) Primary method of communications is voice radio with alternate means by messenger, wire, and visual devices.

(3) Company voice radio net links with the tank platoon headquarters. The tank platoon has an organic tactical voice radio net linking the platoon commander with each tank and supported units.

c Intelligence

(1) Combat intelligence at the company level is inseparably linked to combat operations. Processing is limited to expediting the transmission of information to the battalion command post.

(2) The tank company collects information by direct observation, patrolling, and uncovering enemy personnel and material. There is a limited organic specialized reconnaissance and surveillance capability within the tank company.

3 Firepower

a The main firepower for the company is provided by the weapons of the 17 organic tanks. Each tank has a 90mm gun, a 7.62mm machine gun coaxially mounted with the 105mm gun, and a caliber .50 machine gun.

b Company headquarters contains light infantry weapons to provide for its local security.

4 Mobility.--The tank platoons are mobile. Some elements of company headquarters require wheeled vehicle augmentation from battalion.

5 Logistics.--The tank company logistic organization is based on unit distribution of supplies, simple supply procedures and limited organizatinal maintenance. When augmented with additional transportation it carries a basic allowance of ammunition and handles the internal distribution of supplies for the company. Additional supplies, maintenance, medical support and transportation are provided by battalion.

(c) Concept of Employment.--The company is employed to provide shock power, assault and antitank firepower to the infantry. The normal employment of the company is in support of an infantry regiment. The company may be employed as part of the tank battalion or with other tank companies in both the offensive and defense. The major items of equipment are shown below.

TANK COMPANY

16	Tank Combat, Full Tracked, 105mm gun w/e M60A1
1	Tank, Combat, FT W/M9 Bulldozer Kit M60A1
7	Radio Set, Control Group AN/GRA-39A
4	Radio Set, AN/GRC-160
1	Radio Set, AN/MRG-110
2	Radio Set, AN/PRC-77
3	Radio Set, AN/VRC-12
1	Generator Set, 3kW, 60Hz, Skid-mtd, MEP-016A
3	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
1	Trailer, Flatbed, 3/4T, 2-whl, M762
4	Truck, Utility, 1/4T, 4x4, M151A2
17	Machine Gun, Cal. 30, M37
1	Machine Gun, Cal. 50, Browning, HB, Flexible M2
4	Machine Gun, 7.62mm, M60
17	Machine Gun, 7.62, F/Tanks, M60E2
17	Machine Gun, 50 cal., M85
1	Recovery Vehicle, Full Tracked, Medium w/e M88A1
17	Searchlight Set, Infrared AM/VSS-3A

(d) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance.--Capable of first echelon maintenance of all material authorized the company and second echelon maintenance of all electronics material and tanks.

2 Medical.--Provided by battalion.

3 Transportation.--Organic vehicles provide limited means for transporting rations, other essential items and for command and messenger service. Transportation for ammunition and fuel resupply is provided by battalion.

4 Supply.--Receives and distributes supplies. Does not possess a supply stocking capability.

5 Food Service.--Capable of providing a company dining facility in garrison and in the field as practicable.

(8) Antitank Company (TOW)

(a) Mission.--The primary mission of the antitank company of the tank battalion is to provide antimechanized support for the Marine division. This mission will be accomplished by using the TOW to engage and destroy enemy armored vehicles, particularly tanks. When not performing its primary mission of destroying armored vehicles, the antitank company may assume a secondary mission of engaging other point targets such as nonarmored vehicles, crew-served weapons, and bunkers.

(b) Concept of Organization

1 General.--The antitank company consists of a company headquarters and three antitank platoons.

2 Command and Control

a Command and Staff

(1) The company commander with his company headquarters performs command and staff functions necessary for planning, direction and supervision in execution of assigned missions.

(2) When elements of the company are employed separately in a supporting role, the unit commander, platoon leader/section leader, acts as the antimechanized advisor to the commander of the supported unit.

b Communications

(1) Radio is the primary method of communication within the antitank company. Messenger, visual, and wire communications are supplementary means.

(2) Company establishes and operates the antitank company command net and such liaison communications as required when in a supporting role.

c Intelligence.--Antimechanized intelligence is directly linked to antimechanized operations. Processing is limited to rapid transmission of information to the tank battalion and the supported unit.

3 Firepower

a Primary firepower of the antitank company is derived from the organic M220 (TOW) weapon. The TOW weapon system is a crew-served, man-portable, heavy antitank assault weapon that delivers an optically tracked; wire-command link guided missile to ranges of 3000 meters.

b Each of the three antitank platoons in the company contains twenty-four M220 for a total of seventy-two in the company.

4 Mobility.--The speed, range, and cross-country trafficability of the TOW is limited to the mobility of its M151A2 prime mover.

5 Logistics.--Supply support of the company is by unit distribution with transportation, dining and medical support provided by the battalion.

(c) Concept of Employment

1 The company is employed as part of the division antimechanized defense system closely coordinated with other fire support means such as air, artillery, and tanks. As required by the situation and scheme of maneuver, antitank elements may be placed in support of or attached to infantry regiments or battalions. Additionally, the company may be employed as an entity in the division antimechanized defense system or, in smaller or dispersed operations, in a supporting role with an infantry unit. The major items of equipment are shown below.

ANTITANK COMPANY

72	Launcher, Tubular, F/GM TOW Weapon System M220AE1
17	Radio Set, Control Group, AN/GRA-39A
126	Radio Set, AN/GRC-160
4	Radio Set, AN/MRC-110
4	Radio Set, AN/PRC-77
5	Generator Set, 3kW, 60Hz, Skid-mtd, MEP-016A
1	Generator Set, 10kW, 60Hz, Skid-mtd, MEP-003A
45	Trailer, Amphib, Cargo, 1/4T, 2-whl, M416
4	Trailer, Flatbed, 3/4T, 2-whl, M762
72	Truck 1/4T, 4x4, GM Equipment, (JEEP), M151A2
36	Truck 1/4T, 4x4, GM Carrier, M151A2
9	Truck, Utility, 1/4T, 4x4, M151A2
4	Machine Gun, 7.62mm, M60
40	Night Vision Goggles, Individual AN/PVS-5

2 When engaged in antimechanized missions, TOW is employed in the greatest possible mass and echeloned in depth consistent with the situation.

(d) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance.--Capable of first echelon maintenance of all materiel authorized the company, and second echelon maintenance of the M220 (TOW) weapon, organic motor transport and communication equipment. In support of MAGTF deployments can provide second echeolon motor transport maintenance for up to four MAUs (AT section/MAU) or two MABs (AT platoon/MAB).

2 Medical.--Provided by battalion.

3 Transportation.--Organic vehicles provide limited

means for transporting rations, other essential items and for command and messenger service. Transportation for ammunition and fuel re-supply is provided by battalion.

4 Supply.--Receives and distributes supplies. Does not possess a supply stocking capability.

5 Dining Facility.--Normally subsisted in battalion dining facility. When elements of company are employed in direct support of infantry regiments, they will utilize supporting tank company dining facility when available.

g. Assault Amphibian Battalion

(1) Mission.--To land the surface assault elements of the landing force and their equipment in a single lift from assault shipping during amphibious operations to inland objectives; to conduct mechanized operations and related combat support in subsequent operations ashore.

(2) Tasks

(a) Transport assault elements of the landing force during the ship-to-shore movement.

(b) Transport selected equipment and supplies of the landing force during the ship-to-shore movement.

(c) Transport other supplies and equipment, as required by the assault units during the ship-to-shore movement.

(d) Provide lift for assault elements, selected equipment, and supplies in mechanized or other combat support operations during subsequent operations ashore.

(e) Provide lift for logistic requirements during subsequent operations ashore, forward of the forward edge of the battle area (FEBA).

(f) Participate in the planning and coordination of mechanized operations, linkup operations, and landing operations.

(3) Concept of Organization

(a) The battalion consists of a headquarters and service company and four assault amphibian companies. The organization of the assault amphibian company permits independent deployment for limited operations. (See Figure 2-11.)

(b) Certain elements of the battalion, such as cooks and motor transport personnel, may be centralized under battalion control for more effective utilization, training, and control, when the situation permits.

(c) Battalion communications include:

1 The primary method of communications is by radio. Alternate radios are provided to establish effective communications with supported commanders at each echelon, supporting arms, and subordinate

units, to include individual vehicles. The latter capability can provide commanders of supported units with an emergency method of communications with their subordinate commanders.

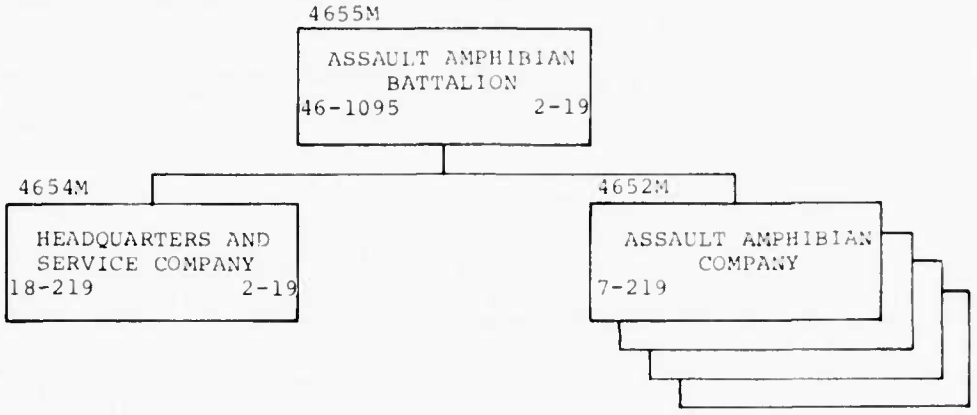


Figure 2-11.--Assault Amphibian Battalion.

2 When an infantry unit commander is being transported in a command vehicle, he can employ the radios contained therein to enter the nets normal to his operation.

3 Alternate means of communications are by wire, messenger, and visual devices.

(4) Concept of Employment

(a) Battalion Organization for Combat.--Under normal circumstances, subordinate elements of the battalion will be placed in support of subordinate units of the division. This method of organization provides for the maximum use of the battalion staff, facilities, and supporting capabilities.

(b) Company Organization for Combat.--The assault amphibian company is a compact organization capable of deployment, removed from the battalion, for limited periods of time. The prime consideration in selecting the method of organization is the ability of the parent organization to provide logistic support. The service and support rendered, other than the logistic support required by the company, will be the same in any case.

(c) Platoon Organization for Combat.--The assault amphibian platoon, the basic unit of the battalion, provides the lift capability during the amphibious assault and operations ashore. Each company is organized with 4 platoons of 10 vehicles each. Each vehicle has a rated capacity of 25 boat spaces. A special task organization, the boat team, is organized around the infantry squad or sections and is embarked in each vehicle.

(d) Command Vehicle.--Each company, including the headquarters and service company, is equipped with three command vehicles. The command vehicle, with an increased radio communication capability, provides an excellent means of controlling supporting arms, infantry units, and ele-

ments of the battalions during the amphibious assault and subsequent operations ashore.

(e) Command Relationship.--Commanders of supported units should consider the senior LVT commander to be a special staff officer, as an additional duty. Regardless of echelon, the LVT commander will be prepared to execute this additional duty assignment.

(f) Liaison.--Commanders of units to be supported will include commanders of LVT units in initial planning conferences.

(g) Planning.--The battalion staff is capable of preparing and executing plans relating to mechanized task forces.

(5) Administrative Capabilities.--Capable of self-administration.

(6) Logistical Capabilities

(a) Maintenance.--Full third echelon maintenance on assault amphibians, and organizatinal maintenance (first and second echelon) on all other equipment organic to the battalion.

(b) Supply.--Maintains operation/training repair parts and supplies, as directed, and a 30-day supply of mount-out repair parts, within maintenance capability.

(c) Motor Transport.--Under normal circumstances, the motor transport is adequate for the needs of the battalion and subordinate units.

(7) Headquarters and Service Company

(a) Mission.--To provide the battalion commander with facilities to command, control, and support the assault amphibian companies.

(b) Concept of Organization.--The company consists of a battalion headquarters, company headquarters, maintenance platoon, and headquarters assault amphibian platoon. The battalion headquarters contains the headquarters, communication, medical, motor transport, and supply sections. The company headquarters possesses the capability to support the battalion. The maintenance platoon possesses the capability of first through third echelon maintenance for the headquarters and service company's amphibian vehicles and provides full third echelon capability for the amphibian vehicles of the letter companies. The headquarters assault amphibian platoon contains three LVT sections, each consisting of five amphibian vehicles, and a command section consisting of three command type amphibian vehicles.

(c) Concept of Employment.--The company to be employed as directed to accomplish the primary mission. The major items of equipment are shown on the following page.

(d) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

HEADQUARTERS AND SERVICE COMPANY, ASSAULT AMPHIBIAN BATTALION

15	Landing Vehicle, Tracked, Personnel, Aslt, Amph Carrier, LVTP-7
3	Landing Vehicle, Tracked, Command/Communication, LVTC-7
2	Landing Vehicle, Tracked, Recovery, LVTR-7
3	Control Radio Set, AN/GRA-6
1	Radiac Computer Indicator, CP95A/PD
3	Radio Set, Control Group AN/GRA-39A
2	Radio Set, AN/GRC-160
2	Radio Set, Trk-Mtd, AN/MRC-83A
2	Radio Set, AN/MRC-109
2	Radio Set, AN/PRC-47
5	Radio Set, AN/PRC-77
1	Radio Set, AN/VRC-12
1	Radio Set, AN/VRC-47
1	Receiving Set, Radio, AN/GRR-17
1	Switchboard, Telephone, Automatic SB-3614 (V)TT
1	Switchboard, Telephone, Manual SB-22/PT
1	Bucket, Multi-Purpose, 2-1/4yd Cap Drott 4-in-1
1	Forklift Attachment, 10,000 lb Cap, Oscillating, PL-21910
6	Generator Set, 10kW, 60Hz, Skid-Mtd, MEP-003A
1	Generator Set, 3kW, 400Hz, Skid-Mtd, MEP-021A
2	Generator Set, 30kW, 60Hz, Skid-Mtd, MEP-005A
1	Generator Set, 60kW, 60Hz, Skid-Mtd, MEP-006A
1	Tractor RT, Articulated Steer, 72-31MP
3	Chassis, Trailer, 3-1/2T, 2-whl, M-353
5	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
3	Trailer, Cargo, 1-1/2T, 2-whl, M105A2
7	Trailer, Flatbed, 3/4T, 2-whl, M762
2	Trailer, Tank, Water, 400 gal., M149A1
1	Truck Ambulance, 1/4T, 4x4, M718A1
4	Truck, Cargo, 1-1/4T, 4x4, M880
5	Truck, Cargo, Dropside, 2-1/4T, 6x6, M35A2C
2	Truck, Tank, Fuel, Servicing, 1200 gal, 2-1/2T, 6x6, M49A2C
2	Truck, Tank, Water, 1000 gal, 2-1/2T, 6x6, M50A2
5	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
6	Launcher, Grenade 40mm, M203
10	Machine Gun, 7.62mm, M60
5	Machine Gun, 7.62mm, M60D
15	Machine Gun, 50 Cal. M85
70	Night Vision Goggles, Individual, AN/PVS-5
2	Night Vision Sight, Individual Served Weapon AN/PVS-4

(e) Logistical Capabilities

1 Maintenance.--The company is capable of providin: full third echelon maintenance on amphibious vehicles and organizational maintenance (first and second echelon) on all other equipment organic to the battalion.

2 Medical.--The battalion medical section provides for emergency treatment and preparation for evacuation by external means of all casualties within the battalion requiring hospitalization. The medical section is capable of operating a field dispensary for treatment of minor illnesses and injuries. The section also exercises technical supervision of measures for prevention and control of disease.

3 Transportation.--Transportation for headquarters and service company is provided by the motor transport section and the assault amphibian platoon. Vehicles are allocated within the company for the purpose of providing transportation for command, staff and liaison personnel, limited emergency medical evacuation, and supply distribution within the battalion headquarters and to assault amphibian companies.

4 Assault Amphibian Platoon.--The platoon is organized into a command section and three LVTP-7 sections. The command section possesses three LVTC-7's and each of the other three sections possesses five LVTP-7's. The assault amphibian platoon provides logistic support and transportation for the LVT battalion and additional vehicles to supported units as required by the situation. Two of the three LVTC-7's in the command section of the platoon may be assigned to the supported unit to be employed as mobile command posts.

5 Supply

a The supply section receives supplies from external service elements and provides for distribution within the battalion.

b The company headquarters receives supplies for internal support of the headquarters and service company and provides for distribution.

6 Food Service.--The company headquarters operates a company dining facility or, when augmented by cooks from the other companies, operates a battalion dining facility either in garrison or in the field, as practicable.

(8) Assault Amphibian Company

(a) Mission.--To land the surface assault elements of the landing force and their equipment in a single lift from assault shipping during amphibious operations to inland objectives; to conduct mechanized operations and related combat support in subsequent operations ashore.

(b) Tasks

1 Transport assault elements of the landing force during the ship-to-shore movement.

2 Transport selected equipment and supplies of the landing force during the ship-to-shore movement.

3 Provide lift for assault elements, selected equipment, and supplies in mechanized or other combat support operations during subsequent operations ashore.

4 Transport other supplies and equipment, as required by the assault units during the ship-to-shore movement.

5 Transport assault elements, equipment, and supplies in mechanized or other combat support operations, during subsequent operations ashore.

6 Provide lift for logistic requirements during subsequent operations ashore, forward of the FEBA.

(c) Concept of Organization.--The company consists of a company headquarters and four assault amphibian platoons. The company headquarters contains the headquarters, communication, maintenance, and assault amphibian sections. Each assault amphibian platoon contains a platoon headquarters and two assault amphibian sections; each section consists of five assault amphibian vehicles.

1 Command and Control

a Command and Staff.--Command functions are exercised through a command group in company headquarters and the four platoon commanders. The command group performs the command and staff functions necessary for planning, direction, and supervision in the execution of assigned missions. The command and staff is such as to permit the company to function as part of the battalion or as a company in support of, or attached to, an infantry unit.

b Intelligence.--There is no organic specialized reconnaissance or surveillance capability within the company. The company collects information by direct observation and uncovering enemy personnel and materiel. Processing is limited to expediting the transmission of information to higher headquarters.

2 Firepower.--The main firepower of the company is provided by weapons mounted on each assault amphibian. In addition, individual weapons and other light infantry weapons are provided for security and local position defense.

3 Mobility.--The basic means of mobility is provided by the assault amphibian which provides mobility on land and water. Land mobility is augmented by organic wheeled vehicles.

4 Logistics.--The company logistics organization is based on unit distribution of supplies, normal supply procedures, and limited organizational maintenance. The company is organized to handle the internal distribution of supplies and carry a basic load. Additional supplies, maintenance, medical support, and transportation are provided by battalion.

5 Communications

a The primary method of communications is by radio. Adequate radios are provided to establish effective communications with supported commanders at each echelon, supporting arms, and subordinate units, to include individual vehicles. The latter capability can provide commanders of supported units with an emergency method of communications with subordinate commanders.

b When an infantry unit commander is being transported in a command vehicle, he can employ the adios contained therein to enter the nets normal to his operation.

c Alternate means of communications are by wire, messenger, and visual devices.

(d) Concept of Employment.--The company is employed to transport troops, supplies, and equipment of the supported unit. A company will normally be placed in direct support of the unit being supported; however, after due consideration of the tactical and logistical implications,

the company may be attached. The company is capable of independent deployment for a limited period of time. Two of the three LVTC-7 command vehicles in the company headquarters may be assigned to the supported unit, to be employed as a mobile command post. The assault amphibian platoon is not capable of operating independently. Reinforced platoons are capable of being employed independent of the company for short periods of time when assigned or attached to a unit where administrative and logistic support can be provided. The major items of equipment are shown below.

ASSAULT AMPHIBIAN COMPANY

3	Landing Vehicle, Tracked, Command and Communication LVTC-7
43	Landing Vehicle, Tracked, Personnel, Aslt Amph. Carrier, LVTP-7
1	Landing Vehicle, Tracked, Recovery, LVTR-7
6	Control Radio Set AN/GRA-6
6	Radio Set, Control Group AN/GRA-39A
1	Radio Set, AN/GRC-160
1	Radio Set, AN/MRC-109
4	Radio Set, AN/PRC-77
3	Radio Set, AN/VRC-12
1	Radio Set, AN/VRC-47
1	Switchboard, Telephone, Manual SB-22/PT
2	Trailer, Amphib, Cargo, 1/4T, 2-whl, M416
1	Trailer, Tank, Water 400 gal., M149A1
1	Truck, Cargo, 1-1/4T, 6x6, w/winch, M561
3	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
1	Truck, Tank, Fuel Servicing, 1200 gal., 2-1/2T, 6x6, M49A2C
2	Truck, Utility, 1/4T, 4x4, M151A2
10	Launcher, Grenade, 40mm, M203
4	Machine Gun, 7.62mm, M60
4	Machine Gun, 7.62mm, M60D
43	Machine Gun, 50 Cal., M85

(e) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(f) Logistical Capabilities

1 Maintenance.--The company is capable of organizational maintenance (first and second echelon) on amphibious vehicles and all other organic equipment.

2 Medical.--Provided by battalion.

3 Transportation.--Organic assault amphibian vehicles and motor transport vehicles provide limited means for supporting the four platoons.

4 Supply.--The company maintains operating/training repair parts, as directed, and a 30-day stock of mount-out repair parts.

5 Food Service.--Capable of providing a company dining facility in garrison and in the field.

h. Combat Engineer Battalion

(1) Mission.--To render close combat engineer support to a Marine Division.

(2) Tasks

(a) Provide essential vertical construction support, which is temporary in nature, designed to minimum standards necessary to meet combat requirements.

(b) Provide utilities support to include water supply, electrical power generation and distribution, refrigeration and bath services for the Marine division.

(c) Provide engineering reconnaissance within the division zone of action or sector of defense. In areas not under division control, appropriate infantry support will be required.

(d) When augmented, erect standard prefabricated fixed and floating bridges.

(e) Construct nonstandard timber bridges up to short span Class 60 from local materials when available.

(f) Assist in the construction and operation of rafts using standard prefabricated floating bridge components.

(g) Reinforce, repair, and maintain bridges other than prefabricated types.

(h) Construct and position obstacles requiring special engineer equipment or technical skills.

(i) Supervise the placement of extensive minefields and booby traps.

(j) Furnish technical and mechanical assistance for the construction of cut-and-cover type temporary field fortifications.

(k) Perform specialized demolition missions beyond the capability of infantry elements.

(l) Perform specialized assistance in breaching obstacles, including mines, from the high water mark inland.

(m) Supervise and participate in the clearance of minefields and booby traps.

(n) Supervise specialized camouflage operations, primarily concealment and deception measures of major significances to the division as a whole.

(o) Provide and operate water points and install refrigeration as required for the division.

(p) Construct, improve, and maintain necessary expedient runways and pads for light liaison and observation type aircraft and helicopters and meet minimum divisional requirements.

(q) Construct and maintain forward sites for AV-8 type aircraft.

(r) Provide temporary repair of existing roads and limited

new construction of engineer roads, including essential maintenance of such installations for moderate logistic traffic. Except under unusual conditions, this activity will be generally limited to the division area of operations.

(s) Provide material handling equipment support for the division.

(3) Concept of Organization.--The combat engineer battalion consists of a headquarters and service company, engineer support company, and four combat engineer companies. The H&S company consists of elements to provide the battalion commander with facilities for command and control functions, and communication support for subordinate elements of the battalion. The engineer support company consists of a company headquarters, equipment platoon, utilities platoon, and a motor transport platoon. Four combat engineer companies are included in the battalion organization to provide support to the infantry regiments and other division units as required. Each of the combat engineer companies consists of a company headquarters and three combat engineer platoons. (See Figure 2-12.)

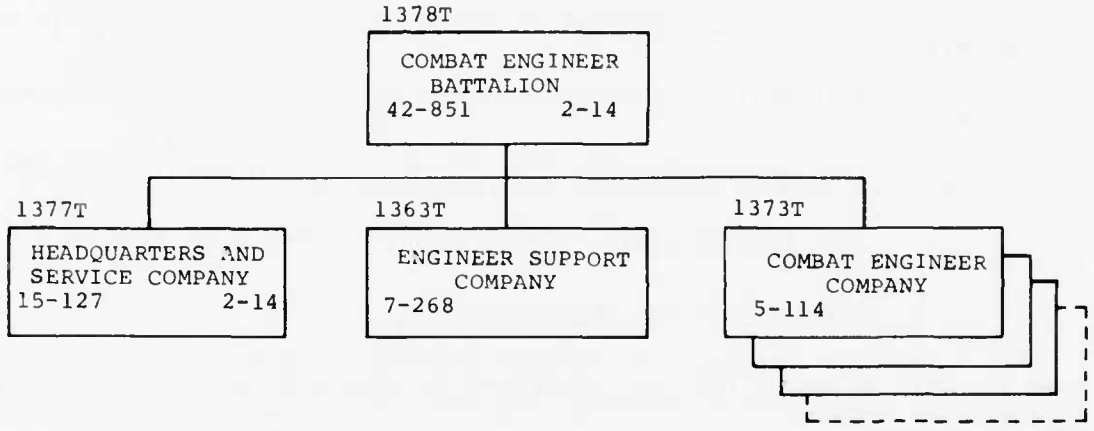


Figure 2-12.--Combat Engineer Battalion.

(a) Command and Control.--The battalion commanding officer exercises command and control of the battalion through the battalion staff and the company commanders.

(b) Firepower.--Limited to light infantry weapons.

(c) Mobility.--Not self-mobile; requires external motor transport support to move the battalion as a unit.

(4) Concept of Employment.--The combat engineer battalion will provide both tactical and logistical engineer functional support for the division. It is organized to provide one combat engineer company for each infantry regiment and its associated tasked elements, one combat engineer company to support other division elements, and still maintain the flexi-

bility to provide required augmentation to the combat engineer companies in the forward areas. Operations of those companies supporting forward elements will generally be decentralized. Engineer support requirements to the rear of forward elements will be performed under centralized engineer battalion control. The engineer support company provides augmentation in the form of personnel and specialized engineer equipment to the combat engineer companies.

(5) Administrative Capability.--Capable of self-administration.

(6) Logistical Capabilities

(a) Maintenance

1 Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment; capable of organizational (second echelon) maintenance on organic communication equipment and infantry weapons. Organizational (second echelon) maintenance on motor transport and engineer equipment is provided for by the battalion. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

2 Support.--None.

(b) Supply.--Capable of providing organic supply support to the battalion.

(c) Medical.--Capable of providing medical services support to the battalion.

(d) Transportation.--The battalion has organic transportation support required to accomplish its stated mission.

(e) Food Services.--Capable of providing food service support to the battalion.

(7) Headquarters and Service Company

(a) Mission.--To provide command, control, and administrative elements to supervise the operations of the battalion, including the provision of supply, food services, communications, chaplain services, and medical support.

(b) Concept of Organization.--The headquarters and service company consists of the battalion headquarters which contains headquarters section, S-1/adjutant section, S-2 section, S-3 section, and S-4 section; a supply platoon containing a battalion food service section; a communication platoon; a medical section; a chaplain section, and a company headquarters.

1 Command and Control.--The company provides the battalion commander with facilities for command and control. The company commander executes the normal command and staff functions.

2 Firepower.--Limited to light infantry weapons.

3 Communications.--Capable of providing communication support for the battalion.

4 Mobility.--Not self-mobile; requires motor transport support from external sources to move the company as a unit.

(c) Concept of Employment.--The company decentralizes support functions in the areas of supply, dining, communications, medical and chaplain services to the extent necessary to meet battalion operational requirements. It provides internal supply, communications, medical, and dining support to subordinate elements of the battalion. The major items of equipment are shown below.

(d) Administrative Capability.--None. Consolidated under battalin S-1/adjutant section.

HEADQUARTERS AND SERVICE COMPANY, COMBAT ENGINEER BATTALION

1	Radiac Computer Indicator, CP95A/PD
9	Control Radio Set, AN/GRA-6
6	Radio Set, Control Group, AN/GRA-39A
7	Radio Set, AN/GRC-160
6	Radio Set, AN/MRC-83A
3	Radio Set, AN/MRC-109
2	Radio Set, AN/MRC-110
4	Radio Set, AN/PRC-47
43	Radio Set, AN/PRC-77
1	Receiving Set, Radio, AN/GRR-17
3	Switchboard, Telephone, Manual, SB-22/PT
1	Switchboard, Telephone, Automatic SB-3614 (V)TT
1	Teletypewriter Set, AN/GCC-3-A
1	Surveying Set, General Purpose
1	Truck, Ambulance, 1/4T, 4x4, M718A1
10	Machine Gun, 7.62mm, M60
2	Night Vision Sight, Individual Served Weapon, AN/PVS-4

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on assigned communication equipment and infantry weapons. Organizational (second echelon) maintenance on motor transport and engineer equipment is provided by combat support company. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--Capable of providing organic supply support to the battalion.

3 Medical.--Capable of providing medical services support to the battalion.

4 Transportation.--None organic; support is provided by combat engineer support company, combat engineer battalion.

5 Food Services.--Capable of providing dining service support to the battalion.

(8) Combat Engineer Company

(a) Mission.--To provide close combat support of an engi-

neer nature as necessary to meet the essential requirements of an infantry regiment and other division elements in combat operations.

(b) Tasks

1 Provide engineer reconnaissance as required.

2 Provide assistance for the cross-country movement of tracked and light wheeled vehicles.

3 Erect temporary engineer type structures to assist in the movement of light vehicles and personnel across dry and wet gaps, subject to the availability of local materials.

4 Construct and operate light rafts, subject to the availability of materials.

5 Reinforce and repair existing bridges with local materials for the passage of light vehicles.

6 Improve existing terrain for use as helicopter terminal points.

7 Furnish technical assistance in the fabrication and positioning of light obstacles.

8 Supervise the placement of minefields and booby-traps.

9 Furnish technical, and mechanical assistance in the installation of temporary cut-and-cover type field fortifications.

10 Perform specialized demolition missions beyond the capability of the infantryman.

11 Provide specialized assistance in breaching obstacles, including mines, from the high water mark inland.

12 Supervise extensive or sensitive minefield clearance.

13 When augmented by necessary elements of the engineer support company, perform any task for which the combat engineer battalion is responsible.

(c) Concept of Organization.--The combat engineer company consists of a company headquarters and three combat engineer platoons. The company provides direct combat engineer support to infantry task groupments for operations. It can provide one combat engineer platoon for close support of each infantry battalion and associated task elements.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Limited to light infantry weapons.

3 Communications.--None organic; support is provided by headquarters and service company, combat engineer battalion.

4 Mobility.--The company possess a limited amount of helicopter transportable equipment. It requires heavy motor transport support to displace its various platoons and/or squads.

(d) Concept of Employment.--A combat engineer company will generally be in direct support of an infantry regiment for operations. Although the company may operate under the centralized control of the company commander, it may more frequently operate under control of the platoon leaders in widely dispersed areas, with the company commander acting as advisor to the infantry regimental commander. One combat engineer company is provided for support of division elements to the rear of forward areas and to augment the engineer companies in forward areas as required. The combat engineer company has limited construction equipment, some of which is helicopter transportable. Equipment augmentation with operators is furnished as necessary from the combat engineer support company. In all such cases, control of augmenting elements will generally be passed to the combat engineer company requiring such assistance. The major items of equipment are shown below.

COMBAT ENGINEER COMPANY, COMBAT ENGINEER BATTALION

9	Detecting Set, Mine, Portable, Non-Metallic, PRS-7
9	Dectecting Set, Mine, Portable, Metallic, P55-11
3	SS Launcher, Rocket, Ground, Demo Kit, PRJ Charge
1	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
1	Truck, Cargo, 1-1/4T, 4x4, M880
3	Truck, Cargo, 1-1/4T, M561
9	Truck, Platform, Utility, 1/2T, 4x4, M274A5
1	Truck, Utility, 1/4T, M151A2
9	Demolition Equipment, Engineer Squad
27	Demolition Equipment, Individual
8	Machine Gun, 7.62mm, M60

(e) Administrative Capability.--None. Consolidated under battalion S-1/adjutant section.

(f) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first echelon) maintenance on all organic equipment. Organizational (second echelon) maintenance of motor transport and engineer equipment is provided by engineer support company. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--None organic; support is provided by headquarters and service company, combat engineer battalion.

3 Medical.--None organic; support is provided by headquarters and service company, combat engineer battalion.

4 Transportation.--None organic; support is provided by engineer support company, combat engineer battalion.

5 Food Services.--None organic; support is provided

by headquarters and service company, combat engineer battalion.

(9) Combat Engineer Support Company

(a) Mission.--To provide personnel, equipment, and appropriate task units to other elements of the battalion in support of operational requirements. To provide potable water for the Marine division and electrical power for designated elements of the Marine division.

(b) Tasks

1 Augment the combat engineer company with engineer and motor transport equipment and personnel required in the performance of all those tasks for which the combat engineer battalion is responsible.

2 Provide electrical power generation and distribution as required in support of the Marine division.

3 Provide essential vertical and horizontal construction support, which is temporary in nature, necessary to support the Marine division.

4 Provide water supply and distribution, bath, and refrigeration services as required by the Marine division.

5 Provide material handling support as required by the Marine division.

(c) Concept of Organization.--The combat engineer support company consists of a company headquarters, equipment platoon, motor transport platoon, and utilities platoon. The functional support requirements of the company are provided by the three platoons which are structured to permit task organizing of equipment and personnel as required.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Limited to light infantry weapons.

3 Communications.--None organic; support is provided by headquarters and service company, combat engineer battalion.

4 Mobility.--Requires external motor transport support to lift the combat engineer company as a unit.

(d) Concept of Employment.--The combat engineer support company provides assistance in the accomplishment of essential engineer support functions in forward areas. It is capable of supporting all functions for which the combat engineer battalion is responsible. The company will employ specialist personnel, as individuals, or tasked units tailored for specific mission in support of the combat engineer companies. In all such cases, control of augmenting elements will generally be passed to the combat engineer company requiring assistance. The company will habitually be employed under centralized control of the combat engineer battalion commander. The major items of equipment are on the following page.

(e) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

ENGINEER SUPPORT COMPANY, COMBAT ENGINEER BATTALION

2	Backhoe Crane-Shovel, Bay City, MOD 37
2	Crane-Shovel, Crawler-Mtd, Bay City, MOD 37-M66
1	Crane, Trk-Mtd, 15T, M315T
3	Crane, Wheel-Mtd, SP, 3T, M71
6	Detecting Set, Mine, Portable, Non-Metallic PRS-7
6	Detecting Set, Mine, Portable, Metallic PSS-11
63	Generator Set, 3kW, 60Hz, Skid-Mtd, MEP-016A
33	Generator Set, 3kW, 400Hz, Skid-Mtd, MEP-021A
3	Generator Set, 100kW, 60Hz, Skid-Mtd, MEP-007A
12	Generator Set, 60kW, 60Hz, Skid-Mtd, MEP-006A
8	Generator Set, 10kW, 60Hz, Skid-Mtd, MEP-003A
1	Generator Set, 10kW, 400Hz, Skid-Mtd, MEP-112A
34	Generator Set, 30kW, 60Hz, Skid-Mtd, MEP-005A
1	Generator Set, 30kW, 400Hz, Skid-Mtd, MEP-114A
1	Roller, Pneumatic Tired, R-135
1	Roller, Towed, Grid, RG-215
2	Roller, Towed, Sheepfoot, MDG-96
4	Scraper, Earthmoving, Towed, Hydrlly Oprd, 8-CuYd, MC80
3	Shovel Front, Crane Shovel, BC MOD 37
65	Tank Fabric, Collapsible, 3000 Gal.
5	Tractor, Full Tracked, Small, w/Bullgrader MC450
5	Tractor, Medium, Full Tracked, 82-30FA-M3
10	Tractor, Full Tracked, w/Multi-Purpose Bucket Case, MC-1150
8	Tractor, Rubber Tired, Articulated Steering, 72-31MP
5	Tractor, Rubber Tired, Wheeled, Industrial, MC580B
7	Tractor, Wheeled, Industrial, MRS-100, M69
5	Truck, Forklitt 05-3354
5	Truck, Forklift, Rough Terrain MC-4000
14	Water Distribution Equipment
14	Water Purification Unit, Frame-Mtd, 1500 GPM, U22446
2	Welding Machine, Arc, Trlr-Mtd, LM62A
2	Cleaner, Steam Pressure Jet, Trlr-Mtd, JOM-1
34	Chassis, Trailer, General Purpose, 3-1/2T, 2-Whl, M353
3	Semi-Trailer, Low-Bed, 40T, M870
6	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
14	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
45	Trailer, Flatbed, 3/4T, 2-Whl, M762
6	Trailer, Tank, Water, 400 Gal., M149A1
7	Truck, Cargo, 1-1/4T, 4x4, M880
10	Truck, Cargo, 5T, 6x6, M54A2C
24	Truck, Dump, 5T, 6x6, M51A2
2	Truck, Tank, Fuel Servicing, 1200 Gal., 2-1/2T, 6x6, M49A2C
10	Truck, Utility, 1/4T, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
3	Truck, Tractor, 10T, 6x6, M123A1C
4	Demolition Equipment, Engr. Squad
10	Machine Gun, 7.62mm, M60

(h) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first echelon) maintenance on all organic equipment. Capable of organizational (second echelon) maintenance on battalion motor transport and engi-

neer equipment. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--None organic; support is provided by headquarters and service company, combat engineer battalion.

3 Medical.--None organic; support is provided by headquarters and service company, combat engineer battalion.

4 Transportation.--The company has the organic transportation capability necessary to provide support to the combat engineer battalion and fulfill the primary mission of the company.

5 Food Services.--None organic; support is provided by headquarters and service company, combat engineer battalion.

SECTION 2B

MARINE DIVISION
Q-1 PERIOD (1979-1983)

204. COMMON EQUIPMENT

Developments for the Marine division during the Q-1 period fall generally into four areas: Communications, infantry weapons, battlefield surveillance devices, and artillery weapons system. The effort in the infantry weapons area is modest but will increase in the Q-2 period. The battlefield surveillance area will receive some worthwhile improvements and the artillery regiments/battalions will experience major equipment changes during 1979-1983, resulting in markedly improved capabilities in artillery fire support. With the exception of artillery weapons system, none of the foregoing categories of new and improved equipment will dictate significant organizational changes. This will be discussed further in paragraph 205e. Artillery organizations will have to conduct full-scale training to meet the impact of new howitzers and computers systems, but the training will be on-the-job. Communications improvements, discussed previously in the FMF section, will be highlighted under a general subparagraph below, as will battlefield surveillance devices that fall within the spectrum of division units.

a. Communication.--During the Q-1 period, the division will experience the onset of the progression of manual to automatic switching, the start of the changeover from analog to digital communications, several product improvements in communications equipment, and the introduction of some communications innovations, for example, SATCOM and PARKHILL.

The communications equipment having significant impact on the division have been explained in the FMF section. Those items considered of special interest to the division and subordinate units during this period will be recapitulated below.

(1) Automatic telephone switching will improve service to users by introduction of a new switchboard, the SB-3614.

(2) HF communications will be improved by the introduction of a family of equipment based on a common receiver-transmitter. Significant impact will be at the "Infantry" level by the replacement of the AN/PRC-47 with the AN/PRC-104 and -105. Another in this HF family located within the division is the AN/MRC-138. A separate UHF mount will be available to provide a UHF capability with the AN/MRC-138. A new hand-held VHF radio, the AN/PRC-68, will find many applications in division units. Ground commanders will welcome the AN/ASC-26, a long-awaited helicopterborne communications package. These are specifically for the use of the airborne infantry commander, but will be kept and maintained by the support helicopter unit.

(3) A new concept will be evaluated by augmenting regiment-to-battalion teletype machines with facsimile machines, the AN/GXC-7A. If the concept is accepted, teletype machines at that level may be on their way out. The AN/MSQ-( ), also called AMES (Automated Message Entry System), will provide another step toward complete automation of the communication center.

(4) Satellite communications will be introduced through the AN/TSC-93. Located at the division headquarters, this SATCOM terminal will

provide multichannel links to MAF.

(5) COMSEC development will have considerable impact on division and subordinate units. Generally, with the goal that eventually all communications will be secure, the new COMSEC equipment introduced to the field (VINSON, and the TSEC/KYV-2) will be in addition to, not in place of, COMSEC equipment already held. PARKHILL affords a hitherto unobtainable capability to secure tactical HF voice circuits.

The above mentioned items plus the remainder of all communications equipment to be introduced to the division during this period are shown in Figure 2-13.

b. Battlefield Surveillance Devices.--Within this broad category are included items to penetrate the darkness and foliage, increase visual sightings, stabilize the field of view, and provide seismic or acoustical information from remote locations. Most of these capabilities exist today; the first two of the following developments are product improvements. Conversely, individual night vision goggles provide a new capability to the FMF. Battlefield surveillance devices are designed to provide systematic remote surveillance for combat intelligence, target acquisition, protection, and defense security. The advent of new and improved surveillance devices will enhance the effectiveness of patrols, listening posts, and all types of defensive postions.

(1) AN/PPS-15 Radar Set.--A replacement item for the AN/PPS-6 on a one-for-one basis, the AN/PPS-15 is lighter (26 vs 60 lb) and more effective. Its effectiveness is based upon lower background noise level, which permits easier tracking and greater operator accuracy. This one-man load is designed to acquire moving targets under conditions of reduced visibility. It will provide range and azimuth on a moving man at ranges up to 1,500 meters and a moving vehicle at ranges to 3,000 meters. The radar is line-of-sight (LOS) and thus has ground form limitations. Further, it is constrained by solid objects and dense foliage within its LOS. The latter shortcoming is being dealt with by the development of a foliage penetrator discussed in the Q-2 period. The AN/PPS-15 will be found in all infantry battalions and regimental headquarters, the division and force reconnaissance units, the division headquarters battalions, as well as in most of the support-type squadrons of the MAW.

(2) Tactical Intrusion Detector (TID).--During the Vietnam conflict, many Marine infantry and reconnaissance units were furnished Patrol Seismic Intrusion Devices (PSID's) from a special allowance. These PSID's provided an LOS seismic detection of enemy activity up to several hundred meters. Presently under testing is a new PSID which has six sensors with both audio and visual activation alerts, and an LOS capability to 1,500 meters. The next test is scheduled for February 1980 when the first generation PSID, the newer PSID, and an Army improved Platoon Early Warning System (PEWS) will be compared. Based on the results of this test, the Marine Corps will decide what type TID will be purchased for issue to FMF in FY 80. The reported capabilities of the PEWS are similar to the new PSID, except PEWS has 10 sensors vs. 6 and a capability to receive signals from the sensors by radio signal or wire; the latter gives PEWS other than LOS qualities. The TID eventually issued to the FMF will be located within most ground organizations, plus aviation support organizations and units.

(3) Individual Night Vision Goggles (NVG) AN/PVS-5.--As stated in the letter of adoption and procurement, the night vision goggles AN/PVS-

5 is a lightweight, headmounted, image intensifier, passive binocular that allows the operator to perform tasks at night or under low light level conditions. Compatible with the helmet and the protective mask, the goggles strap to the head, thereby leaving both hands free to handle a weapon, drive a vehicle, operate equipment, or observe from helicopters. They can function both for distance and close work. In the first example, a patrol or outpost could continuously view a large area of terrain. In the latter application, using the built-in infrared light source, a Marine could read maps or messages, do forward repair or maintenance work, and perform other tasks that required blackout conditions. The NVG will be issued to all organizations and units in the division and FSSG as well as several of the ground support units in the MAW beginning in FY 80.

205. ORGANIZATIONS

a. Headquarters Battalion.--The new battlefield surveillance devices will impact on the capabilities and operational methods of the Sensor Control and Management Platoon (SCAMP). Within the communications company, adjustments will be made to accomodate the more effective generations of equipment being received and the major transition from analog to digital communications, beginning during the Q-1 period.

b. Infantry Regiment.--The regiment will receive the first system of several that are intended to improve tactical command and control. The PLRS will function in its initial capability, that of an accurate and reliable navigation aid, when it arrives in the FMF during 1982. The PLRS has many capablities and applications to MIFASS, TCO, and TAOC-85, but until they arrive during Q-2, the PLRS will mainly serve relative to the Position Location Post Processor (PLPP) located at the regiment. Communications advancements will assist the regimental commander and his staff both in their ability to respond to the needs of subordinate organizations, and to rapidly reply to the information demands of the higher-level commanders.

c. Infantry Battalion.--There are several individual weapons improvements forthcoming that will assist the Marine infantryman in the execution of his mission.

(1) Shoulder-Launched Multipurpose Assault Weapon (SMAW).--A need has been identifed for a man-portable assault weapon for employemnt against field fortifications and urban hardened targets. The Marine Corps-developed SMAW is a man-portable, three tube, multishot, reusable launcher, rocket powered infantry assault weapon. The warhead is a high-explosive (HE) plastic with a dual-made fuze designed to penetrate "soft" targets such as earth and timber bunkers or to detonate upon impact against "hard" targets such as masonry structures or light armor. The SMAW's 250 meter point target range and multishot features ensure rapid engagement and destruction of bunkers, fortified urban postions, and light armored vehicles. With some preparation of firing positions, this weapon can be fired from enclosures in urban warfare.

(2) VIPER, Light Antitank Assault Weapons (LAAW).--An old name (LAAW) with an improved capability, the VIPER will replace the present LAAW in 1981. The VIPER is a lightweight (6 to 7 lb), single shot, throwaway antitank munition with an improved effective range of 250 to 500 meters and increased lethality against armored vehicles. The VIPER will supplement other organic antitank weapons (e.g., DRAGON) and will provide the rifle platoon with its primary means of antiarmor protection. With some prepara-

tion, this weapon can also be fired from enclosures in urban conflicts.

(3) Light Weight Company Mortar System (LWCMS).--Marine Corps rifle companies will begin receiving the 60mm LWCMS in FY 80 to replace all 60mm M19 mortars on a one-for-one basis. The system, along with the HE round and Multi-Option Fuze (MOF), was type-classified standard on 26 July 1977. The LWCMS has a maximum range of 3,500 meters, weighs 46.75 lb in the standard mode (18 lb in the handheld model), and utilizes a light (the M64) with a 6400 mil deflection scale. A tritium light source in the fire control equipment permits use of the sight and aiming stakes at night without batteries or light bulbs. The light source will last 4 to 6 years.

In order to permit full tactical use of the mortar's capabilities without personnel increase to accommodate a fire direction center, the development of a small, lightweight (4 to 6 lb) fire direction computer is planned. The computer, or calculator, will allow the storage and computation of all data necessary to lay and fire the mortar. The calculator, two to each 81mm mortar platoon and two to each company mortar section, can be easily operated by one man.

In addition to the HE round with MOF, the following rounds are under development: an illumination round that will provide illumination to the maximum range of the HE round, a tactical screening smoke round, and two types of training rounds--a cheap concrete round that handles like and ballistically matches the HE round, and a 22mm training round with sabot.

d. Artillery Regiment

(1) As with the infantry, the artillery regimental headquarters will also receive the PLRS during 1982. In its basic use, the PLRS will assist in providing accurate locations of friendly units, thereby enhancing survey, fire support accuracy, and fire support coordination. All batteries of the regiment will receive new survey sets in 1981. These sets are designed for the specific order of survey required by the receiving unit and an overall 40 percent increase in efficiency is predicted.

(2) Radar AN/TPQ-36.--The AN/TPQ-36 is being developed by the Army for its own use and for use by the Marine Corps. It will replace the AN/MPQ-4A in the artillery regiment, on a one-for-one basis, during 1981. The TPQ-36 is designed to locate multiple enemy artillery, mortar, and rocket positions which may be firing simultaneously. Design features include the following:

- Fixed Sector Search of 1600 mils and an extended originator search of up to 6400 mils.
- Operator selectable priority and sensor zones.
- Impact predict mode for aid in assigning priorities to acquired targets.
- Digital link with an Artillery Computer System (ACS)
- System operational availability greater than 90 percent.
- Sufficient accuracy for attack of targets by medium artillery.

		MAR DIV	HQ BN	INF REGT	INF BN	ARTY REGT	ARTY BN	RECON BN	TANK Bn	AA BN
SWITCHING EQUIP	SB-3614 (AUTO SWITCHBOARD)		△	△	△	△	△		△	△
MULTI CHNL TRANS EQUIP										
SINGLE CHNL TRANS EQUIPMENT	AN/PRC-104 (MANPACK HF RADIO)		△	△	△	△	△	△	△	
	AN/PRC-105 (MANPACK HF RADIO)		△	△	△	△	△	△	△	
	AN/[illegible]RH-64 (HF RECEIVER)		△							
	AN/VRC-160 (VEH MOUNT VHF RADIO)		△	△	△	△	△	△	△	△
	AN/MRC-138 (HF RADIO VEHICLE)		△	△	△	△	△		△	△
	AN/MRC-138/UHF MT (HF/UHF RADIO VEHICLE)		△	△	△	△	△		△	△
	AN/ASC-26 (HELIBORNE C&C SYS)	Shown as MARDIV asset, but will actually be located in supporting helo unit.								
	AN/PRC-68 (HANDHELD VHF RADIO)		△	△	△	△	△	△	△	△
TERMINAL DEVICES	AN/GXC-7A (FACSIMILE)		△	△	△	△	△		△	△
	AN/MSQ-( ) (AUTO MSG ENTRY SYS)		△							
	AN/[illegible]RU (QUERY DEVICE)		△							
	AN/UGC-74 (TELETYPE SYSTEM)		△	△		△			△	△
TECH-SYSCON EQUIP										
SATCOM EQUIP	AN/TSC-93 (BENCHMOUNT SATCOM)		△							
INTERFACE EQUIP	AN/GRA-39B (HF/VHF REMOTE CONTROL GROUP)		△	△						
	AN/GRA-( ) (HF REMOTE CONTROL GROUP)		△	△	△	△	△	△	△	△
	HYX-57 (WIRELINE ADAPTER)		△	△	△	△	△		△	△
COMSEC DEVICES	TSEC/KY-57,-58 (VINSON, SECURE VHF/UHF)		△	△	△	△	△	△	△	△
	TSEC/KY-65,-75 (PARKHILL, SECURE HF)		△	△	△	△	△	△	△	
	TSEC/KY-67 (BANCROFT, SECURE VHF RADIO)		△	△	△	△	△	△	△	
	TSEC/KYV-2 (COMSEC FOR AN/PRC-68)		△	△	△	△	△	△	△	

Figure 2-13.--Communications Equipment, Marine Division
Q-1 Period

The radar requires fifth-order survey. Training for operators and maintenance personnel will be conducted at Fort Sill.

e. Artillery Battalion.--During the Q-1 period, the artillery battalion will enjoy one of the most significant refurbishings of any Marine Corps organization. Both the 105mm and 155mm howitzer (T) batteries will receive the new M198 howitzers. A new artillery computer system will be introduced. In addition, the advent of laser equipment for tracking, designating, and positioning should couple with the foregoing developments to significantly enhance the capabilities of the artillery battalion. Cannon-Launched Guided Projectiles (CLGP) will team with laser spotters to virtually ensure first round accuracy for 155 gunners beginning in 1982. In addition to some personnel realignments and maintenance skill improvements, a significant personnel increase will occur with the influx of M198 howitzers into the direct support battalions (projected-+54 Marines, the majority of which are cannoneers). A full-scale retraining program will evolve with the preparation for and acceptance of the new equipment.

(1) M198 155mm Howitzer.--The Army has developed the M198 towed 155mm howitzer to satisfy requirements for a long-range, helicopter-transportable, medium artillery weapon for the near and mid-range time period. The Marine Corps will use this weapon to replace both the M101A1 and M114A1 howitzers during 1981-83. The M198 is a conventional, split-trail, towed configured howitzer weighing 15,500 lb. Under concurrent development is a family of rocket assisted projectiles and new propellants which will permit the M198 to achieve ranges of 24,000 meters with coventional ammunition and 30,000 meters with rocket assisted projectiles.

(2) Modular Universal Laser Equipment (MULE).--The MULE is a Marine Corps unilateral development program under the cognizance of the US Army Missile Research and Develop Command, Redstone Arsenal, Alabama. The goal of this program is to provide the observer with a significant increase in target acquisition accuracy. The MULE will give the observer an ability to designate targets for laser guided ordnance with a compact, manportable laser. The MULE consists of three modules: a Laser Designator Rangefinder Module (LDRM), a Stablizer Tracking Tripod Module (STTM), and a North Finding Module (NFM). The total system can be carried by two men with loads of approximately 20 lb each. The MULE will allow the observer to locate targets in range to an accuracy of plus or minus 10 meters and in azimuth to an accuracy of plus or minus 3 mils. The laser uses the triservice codes and will be compatible with all laser guided ordnance and trackers. The LDRM can be used in the hand-aimed mode or mounted on the STTM. When mounted on the tripod, the laser can be used to track and attack moving targets with guided munitions. The MULE will enter the inventory in the early 1980's.

f. Reconnaissance Battalion

(1) The battalion will benefit by all of the improved battlefield surveillance devices, new communications equipments, and sophisticated location and reporting systems discussed previously. None of the foregoing developments or the IBS (following) will have a major impact on the organization of the reconnaissance battalion. Tactical changes, if any, will be evolutionary.

(2) Inflatable Boat, Small (IBS).--The new IBS is being developed for division and force reconnaissance units. The prototypes being

tested are lighter, more durable, and have better stability/sea-keeping characteristics than the present model. The new IBS will also possess a silenced propulsion system inaudible beyond a distance of 100 meters. The IOC is expected to be 1980.

(3) Waterproof Equipment Bags.--This ROC is designed to meet the two requirements. First, a surface waterproof equipment/weapon bag for use in conjunction with the (IBS). Additionally, a requirement exists for a bouyancy compensation capability for subsurface utilization during scuba operations. R&D development will be required in solving the bouyancy requirement. An IOC of FY 81 is anticipated.

g. Force Reconnaissance Company.--The mission, organization, and concept of employment of this company will remain unchanged. New equipment will include the AN/PRC-68 and 104, the IBS, the TID, the MULE, and night-vision goggles, all detailed in this section on the Marine Division.

h. 8-Inch Howitzer Battery (Self-Propelled)

(1) M110A1 8-Inch Howitzer (SP).--The M110A1 8-inch self propeled howitzer has replaced the antiquated M110 8-inch self propelled howitzer in the Marine Corps inventory. Two 175mm gun batteries continue to be maintained in the inventory to allow expenditure of remaining 175mm munition inventories and to enhance operational flexibility.

(2) XM650 Rocket Assisted Projectile (RAP).--During July 1979, the XM650 RAP will be added to the XM188 projectile to enable the M110A1 to achieve a range of 29,000 meters.

(3) Cannon-Launched Guided Projectile (CLGP).--By the end of 1980, laser homing projectiles will be available. These projectiles, while having a shorter range than the XM188 projectile and XM650 RAP, will have first-round accuracy at 16,000 meters. The present lesser range of the CLGP is attributed to its earlier development and it is forecasted that the range of the laser-guided projectile will be increased to that of the conventional projectiles in the near future. Laser guidance will be controlled by the MULE, the OV-10 laser designator, and Remotely Piloted Vehicles (RPV's). The laser guided projectiles wil be capable of being guided to moving targets by these devices.

(4) The 8-inch howitzer battery will receive the artillery computer system to replace the Field Artillery Digital Automatic Computer (FADAC).

(a) 175mm Gun Battery (Self-Propelled).--The 175mm gun battery will be replaced by a second 8-inch howitzer battery, armed with the M110A1.

(b) 155mm Howitzer Battery (Self-Propelled).--The battery wil receive the artillery computer system, discussed in the division section of LFOSS, and a new survey set. Where the survey set in present use is a general-purpose set used by engineer units as well, the 155mm howitzer battery will get a survey set tailored to the degree of accuracy required by the user.

i. Tank Battalion

(1) M60lA1 (RISE) Tank.--The product improvement package for the

M60 tank consists of an engine of improved reliability and an image intensification device. The M60A1 RISE (Reliability Improved Selected Equipment) has passive night sights for the gunner and tank commander and a passive night viewer for the driver.

j. Assault Amphibian Battalion-M58 Line Charge.--An M58 line charge will be available for installation onto any LVTP-7, commencing in FY 82. The complete package when loaded with three charges and rockets weighs about 10,000 pounds--the maximum load for a LVTP-7. The M58 adaptor kit, installed but empty, will weigh 3,000 pounds, keeping the LVTP-7 within about 70 percent of its load-carrying capacity. Each line charge is 350 feet long and is attached to the amphibian tractor by a tether line which is 205 feet long. The path cleared will be 15-25 feet wide, depending on the surface area to be cleared.

k. Universal Infantry Weapons Trainer.--To be introduced in 1982, the Universal Infantry Weapons Trainer which will be capable of simulating tactical, controlled fire from infantry weapons to include the current service rifle, the machinegun, the grenade launcher, and the light antitank weapon. The performance of the system will include noise and recoil sensations; it will display, as a target, wide angle motion pictures of tactical combat scenarios, with simulated battle noises.

The device will be organic to and maintained by the Marine Corps Training and Audio-Visual Support Centers. The trainer will be employed aboard amphibious ships, at Marine Corps Reserve Centers and selected infantry training sites.

l. Other Items of Interest.--There are other items which will be issued to organizations of the Marine division but are explained elsewhere in LFOSS. Examples, and their locations in this publication, are:

(1) Remotely Piloted Vehicles (RPV). (Ch. 3, Par. 309.a(3)).

(2) Marine Corps Expeditionary Shelter System. (Ch. 1 Par. 113a).

(3) Product improvement of the M274 MECHANICAL MULE. (Ch. 4, Par. 408c(1)).

m. Q-1 Summary.--Figure 2-14 is a matrix of the developments entering the Marine division during the Q-1 period (1979-1983).

	MAR DIV	HQ BN	INF REGT	INF BN	ARTY REGT	ARTY BN	RECON BN
AN/PPS-15 RADAR SET		△	△	△			△
TACTICAL INTRUSION DETECTOR		△	△	△	△	△	△
NIGHT VISION GOGGLES AN/PVS-5			△	△	△	△	△
POSITION LOCATION REPORTING SYSTEM (PLRS)	△		△		△		△
SMAW				△			
VIPER				△			
LIGHTWEIGHT COMPANY MORTAR				△			
RADAR AN/TPQ-36					△	△	
XM 204 105MM HOWITZER						△	
M198, 155MM HOWITZER						△	
CANNON LAUNCHED GUIDED PROJECTILES						△	
MULE			△	△	△	△	△
ARTY SURVEY SET					△	△	
BATTERY COMPUTER SYSTEM					△	△	
CABLE DITCHER AND TRENCH/LINE LAYER	○	△			△		
INFLATABLE BOAT, SMALL							△
ENGR SURVEY SET							
MCESS	○						
M274 MECH MULE (IMP)		△	△	△			△
RPV's	○						
HEAVY MOTORIZED GRADER							
4,000 LB FORKLIFT			△				
10,000 LB FORKLIFT							
REVERSE OSMOSIS, WATER PURIFICATION UNIT	○						
LIGHTWEIGHT AMPHIBIOUS CONTAINER HANDLER (LACH)							

○ - Distribution to be determined.

Figure 2-14.--Weapons and Equipment, Marine Division, Q-1 Period.

10F

SECTION 2C

MARINE DIVISION
Q-2 PERIOD (1984-1988)

206. GENERAL

Three significant items of equipment scheduled for arrival in the Q-2 period will undoubtably cause some conceptual and organizational changes. The ship-to-shore phase of amphibious operations will be affected by the advent of the Landing Craft Air Cushion (LCAC). The Mobile Protected Weapons System (MPWS), coupled with the XM-1 Main Battle Tank (MBT) will significantly impact on armor and tank-infantry concepts and organizations.

a. Landing Craft Air Cusion (LCAC).--The Navy has in development a high-speed, over-the-water landing craft that will support the capability to initiate the ship-to-shore movement of an amphibious operation at a distance of 12-25 miles from the beach, as compared with the present 4,000 yards. Two designs have been developed which employ different technical approaches. The two craft have open-well deck aluminum hulls, about 90-feet long and 48-feet wide. Ramps, forward and aft, will allow drive-through capability. While these vehicles are not organic to the FMF, they will impact greatly on its capability in amphibious landings and are included here for that reason.

b. XM-1 Main Battle Tank (MBT).--The XM-1 MBT will be discussed under the tank battalion.

c. Mobile Protected Weapons System (MPWS).--The MPWS will be discussed under the tank battalion.

d. Communications

Of the three quinquennium periods covered by LFOSS, the Q-2 Period will have the greatest impact on the Marine division. During this period, several of the MTACC systems should achieve their initial operational capabilities. Also, the transition from analog to digital communication equipment will occur, and be a significant factor. The greatest change will be reflected in command and control capabilities (MTACCS, LFICS). This period is characterized by the continued influx of digital equipment initiated during Q-1. Subsystems of the MTACCS must be integrated with the various communication systems since MTACCS does not provide its own communications. The LFICS will be responsible for linking the MTACCS elements. Throughout Q-2, the overall division communications system will continue to be primarily a mix of analog-digital equipments, with the simultaneous attendant complications in training, operation, and maintenance created by operation of the two types of equipment. As new systems are fielded, it is important to ensure that compatible equipment will exist aboard amphibious shipping. A recapitulation of the communications equipment considered to be of special interest to the division and its subordinate units follows.

(1) Automatic digital switches (some with a limited analog capability) wil be fielded in the form of telephone equipment, the SB-3865 (switchboard) and AN/TCC-42 (switching central); and message switches, the AN/GYC-7 (two-man transportable), and the AN/TYC-11 (switching central).

(2) Digital telephones will be introduced. The TSEC/KY-68 will be used to provide secure voice through the new family of automatic digital

circuit switches.

(3) The AN/MRC ( ), a short-range multichannel radio, will be introduced at the regimental level and above. Multichannel equipment in small units may have been consolidated at a higher level by this period.

(4) A new family of VHF radios, the Single Channel Ground-Air Radio System (SINCGARS) will be introduced in 1985. The nomenclature of the basic radio, AN/GRC-( ), will be used to indentify this series. This equipment will eventually replace the majority of familiar VHF equipment now in the field; for example, the AN/PRC-77 and AN/MRC-109.

(5) Division level ability to monitor, test, and conduct overall management of communication systems will be enhanced by introduction of the AN/TSQ-111 (technical control center).

(6) A digital burst communication device, the PSG-( ), will find wide use throughout the entire communication system and, if favorably received, will have considerable impact on future communications in general.

(7) A SATCOM capability will be extended to the infantry battalion level by the AN/PSC-1, a manpack terminal.

The above mentioned items plus the remainder of the communication equipment to be introduced to the division during this period are shown in Figure 2-15.

e. Battlefield Surveillance Devices

(1) Light-Weight, Foliage Penetration, Battlefield Surveillance Device (FOLPEN-BSD).--The FMF requires an all-weather, all-terrain, day-and-night observation, surveillance, and target-acquisition capability. None of the current devices provide a capability to penetrate foliage while providing surveillance of the battlefield. Feasibility of such a capability was demonstrated in February 1977, when a walking man was detected at 200 meters in sparse-to-dense foliage. FOLPEN is aimed at assisting all combat, combat support, and combat service support units in detecting enemy troops and equipment in forward or rear areas, in all weather and light conditions, and in light to heavy foliage. The FOLPEN is expected to reach the FMF in the O+2 period.

(2) Short Range Direction Finding System (SRDF).--The success of combat operations, at any level of intensity, is, in part, directly dependent upon sound intelligence combined with sound tactical fire and maneuver. Since enemy forces must rely on communication for effective command and control, our capability to intercept, analyze, identify, and locate these emissions is the goal for this development. It has a FY 84 IOC.

(3) Forward Pass.--The FORWARD PASS system provides a commander with the capability of obtaining sensor intelligence data without the need for continuous real-time monitoring and the attendant resource requirements.

This system has the capability to store, interrogate, and display remote sensor data. Its principal use is in amphibious operations, during the time interval preceding the assault phase. Remote sensors are deployed in the Amphibious Objective Area (AOA) preceding the planned assault day. The FORWARD PASS Storage Unit (SU) is deployed at the same time as the

		MAR DIV	HQ BN	INF REGT	INF BN	ARTY REGT	ARTY BN	RECON BN	TANK BN	AAV BN
SWITCHING EQUIP	SB-3865 (AUTO SWITCHBOARD)		△	△	△	△	△	△	△	△
	AN/TCC-42 (AUTO TELEPHONE CENTRAL)		△	△		△				
	AN/GYC-7 (AUTO MSG SWITCH)			△	△	△	△			
	AN/TYC-11 (AUTO MSG SW CNTRL)		△			△				
MULTI CHNL TRANS EQUIP	DGM FAMILY (MULTIPLEX EQUIPMENT)		△	△	△	△	△		△	△
	AN/MRC-( ) (MUX RADIO)		△	△	△	△	△		△	△
	AN/TRC-170 (MUX RADIO)		△							
SNGL CHNL TRANS EQUIP	AN/GRC-( ) (SINGARS RADIOS)			△	△	△	△	△	△	△
TERMINAL DEVICES	AN/UXC-4 (FACSIMILE)		△	△	△	△	△		△	△
	TA-954 (DIGITAL PHONE)		△	△	△	△	△	△	△	△
	AN/PSG-( ) (BURST COMM DEVICE)		△	△	△	△	△	△	△	△
	MRTT (TRFFIC TERMINAL)		△	△	△	△	△	△	△	△
TECH-SYSCON EQUIP	AN/TSQ-111 (COMM TECH CON CTR)		△							
SATCOM EQUIP	AN/PSC-1 (MANPACK SATCOM)		△	△	△					
INTER FACE EQUIP	MX-9810,-9811 (DIGITAL DATA ADAPTER)		△	△		△				
COMSEC DEVICES	ANDVT (COMSEC DEVICE)		△	△	△	△	△	△	△	△
	KG-81 (COMSEC DEVICE)		△	△	△	△	△		△	△
	KG-82 (COMSEC DEVICE)		△	△	△	△	△		△	△
	KG-83 (COMSEC DEVICE)		△	△	△	△	△		△	△
	KG-84 (COMSEC DEVICE)		△	△	△	△	△		△	△
	KG-93 (COMSEC DEVICE)		△	△	△	△	△		△	△
	KGX-93 (COMSEC DEVICE)		△	△	△	△	△		△	△
	TSEC/KY-68 (SECURE DIGITAL PHONE)		△	△	△	△	△	△	△	△

Figure 2-15.--Communications Equipment, Marine Division, O-2 Period.

sensors, or shortly thereafter, within radio frequency line-of-sight to as many sensors as possible (typically 25 to 40). As sensor outputs are received, they are time-tagged and stored in a solid state memory device. This capability permits storage of 68 hours of data from 35 sensors.

The FORWARD PASS Interrogation Unit (IU) is mounted in a small aerodynamic pod aboard a reconnaissance type aircraft with a control box located in the cockpit. The IU allows the pilot to interrogate a number of SU's in a single mission while retaining the option of concurrently carrying out other reconnaissance duties. The READOUT command is sent from the aircraft to a particular SU. Upon receipt of the command, the SU transmits its stored date to the pod-mounted IU where it is recorded on magnetic tape. If the SU memory is filled to capacity, transmission requires 21 to 22 seconds. The IU can record approximately 200 seconds of SU-transmitted data.

Upon the return of the aircraft to a carrier or a rear base, the tape cartridge in the IU is removed from the pod and delivered to the FORWARD PASS Display Unit (DU). The DU processes the data and then plots the information. Twenty-four hours of real-time sensor data are ploted in approximately 24 minutes. While the concept has been heavily oriented toward amphibious operations, it has potential applications to other military operations. An IOC of FY 83 is planned.

f. Marine Tactical Command and Control System (MTACCS).--While detailed previously in the FMF section and in LFOSS-78, MTACCS is mentioned here because of the major impact it will make on the division during the Q-2 period. Five of the six systems with a ground force application are expected to be available during the 1983-1987 time frame:

(1) Marine Air-Ground Intelligence System (MAGIS).--The last of the four MAGIS components, the Intelligence Analysis Center (IAC) is programmed to have an IOC of 1983. This system will provide the division with rapid access to electronic and photo intelligence garnered by the assets of the MAW.

(2) Marine Integrated Fire and Air Support System (MIFASS).--The MIFASS will enable the infantry commander to achieve more timely and precise integration of supporting arms with his scheme of maneuver and overall tactical plan of operations. Its projected IOC is 1986.

(3) Tactical Combat Operations System (TCO).--Designed for introduction to the FMF in 1986, the TCO system will provide an improved field capability to receive, process, store, display, and disseminate information vital to command and control. The TCO will utilize the other systems (e.g., PLRS, MAGIS, MIFASS) to provide the ground commander with the full breadth of capabilities available within the MTACCS.

(4) Marine Integrated Personnel System (MIPS).--Although it is even more in the conceptual stages than the previously described systems, MIPS is nonetheless expected to be available in 1986. MIPS will aid the commander and his staff to evaluate manpower impacts on tactical decisions and to properly manage manpower situations in the combat environment.

207. ORGANIZATIONS

a. Headquarters Battalion.--With the introduction of MIFASS, the

present control functions of the direct air support center (DASC) will be accomplished within the Fire and Air Support Center (FASC) of the division. This will require an organizational change within the communications and headquarters companies of the battalion. While the details of the proposed T/O changes are contained within the integrated logistical support plan for MIFASS, they are still subject to testing and further refinement as the system proceeds through engineering and initial operational testing.

The Sensor Control and Management Platoon (SCAMP) will be fully involved with the FORWARD PASS system described above. Its impact on the platoon's organization and operational concept has not yet been determined. Elsewhere in the headquarters battalion, the multitude of communications improvements detailed in the FMF portion of LFOSS will impact on the communications company, especially as the transition occurs from analog to digital equipments.

b. Infantry Regiment.--As with the headquarters battalion, the infantry regiment's headquarters company will be affected by MIFASS. The regimental FASC calls for the addition of 10 officers and 15 enlisted Marines, plus a few communicators. MIFASS induced changes to the battalion structure will probably be minor. Adjustments for the new communications capabilities and for the TCO will also cause changes in the regiment and battalion organizations. It is too early to predict the scope of these changes.

c. Infantry Battalion

(1) Family of Small Arms (FOSA).--A Marine Corps General Operational Requirement (GOR) states, that in the FMF, a requirement exists for a family of small arms designed to provide the individual Marine with the best possible weapon to perform his particular combat role. A concept has evolved with the objectives of high degree of interchangeability of parts, multiplicity of use, and a common round of ammunition; all of which should simplify logistic support and increase employment flexibility. However, in order to obtain the necessary funding to meet future small arms requirements, all the military services will have to work in concert and make compromises as necessary. One compromise that may be necessary is giving up the "family" concept for better performance from each weapon system. Under development at this time is a 5-year technical plan for a joint-services small arms program that is expected to be completely funded by FY 79. Some of the weapons included in the plan that are current interest to the Marine Corps are as follows:

- o A multishot grenade launcher.
- o A laser rangefinder sight.
- o A rifle system.
- o A personal defense weapon.
- o As sub-machinegun.
- o A Squad Automatic Weapon (SAW).

There are no specific IOC's associated with most of the above items; it is anticipated that any developments which would occur in FOSA as a result of a joint exploratory development would begin to impact on the Marine Corps

in the Q-2 period. An exception, the SAW is explained below.

(2) Squad Automatic Weapon (SAW).--There are three candidates for an automatic rifle to replace the capability the Marine Corps had with the BAR. These are the Ford Aerospace and Communication XM248; the Belgian, Fabrique National Minimi XM249; and a heavy-barrel, open-bolt M16. Developmental and operational testing (DT I/OT I) began in January 1979. Once the best weapon has been selected, there will be a lull in the program until, in FY 80, the second (in addition to 7.62mm) NATO standard small arms round of ammunition has been selected. Once that decision has been made, the SAW program will continue. An IOC of FY 83 is anticipated. As the SAW is designed for the present fire team, no changes in organization are predicted.

d. Artillery Regiment.--The artillery regiment will experience the impact of MTACCS, digital communications, and the conceptual vehicle fleet mix (discussed in the FSSG section of LFOSS) during the Q-2 period. MIFASS will produce the loss of some technical fire direction functions and personnel to the new Fire and Air Support Centers (FASC's). The net effect on the headquarters battery of the regiment will probably be the gain of one officer and the loss of about 22 enlisted Marines. Concomittant with new capabilities will be the requirement to adjust staff procedures and to plan for the personnel training necessitated by the receipt of these equipments.

e. Artillery Battalion.--The arrival of MIFASS and its FASC's will cause shifts of functions and personnel from the artillery to the infantry structure. The headquarters battery of the artillery battalion will experience the greatest impact, as it will lose approximately 39 Marines.

f. Reconnaissance Battalion.--This organization will benefit from FOSA developments which may occur during Q-2, plus those aspects of MTACCS and communications developments that relate to command and control of its reconnaissance teams (through the supported ground organization). FORWARD PASS could also serve the reconnaissance battalion effectively. Surveillance systems such as *FORWARD PASS, being complementary* to reconnaissance, can provide timely statistical data which could then identify the most profitable location for employing reconnaissance teams, thereby saving time and manpower. However, no clear changes in organization are envisioned because of these developments.

g. Assault Amphibian Battalion

The service life of the LVTP-7 extends to 1982. A continuing product improvement program will produce no major changes in the interim. A LVTP-7A1 program will carry the basic LVT-7 package from 1982 into the 1990's. The LVTP-7A1 will consist of a new engine, an automatic fire detection and suppression system, on-board diagnostics, improved ventillation system, nonintegral fuel tanks, and a smoke-generation capacity.

h. Tank Battalion.--The main battle tank for the 1990's is currently being developed under the XM-1 project. The advantages of the XM-1 over the M60 series tank will be increased mobility through greater speed and range. Increased probability of survival will be obtained by a smaller silhouette and better armor protection. Fire delivery will be improved by a maximum effective range of nearly double that of the M60A1. The XM-1 will also achieve greater accuracy and improved night engagement capability. The Army's first purchase of the XM-1 is scheduled for 1982. If the decision is made to purchase the XM-1, the tank battalion should expect its

delivery in 1987.

The organizational impact of the MPWS and the XM-1 are anticipated but unclear at this time. The outcome must depend on the tank/MPWS mix and the concept of employment of each separately, or together in a complementary method.

(1) Mobile Protected Weapons Systems (MPWS).--The MPWS will be a lightly armored assault gun vehicle that will be used primarily as a direct fire support weapons system in support of the infantry against personnel, fortifications, material, and armor-type targets, when tanks are not available. Secondarily, it will be used as a complementary weapons system for tanks on the mechanized battlefield. The MPWS will be helicopter transportable and probably have a 75mm or 90mm gun for its major weapons system. It will be swim capable. During the early stage for force buildup, the MPWS would provide direct fire-support to infantry forces. Because of its size and weight, not only can the system be delivered in greater numbers, but more means of delivery are available. Because of its mobility and firepower, less reliance could be placed on naval gunfire, artillery, TOW, infantry antitank weapons, or air support. An IOC of FY 88 is anticipated.

i. Q-2 Summary.--The introduction and distribution of the foregoing equipment to the Marine Division is reflected in Figure 2-16.

	MAR DIV	HQ BN	INF REGT	INF BN	ARTY REGT	ARTY BN	RECON BN	TANK/ AAV BN
FORWARD PASS		△						
FOLPEN	○							
FAMILY OF SMALL ARMS	○							
SQUAD AUTO WEAPON (SAW)		△	△	△			△	
MAGIS	△							
MIFASS	△		△	△	△	△		
TCO	△		△	△	△	△	△	△
MIPS	△	△	△	△	△	△	△	
LIGHT CRAWLER TRACTOR					△			
HEAVY CRAWLER TRACTOR								
SIXCON	○							
LIGHT HMTT, 3/4 TON	△	△	△	△	△	△	△	△
HEAVY HMTT, 5 TON	△	△	△	△	△	△	△	△
SEMITRAILER, 65 TON								

○ - To be determined.

Figure 2-16.--Weapons and Equipment, Marine Division, Q-2 Period.

SECTION 2D

MARINE DIVISION
Q-3 PERIOD (1989-1993)

208. COMMON EQUIPMENT

The third quinquennium presents few developments that are not continuations of subjects discussed previously. This is not to say that efforts are not being made to ensure continuous developments into the future, but rather that the items which will be introduced into the division in 1989 and 1993 are still in the early stages of exploratory development. Thus, it is too early to predict the final capabilities of most items, as well as their potential T/E placements, or even if they will, in fact, be purchased after development is complete. One organization that could benefit by the development of requirements for the Q-3 period is the infantry battalion. This possibility is addressed below.

a. Communications.--The variety of equipment necessary for the analog-digital transition period characterized by Q-1 and Q-2 will be greatly reduced in the Q-3 period when it is expected that Marine tactical communications will be predominatly digital. Communication centers will be more automated, and further automation and improved man/machine interfaces are being considered. The possible increase in volume of traffic may dictate a further development to a more fully automated message-processing system. To illustrate: a much wider application of optical character readers is anticipated, and this will further reduce manual processing of messages. Telephone and message switching will be automatic. The communications system as a whole will be predominantly secure. By this time the majority of MTACCS systems will have been in operation long enough to test the capability of LFICS to support it. The result may dictate future adjustments to both systems. At the present time, the only new equipment planned for the Q-3 period is the AN/TRC-( ), a multichannel configuration of the SINCGARS AN/GRC-( ) introduced in Q-2. It will replace the AN/MRC-126 mod. (Figure 2-15).

b. MILOGS.--The last of the MTACCS systems destined for the Marine division, MILOGS has an IOC of 1988. One or more of the other systems described previously and scheduled for the Q-2 period could slip in time due to funding constraints.

c. FOSA.--Since it often takes approximately 10 years for an item of equipment to go from the conceptual stage to the operational capability, the infantry FOSA was included in Q-2. However, it may be more appropriate to locate it in Q-3, as the large amounts of expensive systems destined for the previous Q-period may result in funding constraints and schedule slippage.

209. ORGANIZATIONS

a. Infantry Battalion.--While it is difficult to predict specific equipment acquisitions 10 to 15 years in the future, it appears that equipment developments programmed for the Q-2 and Q-3 periods may have impact on some of the basic units of the Marine division; e.g., the Marine rifle squad and its parent platoon and company. If the proliferation of new communications devices, MTACCS, improved battlefield surveillance devices, more effective supporting arms, and a family of improved small arms achieve their intended goals, then perhaps the number of infantrymen required to face the enemy

over a given frontage will be reduced. Does this suggest a smaller tactical unit? It may. If the SAW (Q-2) is more than is required for a fire team, but still essential for the T/E of a squad, perhaps one or two would be chosen as a desired number. Would this decrease the number of fire teams, or increase their size, or both? Perhaps. And, while each new equipment development may be described singly as not requiring a significant increase in the required support, it is clear that the collective requirements of more C^3 items, weapons, and other equipment may very well dictate a larger and more skilled support echelon. It is, therefore, possible that the improved capability of the infantryman to fight, and the increased need for supporting personnel may coincide and result in a reorganized rifle squad, platoon, and company with a manpower shift from combat units to support units.

b. Assault Amphibian Battalion.--With the increased threat to surface ships during the amphibious operation, the concept of initiating the ship-to-shore movement of variable distances from the beach is presently under study. The Navy is developing an LCAC and the Marine Corps is developing the LVTX. While the LVTP-7's speed in the water is about 9 knots, the LCAC will conceivably obtain speeds in excess of 25 knots over the water.

(1) Landing Vehicle Tracked Experimental (LVTX).--The major difference between the LVTP-7 which is an assault amphibian, and the proposed LVTX is the addition of an ashore fighting vehicle capability, with high mobility, modularity, and extensive offensive firepower. With a projected IOC of FY 90/91, the LVTX is being designed to carry combat troops at land speeds up to 55mph with a range of 300 miles. There will be no significant difference between the waterborne speed of the projected LVTX and the LVTP-7.

		MAR DIV	HQ BN	INF REGT	INF BN	ARTY REGT	ARTY BN	RECON BN
MULTI CHNL TRANS EQUIP	AN/TRC-( ) (MUX RADIO)		△	△	△	△	△	

Figure 2-17.--Communications Equipment, Marine Division, Q-3 Period.

SECTION 3A

MARINE AIRCRAFT WING
1979 BASELINE

301. PRIMARY MISSION

The primary mission of Marine Corps aviation is to participate as the supporting air component of Fleet Marine Forces in the seizure and defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign. A collateral mission is to participate as an integral component of naval aviation in the execution of such other Navy functions as the fleet commanders may direct.

302. CONCEPT OF EMPLOYMENT

The air support of an amphibious operation includes all air operations conducted to fulfill the air requirements of the forces assigned to the amphibious task force (ATF). The tasks assigned landing force aviation are designed to support the overall mission of the ATF. Actual command of tactical aviation units can shift from the fleet commander during support operations, to the advanced force commander during preassault operations, to the commander amphibious task force (CATF) during assault operations, and to the commander landing force (CLF) when he assumes command and control ashore. The concept calls for control of air to be passed to the CLF as soon as practicable so that the Marine aviation element may continue its role as a part of the Marine air-ground team.

303. FUNCTIONS

A multitude of tasks are required to support the aviation mission. These tasks have been categorized under six separate functions.

a. Offensive Air Support.--Indicates those air operations that actually deliver firepower against enemy ground forces for the destruction or neutralization of installations, equipment, and personnel. Offensive air support missions are classified according to the degree of coordination required with ground elements and fall into two categories--close air support and deep air support.

(1) Close Air Support.--Air attacks against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces.

(2) Deep Air Support.--Air attacks against hostile targets which are at such distances from friendly units as to require no coordination with the fire and movement of those units; the term "deep air support" connotes delivery of firepower beyond the fire support coordination line to destroy, neutralize, or delay enemy ground forces before they can be brought to bear effectively against friendly forces.

b. Antiair Warfare.--Indicates those actions required to destroy or reduce to an acceptable level the enemy air and missile threat. It includes such measures as the use of interceptors, bombers, antiaircraft guns, surface-to-air missiles (SAM's) and air-to-air missiles, electronic countermeasures, and destruction of the air or missile threat both before and after it is launched. Other measures which are taken to minimize the effects of hostile air action are: cover, concealment, dispersion, and

deception (including electronic and mobility). The primary purpose of antiair warfare is to gain and maintain air superiority. All Marine Corps antiair warfare (AAW) operations fall into two categories:

(1) Air Defense.--All defensive measures designed to destroy attacking enemy aircraft or missiles or to nullify or reduce the effectiveness of such attacks. The tasks set forth in the terms "active air defense" and "passive air defense" are applicable.

(2) Offensive Antiair Warfare.--Combat operations conducted against the enemy air/missile threat or air defense system before it can be launched or assume an attacking role. Offensive AAW operations in or near the objective area consist mainly of air attacks to destroy or neutralize hostile aircraft, airfields, radars, missile sites, mobile surface-to-air missiles, air defense systems, and supporting areas.

c. Assault Support.--Indicates those actions required for the airlift of personnel, supplies, and equipment into or within the battle area by helicopters or fixed-wing aircraft. Assault support includes fixed-wing transport, inflight refueling, and helicopterborne operations; such operations may be tactical, administrative, or logistic in nature. The tasks of assault support fall within five categories.

(1) Vertical Assault Airlift.--The use of assault aircraft to provide tactical mobility and logistic support required by ground combat elements.

(2) Air Delivery.--The use of fixed-wing tactical transports to move high priority cargo and personnel within the immediate area of operations. (The tasks set forth in the terms "airdrop," "airlanded," "airlift," "air supply," and "battlefield illumination" are applicable to vertical assault airlift and air delivery.)

(3) Inflight Refueling.--The use of aerial tanker configured aircraft to provide refueling service to fixed-wing or helicopter aircraft in flight.

(4) Air Evacuation.--The evacuation by aircraft of personnel and cargo; casualty and medical evacuation by helicopter and fixed-wing aircraft are implicit tasks of air evacuation.

d. Air Reconnaissance.--The acquisition of intelligence information employing visual observation and/or sensors in air vehicles. Marine aviation air reconnaissance capabilities include the employment of photographic, electronic, and visual reconnaissance/surveillance to fulfill the specific and immediate requirements of the landing force. Air reconnaissance categories are:

(1) Air Photographic Reconnaissance.--The obtaining of information by air photography, either by using handheld cameras from observation type aircraft or jet multisensor imagery aircraft equipped with photographic, side-looking airborne radar (SLAR), and infrared (IR) imagery means.

(2) Electronic Reconnaissance.--The detection, identification, evaluation, and location of foreign, electromagnetic radiations (emanating from other than nuclear detonations or radioactive sources), thereby providing up-to-date electronic order of battle (EOB) information.

(3) Visual Reconnaissance.--A mission undertaken to obtain, by visual observation, information about the activities and resources of an enemy or potential enemy; a task performed by all pilots and aircrew personnel. Included in the visual category is the use of aircraft to provide an aerial platform for tactical air observers, artillery and naval gunfire spotters, and ground unit personnel conducting visual battlefield surveillance.

e. Control of Aircraft and Missiles.--A term which indicates the capability of Marine aviation to exercise authority over and direction of air support elements during the conduct of operations.

(1) Personnel of the Marine air command and control systems (MACCS) use organic radars, radios, and tactical data systems to coordinate and control the aviation combat element of the Marine air-ground team.

(2) All friendly aircraft within the amphibious objective area (AOA) are controlled and coordinated in the performance of their various tasks. Surface-to-air missiles are closely integrated into the air defense system.

(3) Airspace surveillance for detection of hostile aircraft and missiles and airspace control services for altitude separation of friendly aircraft are provided.

f. Electronic Warfare (EW).--Refers to the military action involving the use of electromagnetic energy to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum and action which retains friendly use of this spectrum. There are three categories of EW.

(1) Electronic Warfare Support Measures (ESM).--These are actions taken to search for, intercept, locate, and immediately identify radiated electromagnetic energy for the purpose of immediate threat recognition and/or reaction.

(2) Electronic Countermeasures (ECM).--That division of electronic warfare involving actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum.

(3) Electronic Counter-Countermeasures (ECCM).--Actions taken to retain effective, friendly use of the electromagnetic spectrum despite the enemy's use of ECM.

304. LOGISTIC CAPABILITY

Marine aviation is capable of operating air facilities; maintaining, servicing, and arming assigned aircraft; and storing and handling supplies at the airfields. Construction and repair of operating facilities and distribution of aviation fuel and ordnance from ships to airbases, are logistic operations beyond the capabilities of Marine aviation and require external support.

305. WING ORGANIZATION

Operationally, FMF aviation is divided into three MAW's, each of which works in conjunction with its combat partners, a Marine division and FSSG. The subordinate units of MAW's are groups, squadrons, and light antiaircraft missile (LAAM) battalions. Wings and groups are not organized ac-

cording to the tables of organization (T/O), but are task organized to accomplish the missions assigned. Each of the three wings may be different in organization; however, each wing is capable of providing all six functions. Thus, reference will be made to a typical or notional wing. Squadrons and the LAAM battalion do have tables of organization.

a. Marine Aircraft Wing.--The MAW is task organized to provide a flexible and balanced air combat organization capable of providing the full range of combat air operations in a variety of areas without the requirement for prepositioned support, control, or logistic facilities. The wing is the smallest unit with the inherent capability of performing all the functions enumerated in paragraph 303. To provide this capability, a typical wing is composed of the subordinate units depicted by Figure 3-1. Aviation organizations smaller than a wing can be provided the capabilities to accomplish any or all aviation tasks by task organized groups, squadrons, LAAM battalions, or detachments thereof. An example would be the aviation element of a Marine amphibious brigade (MAB) which is normally a composite Marine aircraft group (MAG).

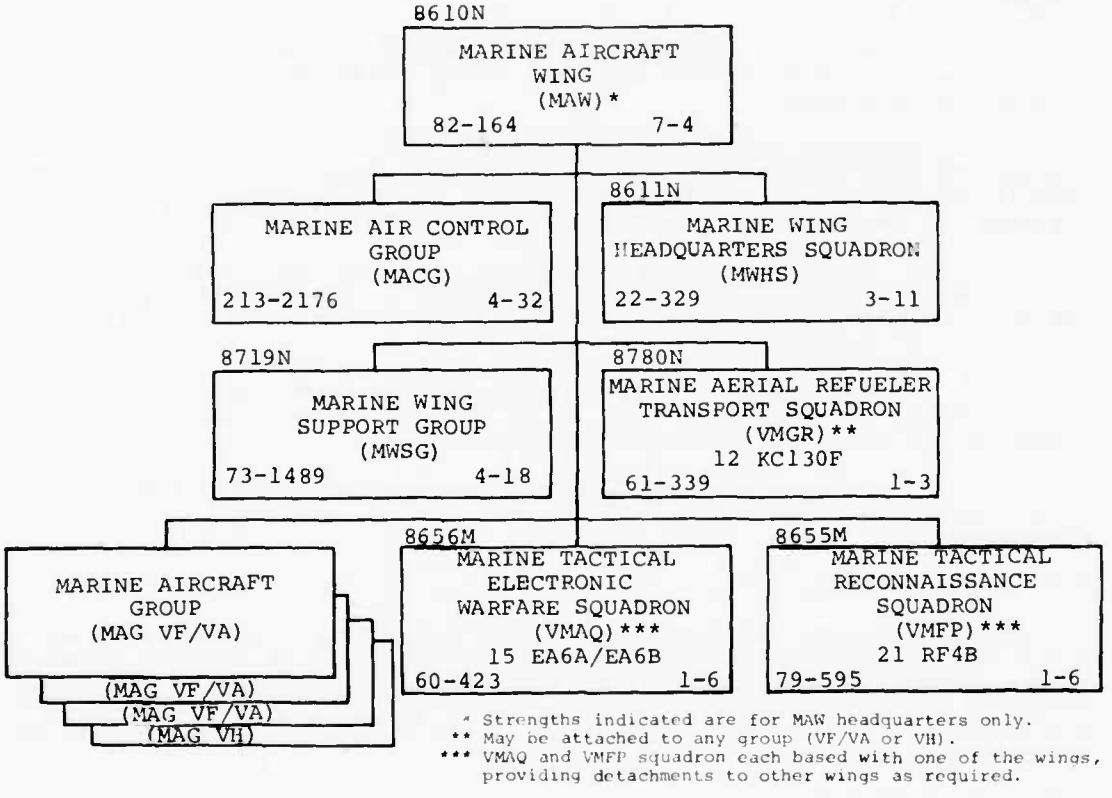


Figure 3-1.--Marine Aircraft Wing.

(1) Marine Wing Headquarters Squadron

(a) Mission.--The mission of the MWHS is to provide command, administrative, and supply support for a Marine wing headquarters and certain elements of the Marine air control group.

(b) Tasks

1 Provide camp facilities and services, including food service, for all elements of the Marine wing headquarters and for the H&HS and MWCS of the Marine air control group.

2 Maintain the capability of deploying as an integral unit when augmented with maintenance support personnel.

3 Provide detachments for supported units as required.

4 Provide for internal security of the MAW headquarters.

(c) Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of the Marine aircraft wing in support of the units mentioned above. (See Figure 3-1.)

(d) Concept of Employment.--Provides support for wing headquarters and certain elements of the Marine air control group.

(e) Administrative Capabilities.--Capable of self-administration.

(f) Logistical Capabilities

1 Maintenance.--Organizational maintenance (second echelon) support on motor transport and engineer equipment is provided by Headquarters and Ground Maintenance Squadron, Marine Wing Support Group. Intermediate maintenance is provided by elements of the Force Service Support Group. Communications support is provided by the Wing Communications Squadron.

a Organic.--Capable of organizatinal (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance of organic infantry weapons. Capable of performing organizatinal maintenance on assigned aircraft.

b Support.--None.

2 Supply.--Capable of supply and fiscal functions required for squadron operations.

3 Medical.--Capable of providing routine and emergency medical support for all elements of the wing headquarters.

4 Transportation.--Possesses sufficient motor transport equipment for routine squadron operations.

5 Food Service.--Provides food service support for all elements of the wing headquarters and H&HS and MWCS of the MACG.

(g) Major Items of Equipment.--The major items of equipment, vehicles, and weapons found in the MWHS are shown below.

MARINE WING HEADQUARTERS SQUADRON, (MWHS)

1	Radiac Computer Indicator, CP/95A/PD
2	Radiac Set, AN/PDR-56G
2	Truck, Ambulance, 1-1/4T, 4x4, M886
4	Truck, Cargo, 1-1/4T, 4x4, M880
12	Machine Gun, 7.62mm, M60
2	Night Vision Sight, Individual Served Weapons, AN/PVS-4

(2) Marine Air Control Group (MACG).--See Figure 3-2.

(a) Headquarters and Headquarters Squadron

1 Mission.--Headquarters, Marine Air Control Group, will coordinate the air command and control system of the Marine Aircraft Wing. Headquarters squadron will provide administrative support for the MACG and maintenance support for MACG units and the Marine Wing Headquarters Squadron.

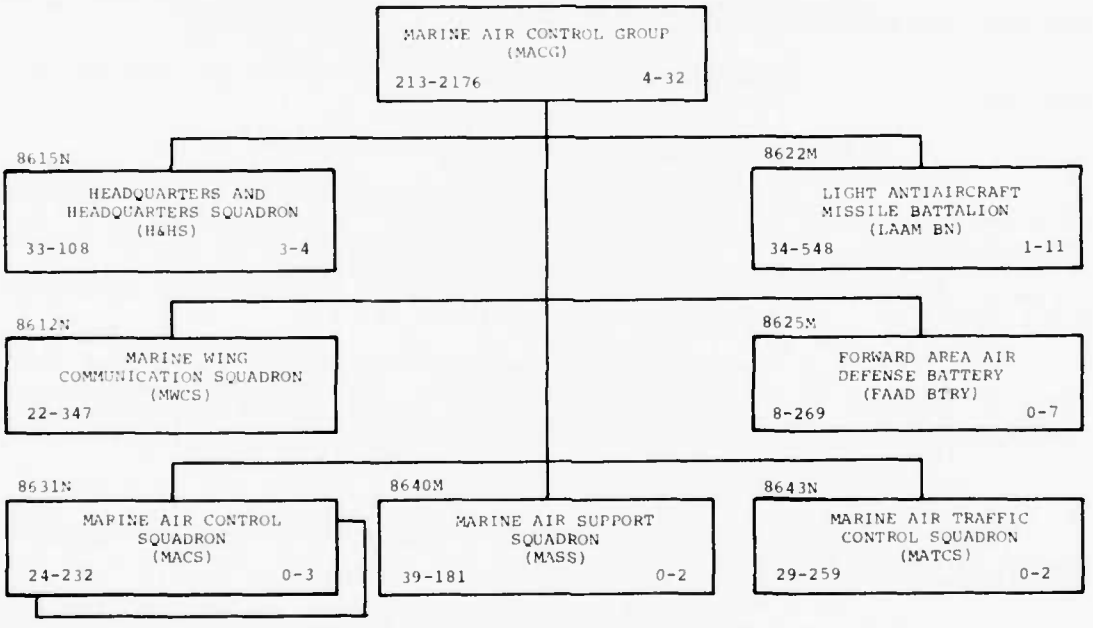


Figure 3-2.--Marine Air Control Group

2 Tasks

a Headquarters, Marine Air Control Group

(1) Plan and provide for the operation of the Marine Air Command and Control System in support of the Fleet Marine Forces.

(2) Advise the tactical air commander (TAC) on applicable matters pertaining to the employment of subordinate units.

(3) Maintain the capability for deploying independent squadrons.

b Headquarters Squadron

(1) Provide for administrative, supply, and maintenance support of the squadrons.

(2) Maintain the capability for deploying as an integral unit when augmented by appropriate MWHS and MWCS personnel and equipment.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of the MAW in support of the units mentioned above.

4 Concept of Employment.--Coordinates the air command and control system and provides administrative support for the Marine Air Control Group. Provides support for units of the Marine Air Control Group and the Marine Wing Headquarters Squadron.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on organic infantry weapons. Capable of organizational (second echelon) maintenance on assigned motor transport, engineer, and communication equipment.

(2) Support.--None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--Possesses sufficient motor transport equipment for routine squadron operations.

e Food Service.--None. Food service support is provided by the MWHS.

7 Major Items of Equipment.--The major items of equipment, vehicles, and weapons found in the H&HS, MACG are shown on the following page.

HEADQUARTERS AND HEADQUARTERS SQUADRON, MACG

1	Radiac Computer Indicator, CP95A/PD
2	Air Conditioner, MCS, Vertical, 60Hz, 18,000 BTU, AE/32C-17
1	Generator Set, 30kW, 60Hz, Skd-Mtd, MEP-005A
6	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
4	Truck, Cargo, 1-1/4T, 4x4, M880
8	Truck, Utility, 1/4T, 4x4, M151A2
4	Trailer, Amphib Cargo, 1/4T, 2-wheel, M416
4	Trailer, Tank, Water, 400 gal., 1-1/2T, 2-whl, M149A1
1	Chassis, Trailer, GP, 3-1/2T, 2-whl, M353

(b) Marine Air Support Squadron (MASS)

1 Mission.--The mission of the MASS is to provide facilities for the control of aircraft operating in close or deep support of Fleet Marine Force operations.

2 Tasks

a Receive and coordinate requests for air support.

b Provide three air support radar teams (ASRT's) to operate and maintain facilities for electronic control of close and direct air support operations.

c Provide facilities for operation of the helicopter direction center (HDC).

d Maintain the capability to accomplish its mission in a situation requiring displacement in echelon.

e Provide fourth echelon maintenance of Marine Corps furnished radar equipment and aviation peculiar communications-electronics materiel items and perform third echelon maintenance of other communications-electronics items and generators, less single sideband.

f Provide second echelon maintenance for organic motor transport equipment.

3 Concept of Organization.--Typically under command and control of the wing commander, or an officer designated by him.

4 Concept of Employment.--Support the Fleet Marine Force units by electronic control of aircraft in close and/or direct support of amphibious operations.

5 Administrative Capability.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance on organic motor transport equipment and infantry weapons. Capable of intermediate (third echelon) maintenance on

organic mobile electric power generators, refrigerators, air conditioning equipment, and on-ground common communications-electronics items, less single sideband equipment. Capable of performing intermediate (fourth echelon) maintenance on Marine Corps furnished radar and aviation peculiar communications-electronic equipment.

(2) Support.--None.

b Supply.--Capable of providing organic supply support.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--Possesses sufficient motor transport equipment to provide the routine transportation requirements of the squadron.

e Food Service.--Capable of providing organic food service support.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE AIR SUPPORT SQUADRON, MACG

1	Radiac Computer Indicator, CP95A/PD
1	Radiac Set, An/PDR-56G
1	Airborne Mobile Direct Air Support Central, AN/UYQ-3
3	Air Support Radar Team Communication Facility, AN/TPA-9
3	Communication Central, AM/MRC-87A
1	Communication Central, AN/TSC-15
23	Control, Radio Set, AM/GRA-6
1	Operations Central, AM/TSQ-122
3	Radar, Course Directing, Central, AM/TPQ-10
3	Radar Set, (LBSR), AN/PPS-15(V)2
6	Radio Set, Control Group, AN/GRA-39A
7	Radio Set, AN/GRC-135A
3	Receiving Set, Radio, AN/GRR-17
1	Radio Set, AN/MRC-109
8	Radio Set, AN/PRC-77
6	Radio Set, AN/TRC-75
4	Radio Set, AN/PRC-75A
2	Radio Set, AN/VRC-47
1	Shelter, Electronics Maintenance Support, AN/GRM-86
2	Shop, Electronic AN/GRM-94
1	Switchboard, Telephone, Manual, SB-22/PT
1	Switchboard, Automatic, SB-3614(V)TT
20	Air Conditioner, MCS Vertical, 60Hz, 18,000 BTU, A/E 32C-17
7	Air Conditioner, MCS Vertical, 400Hz, 18,000 BTU, A/E 32C-18
1	Bucket, Multi-purpose, 2-1/4 yd Cap., Drott 4-in-1
4	Frequency Converter, Solid State, 10kW, 60 to 400Hz
2	Frequency Converter, Motor Driven, 100kW, 60 to 400Hz, PPU-742
2	Frequency Converter, Solid State, 4kW, 60 to 400Hz, CV-3231/U
4	Generator Set, 10kW, 60Hz, Skd-Mtd, MEP-003A
13	Generator Set, 30kW, 400Hz, Skd-Mtd, MEP-114A

MARINE AIR SUPPORT SQUADRON (MAAS) (CON'T)

3	Generator Set, 60kW, 60Hz, Skd-Mtd, MEP-006A
1	Surveying Set, Field Arty Bn.
1	Theodolite, Surveying T-16
1	Tractor, Rubber Tired, Articulated Steer 72-31MP
16	Chassis, Trailer, GP, 3-1/2T, 2-whl, M353
3	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-whl, M149A1
1	Truck, Ambulance, 1-1/4T, 4x4, M886
6	Truck, Cargo, 1-1/4T, 4x4, M880
16	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
1	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, M49A2C
4	Truck, Utility, 1/4T, 4x4, M151A2
3	Trailer, Amphib Cargo, 1/4T, 2-whl, M416
4	Trailer, Flatbed, 3/4T, 2-whl, M762
6	Machine Gun, 7.62mm, M60
10	Detecting Set, Seismic Intrusion, AN/PSR-1A
2	Circle, Aiming M2

(c) Marine Air Control Squadron (MACS)

1 Mission.--The mission of the MACS is to provide air surveillance and control of aircraft and surface-to-air missiles for anti-air warfare in support of the Fleet Marine Forces.

2 Tasks

a Install and operate electronic and communications equipment required for detection, identification, and control of aircraft and surface-to-air missiles.

b Perform air intercepts by directing fighter aircraft. Maintain a capability to coordinate and pass information laterally and to higher echelons.

c Provide enroute air traffic control for friendly aircraft.

d Maintain the capability to deploy and operate as an integral unit.

e Be prepared to operate as an alternate tactical air control center (TACC) as directed.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of the Marine aircraft wing in support of the units mentioned above.

4 Concept of Employment.--Coordinates the electronic and communication effort required for detection, identification, and control of aircraft and surface-to-air missiles. Perform air intercepts by directing fighter aircraft. Provides enroute air traffic control in support of units of the Marine air control group.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first and second echelon) maintenance on all organic equipment. Capable of performing intermediate (third echelon) maintenance on assigned mobile electric power generator sets, refrigerator/air conditioning equipment and on communications-electronics equipment. Capable of performing intermediate (fourth echelon) maintenance on assigned aviation peculiar communications-electronics equipment.

(2) Support.--None.

b Supply.--Capable of providing organic supply support.

c Food Service.--Capable of providing organic food service support.

d Transportation.--Possesses sufficient organic motor transport equipment to satisfy the routine transportation requirements of the squadron.

e Medical.--Capable of providing routine and emergency medical support.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE AIR CONTROL SQUADRON, MACS

1	Radiac Computer Indicator, CP95A/PD
10	Detecting Set, Seismic, Intrusion, AN/PSR-1A
1	Central Computer Group, AN/TYA-5 TAOC
1	Communication Central, AN/TSC-15
2	Communication Central, UHF, AN/TYA-11
1	Communication Group-TADC-AN/TYA-12
1	Compatibility Computer Group, AN/TYA-20 TDCC
1	Control, Communication Central Group, C-8019/TYA-11
12	Control Radio Set, AN/GRA-6
1	Data Communications Group AN/TYA-19 TDCC
1	Data Terminal/Group AN/TYA-17 TDCC
13	Decoder Group AN/UPA-60(V)2
1	Geographic Display Generation Group TAOC, AN/TYA-7
1	Maintenance Transport Group, AN/TYA-24
1	Maintenance Group, AN/TYA-27
4	Operations Group, AN/TYA-9
1	Photographic/Transport Group, AN/TYA-25
2	Radar Processor Group (3-D), AN/TYA-18
2	Radar Set (LBSR), AN/PPS-15 (V) 2
1	Radar Set, AN/TPS-22D
1	Radar Set, AN/TPS-32

MARINE AIR CONTROL SQUADRON (MACS) (CON'T)

2	Radar Set, AN/UPS-1D
4	Radio Set, Control Group, AN/GRA-39A
4	Radio Set, AN/GRC-135A
4	Radio Set, AN/PRC-77
7	Radio Set, AN/TRC-75
4	Interrogator Set, AN/TPX-28D/UPX-27
1	Switchboard, Telephone, Automatic, SB-3614(V)TT
1	Switchboard, Telephone, Cordless, Manual, SB-3082(V)2/GV
4	Radio Terminal Set, AN/TRC-166
2	Receiver Set, Radio, AN/GRC-17
2	Radio Terminal Set, AN/MRC-135
7	Shelter, Electronics Maintenance Support, AN/GRM-86
2	Shop, Electronics, AN/GRM-94
1	Supervisory, Oper. Grp. Altrnt. Tact. Cmd, Cntrl, AN/TYA-98
1	Teletypewriter Set, AN/GCC-3-A
55	Air Conditioner, MCS Vertical, 60Hz, 18,000 BTU, A/E 32C-17
78	Air Conditioner. MCS Vertical, 400Hz, 18,000 BTU, A/E 32C-18
1	Bucket, Multi-purpose, 2-1/4yd, Cap, Drott 4-in-1
3	Frequency Converter, Solid State, 10kW, 60 to 400Hz
6	Frequency Converter, Motor Driven, 100kW, 60-400Hz, PPU-742
2	Frequency Converter, Solid State, 4kW, 60-400Hz, CV-3231/U
1	Generator Set, 3kW, 60Hz, Skd-Mtd, MEP-016A
3	Generator Set, 10kW, 60Hz, Skd-Mtd, MEP-003A
1	Generator Set, 10kW, 400Hz, Skd-Mtd, MEP-112A
4	Generator Set, 30kW, 60Hz, Skd-Mtd, MEP-005A
16	Generator Set, 60kW, 400Hz, Sdk-Mtd, MEP-115A
1	Generator Set, 100kW, 60Hz, Skd-Mtd, MEP-007A
2	Generator Set, 60kW, 60Hz, Skd-Mtd, MEP-006A
1	Generator Set, 200kW, 60Hz, Tactical Utility, MEP-009A
5	Generator Set, 30kW, 400Hz, Skd-Mtd, MEP-114A
16	Sling, Cargo, Chain Leg, 15,000 lb Cap.
2	Tank, Fabric, Collapsible, 3,000 gal.
27	Chassis, Trailer, GP, 3-1/2T, 2-Whl, M353
3	Trailer, Tank, Water, 400 Gal, M149A1
1	Truck, Ambulance, 1-1/4T, 4x4, M886
6	Truck, Cargo, Dropside, 2-1/2T, 6x6, w/o Winch, w/PTO, M35A2C
2	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, M49A2C
4	Truck, Utility, 1/4T, 4x4, M151A2
5	Truck, Cargo, 1-1/4T, 4x4, M880
5	Trailer, Flatbed, 3/4T, 2-Whl, M762
1	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
1	Trailer, Amphib Crgo, 1/4T, 2-Whl, M416
6	Machine Gun, 7.62mm, M60

(d) Forward Area Air Defense (FAAD) Battery

1 Mission.--The Forward Area Air Defense Battery will employ the REDEYE guided missile system to provide close-in air defense protection for elements of a Marine Amphibious Force in forward combat areas, in defense of vital areas and, for units engaged in independent operations, will destroy hostile aircraft and drones, particularly in areas not defendable by other elements of the anti-air warfare system.

2 Tasks

a Provide for battery operation as the forward area air defense component of the antiair warfare system of the Marine aircraft wing, to include the capability of rapid deployment ashore in an amphibious operation with command and logistic support of the subordinate REDEYE platoon.

b Provide for the temporary separate deployment of REDEYE platoons to meet special tactical situations with such personnel and logistic support as required.

c Plan and coordinate requirements for liaison and communications with appropriate commands to ensure the integration of REDEYE missile operations with other air, ground, and antiair warfare operations of the amphibious force.

d Conduct, supervise, and coordinate individual and unit training as required to qualify subordinate elements for tactical combat operations.

e Perform first echelon maintenance on all assigned equipment. Perform second echelon maintenance on all organic motor transport, engineer, and communication equipment.

3 Concept of Organization.--The Forward Area Air Defense Battery consists of a battery headquarters, service platoon, and five FAAD platoons. The battery is task organized to provide forward area air defense as an integral part of the Marine Corps anti-air warfare system. The Battery Commander and a small headquarters staff provide command and staff support of subordinate elements. The service platoon provides logistic support for the battery headquarters and FAAD platoons. Individual elements of the battery will be activated only upon direction of the Commandant of the Marine Corps. The forward area air defense battery will employ the REDEYE guided missile system to provide close-in air defense protection of defense of vital areas, and for units engaged in independent operations, will destroy hostile aircraft and drones, particularly in areas not defendable by other elements of the antiair warfare system.

4 Concept of Employment.--Organized and equipped for employment in an integrated air defense system supporting a Marine amphibious force. May be employed in this manner as a self-contained unit, as separate firing components attached to division and wing elements in support of independent operations, or in a base defense mission.

5 Administrative Capabilities.--Not capable of self-administration. Administrative support is provided as designated by the MAW/MAGTF commander.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all organic equipment. Capable of organizational (second echelon) maintenance on assigned motor transport, engineer, and communications equipment. REDEYE weapons and trainers requiring second echelon or higher maintenance will be evacuated through supply channels to the appropriate maintenance source.

(2) Support.--None.

b Supply.--Capable of performing supply functions required for battery operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--Possesses sufficient motor transportation equipment for routine battery operations.

e Food Service.--Capable of providing organic food service support.

7 Miscellaneous.--When FAAD platoons are deployed separately, logistic support will be provided by the unit to which attached.

8 Major Items of Equipment.--The major items of equipment are shown below.

FORWARD AREA AIR DEFENSE BATTERY, MACG

23	Control Radio Set, AN/GRA-6
15	Radio Set, Control Group, AN/GRA-39A
1	Radio Set, AN/MRC-83A, Truck-Mtd
23	Radio Set, AN/PRC-47
90	Radio Set, AN/PRC-77
1	Switchboard, Telephone, Manual, SB-22/PT
1	Generator Set, 10kW, 400Hz, Skd-Mtd, MEP-112A
2	Generator Set, 30kW, 60Hz, Skd-Mtd, MEP-005A
2	Chassis, Trailer, GP, 3-1/2T, 2-Whl, M353
1	Trailer, Flatbed, 3/4T, 2-Whl, M762
30	Truck, Platform, Utility, 1/2T, 4x4, M274A5
26	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Ambulance, 1/4T, 4x4, M718A1
150	Guided Missile, Intercept, Aerial, Training, M46A2, REDEYE
15	Training Set, Guided Missile System, M76, REDEYE
26	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
5	Launch Simulator, GM, REDEYE

(e) Marine Wing Communications Squadron (MWCS)

1 Mission.--The mission of the MWCS is to provide communications for the wing headquarters and for the wing air command and control system.

2 Tasks

a Plan and provide for the required command communications for a Marine wing headquarters during all phases of an amphibious operation and such other operations as may be directed.

b Provide communication (and related electrical power) support for MWHS, MACG units and for other wing units as directed.

c Provide required communication support/coordination for the Marine Air Command and Control System components employed by the tactical air commander.

d Be prepared to deploy relay and terminal teams in support of Fleet Marine Force operations.

e Provide communication center services for the MWHS and MAW headquarters, to include processing, transmission, reception, reproduction, and distribution of narrative, data, and magnetic tape messages.

f Augment subordinate group communication centers and establish and operate communication centers for MACG as required.

g Provide third echelon maintenance overflow support of Marine Corps common communications-electronics materiel items organic to wing units less aviation peculiar ground electronic equipment in MACS, MASS, and LAAM battalion.

h Provide third echelon maintenance of single sideband equipment for the wing, less MACS, and be capable of performing fourth echelon maintenance of Marine Corps furnished aviation peculiar communications-electronics equipment of all wing units less low density squadron/battery peculiar equipment organic to MACS, MASS, and LAAM battalion.

i Provide supply and fiscal functions required for maintenance float management for wing aviation peculiar ground electronic equipment less that organic in MACS, MASS, and LAAM.

j Provide calibration and repair of Marine Corps electrical and electronic test and measuring equipment organic to wing units.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of the Marine aircraft wing in support of the units mentioned above.

4 Concept of Employment.--Provides tactical communications for the wing headquarters and the wing air command and control system.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all organic equipment. Capable of organizational (second echelon) maintenance on assigned motor transport, engineer, and communications equipment. Capable of intermediate (third echelon) main-

tenance on mobile electric power generators and refrigeration/air conditioning equipment organic to the squadron. Capable of intermediate (third echelon) maintenance on all ground common and aviation peculiar communications-electronic equipment assigned to the squadron. Capable of calibration and repair support of all organic electrical and electronic test and measuring equipment. Not capable of mechanical calibration.

(2) Provides intermediate (third echelon) maintenance support for the electrical/electronic portion of mobile electric power generators organic to MWHS and H&HS (MACG). Provides intermediate (third echelon) maintenance backup support for aviation peculiar and ground common squadron peculiar equipment organic to MACG, MASS, and LAAM battalion. Provides calibration support of Marine Corps electrical and electronic test and measuring equipment for all wing units.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations and management of the secondary repairable float for wing aviation peculiar ground electronics equipment less that organic in MACS, MASS, and LAAM.

c Transportation.--Possesses sufficient motor transport equipment for routine squadron operations.

d Medical.--None. Medical support is provided by H&HS, Marine Air Control Group.

e Food Service.--None. Food service support is provided by the Marine Wing Heaquarters Squadron.

7 Major Items of Equipment.--The major items of equipment shown below.

MARINE WING COMMUNICATION SQUADRON, MACG

1	Radiac Computer Indicator, CP95A/PD
3	Radiac Set, AN/PDR-56
2	Switchboard, Telephone, Manual, SB-22/PT
5	Switchboard, Telephone, Cordless, Manual SB-3082(V)2/GT
2	Switchboard, Automatic, SB-3614(V)TT
1	Central Office, Telephone, Automatic, 300 lines, AN/TCC-38 (V)1
2	Communication Central, AN/TGC-37 (V)
2	Communication Central, AN/MRC-87A
5	Communication Central, AN/TSC-15
2	Communication Central, UHF, AN/TYA-11
12	Control, Radio Set, AN/GRA-6
29	Radio Set, Control Group, AN/GRA-39A
6	Radio Set, AN/GRC-160
4	RAdio Set, AN/GRC-135A
5	Radio Set, AN/MRC-109
26	Radio Set, AN/PRC-77
10	Radio Set, AN/TRC-75
14	Radio Set, 12 Channel, AN/TRC-97C
1	Radio Set, AN/VRC-47
10	Radio Terminal Set, AN/MRC-135
12	Radio Terminal Set, AN/TRC-166

MARINE WING COMMUNICATIONS SQUADRON (MACG) (CON'T)

4	Receiving Set, Radio, AN/GRR-17
1	Communication Group, AN/TYA-16, TACC
1	Compatibility Computer, Group, AN/TYA-20 TDCC
1	Control Central, Communication Technical, AN/TSQ-84
1	Data Communicaions Group, AN/TYA-19 TDCC
1	Data Terminal Group, AN/TYA-17 TDCC
1	Maintenance Transport Group, AN/TYA-24
1	Maintenance Facility Group, AN/TYA-28
1	Operational Group-TACC-AN/TYA-1
1	Planning Group, TACC-AN/TYA-3
2	Radar Set, (LBSR), AN/PSS-15(V)2
8	Shelter, Electronics Maintenance Support, AN/GRM-86
4	Shop, Electronic AN/GRM-94
2	Shop, Electronic Maintenance, AN/GRM-98
6	Teletypewriter Set, AN/GGC-3-A
2	Air Conditioner, MCS, Horizontal, 60Hz, 18,000 BTU, MC18HA6-208
38	Air Conditioner, MCS, Vertical, 60Hz, 18,000 BTU, A/E 32C-17
1	Air Conditioner, MCS, Vertical, 400Hz, 18,000 BTU, A/E 32C-18
14	Air Conditioner, MCSTD, Vertical, 60Hz, 36,000 BTU, A/E, 326-24
9	Frequency Converter, Solid State, 10kW, 60-400Hz.
4	Frequency Converter, Motor Driven, 100kW, 60-400Hz, PPU-742
4	Frequency Converter, Solid State, 4kW, 60-400Hz, CV-3231/U
6	Generator Set, 3kW, 400Hz, Skd-Mtd, MEP-021A
19	Generator Set, DE, 10kW, 400Hz, Skd-Mtd, MEP-112A
5	Generator Set, 30kW, 60Hz, Skd-Mtd, MEP-005A
4	Generator Set, 30kW, 400Hz, Skd-Mtd, MEP-114A
4	Generator Set, 60kW, 60Hz, Skd-Mtd, MEP-006A
5	Generator Set, 3kW, 60Hz, Skd-Mtd, MEP-016A
8	Generator Set, 60kW, 400Hz, Skd-Mtd, MEP-115A
2	Generator Set, 100kW, 60Hz, Skd-Mtd, MEP-007A
21	Chassis, Trailer, GP, 3-1/2T, 2-Whl, M353
14	Truck, Cargo, 1-1/4T, 6x6, w/Winch, M561
1	Semi-Trailer, Van, Expandable 6T, 4-Whl, M313
25	Trailer, Flatbed, 3/4T, 2-Whl, M762

(f) Light Antiaircraft Missile Battalion

1 Mission.--Provide surface-to-air missile fires in defense of assigned areas of operation, or installations or vital zones therein, against hostile low and medium altitude air attacks. Provide the command, control, supply and logistic support required to employ the battalion in either an integrated air defense system or in an independent battalion mode of operation.

2 Tasks

a Provide for battalion operation as the mobile surface-to-air missile component of the anti-air warfare system of the Marine aircraft wing, to include the capability of rapid deployment ashore in an amphibious operation with integral command, control, and logistic support of subordinate missile batteries.

b Plan and coordinate requirements for liaison and communications with appropriate commands to insure the integration of surface-to-air missile operations with other air, ground, and AAW operations

of the Marine Corps and Navy.

c Provide for the temporary separate deployment of subordinate missile batteries to meet special tactical situations, with such personnel augmentation and logistic support as required.

d Plan for the helicopter transport of essential equipments of the missile batteries and supporting elements.

e Plan for the fixed wing air transport of all or any portion of the subordinate missile batteries and supporting elements.

f Plan and coordinate requirements with appropriate commands for the local security of all deployed missile batteries and supporting elements.

g Conduct, supervise, and coordinate such individual and unit training as is required to qualify missile batteries and supporting elements for tactical deployment and combat operations.

3 Concept of Organization.--The LAAM Battalion is composed of a headquarters and service battery and three missile batteries. The battalion is organized to provide surface-to-air missile defense in an amphibious operation, under the command and control of the air command and control group of the MAW.

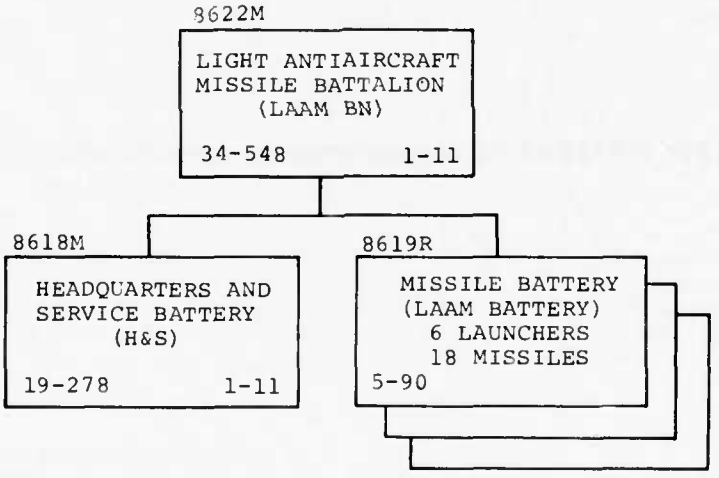


Figure 3-3.--Light Antiaircraft Missile Battalion.

4 Concept of Employment.--Organized and equipped for employment in an integrated air defense system supporting an amphibious force. Additionally, the battery may be employed in an independent mode of operation or base defense missions when so assigned.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Supply.--Capable of organic supply functions.

b Maintenance

(1) Capable of organizational (first and second echelon) maintenance on all organic equipment.

(2) Capable of intermediate (third echelon) maintenance on organic HAWK systems, surveillance radar, fire direction equipment, motor transport equipment, and communications-electronic equipment less HF.

(3) Capable of intermediate (fourth echelon) maintenance on organic HAWK systems, surveillance radar, and fire direction equipment.

c Transportation.--Capable of providing sufficient motor transport equipment to displace the essential fire control elements of one missile battery and essential operational elements of the H&S battery simultaneously, and to sustain missile supply for three missile batteries.

d Medical.--Capable of providing medical services support for the battalion.

e Food Service.--Capable of providing organic food service support.

f Major Items of Equipment.--The major items of equipment found in the LAAM battalion are shown below.

LIGHT ANTIAIRCRAFT MISSILE BATTALION, MACG

1	Radiac Computer, Indicator, CP95A/PD
2	Switchboard, Automatc, SB-3614(V)TT
4	Switchboard, Telephone, Manual, SB-22/PT
1	Switchboard, Telephone, Cordless, Manual, SB-3082(V)2/GT
1	Switchboard, Telephone, Manual, SB-86/P
1	Communication Central, AN/TSC-15
20	Control Radio Set, AN/GRA-6
3	Interrogator Set, AN/UPX-27
13	Radar Set, (LBSR) AN/PPS-15(V)2
2	Radar Set, AN/UPS-1B
2	Radio Set, Control Group, AN/GRA-39A
1	Radio Set, AN/GRC-160
3	Radio Set, Trk-Mtd, AN/MRC-83A

LIGHT ANTIAIRCRAFT MISSILE BATTALION, MACG (CONT'D)

20	Radio Set, AN/PRC-47
5	Radio Set, AN/PRC-77
3	Radio Terminal Set, AN/MRC-135
11	Radio Terminal Set, AN/MRC-134
12	Radio Terminal Set, AN/TRC-166
5	Receiving Set, Radio, AN/GRR-17
9	Shelter, Electonics, Maintenance Support, AN/GRM-86
2	Shop, Electronic, AN/GRM-94
1	Teletypewriter Set, AN/GGC-3-A
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 GAl, M121A1
7	Frequency Converter, Solid State, 10kW, 60-400Hz
6	Frequency Converter, Motor Driven, 100kW, 60-400Hz, PPU-742
2	Frequency Converter, Solid State, 4kW, 60-400Hz, CV-3231/U
8	Generator Set, 3kW, 60Hz, Skd-Mtd, MEP-016A
5	Generator Set, 10kW, 60Hz, Skd-Mtd, MEP-003A
31	Generator Set, 60kW, 400Hz, Skd-Mtd, MEP-115A
3	Generator Set, 60kW, 60Hz, Skd-Mtd, MEP-006A
2	GEnerator Set, 3kW, 400Hz, Skd-Mtd, MEP-021A
6	GEnerator Set, 10kW, 400Hz, Skd-Mtd, MEP-112A
1	Generator Set, 100kW, 60Hz, Skd-Mtd, MEP-007A
4	Generator Set, 30kW, 400Hz, Skd-Mtd, MEP-114A
1	Tractor, Medium, Full-Tracked, 82-30FA-M3
1	Welding Machine, Arc, Trailer-Mtd, LM62A
38	Chassis, Trailer, GP, 3-1/2T, 2-Whl, M353
1	Truck, Ambulance, 1/4T, 4x4, M718A1
42	Truck, Cargo, 2-1/2T, M36A2
3	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, M49A2C
12	Truck, Utility, 1/4T, 4x4, M151A2
7	Trailer, Tank, Water, 400Gal, M149A1
4	Truck, Wrecker, 5T, 6x6, M543A2
5	Circle, Aiming M2
1	Training Set, GM System, REDEYE, M76
12	GM, Training, MTM-23B
5	GM, Intercept, Aerial Training, REDEYE, M46A2
4	Improved Platoon Command Post, I HAWK, AN/MSW-11
4	Information Coordination Central, HAWK, AN/MSQ-95
24	Launcher,. Zero-Length, GM, HAWK, XM-192-I
16	Loader Transporter,GM, HAWK, M-501E3
24	Machine Gun, Cal.50, Browning, HB Flexible, M2
24	Machine Gun, 7.62mm, M60
1	Operation Central, HAWK, AN/TSQ-39
4	Radar Set, AN/MPQ-55
4	Radar Set, (XO-2) AN/MPQ-50
4	Radar Set, (XO-1), ROR, I HAWK, AN/MPQ-51
8	Radar Set, (XO-1), (HPl) (I HAWK), AN/MPQ-46
1	Simulator Station, Radar Signal, GM System, AN/TPQ-29
6	Night Vision Sight, Crew Served Weapon, AN/TVS-5
15	Sling Cargo, Chain Leg, 15,000 lb Cap.
48	Trailer, GM, HAWK, W/E, M-502 Series
10	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
9	Trailer Cargo, 1-1/2T, 2-Whl, M105A2
16	Trailer, Flatbed, 3/4T, 2-Whl, M762

(g) Marine Air Traffic Control Squadron (MATCS)

1 Mission.--Provide continuous, all-weather air traffic control (ATC) services for expeditionary airfields and remote area landing sites, as part of the Marine Air Command and Control System (MACCS) in support of the Fleet Marine Force (FMF).

2 Tasks

a Provide radar approach, departure, and enroute traffic control services within an objective area.

b Provide airfield navigational aids.

c Provide precision radar approach services for airfield all-weather landings.

d Function as an integral element of the MACCS.

3 Concept of Organization.--This organization will normally function as an integral unit of the MACG. Command of the MATCS will be the responsibility of the MACG commander as exercised through the commanding officer, MATCS.

4 Concept of Employment.--The MATCS is organized and equipped to provide continuous Instrument Flight Rule/Instrument Meteorological Condition (IFR/IMC) services simultaneously to three independent and geographically separated expeditionary airfields and seven remote area landing sites. The MATCS is organized to operationally deploy as an integral unit, part of a larger force, or as separate detachments as part of larger forces. The MATCS is organized and equipped to deploy as a task organized integral unit or as task organized detachments capable of providing full range of ATC services from short duration, Visual Flight Rule/Visual Meteorological Condition (VFR/VMC) service of a single installation to extended IFR/IMC operations of a single airfield or multiple installation. The major items of equipment are shown below.

MARINE AIR TRAFFIC CONTROL SQUADRON, MACG

4	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
4	Truck, Utility, 1/4T, 4x4, M151A2
4	Truck, Cargo, 1-1/4T, 4x4, M880

5 Administrative Capability.--Capable of self-administration.

6 Logistical Capability

a Maintenance

(1) Capable of organizational and intermediate maintenance, (first through fourth echelon), on all assigned Navy furnished equipment.

(2) Capable of organizational maintenance, (first and second echelon), on all assigned Marine Corps furnished equip-

ment except motor transport which is limited to first echelon.

b Supply

(1) Capable of performing Marine Corps supply and fiscal functions required for squadron operations.

(2) Capable of performing Navy supply and fiscal functions required for squadron operations. Requires Marine aircraft group (MAG) support in Shipboard Uniform Automated Data Processing-End Use (SUADP-EU) Navy supply functions.

c Transportation.--Possess sufficient motor transport equipment for routine squadron operations.

d Medical.--Capable of providing routine and emergency medical support.

e Food Service.--None.

(3) Marine Aerial Refueler Transport Squadron (VMGR)

(a) Mission.--The mission of the VMGR is to provide aerial refueling service and provide assault air transport of personnel, equipment, and supplies in support of Fleet Marine Forces and conduct such other air operations as may be directed.

(b) Concept of Organization.--The squadron will be under the command and control of the wing commander or as designated by him.

(c) Concept of Employment.--Provide general support to aviation and ground forces as directed by the wing commander.

(d) Tasks

1 Provide aerial refueling service to Fleet Marine Force units.

2 Provide assault air transport of air landed troops and combat cargo between air head of supply and combat fields in the objective area.

3 Provide a capability of long-range direct delivery of high priority material and personnel to alleviate an emergency combat situation, where other means of suitable air transport are not readily available.

4 Provide casualty evacuation from fields within the objective area.

5 Maintain the capability to operate during darkness and under instrument flight conditions, as applicable to the mission, to include air delivery of combat cargo and emergency resupply under control of air support radar teams.

6 Maintain the capability of operating from advanced bases and expeditionary airfields within capability of assigned aircraft.

7 Perform organizational maintenance on assigned aircraft and support equipment. Authorize selected intermediate maintenance on peculiar equipment when independently deployed.

8 Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

9 Provide aircraft for airborne Direct Air Support Center(DASC)/command post functions as required.

(e) Administrative Capabilities.--Capable of self-administration.

(f) Logistical Capabilities

1 Maintenance

a Organic.--Capable of performing organizational maintenance on assigned aircraft. When the maintenance augment section is retained, capable of performing intermediate maintenance on assigned aircraft and support equipment. When the maintenance augment section is attached to a suppoting group, capable of performing organizational maintenance on assigned aircraft. Capable of organizational (second echelon) maintenance on infantry weapons.

b Support.--None.

2 Supply.--Capable of performing supply and fiscal functions required for squadron operations.

3 Medical.--Capable of providing routine and emergency medical support.

4 Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

5 Food Service.--None. Food service support is provided by the appropriate wing unit.

(g) Miscellaneous.--Communication support is provided by the appropriate wing unit.

(h) Major Items of Equipment.--The major items of equipment are shown below.

MARINE AERIAL REFUELER TRANSPORT SQUADRON

12	Aircraft, KC-130F
1	Radiac Computer Indicator, CP95A/PD
1	Radiac Set, AN/PDR-56G
1	Switchboard, Telephone, Manual, SB-22/PT
1	Tractor, Utility, Wheeled-GSE-MF40
2	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893

(4) Marine Wing Support Group (MWSG)

(a) Mission.--Provide command, control, supply and logistics support for the squadrons of the group; motor transport support both medium and heavy, refueling support for both ground equipment and aircraft; engineer support and organizational maintenance (motor transport and engineer) for elements of the Marine aircraft wing.

(b) Tasks

1 Provide motor transport support (medium and heavy).

2 rovide engineer equipment support.

3 rovide materiel handling support.

4 Provide refueling support for ground equipment and aircraft.

5 Provide Tactical Airfield Dispensing Systems as required for MAW units.

6 Provide camp construction and facilities maintenance for MAW.

7 Provide organizational maintenance for motor transport and engineer equipment of MAW units.

8 Provide mobile electric power for the MAW.

9 Provide essential water and hygiene support in the area of portable water, bath facilities and laundry facilities for the MAW.

10 Locate quarries, sand and gravel pits, and other sources of construction material in the objective area.

11 Provide expedient/minor repair of existing airfields, runways/taxi ways.

12 Conduct second echelon level maintenance of all organic engineer equipment.

13 Provide materiel handling equipment for the MAW.

(c) Concept of Organization.--The MWSG is composed of a headquarters squadron (HQS), a wing transport squadron (WTS), and a wing engineer squadron (WES). The group is organized to provide motor transport, engineer services, and organizational maintenance (motor transport and engineer) for units of the MAW.

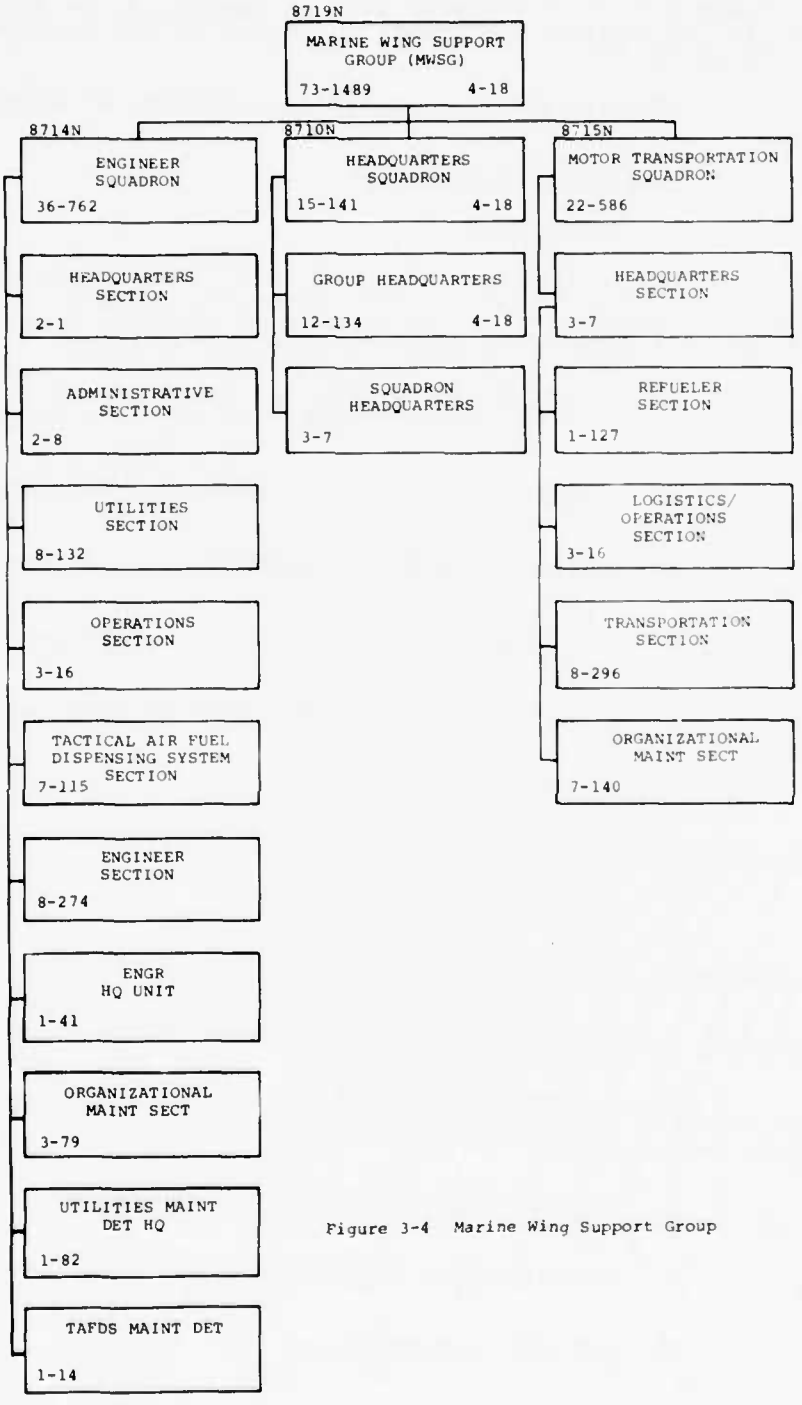


Figure 3-4 Marine Wing Support Group

(d) Concept of Employment.--The MWSG is organized and equipped for employment as an integral unit in support of the MAW. It is structured to provide deployable elements in support of the garrison and/or deployed posture of the MAW.

(e) Administrative Capabilities.--Capable of self-administration.

(f) Logistical Capabilities

1 Maintenance

a Organic.--Capable of performing organizational (first echelon) maintenance on all assigned equipment. Capable of performing organizational (second echelon) maintenance on engineer organizational equipment and assigned infantry weapons, less optical equipment.

b Support.--Provides organizational (second echelon) maintenance support on motor transport and engineer equipment for wing units.

2 Supply.--Possesses the capability to provide supply support for the MWSG.

3 Medical.--Capable of providing routine and emergency medical support.

4 Transportation.--Capable of providing general transportation support for wing units.

5 Food Service.--Provides food service support for organic units of the MWSG.

(g) Headquarters Squadron

1 Mission.--To provide administration for the squadron and units assigned to the group.

2 Tasks

a Provide command, control, and administrative support for assigned units.

b Maintain the capability to deploy as an integral unit or by elements in support of MAW units.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordniate unit of the MWSG.

4 Concept of Employment.--Provides administration for the squadron and units assigned to the group.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance on assigned ordnance equipment and communications-electronic equipment, less avionics and optical equipment.

(2) Support.--None.

b Supply.--Possesses the capability to provide organic supply functions for all organic units of the MWSG.

c Medical.--Capable of providing routine and emergency medical support for elements of the MWSG.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron.

e Food Service.--Provides food service support for organic units of the MWSG.

7 Miscellaneous.--Provides communication support for organic units of the MWSG.

8 Major Items of Equipment.--The major items of equipment are shown below.

HEADQUARTERS SQUADRON, MWSG

1	Radiac Computer Indicator, CP95A/PD
4	Radiac Set, AN/PDR-56G
1	Switchbaord, Telephone, Cordless Manual, SB-3082(V)2/GT
2	Switchboard, Telephone, Automatic, SB-3614(V)TT
1	Communication Central, AN/TSC-15
4	Control Radio Set, AN/GRA-6
7	Radio Set, Control Group, AN/GRA-39B
2	Radio Set, AN/GRC-160
1	Radio Set, AN/GRC-109
3	Radio Set, AN/TRC-75
7	Radio Set, AN/PRC-77
1	Radio Set, AN/VRC-47
1	Receiving Set, Radio AN/GRR-17
1	Teletypwriter Set, AN/GGC-3-A
8	Machine Gun, 7.62mm, M60
2	Night Vision Sight, Individual Served Weapon, AN/PVS-4

(h) Wing Engineer Squadron

1 Mission.--To provide engineer (construction, utilities, MHE, MEP, and TAFDS) service support for the MAW and assigned units.

2 Tasks

a Provide engineer reconniassance/survey for the MAW.

b Repair, improve and maintain existing road nets within the MAW area of responsibility.

c Provide construction and maintenance of expedient roads.

d Construct, improve and maintain helicopter and light reconnaissance aircraft landing sites.

e Provide construction of temporary camps to include the provision of technical and equipment assistance for erection of shelters.

f Provide essential utilities support in the area of mobile electric power.

g Provide essential water and hygiene support in the area of portable water, bath facilities and laundry facilities.

h Develop, improve and maintain drainage systems.

i Supervise special camouflage requirements.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of the MWSG.

4 Concept of Employment.--To function as an integral unit of the MWSG by providing deployable elements in support of the MAW and its assigned units.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance on assigned infantry weapons and engineer organizational equipment.

(2) Support.--None.

b Supply.--None. Supply support is provided by HQS, MWSG.

c Transportation.--None. Motor transport support is provided by the wing transportation squadron.

d Medical.--None. Medical support is provided by HQS, MWSG.

e Food Service.--None. Food service support is provided by HQS, MWSG.

f Miscellaneous.--Communication support is provided by HQS, MWSG.

g Major Items of Equipment.--The major items of equipment are shown below.

ENGINEER SQUADRON, MWSG

1	Radiac Computer Indicator, CP95A/PD
14	Bath Unit, Trailer Mtd, EC-88-64
3	Bucket, Clamshell, 3/4yd, MOL GP34G
22	Bucket, Multi-purpose, 2-1/4 Cap.,Drott 4-in-1
6	Crane, RT, Rough Terrain, Hydraulic, 30T, DROH 2500
30	Crane, Whl-Mtd, SP, 7-1/2T, 15B1WF
4	Crane, Truck-Mtd, 15T, M315T
11	Crane, Whl-Mtd, SP, 3T, M71
6	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal., M12lA1
9	Detecting Set, Mine, Portable, Metallic PSS-11
21	Forklift Attachment, 10,000 lb Cap., Oscillating PL-21910
6	Frequency Converter, Solid Sate, 10kW, 60-400Hz
2	Frequency Converter, Motor Driven, 100kW, 60-400Hz, PPU-742
4	Frequency Converter, Solid State, 4kW, 60-400Hz, CV-3231/U
20	Fuel Dispensing System, Tactical Airfield, Firestone, M1966
41	Generator Set, 3kW, 60Hz, Skd-Mtd, MEP-016A
15	Generator Set, 10kW, 60Hz, Skd-Mtd, MEP-003A
11	Generator Set, 10kW, 400Hz, Skd-Mtd, MEP-112A
9	Generator Set, 30kW, 60Hz, Skd-Mtd, MEP-005A
3	Generator Set, 30kW, 400Hz, Skd-Mtd, MEP-114A
22	Generator Set, 60kW, 60Hz, Skd-Mtd, MEP-006A
17	Generator Set, 3kW, 400Hz, Skd-Mtd, MEP-021A
6	Generator Set, 60kW, 400Hz, Skd-Mtd, MEP-115A
9	Generator Set, 100kW, 60Hz, Skd-Mtd, MEP-007A
14	Generator Set, 200kW, 60Hz, Tactical Utility MEP-009A
18	Helicopter Expedient Refueling System
90	Kit, Assault, Trackway
12	Laundry Unit, Trailer-Mtd, M532
3	Mixer, Concrete, Kwik-Mix, 16S-2A
1	Roller, Pneumatic Tired
1	Roller, Towed, Grid RG-215
1	Roller, Towed, Sheepfoot, MDG-96
1	Surveying Set, GP
5	Sweeper, Runway, Vacuum, ASS32M3
14	Grader, Road, Motorized, 5R3999
2	Tractor, Full-Tracked, Small, W/Bull Grader MC 450
2	Tractor, Medium, Full Tracked, 82-30FA-M3
36	Tractor, RT, Articulated Steering, 72-31MP
2	Tractor, RT, Wheeled, Industrial, MC5808
4	Transit, 20 Second, W/Tripod
62	Truck, Forklift 05-3354
20	Truck, Forklift, Rough Terrain, MC-4000
7	Water Purification Equip Set, Mobile, 1500 GPH Cap. Erdlator typ
18	Water Distribution Equipment Set, M-62
11	Water Purification Set, 600 GPH, Trailer-Mtd, Erdlator U2200
21	Water Purification Unit, Frame-Mtd, 1500 GPH, U22446
1	Welding Machine, ARC, Trailer-Mtd, LM62A

25	Chassis, Trailer, GP, 3-1/2T, 2-Whl, M353
47	Trailer, Flatbed, 3/4T, 2-Whl, M762
50	Sling, Cargo, Chain Leg, 15,000-lb, Cap
45	Tank, Fabric, Collapsible, 3000 Gal

(a) Wing Transportation Squadron

1 Mission.--To provide motor transport service support for the Marine aircraft wing.

2 Tasks

a Provide motor transport service support as required.

b Provide organizaional maintenance with contract capability for wing motor transport equipment.

c Provide aircraft and ground refueling support as required.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of the MWSG.

4 Concept of Employment.--To function as an integral unit of the MWSG by providing deployable elements in support of the MAW and its assigned units.

5 Administrative Capabilities.--Capable of self administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance on assigned infantry weapons and motor transport equipment, less optical equipment.

(2) Support.--None.

b Supply.--None. Supply support is provided by HQS, MWSG.

c Transportation.--Possesses sufficient motor transport equipment to accomplish assigned missions and tasks.

d Medical.--None. Medical support is provided by HQS, MWSG.

e Food Service.--None. Dining facilities are provided by HQS, MWSG.

7 Miscellaneous.--Communication support is provided by HQS, MWSG.

8 Major Items of Equipment.--The major items of equipment are shown below.

MOTOR TRANSPORT SQUADRON, MWSG

1	Radiac Computer Indicator, CP95A/PD
3	Crane, RT, Rought Terrain, Hydraulic, 30T, DROH 2500
20	Crane, Wheel-Mtd, SP, 7-1/2T, 15B1WF
5	Sweeper, Runway, Vacuum, ASS32M3
1	Welding Machine, ARC, Trailer-Mtd, LM62A
96	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
3	Truck, Oil Serv, A/C. 2-1/2T, 6x6, 500 Gal, MA1B-M57
14	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, M49A2C
12	Truck, Tank, Water, 1000 Gal, 2-1/2T, 6x6, M50A2
59	Truck, Tractor, 5T, 6x6, w/o Winch, M52A2
80	Truck, Utility, 1/4T, 4x4, M151A2
8	Truck, Cargo, 5T, 6x6, M54A2C
23	Truck, Dump, 5T, 6x6, M51A2
3	Truck, Firefighting, Brush M530CB
2	Truck, Firefighting, Structural M530CS
7	Truck, Wrecker, 5T, 6x6, M543A2
4	Truck, Ambulance, 1-1/4T, 4x4, M886
78	Truck, Cargo, 1-1/4T, 4x4, M880
44	Trailer, Amphib. Cargo, 1/4T, 2-Whl, M416
1	Trailer, Cargo, 3/4T, 2-Whl, M101A1
67	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
40	Trailer, Tank, Water, 400Gal, 1-1/2T, 2-Whl, M149A1
30	Trailer, Utility, 2-1/2T, 4-Whl, F-2A
42	Semi-Trailer, Refueler, 5000 Gal, 4-Whl, M970
14	Semi-Trailer, Low Bed, 25T, 4-Whl, M172A1
26	Semi-Trailer, Stake, 12T, 4-Whl, M127A2C
5	Semi-Trailer, Van, Expandible, 6T, 4-Whl, M313
19	Machine Gun, Cal. 50, Browning, HB Flexible, M2

(5) Marine Aircraft Group.--The MAG is an administrative and tactical command element. Each MAG is task organized for the mission assigned and provides direct support to tactical squadrons assigned. MAG's within the MAW are usually four in number and of two types--a helicopter MAG and three fighter/attack MAG's. In a typical wing, the MAG's (VF/VA) assigned may have any combination of VMA, VMA(V), VMA(AW), or VMFA squadrons. The MAG (VH) will usually have one VMO, one HML, and one HMA squadron, or three HMM and two HMH squadrons.

(a) Marine Aircraft Group (MAG(VH))

1 Mission.--Commensurate with assets assigned, conduct helicopter and fixed wing operations in support of Fleet Marine Forces and be prepared to conduct such other air operations as may be directed. (See Figure 3-5.)

2 Tasks

a Conduct helicopter assault and support operations in support of the Fleet Marine Forces and such other air operations as may be directed.

b Conduct, supervise, and coordinate such unit and individual training as may be required to qualify assigned units for tactical deployment and combat.

c Maintain the capability of deploying squadrons, detachments, and/or composite squadrons aboard LPH's, LHA's, advance bases, or to the field for independent operations.

d Maintain the capability of deploying as an integral unit in an amphibious operation and providing command, control, and logistic support ashore for subordinate units.

e Provide, when directed, detachments for the traffic control of helicopters and for the supervision of loading and unloading of personnel and cargo at designated terminals or landing zones.

f Augment shore establishments, when based thereon, with personnel and equipment as directed by appropriate authority.

g Provide and coordinate air-sea rescue services at advanced bases.

h Determine and coordinate requirements for ground defense with cognizant commands when in a separate location.

i Provide for the internal security of assigned areas.

j Collect, evaluate, interpret, and disseminate intelligence information in coordination with appropriate agencies.

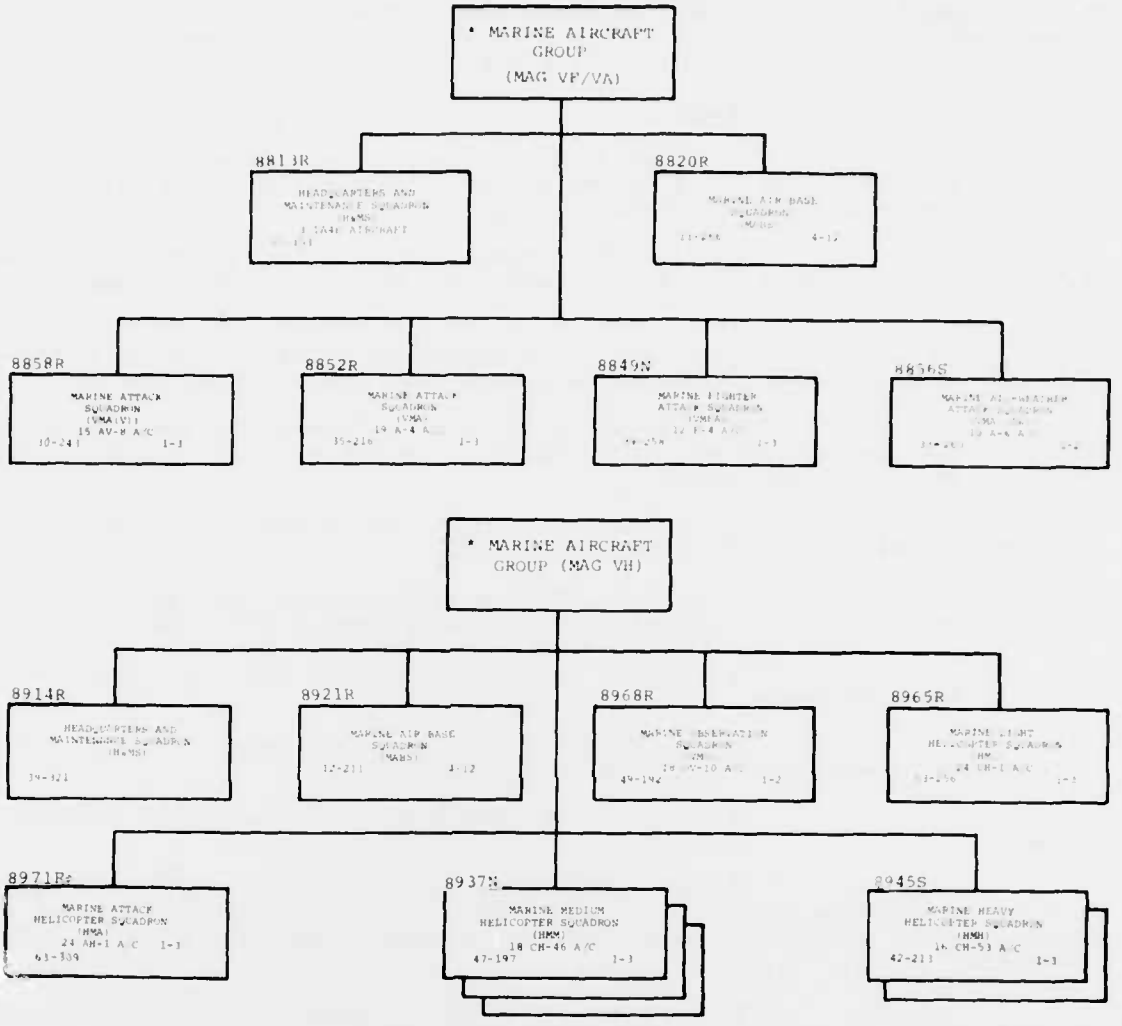
k Provide third echelon maintenance of Marine Corps furnished communications-electronics material items organic to the group, less single sideband.

l Provide logistic and maintenance support for attached squadrons.

m Provide intermediate level calibration (qualification) and repair services for all aeronautical test and measuring equipment assigned to MAG units.

n Provide supply, financial, and aircraft maintenance automated data processing (ADP) support in accordance with OPNAV, NAVSUP, and Marine Corps directives.

o Requisition, store, issue, and provide for appropriate supplies and equipment for supported units.



* No prescribed table of organization.

Figure 3-5.--Marine Aircraft Group (MAG(VH)/MAG(VF/VA))

(b) Marine Aircraft Group (MAG(VF/VA/VA(AW))

1 Mission.--Conduct antiair warfare and offensive air support operations in support of Fleet Marine Forces from advanced bases, expeditionary airfield, and aircraft carriers. Conduct such other air operations as may be directed. (See Figure 3-5.)

2 Tasks

a Conduct antiair warfare and offensive air operations in support of the Fleet Marine Forces. Conduct such other air operations as may be directed by higher authority.

b Plan and conduct tactical air operations as the aviation combat element of a Marine amphibious brigade or Marine amphibious unit.

c Maintain the capability of deploying and operating from advanced bases, expeditionary airfields, and aircraft carriers.

d Conduct, supervise, and coordinate such individual and unit training as may be required to qualify assigned squadrons for tactical deployment and combat.

e Maintain the capability of manning and operating a short airfield for tactical support (SATS).

f Augment shore establishments, when based thereon, with personnel and equipment as directed by appropriate authority.

g Provide and /or coordinate air-sea rescue services at advanced bases.

h Coordinate requirements for ground defense with appropriate command when in a separate location.

i Provide for the internal security of assigned areas.

j When deployed, and not under the operational control of a Marine aircraft wing, maintain a capability for planning and conducting NBC weapons delivery, utilizing weapons compatible with assigned aircraft.

k Collect, evaluate, interpret, and disseminate intelligence information in coordination with appropriate agencies.

l Provide logistic and maintenance support for attached squadrons.

m Provide intermediate level calibration (qualification) and repair services for all aeronautical test and measuring equipment assigned to MAG units.

n Provide supply, financial, and aircraft maintenance ADP support in accordance with current OPNAV, NAVSUP, and Marine Corps directives.

o Provide detachments for the support and maintenance of separately deployed units as required.

(c) Headquarters and Maintenance Squadron (H&MS)

1 Mission.--Perform tactical, logistic and administrative support for units attached to the Marine aircraft group.

2 Tasks.--(Note: Tasks a-h apply to all H&M squadrons. Tasks i-n apply only to H&M squadrons, MAG (VF/VA/VA(AW)).

a Provide intermediate maintenance on aircraft of units assigned to the Marine aircraft group.

b Perform intermediate and organizational maintenance on assigned aircraft and first echelon maintenance on assigned motor vehicles.

c Provide administrative and supply support for headquarters of the Marine aircraft group.

d Screen and repair aeronautical materials in need of rework, test, or check (condition codes B & E).

e Maintain the capability to deploy as an integral unit or by elements in support of separately employed units.

f Conduct individual and unit training as required to qualify organic personnel and supported squadrons for performance of assigned missions and tasks.

g Provide logistic, administrative, and training flight support for assigned squadrons.

h Provide base storage and distribution of class V and V(A) supplies to supported units.

i Provide Tactical Air Coordinator Airborne (TACA) and Forward Air Controller (FACA) for either high or low AAW environment as assigned.

j Provide direct support of tactical squadrons assigned to the Marine aircraft group.

k Provide priority air movement of cargo/personnel.

l Provide augmentation of wing heavy transport capability.

m Perform additional air support missions to include automatic radio retransmission, intrusion detector monitoring, flare drop, and medical evacuation.

n Manufacture cryogenics products as required for supported units.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group. MAG (VH) only: When appropriately augmented by the intermediate maintenance section of each supported squadron, it is capable of providing intermediate maintenance to support any mix of aircraft squadrons.

4 Concept of Employment

a MAG(VH).--Support Fleet Marine Force units by providing logistic and administrative support for units attached to the Marine aircraft group.

b MAG (VH/VA/VA(AW)).--Coordinate anti-air warfare and offensive air support operations in support of Fleet Marine Forces. When appropriately augmented by the intermediate maintenance section of each support squadron, capable of providing intermediate maintenance support for any mix of aircraft squadrons.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all organic equipment and organizational (second echelon) maintenance on assigned infantry weapons. Capable of performing organizational and intermediate maintenance on assigned aircraft and support equipment.

(2) Support.--Capable of performing intermediate maintenance on assigned aircraft and support equipment of supported aircraft squadrons.

b Supply.--Capable of supply and fiscal functions required for group operations.

c Medical.--None. Medical support is provided by the Marine airbase squadron (MABS) of the group.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by the MABS of the group.

7 Major Items of Equipment.--The major items of equipment are shown below.

HEADQUARTERS AND MAINTENANCE SQUADRON, MAG (VF/VA/VH)

4	Aircraft, TA-4F
1	Radiac Computer Indicator, CP95A/PD
2	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M121A1 (none f/MAG(VH))
3	Sweeper, Industrial -GSE-70-90

HEADQUARTERS AND MAINTENANCE SQUADRON, MAG (VF/VA/VH)	
8	Tractor, Utility, Wheeled-GSE-MF40 (12 f/MAG(VH))
2	Truck, Multi-Stop, Repair parts, 1-1/4T, 4x4, M893, (3 f/MAG(VH))
1	Demolition Equip, Engineer Squadron
137	Night Vision Goggles, Individual, AN/PVS-5 (MAG(VH) Only)

(d) Marine Airbase Squadron (MABS)

1 Mission.--Provide airbase facilities and services (except airfield construction) for the Marine aircraft group or supplement the airbase facilities and services provided by the station or facility, when based thereon.

2 Tasks

a Conduct airfield operations as required for supported units.

b Provide dining facilities as required for Marine aircraft group organic units.

c Maintain the capability to deploy as an integral unit and by elements in support of separately employed units.

d Conduct individual and unit training as required to qualify organic personnel and supported squadrons for performance of assigned missions and tasks.

e Provide third echelon/intermediate maintenance of communications-electronics materiel items organic to the group, less avionics, single sidedband, and MATCS equipment.

f Perform first echelon maintenance on organic motor transport equipment.

g Provide weather service support as required for supported units.

h Provide internal security to airbase facilities, to include personnel and traffic control and limited perimeter security.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group.

4 Concept of employment.--Provide airbase facilities and services for the Marine aircraft group or to supplement airbase facilities and services provided by a station or facility when based thereon.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistic Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on assigned infantry weapons. Capable of intermediate (third echelon) maintenance on organic communications-electronics equipment, less single sideband, and, for MABS(VH), avionics equipment.

(2) Support.--Provides intermediate (third echelon) maintenance support for communications-electronic equipment organic to the group, less avionics, single sideband equipment, and, for MABS (VF/VA/VA(AW))), MATCS equipment.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport support is provided by the Wing transportation squadron, MWSG.

e Food Service.--Provides food service support for the group.

7 Major Items of Equipment.--the major items of equipment are shown below.

MARINE AIR BASE SQUADRON, MAG(VF/VA/VH)

1	Radiac Computer Indicator, CP95A/PD
1	Radiac Set, AN/PDR-56G
1	Switchboard, Telephone, Cordless, Manual, SB-3082(V)2/GT
2	Switchboard, Telephone, Manual, SB-86/P
1	Communication Central, AN/TSC-15
2	Communication Central, AN/MRC-87A (MABS(VH)only)
2	Control Radio Set, AN/GRC-6(9 f/MABS(VH))
3	Radio Set, Control Group, AN/GRA-39A (8 f/MABS(VH))
2	Radio Set, AN/GRC-160
2	Radio Set, AN/MRC-109
5	Radio Set, AN/PRC-75A (6 f/MABS (VH))
25	Radio Set, AN/PRC-77 (29 f/MABS (VH))
2	Radio Set, AN/TRC-75
1	Radio Set, AN/VRC-47
2	Radio Terminal Set, AN/MRC-135
6	Radio Terminal Set, AN/TRC-166
1	Receiver Set, Radio, AN/GRR-17
8	Radio Set, AN/PRC-47 (MABS (VH) only)
3	Radar Set, (LBSR) AN/PPS-15 (V)2 (4 f/MABS (VH))
1	Shelter, Electrical Equipment, S-126A/G
2	Switchboard, Telephone, Automatic SB-3614(V)TT
2	Teletypewriter Set, AN/GGC-3-A
10	Night Vision Sight, Individual Served Weapon, AN/PVS-4
2	Truck, Ambulance, 1/4T, 4x4, M718A1 (2 f/MABS(VH)only)
3	Truck, Ambulance, 1-1/4T, 4x4, M886, (2 f/MABS (VH))

MARINE AIR BASE SQUADRON, MAG (VF/VA/VH) (CON'T)

1	Truck, Firefighting, Brush, M530CB
4	Truck, Crash/Fire/Rescue, 4x4, M-1000
2	Truck, Crash, Fire and Rescue, 6x6,MB-1, (MABS(VF/VH) only)
2	Truck, Crash, Fire and Rescue, 4x4, MB-5, (5 f/MABS(VH))
12	Machine Gun, 7.62mm, M60

(e) Marine Fighter/Attack Squadron (VMFA)

1 Mission.--Intercept and destroy enemy aircraft under all-weather conditions, attack and destroy surface targets, and conduct such other air operations as may be directed.

2 Tasks

a Intercept and destroy enemy aircraft in conjunction with ground and airborne fighter control under all-weather conditions.

b Maintain the capability to attack and destroy surface targets with those conventional weapons compatible with assigned aircraft.

c Provide escort of friendly aircraft as required under all-weather conditions.

d Maintain the capability of deploying and operating from aircraft carriers, advanced bases, and SATS.

e Conduct close air support within capability of assigned aircraft.

f Maintain the capability of deployment or extended range operations employing aerial refueling.

g Perform organizational maintenance on assigned aircraft.

h Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.-- Provide general support to aviation and ground forces as directed by the wing commander.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance augment of the squadron is assigned temporary additional duty (TAD) to the aircraft maintenance department of the MAG for the duration of such assignment. The squadron will then obtain its intermediate maintenance support from the H&MS. Detachments of this squadron are not capable of self support in other than special support equipment (SSE) and will be assigned to applicable T/O units possessing general organizational capability for their remaining logistic requirements.

(2) Support. None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by MABS.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE FIGHTER/ATTACK SQUADRON, MAG

12	Aircraft, F-4J
1	Switchboard, Telephone, Manual, SB-22/PT
1	Tractor, Utility, Wheeled-GSE-MF40
1	Radiac Computer Indicator, CP95A/PD
1	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893

(f) Marine Attack Squadron (VMA), A-4M

1 Mission.--Attack and destroy surface targets, escort helicopters, and conduct such other air operations as may be directed.

2 Tasks

a Conduct close air support.

b Conduct armed reconnaissance, interdiction operations, and strikes against enemy installations, utilizing all types of conventional and nuclear, biological, and chemical (NBC) weapons compatible with assigned aircraft.

c Perform smoke laying, night battlefield, or

target illumination and insecticide spraying.

d Conduct air defense operations within capability of aircraft assigned.

e Maintain capability to operate during darkness and under instrument flight conditions, to include ordnance delivery under the control of air support radar teams.

f Maintain the capability of deployment or extended operations employing aerial refueling.

g Maintain the capability of deploying and operating from aboard carriers, advanced bases, and expeditionary airfields.

h Maintain capability to perform emergency resupply missions compatible with assigned aircraft.

i Conduct armed escort missions in support of helicopter operations.

j Perform organizational maintenance on assigned aircraft.

k Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.--Provide general support to aviation and ground forces as directed by the wing commander.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance augment of the squadron is assigned TAD to the aircraft maintenance department of the MAG for the duration of such assignment. The squadron will then obtain its intermediate maintenance support from the H&MS. Detachments of this squadron are not capable of self support in other than special support equipment and will be assigned to applicable T/O units possessing general organizational capability for their remaining logistic requirements.

(2) Support.--None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by MABS.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE ATTACK SQUADRONS (VMA, VMA, (V)), MAG

19/0	Aircraft, A-4M, or
0/15	Aircraft, AV-8A
1/0	Radiac Computer Indicator, CP95A/PD
1/1	Switchboard, Telephone. Manual, SB-22/PT
4/2	Tractor, Utility, Wheeled-GSE-MF40
1/1	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893

(g) Marine Attack Squadron (VMA)(V), AV-8A

1 Mission.--Attack and destroy surface targets, escort helicopters, and conduct such other air operations as may be directed.

2 Tasks

a Conduct close air support.

b Conduct armed reconnaissance, interdiction operations, and strikes against enemy installations, utilizing all types of conventional weapons compatible with assigned aircraft.

c Conduct air defense operations within capability of aircraft assigned.

d Maintain capability to operate during darkness and under instrument flight conditions to include ordnance delivery under the control of air support radar teams.

e Maintain the capability of deployment or extended operations employing aerial refueling.

f Maintain the capability of deploying and operating from aboard carriers and other suitable seagoing platforms, advanced bases, expeditionary airfields, and remote tactical landing sites.

g Maintain capability to perform emergency resupply missions compatible with assigned aircraft.

h Conduct armed escort missions in support of

helicopter operations.

i Perform organizational maintenance on assigned aircraft.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.--Provide general support to aviation and ground forces as directed by the wing commander.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance augment of the squadron is assigned to the aircraft maintenance department of the MAG for the duration of such assignment. The squadron will then obtain its intermediate maintenance support from the H&MS.

(2) Support. None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by MABS.

7 Major Items of Equipment.--The major items of equipment for a VMA(V) are shown in the previous chart for the VMA, VMA(V), MAG.

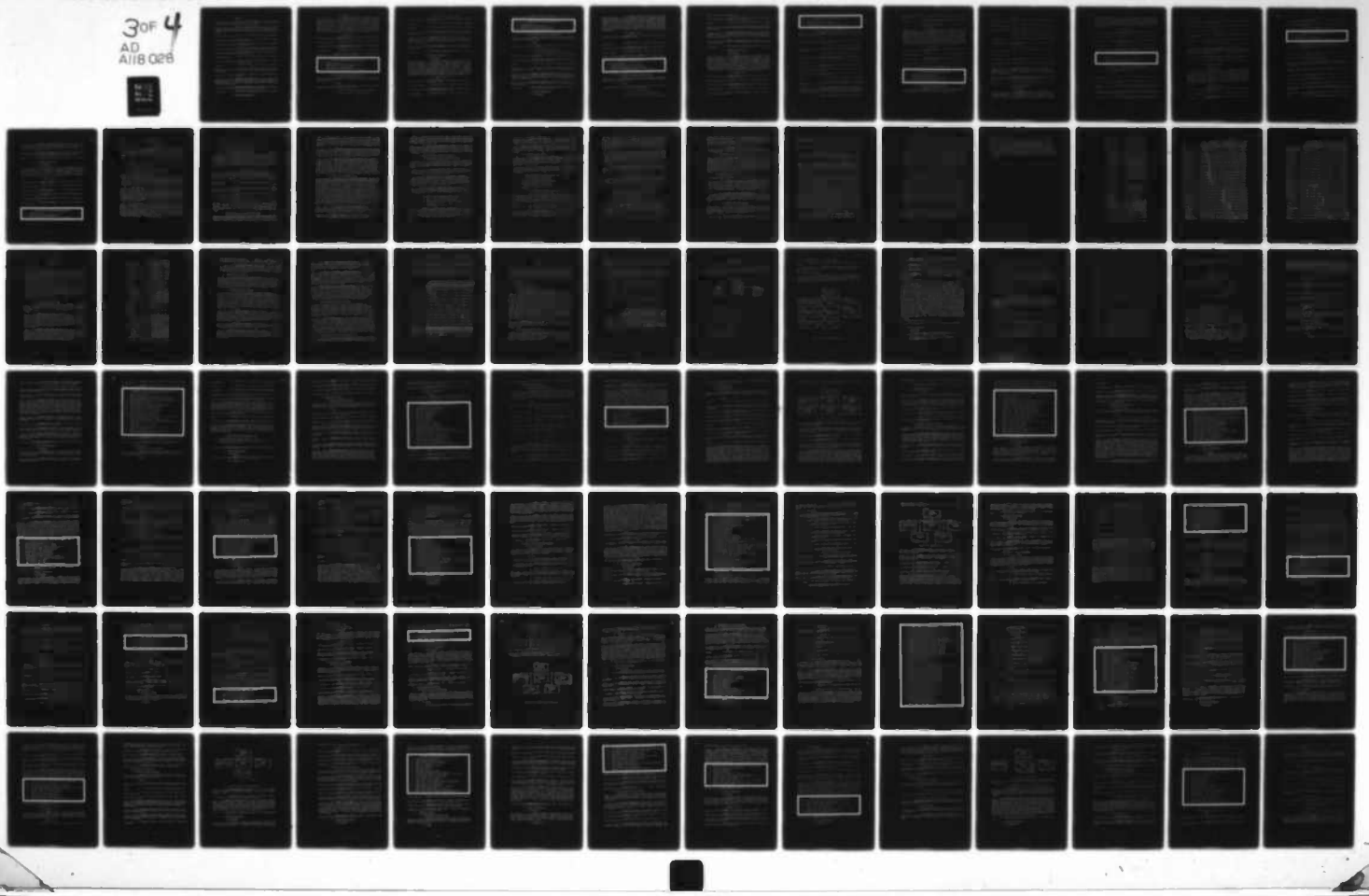
(h) Marine Attack Squadron (VMA(AW)), A-6A/E

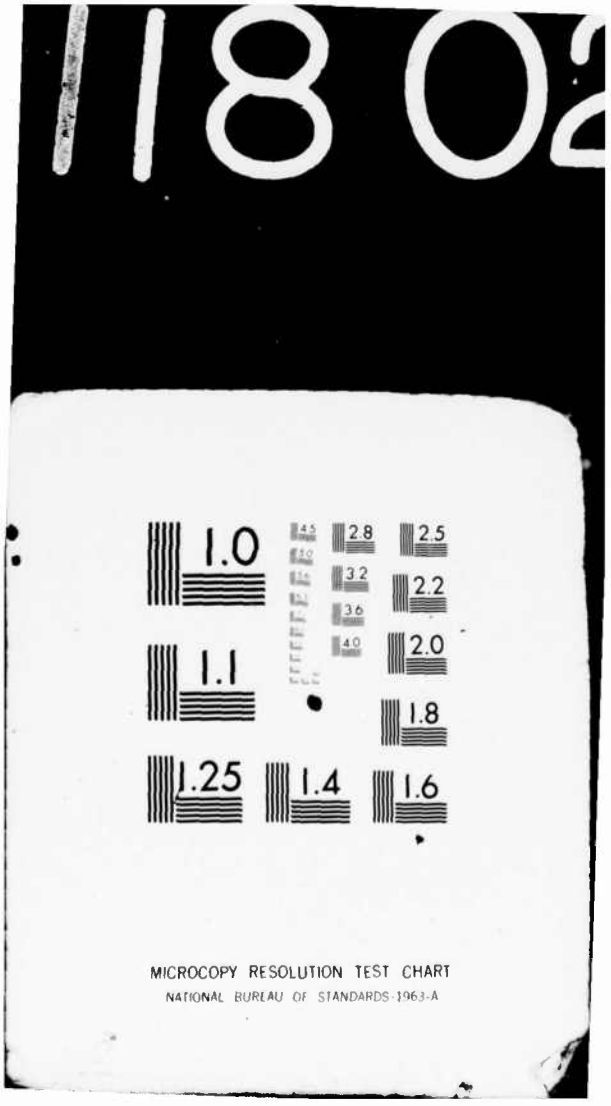
1 Mission.--Attack and destroy surface targets under all-weather conditions, escort helicopters, and conduct such other air operations as may be directed.

AD-A118 028 MARINE CORPS DEVELOPMENT AND EDUCATION COMMAND QUANT--ETC F/G 15/3
LANDING FORCE ORGANIZATIONAL SYSTEMS STUDY (LFOSS).(U)
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NATIONAL BUREAU OF STANDARDS-1963-A

2 Tasks

a Conduct close air support under all-weather conditions to include ordnance delivery under control of air support radar teams and radar beacon forward air controller teams.

b Conduct armed reconnaissance, radar search and attack, interdiction operations, emergency mining missions, and strikes against enemy installations, utilizing all types of conventional and NBC weapons compatible with assigned aircraft under visual and all-weather conditions.

c Conduct air defense operations within capabilities of aircraft assigned.

d Peform smoke laying, night battlefield, or target illumination and insecticide spraying.

e Maintain the capability of deployment or extended operations employing aerial refueling.

f Maintain the capability of deployment and operating from aboard carriers, advanced bases, and expeditionary airfields.

g Maintain capability to perform emergency resupply missions compatible with assigned aircraft.

h Conduct armed escort missions in support of helicopter missions.

i Collect and disseminate information on enemy units within capability of assigned aircraft.

j Perform organizational maintenance on assigned aircraft.

k Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

l Maintain the capability to conduct mining missions under all-weather conditions.

3 Concept of Organizaion.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.--Provide general support to aviation and ground forces as directed by the wing commander.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance augment of the squadron is assigned to the aircraft maintenance department of the MAG for the duration of such assignment. The squadron will then obtain its intermediate maintenance support from the H&MS. Detachments of this squadron are not capable of self-support in other than special support equipment and will be assigned to applicable T/O units possessing general organizational capability for their remaining logistic requirements.

(2) Support.--None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by MABS.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE ALL-WEATHER ATTACK SQUADRON, MAG

10	Aircraft, A-6A, E
1	Switchboard, Telephone, Manual, SB-22/PT
2	Transponder Set, Forward Air Control, AN/PPN-18
1	Radiac Computer Indicator, CP95/PD
4	Tractor, Utility, Wheeled-GSE-MF40
1	Truck, Multi-Stop, Repair Parts 1-1/4T, 4x4, M893

(i) Marine Light Helicopter Squadron (HML)

1 Mission.--To provide utility combat helicopter support to the landing force in the ship-to-shore movement and in subsequent operations ashore.

2 Tasks

a Provide airborne control of tactical air support operations as required for command and control.

b Conduct emergency aerial supply and resupply.

c Conduct front line casualty evacuation.

d Conduct liaison and courier service.

e Augment local search and rescue facilities within the capability of assigned aircraft.

f Conduct special operations as directed by higher authority.

g Perform organizational maintenance on assigned aircraft.

h Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.--Support Fleet Marine Force units by providing utility helicopter support during aerial and ground combat operations.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance augment of the squadron is assigned to the aircraft maintenance department of the MAG for the duration of such assignment . The squadron will then obtain its intermediate maintenance support from the H&MS. Detachments of this squadron are not capable of self support in other than special support equipment and will be assigned to applicable T/O units possessing general organizational capability for their remaining logistic requirements.

(2) Support.--None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by MABS.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE LIGHT HELICOPTER SQUADRON, MAG	
24	Aircraft, UH-1 N
1	Receiving Set, Radio AN/GRR-17
30	Sling, Cargo, Chain Leg, 15,000-lb Cap.
1	Switchboard, Telephone, Manual, SB-22/PT
2	Tractor, Utility, Wheeled-GSE-MF40

(j) Marine Medium Helicopter Squadron (HMM)

1 Mission.--Provide helicopter transport of supplies, equipment, and personnel for the landing force during ship-to-shore movement and within an objective area.

2 Tasks

a Transport supplies, equipment, and troops. Primary task is the transport of troops.

b Conduct evacuation operations.

c Augment local search and rescue facilities.

d Maintain the capability to operate from LHA's, LPH's, LPD's, or other floating bases.

e Maintain the capability to operate under conditions of darkness and instrument flight conditions.

f Perform organizational maintenance on assigned aircraft.

g Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft wing, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.--Support Fleet Marine Force units by providing transport of supplies, equipment, and personnel in amphibious operations.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance augment of the squadron is assigned to the aircraft maintenance department of the MAG for the duration of such assignment. The squadron will then obtain its intermediate maintenance support from the H&MS. The detachments of this squadron are not capable of self support in other than T/O units possessing general organizational capability for their remaining logistic requirements.

(2) Support.--None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency support.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by MABS.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE MEDIUM HELICOPTER SQUADRON, MAG

18	Aircraft, CH-46F
1	Radiac, Computer, Indicator CP95A/PD
30	Sling, Cargo, Chain Leg, 15,000-lb Cap.
1	Switchboard, Telephone, Manual, SB-22/PT
1	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893
2	Tractor, Utility, Wheeled-GSE-MF40

(k) Marine Heavy Helicopter Squadron (HMH)

1 Mission.--Provide helicopter transport of supplies, equipment, and personnel for the landing force during ship-to-shore movement and within an objective area.

2 Tasks

a Transport supplies, equipment, and troops. Primary task is the transport of supplies and equipment.

b Conduct evacuation operations.

c Augment local search and rescue facilities.

d Maintain the capability to operate from LHA's,

LPH's, LPD's, or other floating bases.

e Maintain the capability to operate under conditions of darkness and instrument flight conditions.

f Perform organizational maintenance on assigned aircraft.

g Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.--Support Fleet Marine Force units by providing transport of supplies, equipment, and personnel in amphibious operations.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance augment of the squadron is assigned to the aircraft maintenance department of the MAG for the duration of such asignment. The squadron will then obtain its intermediate maintenance support from the H&MS. Detachments of this squadron are not capable of self support in other than special support equipment and will be assigned to applicable T/O units possessing general organizational capability for their remaining logistic requirements.

(2) Support.--None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by MABS.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE HEAVY HELICOPTER SQUADRON, MAG

16	Aircraft, CH-53
1	Switchboard, Telephone, Manual, SB-22/PT
2	Heliport Lighting Set, Portable
1	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893
30	Sling, Cargo, Chain Leg, 15,000-lb Cap.

(1) Marine Helicopter Attack Squadron (HMA)

1 Mission.--To provide close-in fire support during aerial and ground escort operations during the ship-to-shore movement and within an objective area.

2 Tasks.

a Conduct armed escort flights in support of personnel and cargo carrying helicopters.

b Provide landing zone suppression fire support.

c Maintain the capability to operate the tube-launched optically-tracked wire command link guided missile (TOW) against enemy armor.

d Conduct visual and armed reconnaissance.

e Provide target marking and airborne direction for the attack of surface targets by higher performance aircraft.

f Provide air coordination for the utilization of supporting arms.

g Escort and provide suppressive fire for surface convoys and other ground unit operations.

h Maintain the capability to operate from aircraft carriers or other floating bases.

i Maintain the capability to operate under conditions of darkness and reduced visibility.

j Perform organizational maintenance on assigned aircraft.

k Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.--Support Fleet Marine Force

units by providing close-in fire support during aerial and ground escort operations.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capble of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance augment of the squadron is assigned to the aircraft maintenence department of the MAG for the duration of such assignment. The squadron will then obtain its intermediate maintenance support from the H&MS. Detachments of this squadron are not capable of self support in other than special support equipment and will be assigned to applicable T/O units possessing general organizational capability for their remaining logistic requirements.

(2) Support.--None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport equipment is provided by the wing transportation squadron, MWSG.

e food Service.--None. Food service support is provided by the MABS.

7 Major Items of Equipment.--The major items of equipment are shown below.

MARINE ATTACK HELICOPTER SQUADRON, MAG

24	Aircraft, AH-1J/AH-1T/AH-1R (TOW)
3	Heliport Lighting Set, Portable
1	Switchboard, Telephone, Manual, SB-22/PT
1	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893
30	Sling, Cargo, Chain Leg, 15,000-lb Cap.
2	Tractor, Utility, Wheeled-GSE-MF40

(m) Marine Observation Squadron (VMO)

1 Mission.--Conduct aerial reconnaissance, observation, and forward air control operations to support the landing force in the ship-to-shore movement and in subsequent operations ashore.

2 Tasks

a Conduct aerial reconnaissance and observation in support of landing force units.

b Conduct forward air control, and artillery and naval gunfire spotting.

c Conduct emergency aerial supply and resupply within the capability of assigned aircraft.

d Augment local search and rescue facilities.

e Conduct frontline, low level aerial photography.

f Conduct helicopter escort missions and close-in fire suppression.

g Conduct such other operations as may be required within capabilities of assigned aircraft.

h Maintain the capability to:

(1) Operate from aircraft carriers and other floating and advanced bases.

(2) Operate under conditions of reduced visibility and darkness.

(3) Perform organizational level maintenance on assigned aircraft and associated equipment.

i Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

3 Concept of Organization.--This organization will normally function as an integral unit. It is structured to operate as a subordinate unit of a Marine aircraft group, and when appropriately augmented, is capable of functioning independently or as the air component of a task organized element.

4 Concept of Employment.--Support Fleet Marine Force units by providing aerial reconnaissance and observation throughout the amphibious objective area and subsequent operations ashore.

5 Administrative Capabilities.--Capable of self-administration.

6 Logistical Capabilities

a Maintenance

(1) Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and support equipment. When this squadron is assigned to a supporting group, the intermediate maintenance

augment of the squadron is assigned TAD to the aircraft maintenance department of the MAG for the duration of such assignment. The squadron will then obtain its intermediate maintenance support from the H&MS. Detachments of this squadron are not capable of self support in other than special support equipment (SSE) and will be assigned to applicable T/O units possessing general organizational capability for their remaining logistic requirements.

(2) Support.--None.

b Supply.--Capable of performing supply and fiscal functions required for squadron operations.

c Medical.--Capable of providing routine and emergency medical support.

d Transportation.--None. Motor transport support is provided by the wing transportation squadron, MWSG.

e Food Service.--None. Food service support is provided by MABS.

7 Major Items of Equipment.--The major items of equipment are shown on the following page.

MARINE OBSERVATION SQUADRON, MAG

18	Aircraft, OV-10A
1	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893
1	Switchboard, Telephone, Manual, SB-22/PT
1	Tactical Intelligence Imagery Processor
2	Tractor, Utility, Wheeled-GSE-MF40

(6) Marine Tactical Reconnaissance Squadron (VMFP)

(a) Mission.--Conduct tactical imagery reconnaissance in support of Fleet Marine Force operations.

(b) Tasks

1 Conduct day and night aerial multisensor imagery reconnaissance.

2 Conduct aerial prestrike and poststrike multisensor imagery for target damage assessment.

3 Process and provide aerial multisensor imagery for immediately responsive interpretaion reports to wing and/or supported commanders.

4 Provide for the processing and/or reproduction of aerial multisensor imagery obtained by organic aircraft within capability of assigned laboratory equipment.

5 Maintain the capability of operating from aircraft carriers, advanced bases, and expeditionary airfields within capability of

organic aircraft.

6 Maintain the capability to operate during darkness and under instrument flight conditions.

7 Maintain the capability of deployment or extended operations employing aerial refueling.

8 Be prepared to deploy photo detachments aboard carriers, advanced bases, and expeditionary airfields.

9 Ensure that aeronautically designated personnel maintain basic flying skills concurent with the performance of other assigned duties.

10 Provide liaison personnel to wing and landing force staffs to assist in VMFP employment planning.

11 Perform organizational maintenance on assigned aircraft.

(c) Concept of Organization.--This organization will normally function through detachments which are assigned as subordinate units to a Marine aircraft group. When the detachments are appropriately augmented, they are capable of functioning independently or as the air component of a task organized force

(d) Concept of Employment.--Support airborne operations and ground forces by conducting aerial multisensor imagery reconnaissance.

(e) Administrative Capabilities.--Capable of self-administration.

(f) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and organizational (second echelon) maintenance on infantry weapons. Capable of performing organizational maintenance on assigned aircraft and equipment. Capable of performing intermediate maintenance of assigned aircraft and support equipment for independent operations when augmented by the parent intermediate maintenance activity (IMA). When this squadron is assigned to a supporting IMA, the IMA augment section is assigned TAD to that activity. The squadron will then obtain its intermediate level maintenance support from the supporting intermediate maintenance activity.

b Support.--None.

2 Supply.--Capable of performing supply and fiscal functions required for squadron operations.

3 Medical.--Capable of providing routine and emergency medical support.

4 Transportation.--None. Motor transport support is provided by the appropriate wing unit.

5 Food Service.--None. Food service support is provided by the appropriate wing unit.

(g) Miscellaneous.--Communication support is provided by the appropriate wing unit.

(h) Major Items of Equipment.--The major items of equipment are shown below.

MARINE TACTICAL RECONNAISSANCE SQUADRON

21	Aircraft, RF-4B
1	Switchboard, Telephone, Manual, SB-22/PT
2	Tractor, Utility, Wheeled-GSE-MF40
1	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893

(7) Marine Tactical/Electronic Warfare Squadron (VMAQ)

(a) Mission.--Conduct airborne electronic warfare in support of Fleet Marine Force operations.

(b) Tasks

1 Conduct airborne electronic countermeasures and electronic warfare support measures operations.

2 Conduct ECM operations for electronic counter-countermeasures training for Fleet Marine Force units.

3 Process and provide immediately responsive information and mission data from tape recordings obtained on EW missions for updating and maintaining electronic order of battle and for use in subsequent air operations.

4 Maintain the capability of operating from aircraft carriers, advanced bases, and expeditionary airfields within capability of organic aircraft.

5 Maintain the capability to operate during darkness and under instrument flight conditions.

6 Maintain the capability of deployment or extended operations employing aerial refueling.

7 Be prepared to deploy ECM detachments aboard carriers, advanced bases, and expeditionary airfields.

8 Ensure that aeronautically designated personnel maintain basic flying skills concurrent with the performance of other assigned duties.

9 Provide liaison personnel to wing and landing force staff to assist in VMAQ employment planning.

10 Perform organizational maintenance on assigned aircraft.

(c) Concept of Organization.--This organization will normally function through detachments which are assigned as subordinate units to a Marine aircraft group. When the detachments are appropriately augmented, they are capable of functioning independently or as the air component of a task organized force.

(d) Concept of Employment.--Support airborne operations and ground forces by detecting and suppressing enemy electronic warning, acquisition, and terminal threat weapons systems and communications.

(e) Administrative Capabilities.--Capable of self-administration.

(f) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational maintenance on all assigned aircraft and equipment. Capable of intermediate maintenance of assigned aircraft and support equipment for independent operations when augmented by the parent intermediate maintenance activity. When this squadron is assigned to a supporting IMA, the IMA augment section is assigned to that activity. The squadron will then obtain its intermediate level maintenance support from the supporting IMA

b Support.--None.

2 Supply.--Capable of performing supply and fiscal functions required for squadron operations.

3 Medical.--Capable of providing routine and emergency medical support.

4 Transportation.--None. Motor transport support is provided by the appropriate wing unit.

5 Food Service.--None. Food service support is provided by the appropriate wing unit.

(g) Miscellaneous.--Communication support is provided by the appropriate wing unit.

(h) Major Items of Equipment.--The major items of equipment are shown below.

MARINE TACTICAL ELECTRONIC WARFARE SQUADRON

15	Aircraft, EA-6A
1	Switchboard, Telephone, Manual, SB-22/PT
2	Tractor, Utility, Wheeled-GSE-MF40
1	Truck, Multi-Stop, Repair Parts, 1-1/4T, 4x4, M893

SECTION 3B

MARINE AIRCRAFT WING
Q-1 PERIOD (1979-1983)

306. GENERAL

a. Fielding of equipment now under development is not expected to change the mission of the MAW during the 1979 to 1983 time frame. Improvements in air traffic control and landing systems will enable control units to provide more efficient handling of high density air traffic. Technological improvements in the electronic equipment slated for organizations within the MAW should enhance the wing's support of the Marine Corps division. Some of the MAW organizations and their improved capabilities are as follows:

- o The MASS's capability to control multiple aircraft bombing missions.
- o The DASC's timely control of aircraft within the airspace over the battlefield.
- o The MSTC's remote area approach and landing system.
- o The LAAM battalion's enhanced systems operation and electronic countermeasures.

Reliability, availability, and maintainability of equipment, as well as accuracy and timeliness of information, will speed support to the desired ground unit in a manner previously considered impossible. New or improved equipment, such as the F-18 fighter and the EA-6B electronic warfare aircraft, and laser equipment, such as spot trackers and guided weapons, will have a decided effect on service/maintenance organizations. Special training with possible changes and additions in occupational fields (OF's) may be required.

b. In the field of communications/electronics, improvements in radios and other communications technology will enhance all organizations within the MAW during the Q-1 period. Technological advancements will result in improved digital computers, solid state components, integrated circuitry, and digital data links. Changes and improvements in communications systems and equipment within the MAW will generally parallel that already explained in the division. See the matrix shown in Figure 3-6 for a complete list of communications equipment to be introduced into the wing during the Q-1 period. Significant equipment unique to the MAW will be explained within this section.

c. The matrix at the end of this section includes items that are slated for use by the MAW but are more specific to the requirements of another organization and therefore are detailed in that organization's section. For example, the tactical intrusion detector, which has broader application to division use, will be discussed in the division section. Other division-related materiel includes the Position Location Reporting System (PLRS) and the AN/PPS-15 radar set. The FSSG section identifies new/improved products including 4,000, 6,000 and 10,000 pound forklifts and a heavy motorized grader. These items plus all Q-1 developments will be included in the MAW matrix, at the end of this section.

307. WING ORGANIZATION

a. Marine Wing Headquarters Squadron

b. Marine Air Control Group

(1) Headquarters and Headquarters Squadron

(2) Marine Air Support Squadron, MACG

(a) Radar Course Direction Central (RCDC), AN/TPQ-27.--The capabilities of the air support radar team of the MASS will be improved tremendously by the introduction of the RCDC AN/TPQ-27 which will provide the capability of simultaneous control of multiple aircraft for level, high-altitude, day/night bombing missions in support of ground combat forces under all weather conditions. The AN/TPQ-27 provides more accuracy and range (100 nautical miles) than the AN/TPQ-10 which it replaces, and will improve and speed communications with the direct air support center by the use of a tactical digital information link (TADIL B). The IOC is FY 82.

(b) Direct Air Support Central, AN/UYQ-4

1 The response time of Marine air command and control to air-support requirements of Marine Corps ground units will be reduced by the automation of information processing, display, and transmission within the DASC by 1980. The DASC will achieve timely control of attack aircraft and helicopters operating in the airspace over the battlefield by automatically:

a Displaying the ground situation, including friendly and known enemy dispositions from information stored in its data bases.

b Displaying selected friendly aircraft tracks based on information digitally transmitted from the TAOC and the position location and reporting system (PLRS).

c Computing and displaying aircraft vector information for navigational purposes.

d Receiving, computing, and displaying target data in the proper coordinate system.

2 The responsibility for manning, training, and operation of the DASC will remain with the MASS. No significant changes in tactics or doctrine are envisioned; however, increased formal training of operations personnel will be required. The use of modular equipment with excellent reliability will permit almost continuous automated operation. Failed modules and end items will have to be retrograded to the FSSG for repair.

(3) Marine Air Traffic Control Squadron, MACG

(a) Marine Traffic Control Unit Equipment Service Test and Operational Evaluation.--The equipment currently used by the MATCU of the MATCS, the AN/TSQ-18A, was developed in the 1950's. It uses vacuum tube technology, lacks reliability and is oversized and heavy compared to mod-

ern, solid-state equipment. An ongoing MATCU equipment improvement program will continue through the Q-1 period. The program will evaluate the 60Hz generators and air conditioners, the AN/TSA-120 mobile air traffic control tower (IOC FY 79), and a solid-state TACAN OE-258/URN antenna and beacon transponder AN/URN-25 (IOC FY 79) for operational suitability, ease of maintenance, transportability, and compatibility for employment by the MATCU's.

(b) Marine Remote Area Approach and Landing System (AN/TPN-30) (MRAALS).--This system will satisfy the requirement for a remote area terminal guidance system for vertical/short takeoff and landing (V/STOL) aircraft and helicopters. By using MRAALS, pilots will be able to locate a remote landing zone and make an approach in all weather conditions down to 1/4-mile visibility and 100-foot ceiling. The IOC if FY 79.

(c) Marine Air Traffic Control Landing System (MATCALS).--Modern aircraft are equipped with sophisticated navigational, guidance, and control systems. Their operations are constrained by the quality of ground-based traffic control and navigational aid system, the AN/TSQ-18 of 1950-1960 vintage. The Marine air traffic control and landing system (MATCALS) will provide automatic and upgraded control capabilities to the MATCU's for handling high density air traffic at expeditionary airfields, under all-weather conditions. The MATCU will be capable of providing all aspects of surveillance, identification, tracking, aircraft vectoring, and will provide automated tracking of up to 40 aircraft, and ground-controlled approaches at a sustained rate of up to one per minute. The IOC is FY 81.

(4) Marine Air Control Squadron, MACG

(a) Tactical Air Operations Central, AN/TYQ-2, and Tactical Data Communications Central (TDCC), AN/TYQ-3, Improvement Program.--To automate the Marine air command and control system (MACCS), the Marine tactical data system (MTDS) was initiated in the mid-1950's. Three items of equipment were developed--the TACC, AN/TYQ-1; the TAOC, AN/TYQ-2; and the TACC, AN/TYQ-3. Technological improvements of the MACG's equipment will continue through FY 80. These improvements will enhance the effectiveness and timeliness of the MACCS in operation. The present system, including related sensors and communications links such as radars, intercenter data links (ICDL), and missile battery data links (MBDL), will not provide a satisfactory solution to the air defense and antiair warfare requirements which the Marine Corps anticipates by 1985. In response to these deficiencies, the ongoing developmental program will analyze requirements for digital data links with other command, control, and communication systems, and it will replace the ICDL and MBDL with improved tactical digital information links (TADIL), including TADILB, TADILC, and A-TADIL, in order to make use of airborne weapon and early warning system inputs. The program will ensure the compatibility of MACCS equipment with air traffic control radar beacon system-identification friend or foe (IFF)-Mark XII-system (AIMS).

(b) Training Device, 15A19, Reprogramming.--The TAOC/TDCC trainer, 15A19, is being modified to keep pace with the improved systems it serves. Most of the required modifications are programming changes to ensure compatibility between the improved TAOC and TDCC and the other MACCS equipments. Modifications should be completed by FY 80.

(c) AN/TPS-63 Radar Set.--The MACS provides radar and IFF information on friendly and hostile aircraft within an objective area to the TACC for use during high intensity air traffic control operations. The

AN/TPS-63, a two-dimensional, solid-state radar, will provide the MACS with a highly reliable, lightweight en-route traffic control and early warning capability, particularly in low altitude, high-clutter areas. The TPS-63, which will replace the AN/UPS-1 in FY 79, will frequently be operated from a remote site via a radar relay.

(d) AN/TXQ-3 Radar Relay.--The AN/TXQ-3 is a wideband remoting system for the AN/TPS-63 and AN/TPS-22 radars which is capable of relaying two-dimensional radar data from a remote site to the TAOC. The Marine Corps is presently monitoring other services' efforts in radar relay development to estabalish future applicability in meeting the requirements of the MACCS. The IOC is FY 80.

(5) Forward Area Air Defense Battery, MACG

(a) Lightweight Air Defense Weapons System

1 The STINGER surface-to-air weapons system is currently undergoing operational testing and evaluation as a man-transportable system with an all-aspect engagement capability. STINGER will replace the presently deployed REDEYE surface-to-air missile system. The IOC date is 1979.

2 A passive optical seeker technique (POST) will be incorporated with the STINGER airframe and launcher to allow it to operate in both the infrared and ultraviolet frequency spectrums and to be relatively insensitive to infrared countermeasures.

(b) Forward Area Air Defense Battery Employment.--When fully operational, the FAAD battery will consist of five platoons, each containing three firing sections of five two-man firing teams--a total of 75 teams, each made up of a team chief and a gunner. The basic load proposed for the team is four weapon rounds (grip stock with IFF antenna and the missile round). The weight of the basic load poses an obstacle to team mobility, which must be taken into consideration.

(6) Light Antiaircraft Missile Battalion, MACG.--There is a continuing program to improve the HAWK (surface-to-air missile system) by developing hardware and software to enhance system operation, mobility, nd electronic countermeasures. Improved HAWK update within the Q-1 period will include:

(a) Improved Continuous Wave Acquisition Radar (ICWAR).
(b) Digital Moving Target Indicator (DMTI).
(c) Army Tactical Data Link-1 (ARDL-1).
(d) Pulse Acquisition Radar Emission Control (PAREMCOM).
(e) Pulse Acquisition Radar Ultra Low Sidelobe Antenna (PARULSA).
(f) High Powered Illuminator Reliability And Maintainability (HPIRAM).

(7) Marine Wing Communications Squadron, MACG.--Communications systems changes and improvements within the MAW will be similar to those of the Marine division. Significant equipment unique to the MAW is explained below. For a complete list of communications equipment to be introduced into the MAW during this period see the MAW communications matrix for the Q-1 period (Figure 3-6). There will be an organizational impact on the MAW units, the scope of which is not clear at this time.

(a) Radio Set AN/GRC-193.--This bench mount HF single sideband radio uses the same receiver transmitter as the AN/PRC-104, the new family of HF equipment. In this configuratin the radio has a 400-watt amplifier and can operate in the voice, CW, teletype or data modes. The AN/GRC-193 replaces the AN/TRC-75. The IOC date is 1978.

c. Marine Wing Support Group.--The MWSG, supported as required by elements of the FSSG, is capable of providing ground combat service support to the aviation element of the MAGTF. The implementation of augmented FSSG elements is, at present, in varying stages within the Marine Corps' three MWSG's.

(1) Engineer Squadron, MWSG

(a) Pump System (Fuel) 100 Gallons Per Minute.--Optimum employment of the AV-8A aircraft and helicopters in mid- and high-intensity warfare depends on rapid refueling to minimize turnaround times required to ready aircraft for succeeding missions. A 100-gallon per minute fuel pumping system is being evaluated to replace the present 55-gallon per minute capability. The IOC is FY 81.

(b) The total Marine Corps requirement is for 108 systems with one pump per system. One system, emplaceable by two Marines within 20 minutes, is not anticipated to require new training or logistic support. The system will also be able to function as a ground refueler or fuel transporter.

(2) Headquarters and Ground Maintenance Squadron, MWSG

(3) Motor Transport Squadron, MWSG

d. Marine Aerial Refueler Transport Squadron

e. Fighter/Attack Marine Aircraft Group

(1) Several programs which impact throughout the MAG are presently in progress:

(a) Survivability Systems for All USMC Aircraft

1 Survivability systems are being evaluated for all MAG aircraft to include radio frequency, electro-optical, and infrared countermeasures as well as hardening of aircraft to lower attrition rates against IR SAM threats. These hardening projects, which are considered interim solutions for immediate problems or weaknesses, include IR glint-reducing paint for aircraft and ordnance, engine IR suppressor devices, radar and optical sensing detection devices, and missile launch detectors.

2 New tactics also are being evaluated to enhance survivability. These include extensive night operations and low-level flying to prevent visual acquisition by SAM systems.

(b) Laser Guided Weapons.--The ability of a forward air controller to pinpoint a target for attack with precision guided weapons on the first pass is now considered essential for effective close air support in a high threat environment. In response to this need the evaluation and implementations for lightweight, laser target designation systems (LLTDS)

and laser-guided, air-delivered weapons (HELLFIRE, LASER MAVERICK, laser-guided bombs (LGB)) will greatly enhance designation accuracy and first pass hit probability. Also under study is the feasibility of dropping the LGB by AN/TPQ-27 guidance. If such delivery is proved feasible, terminal guidance envelopes, tactics, command and control procedures, and designation requirements will be derived from the bombing envelopes and from tactics already developed for the LGB. The Marine Corps is engaged in a joint developmental effort with the U. S. Air Force on laser-guided, air-deliverable weapons.

(c) Multiple Weapons Assembly Preloading System, A/E 37-K-1.--An evaluation is under way to determine the suitability of a proposed multiple weapons assembly preloading system for use in an environment where a large number of bombs are assembled and preloaded, and to determine the increase in capability to reload aircraft that would result from the use of such a system. A related test is evaluating procedures to support the increasingly complex weapons systems of the Marine Corps today and in the future. Test candidates include a second generation of the SATS loader and the H1-AB crane. The IOC is FY 79.

(d) Gator Mine System.--A joint service (USAF, USA, USMC) effort is being conducted to develop a fixed-wing, air scatterable mining system for both interdiction and tactical air support of ground troops. This program is evaluating antipersonnel and antivehicle target activated munition systems.

(e) Aircrewman Survival Equipment

1 The Naval Air Development Center (NADC) is now actively developing the HGU-35/P integrated helmet/oxygen mask, hose system. The HGU-35/P system is a low-profile, lightweight, form-fit buffet head protection helmet with integrated oxygen mask and communication. This system has been designed specifically for the requirement of a high "G" environment and the mission profiles of the VF/VA community. The IOC is FY 81.

2 An active development program is under way to find a suitable exposure suit with/without ventair. The IOC is FY 82.

(2) Headquarters and Maintenance Squadron, MAG (VF/VA)

(3) Marine Air Base Squadron, MAG (VF/VA)

(4) Marine Fighter/Attack Squadron (VMFA), MAG (VF/VA)

(5) Marine Attack Squadron VMA, VMA (V) MAG (VF/VA)

(a) Fleet Introduction of the Laser Spot Tracker (LST) and Lightweight Laser Target Designator.--The LST is now operational in the FMF. It was upgraded in 1978 by the angular rate bombing system (ARBS), which will provide stores management information, ranging information, and dual mode tracking with TV and the spot tracker. Unique skills will be required by personnel who will operate and maintain the laser target designator system (LTDS), such as basic knowledge of laser theory, safety, and characteristics of laser weapons.

(b) Improved Weaponry for V/STOL Aircraft.--Weapon systems currently under development for V/STOL aircraft include improved 20mm and

30mm cannons, smoke screening munitions, and target marking devices. The Marine Corps is participating in a joint effort to produce day-night target marking rounds using electro-optical fuzes with both white phosphorus and chemillum. Each weaponry program is being closely monitored and expectations are that most of the programs will be available within the Q-1 period. No IOC dates are presently available.

(c) AV-8A Improvement Program.--The AV-8A will undergo a conversion in lieu of procurement in Fy 82. Major improvements will include the ability to carry multiple bomb racks, lift improvement devices, and ECM capability. This aircraft will be designated as AV-8C.

(6) Marine All-Weather Attack Squadron (VMA (AW)), MAG (VF/VA)

(a) Dual Band Radar Beacon (SEEKSET).--The current radar beacon, forward air controller (RABFAC) AN/PPN-18 is a J-Band ground based radar transponder which responds with a radar signal when triggered by an appropriate aircraft radar. Used with a forward air controller, the RABFAC provides airborne weapon systems with radar significant aim points for use in attacking ground targets. A joint USAF/USMC test, completed in May 1976, evaluated eight dual-band system under a project called SEEKSET. The candidates were evaluated on their ability to meet USMC requirements and their feasibility for use with naval gunfire, USAF C-130 aircraft for all-weather aerial delivery, and F-18 requirements. Procurement of 404 RABFAC SEEKSET will be complete in 1980.

f. Helicopter Marine Aircraft Group (MAG(VH))

(1) Several programs that will have effects throughout the helicopter Marine aircraft group are:

(a) Airborne Radio Direction Finding (ARDF).--A unilaterial USMC effort based on the Army's AN/ALQ-151 special purpose countermeasures system with DF. The system is a team-portable, omnidirectional, airborne radio direction finding system designed to locate low-powered tactical communications emitters. The ARDF candidate now under development is intended to be a simifixed installation in the UH-1N utility helicopter with the capability to be removed and used in a ground configuration. The IOC is FY 82.

(b) Low Range Airspeed System (LORAS).--Helicopter aviation has historically accepted the fact that airspeed indicators are unreliable below 30-40 knots because of rotor wash and the unique flight characteristics of VTOL aircraft. The Marine Corps is evaluating an omnidirectional low-range airspeed system at HMX-1. The LORAS has a projected IOC date of 1981.

(c) Aircrewmen Survival Equipment

1 The NADC is actively developing protective helmets, one of which is the HGU-27/P. This helmet will feature a 3-ply Kevlar shell reinforced with a 1/2-inch polystyrene liner and a light, radar and infrared reflective finish. This system provides impact protection and form-fit as well as ventilation and perspiration absorption for comfort. The IOC is FY 80.

2 A second program is a mini-boat which will replace the one-man raft. This boat employs the latest state-of-the art fabrics

and utilizes a new raft concept which places the center of mass below the center of buoyancy. This system increases boarding ease and stability. The IOC is FY 80.

3 Another program is the redesign/positioning of required man-mounted survival equipment. This project will reduce the weight and position the equipment in a more convenient location. The IOC is FY 79.

(2) Marine Heavy Helicopter Squadron, MAG (VH)

(a) Operational Evaluation of the CH-53E.--The CH-53E has been designed with increased lift capability over the CH-53D. Several major structural changes and some proven subsystems from the 53D have been incorporated into the 53E in the ongoing operational evaluation. The IOC is FY 80.

(b) Improved Helicopter External Cargo Handling Technology.--The Marine Corps is working in conjunction with the Army to review the overall realm of external cargo lifting by helicopters. The program consists of a systematic investigation of subsystems, components, and operational procedures including development of an advanced family of slings (from 10,000 to 40,000-pound capacity) and container lift adapters. The program is aimed at reducing turnaround time and improving equipment life-times. The IOC is FY 79.

(3) Marine Medium Helicopter Squadron, MAG (VH).--The CH-46D/F was introduced into the Marine Corps in 1965 with a projected service life of 13 years. A service life extension program is being used to extend its life to 20 years. Replacement is now programmed for 1985. Continued service of the CH-46 requires update to increase lift capability and improve combat survivability of the aircraft. The CH-46D/F is being modified to the CH-46E configuration by incorporation of a new engine with IR suppressors, a combat and crashworthy fuel system, an armored and crash attenuating seat, an external rescue winch, and an improved navigation system.

(4) Marine Light Helicopter Squadron, MAG (VH).--Ground unit commanders, while airborne in helicopters, must have positive communications with their ground units during combat operations. The current utility helicopter does not have sufficient integral communications equipment to allow dedication of radios to meet the needs of the ground unit commander and his staff. In response to this need, the helicopterborne command, control, and communications console (HC4) will provide two secure voice VHF radios and one secure voice UHF radio with an HF capability a desired feature. The HC4 concept will require the addition of eight consoles per MAF, which will be added to the table of equipment, with interchangeable between aircraft within 15 minutes. The number of avionics components represented by the addition of these consoles is small compared to the total MAW assets; maintenance can be accomplished with little, if any, personel increase and within current logistic support capabilities. The IOC is FY 80.

(5) Marine Attack Helicopter Squadron, MAG (VH)

(a) Improved Helicopter Fire Control System.--The system will include inertially stablized aiming reticles to point the laser for range and designation and to display to the pilot the computed impact point for firing the fixed forward weapons. Target acquisition will be accomplished by heads-up method.

(b) TOW Night Sight.--FLIR augment Cobra TOW sight (FACTS) is under development to provide a night acquisition capability for the AH-1T helicopter. The FACTS has an IOC date of FY 81.

(c) Ammunition Trailer.--The small munitions trailer MHU-151 (XGS-17/M) will assist in the forward area loading of helicopters and Harrier aircraft. The IOC is 1979.

(6) Marine Observation Squadron, MAG (VH).--OV-10D Night Observation System (NOS). A contract was let for 18 OV-10D's for the Marine Corps, with an IOC of 1979. The introduction of the OV-10D NOS will assist the pilots of attack aircraft in interdicting enemy lines of communication under conditions of reduced visibility and lighting in both high and low intensity antiair threat environments. Provisional approval for service use has been given for an uprated engine with 1040 shaft horsepower and new-type fibreglass propellers. Automatic tracking has been added to the FLIR system to allow laser designation for the Hellfire, ARBS, and laser MAVERICK. The concept of employment and additional requirements are still being evaluated. The introduction of FLIR and LRDS equipment will require increased training of intermediate maintenance activity personnel. Some organizational changes could occur in the VMO squadrons to incorporate the OV-10D system.

g. Marine Tactical Reconnaissance Squadron (VMFP)

(1) The RF-4B aircraft is a sensor-equipped version of the F-4B, capable of providing timely day and night reconnaissance imagery to a commander. Seventy-three percent of the RF-4B's reached the end of their service life in 1978. A service life extension program is under way to extend the usefulness of this proven system. The program includes the incorporation of an updated inertial navigation system (AN/ASN-92), an improved side-looking radar (AN/ADP-10), an IR line scanner (AN/AAD-5), and a new data link system (AN/ASW-25). The IOC date is scheduled for 1979.

(2) Imagery Interpretation (II).--The II segment of the Marine air ground intelligence system (MAGIS) may be located with the VMFP. With an IOC date of FY 79, this segment will provide rapid and accurate interpretation of all forms of imagery and prepare the derived intelligence for timely dissemination. The II segment is a one-shelter configuration containing two photo interpretaion consoles, computers with peripheral equipment, and a supervisory position. It is an integral component of the processing stage of the intelligence cycle, providing the link between the imagery processing (IP) segment and the intelligence analysis center (IAC) by interpreting imagery collected by photographic reconnaissance aircraft. The II enhances the capability to derive meaningful intelligence from imagery collected by reconnaissance aircraft and other amphibious force assets or national agencies. Basic functions of the II segment are to provide computer-assisted imagery analysis, II reporting, and file maintenance; to display imagery and map comparison; and to plot photo coverage automatically.

(3) Imagery Processing.--The IP segment of MAGIS is the commander's mobile photo laboratory. It provides for the processing, duplicating, enlarging, and printing of sensitized imagery collected by Marine Corps photographic reconnaissance aircraft or other sources. In order that the commander may derive the greatest benefit from his imagery, it must be processed immediately upon completion of the mission. For this reason the IP

is normally collocated with the tactical reconnaissance detachment of the MAW. The IOC is FY 80.

h. Marine Tactical Elecrtronic Warfare Squadron (VMAQ).--The EA-6A aircraft presently in the Marine Crops inventory is being replaced by the EA-6B. The EA-6B is a greatly improved aircraft with more powerful jammers and with a fully automatic computer control system. Five jamming pods can be carried on each aircraft. The electronic warfare system normally works in the automatic mode with programmed threats being jammed automaticaly. The system can work in a semiautomatic mode where the operator makes the decision as to which signals to jam. The crew consists of a pilot and three electronic countermeasure officers (ECMO). Additional ECMO's will be required and necessary training made available.

		MAW	MWCS	MACS	MASS	MWSG	MAG
SWITCHING EQUIP	SB-3614 (AUTO SWITCHBOARD)		△				△
MULTI-CHNL TRANS EQUIP	AN/UYQ-4 (DASC AIR-GROUND MULTI-RADIO SYSTEM)				△		
SINGLE CHNL TRANS EQUIP	AN/PRC-104 (MANPACK HF RADIO)		△				△
	AN/PRC-105 (MANPACK HF RADIO)		△				△
	AN/URR-( ) (HF RECEIVER)		△				
	AN/GRC-193 (BENCH MOUNT HF RADIO)		△	△	△	△	△
	AN/GRC-160 (VEH MOUNT VHF RADIO)		△				△
	AN/MRC-138		△				△
	AN/ASC-26 (HELIBORNE C&C SYS)	Ground commander asset maintained by wing, probably by supporting helo squadron, HML.					
	(HANDHELD VHF RADIO)						
TERMINAL DEVICES	AN/GXC-7A (FACSIMILE)		△	△	△	△	△
	AN/MSQ-( ) (AUTO MSE ENTRY SYS)		△				
	QRW (QUERY DEVICE)	△					
	AN/UGC-74 (TELETYPE SYSTEM)		△	△	△	△	△
TECH SYSCON EQUIP	AN/TRQ-35 (HI FREQ MANAGEMENT SYS)		△				
SATCOM EQUIP	AN/TSC-93 (BENCHMOUNT SATCOM)		△				
INTERFACE EQUIP	AN/GRA-39B (HF/VHF REMOTE CONTROL GROUP)		△	△	△	△	△
	AN/GRA-( ) (HF REMOTE CONTROL GROUP)		△	△	△	△	△
	HYX-57 (WIRELINE ADAPTER)		△	△	△	△	△
COMSEC DEVICES	TSEC/KY-57,-58 (VINSON, SECURE VHF/UHF)		△	△	△	△	△
	TSEC/KY-67 (BANCROFT, SECURE VHF RADIO)		△				△

Figure 3-6.--Communications Equipment Marine Aircraft Wing, Q-1 Period.

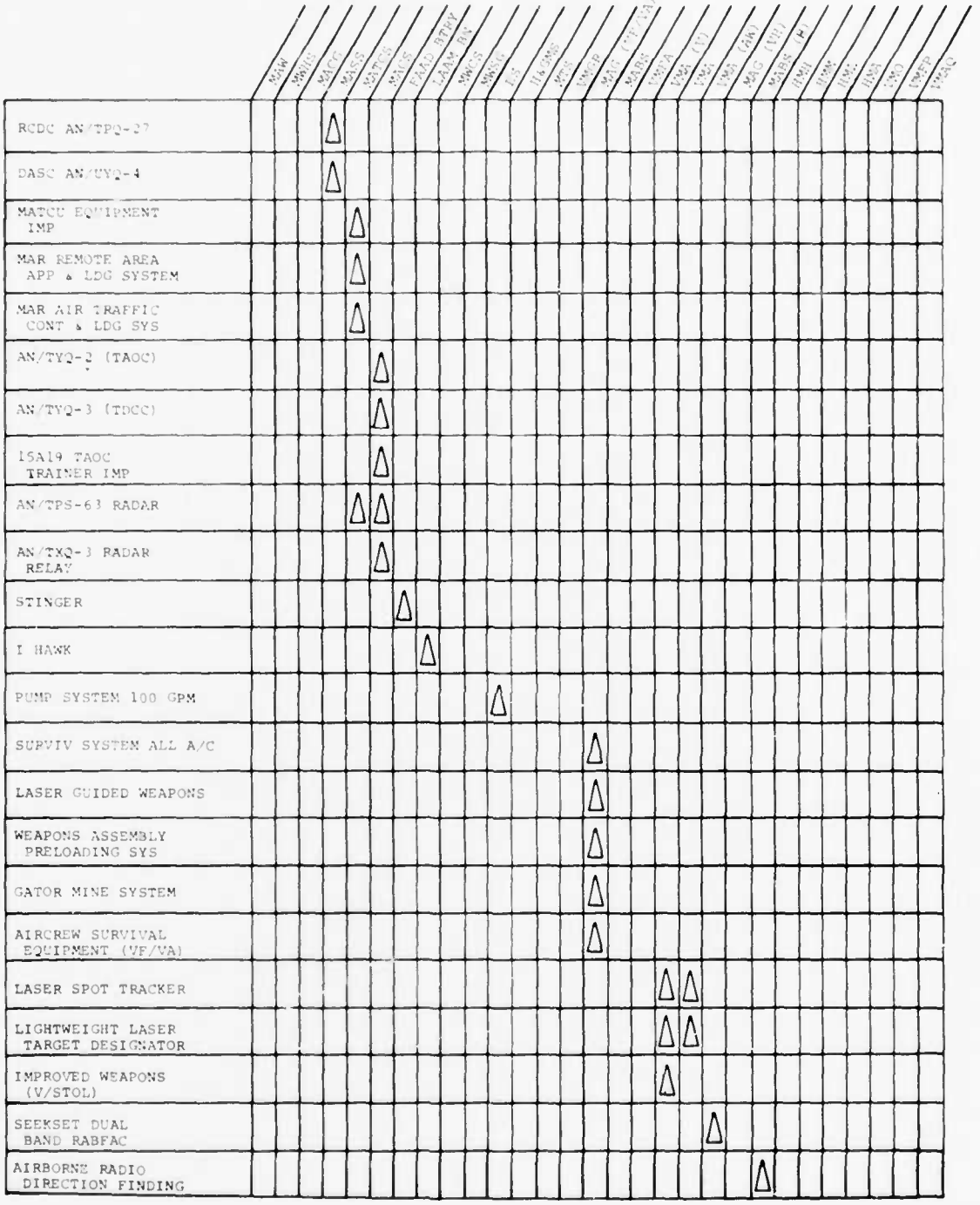


Figure 3-7.--Weapons and Equipment, Marine Aircraft Wing, Q-1 Period.

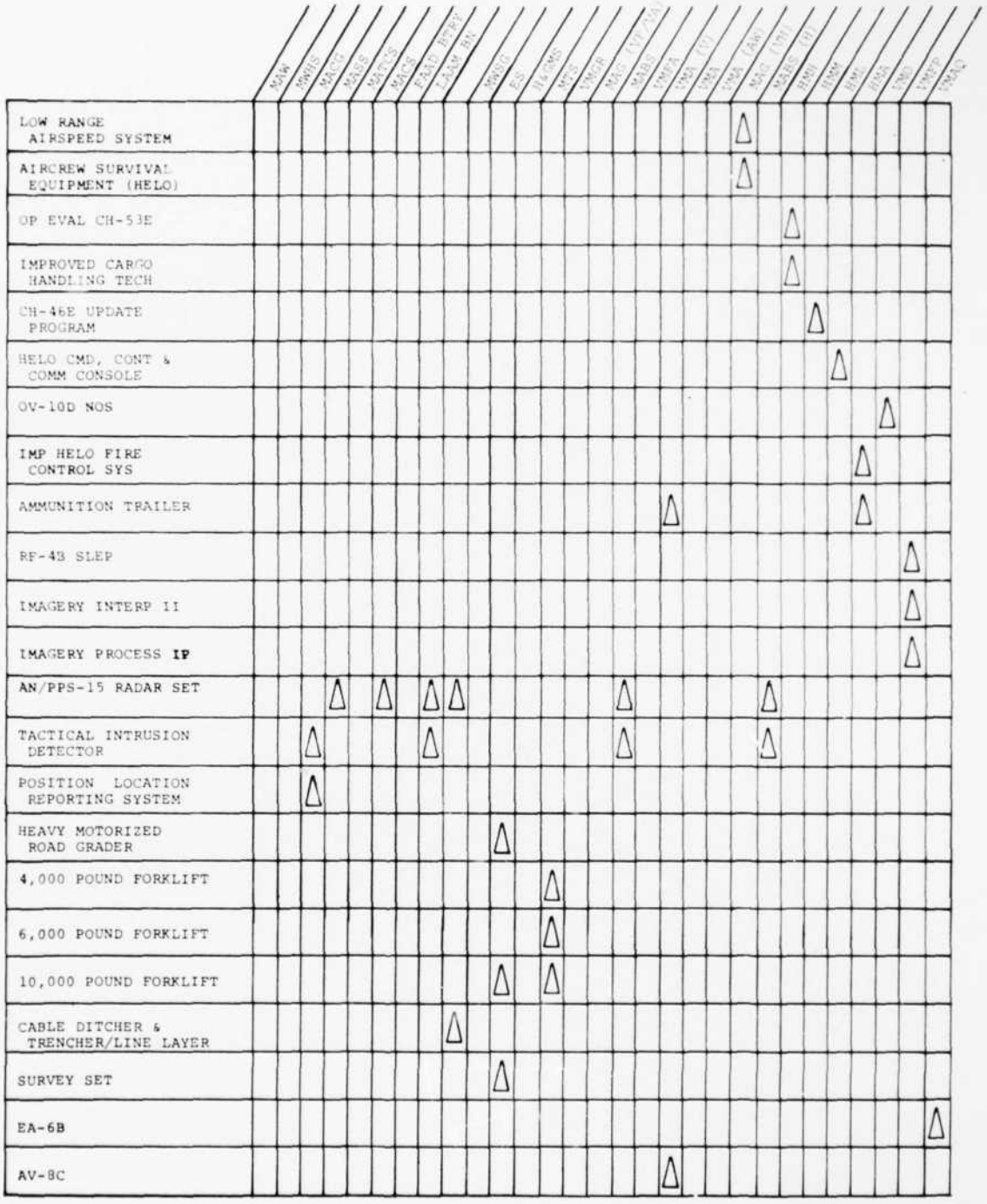


Figure 3-8.--Weapons and Equipment, Marine Aircraft Wing, Q-1 Period.

15F

SECTION 3C

MARINE AIRCRAFT WING
Q-2 PERIOD (1984-1988)

308. GENERAL

a. Research and development projects which will reach fruition during the Q-2 period are not expected to change the mission, organization, and concept of employment of the MAW. Technological improvements in navigation systems, command and control systems, and surveillance radars will enhance air support capabilities and flight safety throughout the wing. The advanced medium short takeoff and landing (STOL) transport will upgrade the capabilities of the aerial refueler transport squadron. The increased efficiency of the intelligence collection agencies will produce increased data. The complete MAGIS will process the information and disseminate the intelligence to the tactical commander.

b. Improvements in communications equipment will upgrade communications and data flow and will produce increased demands for training and logistic support. The influence on MAW communications created by the new equipment being introduced during this period is similar to that discussed in Section 2C for the Marine division. The majority of the equipment is the same. See the matrix for MAW communications equipment, Figure 3-9 for a complete list of communications equipment being fielded in the Q-2 period. Figure 3-10 displays all weapons and equipment developments (less communications) for period Q-2.

309. WING ORGANIZATION

a. Marine Wing Headquarters Squadron

(1) Tactical Combat Operations (TCO) System within Marine Corps Aviation.--The TCO system within the Marine aircraft wing will be employed by the MWCS and the Marine air base squadrons of the MAG's. The TCO will interoperate with the Tactical Air Operations Center-85 (TAOC-85) and will be used essentially to handle the planning functions for the Tactical Air Commander.

(2) Global Positioning System (GPS).--The Marine Corps is monitoring a joint program to develop a navigational system which uses time and ranging to determine global positioning. A space-based radio navigation system, GPS, when combined with accurately positioned ground stations, will provide the capability to precisely determine three-dimensional position (azimuth, elevation, range), velocity, and reference time throughout the globe. The IOC date for full system operation is 1984. Potential application of GPS include air surveillance, control of aircraft and missiles, survey of organic radars, directing attack aircraft to specific targets, and navigation.

(3) Remotely Piloted Vehicles (RPV's).--An examination of the entire field of RPV's is being made with an eye toward the possibility of establishing a family of RPV's for the Marine Corps inventory. These RPV's will be capable of unmanned reconnaissance, target acquisition, and target designation for terminally guided munitions. They would also have the capability to conduct electronic warfare missions. While this developmental area is indefinite, it portends such capabilities that it is included in LFOSS. An IOC of 1984 is envisioned. At the present time, it has not been

		MAW	MWCS	MACS	MASS	MWSG	MAG
SWITCHING EQUIP	SB-3865 (AUTO SWITCHBOARD)		△	△	△	△	△
	AN/GYC-7 (AUTO MSG SWITCH)		△	△			△
MULTI CHNL TRANS EQUIP	OGM FAMILY (MULTIPLEX EQUIPMENT)		△	△	△		△
	AN/TRC-170 (MUX RADIO)		△	△	△		△
	AN/MRC( ) (MUX RADIO)		△	△			△
SNGL CHNL TRANS EQUIP			△	△	△		△
TERMINAL DEVICES	AN/UXC-4 (FACSIMILE)						
	TA-954 (DIGITAL PHONE)		△	△	△	△	△
	AN/PSG-( ) (BURST COMM DEVICE)		△	△	△	△	△
	MRTT (TRAFFIC TERMINAL)		△	△	△	△	△
TECH-SYSCON EQUIP	AN/TSQ-111 (COMM TECH/CON CTR)		△	△	△	△	△
			△				
SATCOM EQUIP							
INTERFACE EQUIP							
COMSEC DEVICES	ANDVT (COMSEC DEVICE)		△	△	△	△	△
	KG-81 (COMSEC DEVICE)		△	△	△	△	△
	KG-82 (COMSEC DEVICE)		△	△	△	△	
	KG-83 (COMSEC DEVICE)		△	△	△	△	△
	KG-84 (COMSEC DEVICE)		△	△	△	△	△
	KG-93 (COMSEC DEVICE)		△	△	△	△	△
	KGX-93 (COMSEC DEVICE)		△	△	△	△	△
	TSEC/KY-68,-78 (SECURE DIGITAL PHONE)		△	△	△	△	△

Figure 3-9.--Communications Equipment, Marine Aircraft Wing, Q-2 Period.

determined where this equipment will eventually be located. The RPV best suited to the Marine Corps needs will be selected by aviation personnel and an organization in the Marine aircraft wing will probably operate it.

(a) Intelligence Analysis Center (IAC).--The IAC provides the capability to store processed intelligence data, correlate new data with a master intelligence data base, perform analyses of the information, and generate the reports required for proper dissemination of the intelligence in support of the wing commander. (For more details, see Section 1C.) This is a subsystem of MAGIS.

b. Marine Air Control Group

(1) Marine Air Traffic Control Squadron.--The Marine Corps is monitoring DoD, as well as Army, Navy, and Air Force testing of commercial microwave airborne receivers which will become part of the National Microwave Landing System (NMLS). This system will provide autopilot-coupled approaches and landings at established airfields, and approach and navigational guidance for all aircraft at expeditionary airfields. The approaches and landings at established airfields will be equivalent to those available with the prototype ground systems.

(2) Marine Air Control Squadron

(a) Tactical Air Operations Center-1985 (TAOC-85).--TAOC-85 will provide the means by which the MAGTF commander can control and coordinate those aspects of the air war not performed by specific functional systems, such as the tactical combat operations system and the Marine integrated fire and air support system. TAOC-85 focuses on execution of the tactical air commander's air plans to enhance the capability to coordinate offensive air support with ground control of interceptors, SAM units, and en-route and itinerant air traffic control. The TAOC-85 is an on-line. secure, automated, tactical air command and control system for receiving, processing, storing, and disseminating selected information for effective combat air operations. It will replace the currently fielded AN/TYQ-2 (TAOC) and AN/TYQ-3 (TDCC).

(b) AN/TPS-59 Radar Set.--The AN/TPS-59, a lightweight, solid-state radar currently undergoing IOT&E, will replace the AN/TPS-22 radar in 1980-1985 period and become the primary sensor for the TAOC. The AN/TPS-59 will be used primarily as a long range, ground control intercept (GCI) and air surveilance radar. It uses a mechanically rotated, phased array, modular antenna and possesses extensive ECCM capabilities. It is compatible with the Marine tactical data system (MTDS) and is capable of autonomous operation. The IOC is FY 83.

(c) AN/TPS-32( ) Radar Set.--The AN/TPS-32( ) three dimentional radar provides range, azimuth, and height of detected targets to the TAOC. An improvement program is underway to improve reliability, maintainability, and life cycle cost. The IOC is FY 1983.

(3) Light Antiaircraft Missile Battalion, MACG.--Improved HAWK follow-on developments (surface-to-air missile systems) that will become operational during the years 1980 through 1985 are being identified, and studied to determine which system will best meet the 1985-1990 Marine Corps operational requirements in the low- to medium-altitude, medium-range, air defense sector.

(4) Marine Wing Communication Squadron.--The radio central control group AN/TRA-( ) is a radio system under development with an IOC date of 1984. This system placed in a standard shelter will serve as the air-ground link for elements of the Marine Air Command and Control System. It is configured to accept up to 15 receiver-transmitters (HF, VHF, and UHF).

(5) Marine Air Support Squadron, MASS.--The arrival of the Marine integrated fire and air support system (MIFASS) in the FMF could have a major impact on the MASS. Within MIFASS, the fire and air support center (FASC) of the division will combine the functions of the present FSCC and the DASC. Present planning calls for testing in both the present configuration (i.e., separate but collocated air and fire support activities at division level) as well as testing in totally integrated FASC. The results of the engineer and operational testing may call for a revision to, or dissolution of, the MASS.

c. Marine Aerial Refueler Transport Squadron.--The USAF is developing an advanced medium STOL transport (AMST) aircraft to replace its C-130 force. The Marine Corps is monitoring this developmental effort for a follow-on for its KC-130 in the 1980 and beyond time frame. A computer-assisted preliminary design of the aircraft is being conducted by the Naval Air Development Center to create an ideal solution for the KCX requirement. The design will be used as a baseline against which to compare candidate aircraft like the YC-14 and YC-15. The results of the AMST program to date indicate that the desired Marine Corps aerial refueler of the future can be realized with a significant increase in tactical airlift capability.

d. Fighter/Attack Marine Aircraft Group

(1) F-18.--The Marine Corps F-4 fighter aircraft will require replacement beginning in FY 83. The most likely candidate is the F-18. The F-18 is a single place, twin engine, high performance fighter/attack aircraft. Mission requirements include all-weather fighter capability and all-weather avionics. Armament is carried on nine store stations for a total capability of nearly 14,000 pounds. These stations offer the flexibility of a full complement of air-to-air and conventional air-to-ground weapons, as well as guided bombs. A cannon will be mounted in the fuselage ahead of the cockpit.

(2) AV-8B Advanced Harrier.--The development and validation of the V/STOL concept for light attack aircraft has been accomplished within the Marine aviation. During the Q-1 period, successful integration of new U. S. technology will be incorporated into the proven Harrier V/STOL concept to produce the AV-8B. Technological advances to be incorporated will include more lift in the short take-off (STO) and vertical take-off (VTO) modes, better cruise efficiency, and the introduction of a supercritical wing and improved aircraft systems. The AV-8B will be capable of improved maneuvering with thrust vector control, increased payload and radius of action, will be more reliable, will require less maintenance, and will be more operationally efficient. The IOC date is FY-85.

e. Helicopter Marine Aircraft Group (MAG (VH))

(1) Marine Heavy Helicopter Squadron, MAG (VH).--The Marine Corps inventory of CH-53A aircraft is programmed to undergo a modification commencing in FY 80 to convert the aircraft to the CH-53F. The CH-53F will

incorporate uprated engines, elastomeric rotor head and external range tanks in addition to a number of reliability and maintainability improvements.

(2) Marine Observation Squadron.--The Marine Corps is presently involved in establishing an Operational Requirement for a follow-on aircraft to assume the mission of the OV-10. The requirement has been stated and is in staffing and an IOC of FY 85 is anticipated.

f. Marine Tactical Reconnaissance Squadron.--There is presently in existence a stated requirement for a follow-on aircraft to the Marine Corps RF-4B. There are various systems being considered, including remotely piloted vehicles (RPV), tactical aerial reconnaissance pods (TARPS), and dedicated aircraft (F-18). The stated IOC date is FY 81.

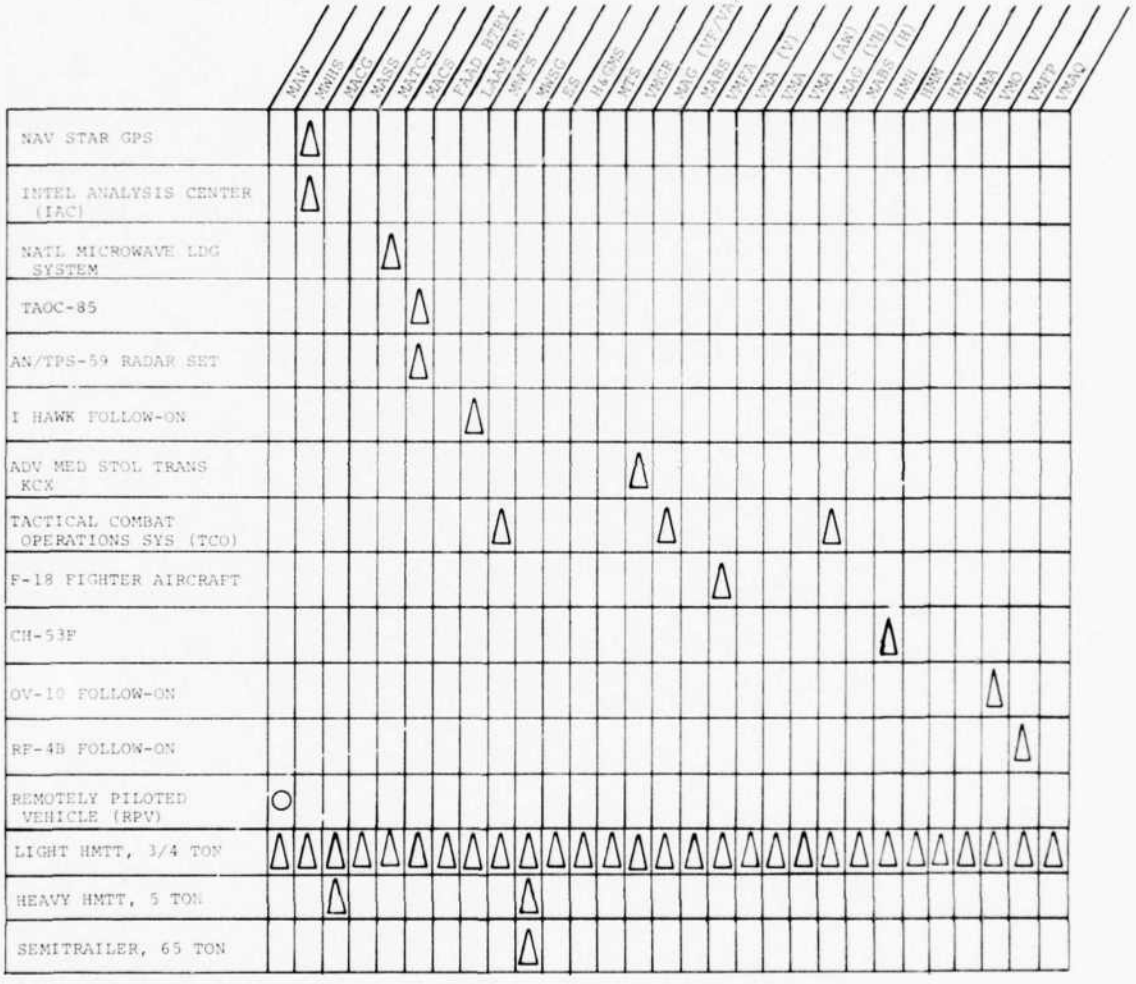


Figure 3-10.--Weapons and Equipment, Marine Aircraft Wing, Q-2 Period.

SECTION 3D

MARINE AIR WING
Q-3 (1989-1993)

310. GENERAL

Research and development projects are not expected to change the mission, organization, or concept of employment of the MAW. The introduction of a mobile surface-to-air missile system will fulfill the requirements for low- to medium-altitude air defense, and the incorporation of data links from remotely piloted vehicles will enhance target acquisition and target designation for terminally guided munitions. Developments reaching their IOC's during the Q-3 period are shown in the matrix at the end of this section. (Figure 3-11, and 3-12.)

311. WING ORGANIZATION

a. Marine Aircraft Wing

b. Marine Air Control Group

(1) Marine Air Traffic Control Squadron, MACG

(2) Light Antiaircraft Missile Battalion, MACG.--The Marine Corps is considering surface-to-air weapons which will be operational during 1980-1985 and will conduct a feasibility study to determine which system, to be designated mobile surface-to-air missile (MSAM), will best meet the operational requirement of low- to medium-altitude, medium-range air defense for the 1980-1990 period. Although it is impracticable for the Marine Corps to develop and logistically support a unique SAM system, analysis of this alternative is deemed necessary because of the unsuitability of presently emerging Army SAM systems. The PATRIOT system would be a desirable solution, but cost and weight militate against its adoption. The Marine Corps requirements for fire unit target handling capabilities and range and altitude intercept capabilities exceed the capabilities of the ROLAND II system. The objectives of the study are to shorten the time required to activate a site; to improve mobility, missile performance, and simultaneous engagement capability; and to reduce system susceptibility to ECM. These objectives will be achieved by synthesizing components (seekers, guidance sections, autopilots, airframes, propulsion, acquisition sensors, and data links) from existing candidates into a weapons system which will meet the MSAM required operational capability.

(3) Marine Wing Communications Squadron.--The AN/TRC-( ); a multichannel configuration of the AN/GRC-( ) will replace the AN/MRC-134, -135 during the Q-3 period. See the Marine division section for further details. Figure 3-11 reflects this single communications development in the Q-3 period.

c. Marine Attack Squadron, MAG (VF/VA)

(1) Airborne Target Acqusition Joint Test - SEEKVAL.--The effectiveness of current and proposed air-to-ground weapons system is limited by the ability to acquire enemy targets in preparation for attack by either fix- or rotary-winged aircraft. A DoD program is evaluating alternative systems and techniques for acquiring targets for combat air support missions. The program includes an evaluation of concepts and techniques for

camouflage and concealment of ground targets to avoid detection from aircraft and the use of data link to acquire targets from remotely piloted vehicles (RPV's) and other weapons. The IOC date is to be determined. The SEEKVAL joint test force effort has been completed and a final report has been submitted.

d. Marine Medium Helicopter Squadron, MAG (VH).--The Marine Corps inventory of CH-46 aircraft, purchased in the early 60's and modernized in the late 70's, will require replacement in the 1986-1990 time frame. The Marine Corps is actively participating in the Cat A VSTOL program to find a replacement for the CH-46. The significant increase in speed/range which is sought in the VSTOL program will, if successful, provide a quantum jump in assault aircraft capability. (Figure 3-12.)

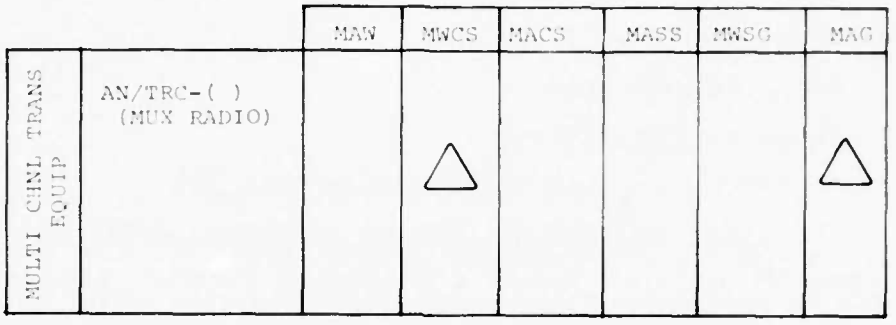


Figure 3-11.--Communications Equipment, Marine Aircraft Wing, Q-3 Period.

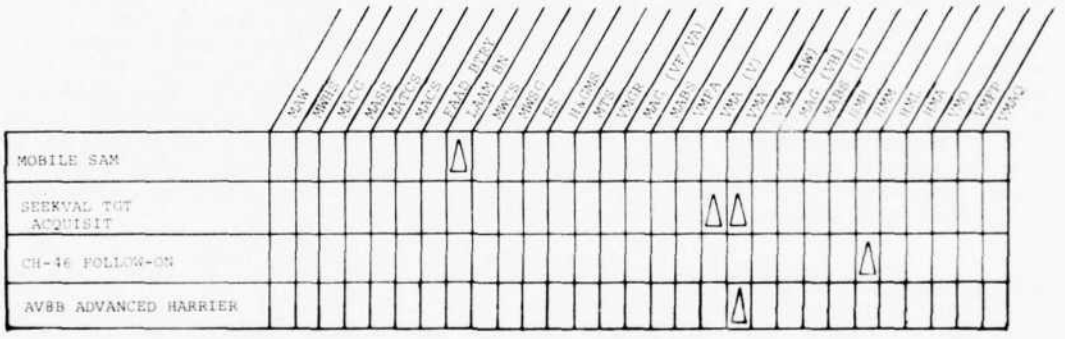


Figure 3-12.--Weapons and Equipment, Marine Aircraft Wing, Q-3 Period.

SECTION 4A
FORCE SERVICE SUPPORT GROUP
1979 BASELINE

401. MISSION, TASKS, AND FUNCTIONS

a. Mission.--To provide sustained combat service support for a Marine division and Marine aircraft wing (MAW), including geographically separated components thereof, when in garrison, employed separately as a Marine Amphibious Force (MAF), or Marine Air-Ground Task Force (MAGTF) below MAF level, in the amphibious assault, and subsequent operations ashore. (See Figure 4-1).

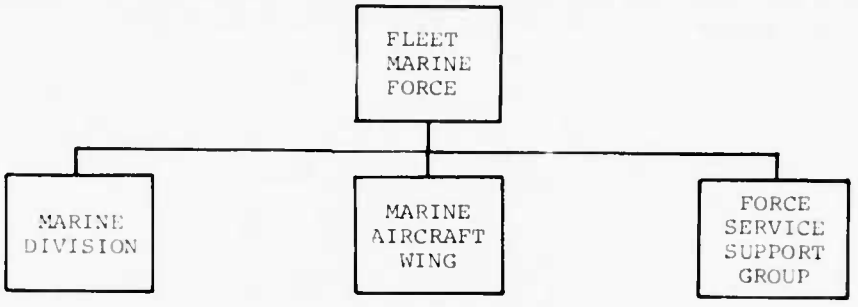


Figure 4-1.--Command Relationships.

b. Tasks

(1) Provide both general and direct supply support missions for the MAF and other Fleet Marine Force (FMF) units as required.

(2) Provide general engineer support to the MAGTF.

(3) Provide general motor transport support to the MAGTF.

(4) Provide all of the MAF's intermediate maintenance support.

(5) Provide medical support to the MAGTF.

(6) Provide dental support to the MAGTF.

(7) Maintain and operate the operational readiness float (ORF) for the MAGTF.

(8) Provide sustained combat service support to two deployed Marine Amphibious Brigades (MAB's) or four deployed Marine Amphibious Units (MAU's) operating independently.

(9) Plan, coordinate, and supervise the provision of combat service support to the landing force.

(10) Plan, coordinate, and supervise the internal logistics func-

tions of headquarters and service (H&S) battalion.

(11) Support the landing and assault phases of amphibious operations.

(12) Assume full responsibilities for overall combat service support for the MAF less those responsibilities inherent to the division and wing commanders.

402. CONCEPT OF ORGANIZATION

The force service support group (FSSG) consists of a headquarters and service battalion, supply battalion, maintenance battalion, engineer support battalion, motor transport battalion, medical battalion, landing support battalion, and a dental battalion. These battalions are structured to support the assigned mission of the FSSG. (See Figure 4-2.)

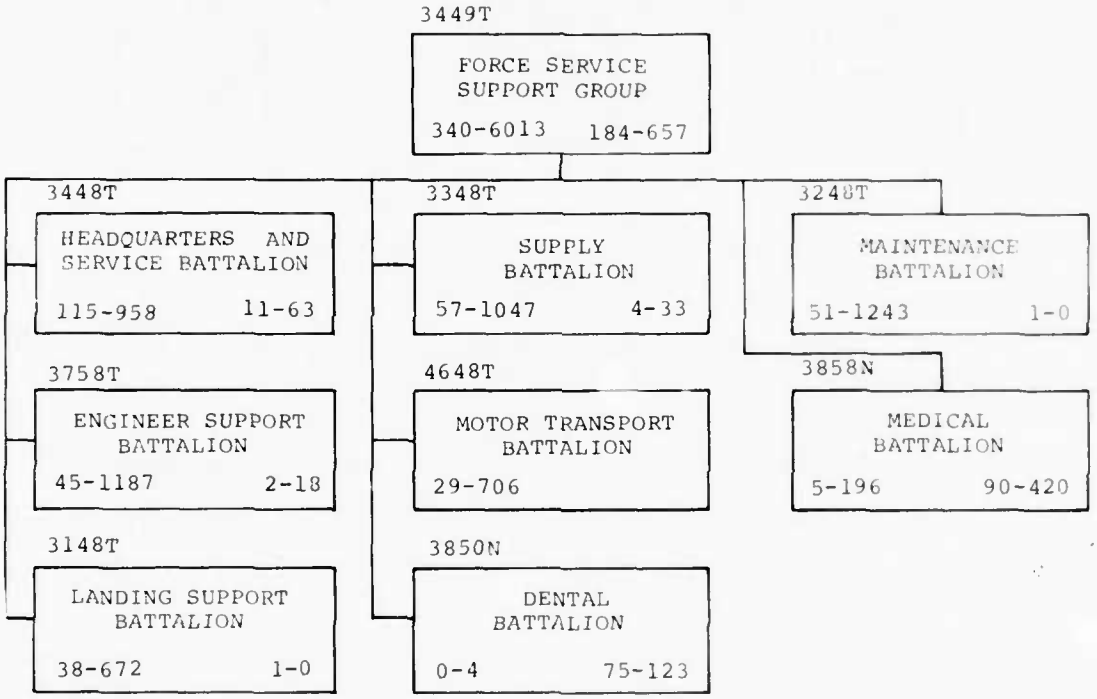


Figure 4-2.--Force Service Support Group.

a. Command and Control.--The FSSG commander exercises command and control of the FSSG through the FSSG staff, battalion, and company commanders.

b. Firepower.--Organic firepower capability is limited to individual and automatic weapons for security.

c. Mobility.--The FSSG is vehicular transportable and contains sufficient general and special purpose transportation to effect displacement.

d. Intelligence.--A G-2 intelligence section is organized to provide intelligence support to the FSSG. The intelligence capability is limited to the processing of technical information relative to the FSSG's physical environment.

403. CONCEPT OF EMPLOYMENT

The FSSG is the combat service support element of the MAF. It assumes the full responsibilities for overall combat service support for the MAF less those responsibilities inherent to the division and wing commanders. To support the landing and assault phases of amphibious operations, the FSSG task organizes and joins the division shore party elements that are required to support and sustain the division. When the landing force is established ashore, those attachments revert back to the FSSG which assumes control of and responsibility for the landing force combat service support requirements as outlined in the primary mission. The FSSG staff is organized to plan, coordinate, and supervise the provision of combat service support to the landing force. Responsibilities are discharged through the FSSG headquarters within the H&S battalion consisting of a commander and an executive staff. The battalion's supply section is organized to plan, coordinate, and supervise the internal logistics functions of the battalion and a force service support section (FSSS) is provided as the FSSG commander's operational manager of the FSSG battalions. Within the FSSS, there are two MAB plans and control units which provide the command and control nucleus of the CSS elements provided by the FSSG to the MAB's, as well as MAGTF's below MAB level. The FSSG is capable of providing balanced detachments in support of MAGTF's below MAF level. It is capable of providing detachments for the simultaneously sustained combat service support for two MAB's, each operating independently, or it can support, in a similar manner, up to four MAU's, each operating independently. It should be noted that this total capability is not cumulative, but reflects the FSSG's capabilities in an (either/or MAF, two MAB's, or four MAU's) operational environment.

404. ADMINISTRATIVE CAPABILITY

Major subordinate elements of the FSSG are capable of self-administration.

405. LOGISTICAL CAPABILITIES

a. Maintenance

(1) Organic.--Capable of organizational (first and second echelon) maintenance on all equipment organic to the FSSG.

(2) Support.--Capable of providing all intermediate (third and fourth echelon) maintenance for the MAF.

b. Supply.--Capable of providing organic supply support for the FSSG. Capable of providing both general and direct supply support missions for the entire MAF and other FMF units as required.

c. Communications.--The FSSG is organized to provide internal communication support between all levels of command for continual control of subordinate units as required.

d. Medical.--Capable of providing medical/dental service support for the FSSG and the MAGTF.

e. Transportation.--Capable of providing organic transportation incident to the accomplishment of the primary mission. Each battalion of the FSSG is capable of providing its own light organic motor transportation. The FSSG is capable of providing general support requirements to the MAGTF. It is further capable of providing augmentation support to the division and wing.

f. Food Service.--Capable of operating dining facilities at the battalion level, both in garrison and in the field.

406. ORGANIZATION

a. Headquarters and Service Battalion

(1) Mission, Tasks, and Functions

(a) Mission.--To provide command, control, administration, communications, security, automatic data processing, and beach and port operations for the FSSG. To provide supporting services to the MAF in the amphibious assault and subsequent operations ashore to include general support data processing, disbursing, postal, exchange, beach and port operations, shipping and receiving, and air delivery. To provide command central communications efforts of the combat service support elements of the MAGTF's below MAF size.

(b) Tasks

1 Provide internal communication support for geographically separate logistic support areas.

2 Provide communication support between geographically separated logistic support areas.

3 Provide multichannel radio terminals between the headquarters of the FSSG, division, and wing support group (WSG).

4 Provide personnel and equipment for the loading and unloading movement of supplies at a port, railroad, airhead, beach, and in dumps or depots.

5 Develop and maintain skills in cargo handling operations to include container handling and management.

6 Furnish labor, supervision for unskilled labor, and equipment for assignment to division or wing elements on independent missions.

7 Provide material handling equipment support to meet FSSG requirements and to augment the MAF as required.

8 Provide air delivery support in support of the MAF as required.

9 Provide the command and control element to run a colored beach in support of the MAF as required.

10 Provide air freight operations capability as required.

11 Provide all of the disbursing functional support for the MAF.

12 Provide all of the postal functional support for the MAF.

13 Provide all of the exchange functional support for the MAF.

14 Provide all of the U. S. Marine Corps automated data processing (ADP) functional support for the MAF on a nondedicated basis.

15 Provide reproduction functional support for the FSSG and backup support for the division and wing capabilities.

16 Provide beach and landing zone security and traffic control to prevent congestion and pilfering.

17 Provide convoy escort as required.

18 Enforce laws, orders, and regulations applicable to the area of operation.

19 Provide for the evacuation, processing, guarding, and custody of enemy prisoners of war and civilian detainees/internees.

20 Conduct suspect, prisoner, and area searches as appropriate to the assigned mission.

21 Provide sentry handler/dog capability for the security of key installations and facilities as may be directed.

22 Provide scout handler/dog capability for the support of offensive operations as may be directed.

23 Maintain a kennel facility for scout and sentry dogs organic to the battalion.

24 Provide a company headquarters for the necessary logistics support of the battalion.

25 Conduct investigation and crime prevention.

26 Provide food services support for the FSSG.

(2) Concept of Organization.--The H&S battalion consists of a H&S company, service company, communication company, and military police company. (See Figure 4-3.)

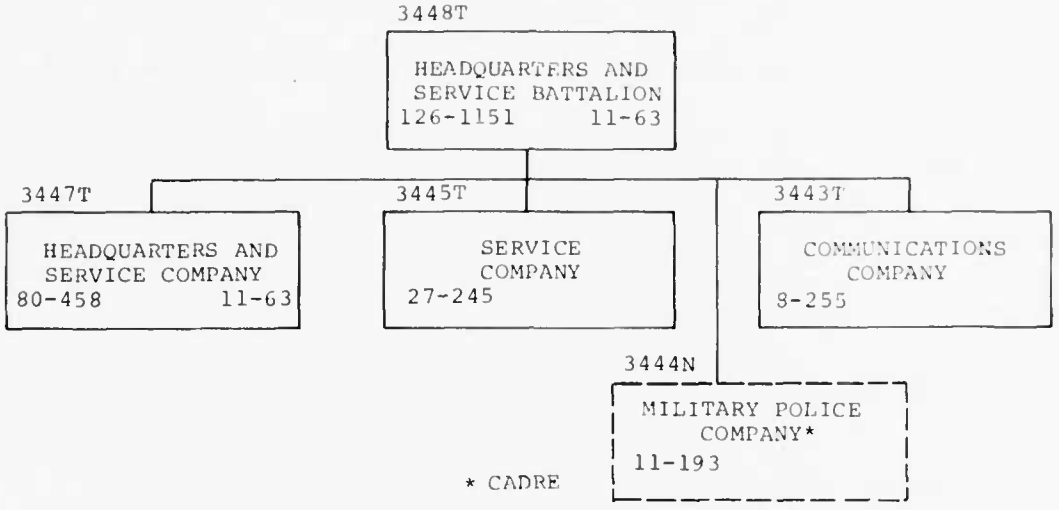


Figure 4-3.--Headquarters and Service Battalion

(a) Command and Control.--The battalion commanding officer exercises command and control of the battalion through the battalion staff and the company commanders.

(b) Firepower.--Organic firepower capability is limited to individual and automatic weapons for security.

(c) Mobility.--The battalion is not considered to be a mobile unit due to the extent and complexity of resident equipment and requires support from motor transport battalion to effect displacement.

(d) Intelligence.--None organic. Support is provided by the group G-2 section. Elements of the battalion assist in providing technical intelligence as required.

(3) Concept of Employment.--The H&S battalion is organized to consolidate within a single battalion the internal support activities of the FSSG and smaller service support activities as stated in the mission and as required by the FSSG and a MAF or lesser elements of the force. Units of the battalion are capable of task organization to meet the requirements of the particular service support for which they are responsible. The operational units operate primarily in assigned support areas and in support of the FSSG and MAF. Staff elements of the FSSG headquarters

operate within one or both force logistic support areas. Battalion headquarters sections locate and operate within one or both force logistic support areas. Battalion staff and company personnel will be located in force logistic support areas to perform assigned missions. Data processing support elements may be organized with support activities elements in order to provide regional data processing support. Service company, and communications company are structured to provide external logistic support as stated in their missions.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance

1 Organic.--Capable of providing organizational (first and second echelon) maintenance on all organic equipment. Intermediate (third and fourth echelon) maintenance support is provided by maintenance battalion, FSSG.

2 Support.--None.

(b) Supply.--Capable of performing organic logistic supply support for the battalion.

(c) Communication.--Capable of providing communication support, as required, to the FSSG in garrison and when deployed in either one or two force logistic support areas.

(d) Medical.--Support is provided by the group medical section, H&S company, H&S battalion, FSSG.

(e) Transportation.--Capable of performing operations as set forth in the mission (to include unit distribution of supplies) with organic transportation.

(f) Food Service.--Capable of operating a single consolidated dining facility to subsist H&S battalion, motor transport battalion, supply battalion, and maintenance battalaion, both in garrison and in the field. Capable of providing up to three separate dining facilities to support task organized elements of the FSSG.

(6) Headquarters and Service Company

(a) Mission, Tasks, and Functions

1 Mission.--To provide for the internal support activities of the FSSG in the amphibious assault and in subsequent operations ashore to include command, control, administration, organic supply, and motor transport.

2 Tasks

a Provide command and control for the operations of the FSSG in support of the MAF.

b Provide organizational (second echelon) maintenance on H&S battalion engineer, motor transport, and ordnance equipment.

c Provide food service support for the FSSG.

d Provide ground motor transport support for the internal support activities of the FSSG in the amphibious assault and in subsequent operations ashore.

e Provide command and control for organic and attached units of the battalion in the amphibious assault and in subsequent operations ashore.

(b) Concept of Organization.--the H&S company consists of a group command section containing a chief of staff (C/S) section; G-1, G-2/G-3, and G-4 section; comptroller section; force combat service support section; legal section, adjutant section; chaplain section; career planning section; special services section; education/personnel affairs section; public affairs section; medical section; dental section; battalion headquarters containing a command section, S-1/adjutant section, admin assistance unit, S-3 section, S-4 section, and battalion supply section, and a motor transport/maintenance platoon consisting of a truck section, maintenance section, engineer maintenance/power section; food services platoon; and company headquarters.

1 Command and Control.--A company headquarters is provided to command and control of organic and attached elements. The FSSG commander utilizes the FSSG staff element in the performance of his responsibilities.

2 Firepower.--Organic firepower capability is limited to individual and automatic weapons for security.

3 Mobility.--The company is not considered to be a mobile unit due to the extent and complexity of resident equipment and requires support from motor transport battalion, FSSG to effect displacement.

(c) Concept of Employment.--The H&S company is structured to provide command and control for the operation of the FSSG in support of the MAF and the H&S battalion, and also provides those same elements in support of lesser MAGTF's. The major items of equipment are shown on the following page.

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first and second echelon) maintenance on all organic equipment. Intermediate (third and fourth echelon) maintenance support is provided by maintenance battalion, FSSG.

b Support.--Capable of providing organizaional (second echelon) maintenance on H&S battalion engineer, motor transport, and ordnance equipment.

2 Supply.--Capable of performing organic supply support functions.

3 Medical.--Support is provided by the group medical section, H&S battalion, FSSG.

HEADQUARTERS & SERVICE COMAPNY, H&S BATTALION, FSSG

2	Radiac Computer Indicator, CP95A/PD
1	Radiac Set, AN/PDR-56
2	Bucket, Multi-Purpose, 2-1/4 yd Cap. Drott 4-in 1
2	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M12lA1
8	Forklift Attachment 10,000 lb, Cap, Oscillating PL-21910
8	Tractor, Rubber Tired, Articulated Steer, 72-31IMP
35	Truck, Forklift, 05-3354
25	Truck, Forklift, Rough Terrain, MC-4000
3	Semi-Trailer, Van, Expansible, 6-Ton, 4-Whl, M313
52	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
21	Trailer, Cargo, 3/4T, 2-Whl, M101A1
12	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
14	Trailer, Tank, Water, 400 Gal, M149A1
2	Truck, Ambulance, 1/4T, 4x4, M718A1
3	Truck, Ambulance, 1-1/4T, 4x4, M886
28	Truck, Cargo, 1-1/4T, 4x4, M880
30	Truck, Cargo, Dropside, 2-1/2T, 6x6, w/o W, W/PTO, M35A2C
8	Truck, Firefighting, Brush, M530CB
1	Truck, Firefighting, Structural M530CS
4	Truck, Tank, Water, 1000 Gal, 2-1/2T,6x6, M50A2
3	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, w/Wn, M49A2C
55	Truck, Utility, 1/4T, 4x4, M151A2
2	Truck, Wrecker, 5T, 6x6, M543A2
9	Machine Gun, Cal.50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60
2	Night Vision Goggles, Individual AN/PVS-5
4	Night Vision Sight, Crew Served Weapon AN/TVS-5
4	Telescope, Observation W/E M49

4 Transportation.--The company is capable of providing organic motor transport incident to its stated mission.

5 Food Service.--Capable of providing food service support to the group both in garrison and in the field as required.

(7) Service Company

(a) Mission, Tasks, and Functions

1 Mission.--To provide service support for the MAF in garrison, and to provide support for deployment of MAGTF's smaller than a MAF. To provide backup support for reproduction capabilities provided by the division and the wing.

2 Tasks

a Provide all of the disbursing functional support for the MAF.

b Provide all of the postal functional support for the MAF.

c Provide all of the exchange functional support for the MAF.

d Provide all of the U. S. Marine Corps ADP functional support for the MAF on a nondedicated basis.

e Provide reproduction functional support for the FSSG and backup support for the division and wing capabilities.

(b) Concept of Organization.--The service company is organized to provide command and control over the platoons organic to the company. The platoons are structured to provide subsections in each of the functional capabilities for support of the MAF. The company consists of a reproduction section, disbursing platoon, postal platoon, exchange platoon, force automated services center (medium), and company headquarters.

1 Command and Control.--The company commander executes the normal command and staff functions.

2 Firepower.--Capability is limited to light infantry weapons.

3 Mobility.--None organic. To effect displacement requires support from motor transport battalion, FSSG.

(c) Concept of Employment.--The service company will provide task organized elements to perform the functions contained in the unit mission. The nature of these functions are such that the task elements may perform their particular service at widely separated locations and are not necessarily restricted to the immediate objective area. The major items of equipment are shown below.

SERVICE COMPANY, H&S BATTALION, FSSG

2	Modular, Relocatable Bldg, GP, Prefab.
8	Air Conditioner, MSC Vertical, 60Hz, 18,000 BTU, A/E 32C-17
28	Air Conditioner, MC, Standard, Skd-Mtd, A/E 32C-39
1	Machine Gun,. 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first and second echelon) maintenance on infantry weapons.

b Support.--None.

2 Supply.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--None organic. Support is provided by H&S battalion, FSSG.

5 Food Service.--None organic. Support is provided by H&S battalion, FSSG.

(8) Communication Company

(a) Mission, Tasks, and Functions

1 Mission.--To provide radio, communication center, and wire facilities for all units of the FSSG in garrison and in the amphibious assault, to include subsequent operations ashore; to provide communications with and between other units of the force.

2 Tasks

a Provide internal communication support for geographically separated logistic support areas.

b Provide communication support between geographically separated logistic support areas.

c Provide multichannel radio terminals between the headquarters of the FSSG, division, and wing.

(b) Concept of Organization.--The company consists of a company headquarters, radio platoon, message center platoon, and wire platoon. The platoons are organized to facilitate assignment of groupments or elements to the various task organizations of the FSSG.

1 Command and Control.--The company commander directs and controls all matters pertaining to company communications and electronics matters.

2 Firepower.--Capability is limited to light infantry weapons. Capable of defense against infiltration or light guerilla type units.

3 Mobility.--Capable of limited displacement with organic motor transportation. Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons and/or sections.

(c) Concept of Employment.--The communication company provides for internal communications, communication center teams, radio, and wire teams to the FSSG in garrison and when deployed in either one or two force logistic support areas. Provides communication support for detachments of the FSSG in support of isolated units. Provides communications, as required, with other units of force. May require augmentation in providing sustained long haul communications between force logistic support

areas and/or between the FSSG headquarters and other units of the force. The major items of equipment are shown below.

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first and second echelon) maintenance on all equipment authorized.

b Support.--None.

COMMUNICATIONS COMPANY, H&S BATTALION, FSSG

1	Communications Central, AN/TGC-37(V)
3	Communications Central, AN/TSC-15
16	Control Radio Set, AN/GRA-6
20	Radio Set, Control Group, AN/GRA-39A
8	Radio Set, AN/GRC-160
8	Radio Set, Trk-Mtd, AN/MRC-83A
12	Radio Set, AN/MRC-109
10	Radio Set, AN/MRC-110
19	Radio Set, AN/PRC-47
2	Radio Set, AN/PRC-75A
58	Radio Set, AN/PRC-77
4	Radio Terminal Set, AN/MRC-134
8	Radio Terminal Set, AN/MRC-135
10	Radio Terminal Set, AN/TRC-166
2	Receiving Set, Radio, AN/GRR-17
20	Switchboard, Telephone, Manual, SB-22/PT
6	Switchboard, Telephone, Automatic, SB-3614(V)TT
2	Switchboard, Telephone, Cordless, Manual, SB-3082(V)2/GT
8	Teletypewriter Set, AN/GGC-3-A
7	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
2	Trailer, Cargo, 3/4T, 2-Whl, M101A1
2	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
1	Trailer, Tank, Water, 400 Gal, M149A1
2	Truck, Cargo, 1-1/4T, 4x4, M880
3	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
7	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal. 50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60
4	Night Vision Sight, Individual Served Weapon, AN/PVS-4

2 Supply.--Capable of performing organic supply support functions.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Capable of performing operations as set forth in the mission with organic transportation.

5 Food Service.--None organic. Support is provided by H&S battalion, FSSG.

(9) Military Police Company

(a) Mission, Tasks, and Functions

1 Mission.--To provide command and logistic functions for the company and provide area and command oriented support, including traffic control, convoy escort, law enforcement, circulation control of individuals, physical security, crime prevention, investigation, and limited counterinsurgency operations as directed; and to provide a scout/sentry dog capability to support combat operations of the company and other FMF units as required.

2 Tasks

a Provide beach and landing zone security and traffic control to prevent congestion and pilfering.

b Provide convoy escort as required.

c Enforce laws, orders, and regulations applicable to the area of operation.

d Provide for the evacuation, processing, guarding, and custody of enemy POW's and civilian detainees/internees.

e Conduct suspect, prisoner and area searches as appropriate to the assigned mission.

f Provide sentry handler/dog capability for the security of key installations and facilities as may be directed.

g Provide scout handler/dog capability for the support of offensive operations as may be directed.

h Maintain a kennel facility for scout and sentry dogs organic to the company.

i Provide a company headquarters for the necessary logistics support of the company.

j Conduct investigation and crime prevention.

(b) Concept of Organization.--The company is organized to provide command and control over the platoons organic to the company. The company consists of a military police platoon, three traffic platoons, a scout dog platoon, sentry dog platoon, and criminal investigation section which are controlled by the company headquarters. The company headquarters plans, directs, and supervises the execution of missions assigned the company.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Capable of defending the battalion headquarters against infiltration by small groups of the enemy. Security ele-

ments are armed with light infantry weapons.

3 Mobility.--The military police company is helicopter transportable. Its organic capability to displace is based on foot and/or transportation provided by the battalion or supported unit.

(c) Concept of Employment.--The company headquarters primarily provides internal logistics, security, and working space facilities for the company. The military police platoon provides convoy escort, evacuations, processing, guarding, and custody of enemy/ POW's and civilian detainees/internees. The traffic platoons provide beach, landing zone, and traffic control to prevent congestion and pilfering. The scout dog platoon will normally be employed in support of offensive operations of infantry units or elements of the MAF. The sentry dog platoon will normally be employed in support of defensive operations of the battalion and/or other units as directed. The criminal investigation section conducts investigations and provides the MAF with a crime prevention capability. The major items of eqipment are shown below.

MILITARY POLICE COMPANY, H&S BATTALION, FSSG

5	Radio Set, Control Group, AN/GRA-39A
14	Radio Set, AN/GRC-160
6	Radio Set, AN/MRC-109
17	Radio Set, AN/PRC-77
2	Trailer, Amphib. Cargo, 1/4T, 2-Whl, M416
5	Truck, Cargo, 1-1/4T, 4x4, M880
2	Truck, Utility, 1/4T, 4x4, M151A2
3	Launcher, Grenade, 40mm, M203
4	Machine Gun, 7.62mm, M60
1	Night Vision Sight, Individual Served Weapon, AN/PVS-4

(d) Administrative Capabilities.--None. Centralized under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first and second echelon) maintenance on infantry weapons.

b Support.--None.

2 Supply.--None organic. Support is provided by headquarters and service company, headquarters and service battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, headquarters and service battalion, FSSG.

4 Transportation.--None organic. Support is provided by headquarters and service battalion, FSSG.

5 Food Service.--None organic. Support is provided by headquarters and service battalion, FSSG.

(f) Status.--The military police company of the H&S battalion, FSSG is presently in a cadre status.

b. Maintenance Battalion

(1) Mission and Tasks

(a) Mission.--To provide intermediate level maintenance support for the Marine Corps furnished tactical ordnance, engineer, motor transport, communications/electronics, and general supply equipment of a MAF.

(b) Tasks

1 Provide contact team maintenance to effect on-site repairs.

2 Provide end item maintenance at battalion repair facilities when such maintenance is beyond the capability of contact team maintenance.

3 Provide technical inspection services in support of the MAF commander's equipment maintenance program.

4 Provide intermediate level maintenance and modifications on "in-stock" equipment.

5 Provide a general support maintenance facility to support the secondary repairables program.

6 Provide an ordnance tracked vehicle recovery capability.

7 Provide calibration services for all electrical/mechanical test/measuring equipment.

8 Provide intermediate maintenance on major end items in mount out and the operational readiness float.

9 Provide technical assistance to the overflow organizational maintenance for supported units as directed by higher headquarters.

10 Provide office machine repair support capability as required.

(2) Concept of Organization.--The battalion is structured to provide command and control over subordinate organic units. Responsibilities are discharged through the battalion headquarters consisting of the commander and executive staff. Maintenance support, provided by the battalion to other units, is coordinated under the staff cognizance of the maintenance operations section. The S-4 section is organized to plan, coordinate, and supervise the organic logistic functions of the battalion. The battalion consists of a H&S company, ordnance maintenance company, motor transport maintenance company, engineer maintenance company, electronics maintenance company, and a general support maintenance company. The battalion is structured to facilitate the task organization for maintenance support for semimobile intermediate level maintenance facilities,

while simultaneously providing contact team maintenance to forward elements of the various combinations of MAGTF's. (See Figure 4-4.)

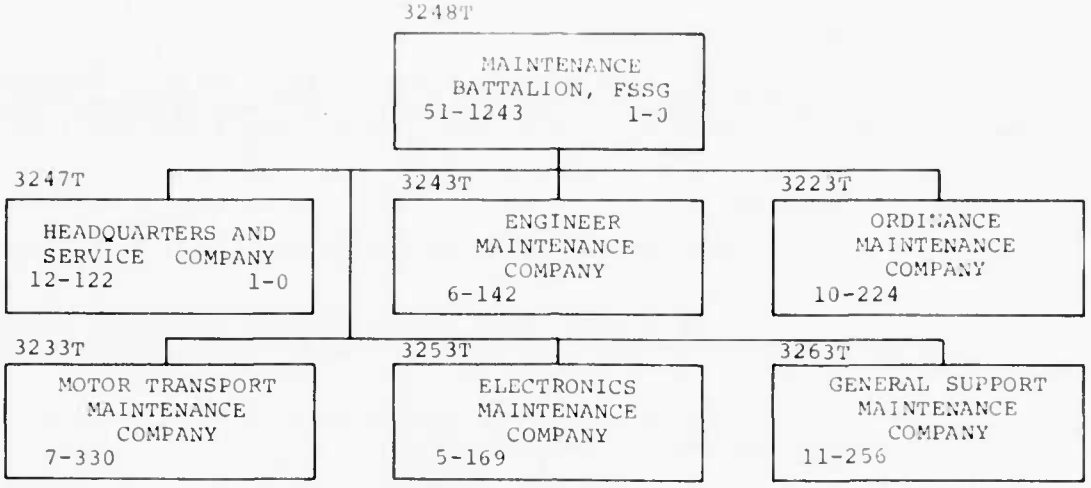


Figure 4-4.--Maintenance Battalion.

(a) Command and Control.--The battalion commanding officer exercises command and control of the battalion through the battalion staff and the company commanders.

(b) Firepower.--Organic firepower capability is limited to individual weapons for personal security. The battalion is capable of providing local security and assisting in the defense of its installations against infiltration.

(c) Communications.--None organic. Support is provided by the communications company, H&S battalion, FSSG.

(d) Intelligence.--None organic. Support is provided by the group G-2 section, H&S battalion, FSSG.

(e) Mobility.--Certain elements within the battalion are helicopter and/or fixed-wing aircraft transportable. The battalion requires heavy motor transport support from the motor transport battalion, FSSG to displace the maintenance installations.

(3) Concept of Employment.--The battalion will establish and operate intermediate level direct and general support maintenance facilities, under centralized control, in one force logistic support area (LSA) or under decentralized control in two LSA's. When not deployed as a battalion, it will provide the necessary task organized maintenance/maintenance control elements to support the different combinations of Marine air-ground task forces, up to and including two MAB's or four MAU's deployed in widely separated geographical areas. When the maintenance/maintenance control elements cannot provide the required intermediate level support, the

will be evacuated to the general support element for repair or disposition as required.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance

1 Organic.--Elements of the battalion are capable of providing organizational (first and second echelon) maintenance on all organic equipment.

2 Support.--Capable of intermediate level (third and fourth echelon) maintenance on all Marine Corps furnished equipment of the MAF (except those items which are provided intermediate level maintenance through Interservice Support Agreements, contractor agreements, etc., as specified in separate directives from the Commandant of the Marine Corps).

(b) Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

(c) Transportation.--Capable of providing organic transportation incident to the accomplishment of its primary mission.

(d) Supply.--Capable of providing organic supply support.

(e) Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(6) Headquarters and Service Company

(a) Mission.--To provide the battalion commander with facilities for command and control. To provide administration, organic supply, light motor transport, maintenance, and service support to the battalion.

(b) Concept of Organization.--The company consists of a battalion headquarters containing a S-1/adjutant section, S-2/S-3 section, S-4/embarkation section, maintenance operations section, battalion supply section, battalion motor transport/maintenance platoon containing a utilities maintenance section, and a company headquarters. The company is structured to facilitate task organization for operations in either one or two force logistic support areas.

1 Command and Control.--The company commander directs and controls all matters pertaining to company administration and logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various sections.

(c) Concept of Employment.--The company may be deployed under centralized control in one force logistic support area providing com-

mand and administrative facilities for the battalion, or it is capable of operating in two force logistic support areas providing the same services under decentralized control. The company headquarters is organized to plan, coordinate, and supervise the logistic functions of the subordinate elements of the company with assistance by the battalion supply and motor transport officers. The major items of equipment are shown below.

HEADQUARTERS AND SERVICE COMPANY, MAINTENANCE BATTALION, FSSG

1	Radiac Computer Indicator, CP95A/PD
1	Radiac Set, AN/PDR-56
6	Radio Set, Control Group, AN/GRA-39A
6	Radio Set, AN/GRC-160
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M12lA1
5	Frequency Converter, Solid State, 10kW, 60-400Hz
3	Frequency Converter, Motor Driven, 100kW, 60-400Hz, PPU-742
2	Generator Set, 3kW, 400Hz, Skd-Mtd, MEP-021A
20	Generator Set, DE, 10kW, 60Hz, Skd-Mtd, MEP-003A
14	Generator Set, 30kW, 60Hz, Skd-Mtd, MEP-005A
7	Generator Set, 30kW, 400Hz, Skd-Mtd, MEP-114A
8	Generator Set, 60kW, 60Hz, Skd-Mtd, MEP-006A
1	Generator Set, 60kW, 400Hz, Skd-Mtd, MEP-115A
1	Generator Set, 100kW, 60Hz, Skd-Mtd, MEP-007A
1	Generator Set, 200kW, 60Hz, Tactical Utility MEP-009A
30	Chassis, Trailer, General Purpose, 3-1/2T, 2-Whl, M353
3	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
8	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
24	Trailer, Flatbed, 3/4T, 2-Whl, M762
7	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
4	Truck, Cargo, 1-1/4T, 4x4, M880
8	Truck, Cargo, 5T, 6x6, M54A2C
1	Truck, Cargo, 5T, 6x6, M55A2
4	Truck, Tank, Fuel Servicing, 1200 GAl, 2-1/2T, 6x6, w/wn, M49A2C
4	Truck, Tractor, 5T, 6x6, M52A2
5	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
6	Machine Gun, Cal. 50, Browning, HB, Flexible M2
2	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistic Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance on organic motor transport and infantry weapons. Organizational (second echelon) maintenance on all other assigned equipment is provided by maintenance battalion, FSSG. Intermediate (third and fourth echelon) maintenance support on all assigned equipment is provided by maintenance battalion, FSSG.

b Support.--Capable of providing organizational (second echelon) maintenance on all maintenance battalion infantry weapons and motor transport vehicle assets, less general support maintenance com-

pany vehicles.

2 Supply.--Capable of providing organic supply support for the battalion.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Capable of providing light motor transport incident to the accomplishment of the company's primary mission. Additional requirements are provided by motor transport battalion, FSSG.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(7) Engineer Maintenance Company

(a) Mission and Tasks

1 Mission.--To provide intermediate (third and fourth echelon) maintenance support for Marine Corps engineer equipment of a MAF.

2 Tasks

a Provide on-site repair by contact teams.

b Provide end item maintenance at company mobile repair facilities, when such maintenance is beyond the capability of contact team maintenance.

c Provide technical inspection services in support of the MAF commander's equipment maintenance program.

d Provide required maintenance on "in-stock" engineer equipment prior to issue.

e Provide technical assistance to, and overflow organizational maintenance for, supported units as directed by higher headquarters.

(b) Concept of Organization.--The company consists of a company headquarters containing a maintenance control section, service/support section, fabric repair section, an engineer equipment maintenance/repair platoon consisting of a maintenance repair section and utilities repair section, and an engineer contact maintenance platoon consisting of three maintenance repair squads and three utilities repair squads. The company is organized to provide the basic structure necessary to facilitate the task organization for support of a MAF from either one or two force logistic support areas while operating as an integral part of the maintenance battalion. When not deployed as a company, it is organized to provide the personnel and support equipment necessary for maintenance of ground engineer equipment of the different configurations of MAGTF's, up to and including two MAB's or four MAU's deployed in widely separated geographical areas.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various sections and/or squads.

(c) Concept of Employment.--The primary method of employment will be by contact teams, equipped to effect on-site repairs, with evacuation of unserviceable/disabled equipment to back-up company mobile repair facilities when repair cannot be accomplished on-site. When deployed as a unit in one LSA, or under decentralized control in two LSA's, the company will operate intermediate maintenance facilities for the repair of ground engineer equipment as an integral part of maintenance battalion. The company is structured to provide the appropriate technical and supervisory personnel and support equipment to form the engineer maintenance element of a MAF or MAGTF's less than MAF size. The major items of equipment are shown below.

ENGINEER MAINTENANCE COMPANY, MAINTENANCE BATTALION, FSSG

2	Air Conditioner, MC Std, Vertical, 60Hz, 36,000 BTU, A/E,32C-24
2	Blast Cleaning Machine, 125 Lb., CJ-200
1	Crane, RT, Rough Terrain, Hydraulic, 30T, DROH 2500
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M12lAl
1	Forklift Attachment, 10,000 lb. Cap., Oscillating, PL-21910
1	Tank, Fabric, Collapsible, 3,000 gal.
1	Tractor, Medium, Full Tracked 82-30 FA-M3
1	Tractor, Rubber-Tired, Articulated Steer, 72-31MP
1	Truck, Forklift, Rough Terrain, MC-4000
4	Welding Machine, Arc, Trlr-Mtd, LM62A
2	Semi-Trailer, Lowbed, 40T, M-870
2	Semi-Trailer, Van, Expansible, 6T, 4-Whl, M313
3	Trailer, Amphib, Cargo, 1/4T, 2-Whl, M416
2	Trailer, Tank, Water, 400 Gal., 1-1/2T, 2-Whl, M149Al
4	Truck, Cargo, 1-1/4T, 4x4, M880
2	Truck, Tractor, 10T, 6x6, W/wn, M123AlC
3	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
2	Machine Gun, Cal.50, Browning, HB, Flexible, M2
6	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned engineer equipment, less vehicular components. Organizational (second echelon) maintenance on all other assigned equipment is provided by maintenance battalion, FSSG. Intermediate (third and fourth echelon) maintenance support on all assigned equipment, less engineer, is provided by maintenance battalion, FSSG.

b Support.--Capable of providing organizational (second echelon) maintenance for all maintenance battalion organic engineer equipment less general support maintenance company. Capable of providing intermediate (third and fourth echelon) maintenance support on all Marine Corps furnished engineer equipment of the MAF.

2 Supply.--None organic. Support is provided by H&S company, maintenance battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section,H&S battalion, FSSG.

4 Transportation.--Capable of providing light motor transport incident to the accomplishment of the company's primary mission. Additional requirements are provided by motor transport battalion, FSSG.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(8) Ordnance Maintenance Company

(a) Mission and Tasks

1 Mission.--To provide intermediate (third and fourth echelon) maintenance support for Marine Corps ordnance equipment of a MAF.

2 Tasks

a Provide on-site repair by contact teams.

b Provide end items maintenance at mobile repair facilities when such maintenance is beyond the capability of contact team maintenance.

c Provide technical inspection services in support of the MAF commanders equipment maintenance program.

d Provide required maintenance on "in-stock" ordnance equipment prior to issue.

e Provide an ordnance tracked vehicle recovery capability as required.

f Provide technical assistance to and overflow organizational maintenance for supported units as directed by higher headquarters.

(b) Concept of Organization.--The company consists of a company headquarters containing a maintenance control section and a recovery section, tracked vehicle repair platoon, armament repair platoon, and two contact maintenance platoons, each containing a tracked vehicle repair section, infantry weapons repair section, and artillery weapons repair section. The company is organized to provide the basic structure necessary to facilitate the task organization for support of a MAF, from either one or two force LSA's, while operating as an integral part of the maintenance battalion. When not deployed as a company, it is organized to provide the personnel and support equipment necessary for maintenance of ground ordnance equipment of the different configurations of the MAGTF's,

up to and including two MAB's or four MAU's deployed in widely separated geographical areas.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons and/or section.

(c) Concept of Employment.--The primary method of employment will be by contact teams, equipped to effect on-site repairs, with evacuation of unserviceable/disabled equipment to back-up company mobile repair facilities when repair cannot be accomplished on-site. When deployed as a unit in one LSA, or under decentralized control in two LSA's, the company will operate intermediate maintenance facilities for the repair of ground ordnance equipment as an integral part of the maintenance battalion. The company is structured to provide the appropriate technical and supervisory personnel and support equipment to form the ordnance maintenance element of a MAF or MAGTF's less than MAF size. The major items of equipment are shown below.

ORDNANCE MAINTENANCE COMPANY, MAINTENANCE BATTALION, FSSG

1	Tank, Fabric, Collapsible, 300 Gal
1	Decontaminating Apparatus, PD, Skd-Mtd, 500-Gal, M121A1
2	Welding Machine, Arc, Trlr-Mtd, LM62A
4	Semi-Trailer, Tank Transporter, Joined, 65T,16-Whl, M793
3	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
2	Trailer, Tank, Water, 400 Gal, M149A1
6	Truck, Cargo, 1-1/4T, 4x4, M880
4	Truck, Tractor, 10T, 6x6, M123E2
5	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
2	Landing Vehicle, Tracked, Recovery, LVTR7
3	Recovery Vehicle, Full Track, w/Radio Set, AN/VRC-76,M51
5	Machine Gun, Cal.50, Browning, HB, Flexible, M2
6	Machine Gun, 7.62mm, M60
2	Machine Gun, 7.62mm, M60D
2	Night Vision Sight, Crew Served Weapon, AN/TVS-5

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance on assigned ordnance equipment less infantry weapons and motor transport vehicular components. Organizational (second echelon) maintenance support on all other assigned equipment is provided by

maintenance battalion, FSSG. Intermediate (third and fourth echelon) maintenance support on all assigned equipment, less ground ordnance, is provided by maintenance battalion, FSSG.

b Support.--Capable of providing intermediate (third and fourth echelon) maintenance support on all Marine Corps furnished ground ordnance equipment of the MAF.

2 Supply.--None organic. Support is provided by H&S company, maintenance battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Capable of providing light motor transport and heavy transportation of ordnance tracked vehicles incident to the accomplishment of the company's primary mission. Additional requirements are provided by motor transport battalion, FSSG.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(9) Motor Transport Maintenance Company

(a) Mission and Tasks

1 Mission.--To provide intermediate (third and fourth echelon) maintenance support for Marine Corps motor transport equipment of a MAF.

2 Tasks

a Provide-on site repair by contact teams.

b Provide end item maintenance at company mobile repair facilities where such maintenance is beyond the capability of contact team maintenance.

c Provide technical inspection services in support of the MAF commander's equipment maintenance program.

d Provide required maintenance on "in-stock" motor transport equipment prior to issue.

e Provide technical assistance to and overflow organizational maintenance for supported units as directed by higher headquarters.

(b) Concept of Organization.--The company consists of a company headquarters containing a maintenance control section and support section, and an automobile repair platoon and two automobile contact maintenance platoons, each containing two automobile repair sections. The company is organized to provide the basic structure necessary to facilitate the task organization for support of a MAF from either one or two force LSA's while operating as an integral part of the maintenance battalion. When not deployed as a company, it is organized to provide the personnel and support equipment necessary for maintenance of motor transport equipment of the different configurations of MAGTF's, up to and including two

MAB's or four MAU's deployed in widely separated geographical areas.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons and/or sections.

(c) Concept of Employment.--The primary method of employment will be by contact teams equipped to effect on-site repairs, with evacuation of unservicable/disabled equipment to back-up company mobile repair facilities when repair cannot be accomplished on-site. When deployment as a unit in one LSA or under decentralized control in two LSA's, the company will operate intermediate maintenance facilities for the repair of motor transport equipment as an integral part of the maintenance battalion. The company is structured to provide the appropriate technical and supervisory personnel and support equipment to form the motor transport maintenance element of a MAF or MAGTF's less than MAF size. The major items of equipment are shown below.

MOTOR TRANSPORT MAINTENANCE COMPANY, MAINTENANCE BATTALION, FSSG

3	Air Conditioner, MC Std, Vertical, 60Hz, 900BTU, A/E 32C-29
3	Tank, Fabric, Collapsible, 3,000 Gal
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M12lA1
2	Welding Machine, Arc, Trlr-Mtd, LM62A
2	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
5	Trailer, Tank, Water, 400 Gal, M149A1
6	Truck, Cargo, 1-1/4T, 4x4, M880
2	Truck, Utility, 1/4T, 4x4, M151A2
6	Truck, Wrecker, 5T, 6x6, M543A2
2	Machine Gun, Cal.50, Browning, HB, Flexible, M2
6	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance on assigned motor transport equipment. Organizational (second echelon) maintenance support on all other assigned equipment is provided by maintenace battalion, FSSG. Intermediate (third and fourth echelon) maintenance support on all assigned equipment, less motor transport, is provided by maintenance battalion, FSSG.

b Support.--Capable of providing intermediate (third and fourth echelon) maintenance support on all Marine Corps furnished motor transport equipment of the MAF. Capable of providing organic

(second echelon) maintenance support for all maintenance battalion motor transport equipment less general support maintenance company and H&S company.

2 Supply.--None organic. Support is provided by H&S company, maintenance battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Capable of providing light motor transport incident to the accomplishment of the company's primary mission.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(10) Electronics Maintenance Company

(a) Mission and Tasks

1 Mission.--To provide intermediate maintenance (third and fourth echelon) support for all Marine Corps furnished communication-electronics equipment of a MAF.

2 Tasks

a Provide on-site repair by contact teams.

b Provide end item maintenance at company mobile repair facilities where such maintenance is beyond the capability of contact team maintenance.

c Provide technical inspection services in support of the MAF commander's equipment maintenance programs.

d Provide required maintenance on "in-stock" communications-electronics equipment prior to issue.

e Provide technical assistance to and overflow organizational maintenance for supported units as directed by higher headquarters.

f Provide office machine repair support capability as required.

(b) Concept of Organization.--The company consists of a company headquarters containing a maintenance control section; wire platoon consisting of a wire section and an office machine repair section; radio/radar platoon containing two radio sections; and an electronics contact maintenance platoon consisting of three wire squads, two office machine repair squads, three radio squads, and a small missile maintenance squad. The company is organized to provide the basic structure necessary to facilitate the task organization for support of a MAF from either one or two force LSA's while operating as an integral part of the maintenance battalion. When not deployed as a company, it is organized to provide the personnel and support equipment necessary for maintenance of ground communications-electronics equipment of the different configurations of MAGTF's up to and including two MAB's or four MAU's deployed in widely separated geo-

graphical areas.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons, sections, and squads.

(c) Concept of Employment.--The primary method of employment will be by contact teams, equipped to effect on-site repairs, with evacuation of unserviceable/disabled equipment to back-up company mobile repair facilities when repair cannot be accomplished on-site. When deployed as a unit in one LSA, or under decentralized control of two LSA's, the company will operate intermediate maintenance facilities for the repair of ground communications-electronics equipment as an integral part of maintenance battalion. The company is structured to provide the appropriate technical and supervisory personnel and support equipment to form the communications-electronics maintenance element of a MAF or MAGTF's less than MAF size. The major items of equipment are shown below.

ELECTRONIC MAINTENANCE COMPANY, MAINTENANCE BATTALION, FSSG

1	Radar Set, AN/PPS-15(V)2
4	Radio Set, AN/GRC-160
6	Radio Set, AN/PRC-77
2	Radio Set, AN/TRC-75
2	Radio Terminal Set, AN/TRC-166
1	Receiving Set Radio, AN/GRR-17
2	Recorder, Signal Data, RD-376A/USQ
8	Shelter, Electronics Maintenance Support, AN/GRM-86
8	Shop, Electronic AN/GRM-94
1	Switchboard, Telephone, Manual, SB-22/PT
1	Transponder Set, FAC, AN/PPN-18
1	Transponder Set, AN/UPN-32
16	Air Conditioner, MC Std, Vertical, 60Hz, 18,000 BTU, A/E 32C-17
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M121A1
2	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
2	Trailer, Tank, Water, 400 Gal, M149A1
3	Truck, Cargo, 1-1/4T, 4x4, M880
8	Truck, Cargo, 5T, 6x6, w/o Winch, M54A2C
3	Truck, Cargo, 5T, 6x6, M55A2
2	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal.50, Browning, HB, Flexible, M2
6	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Capable of organizational (second echelon) maintenance on communications-electronics equipment and ordnance equipment less infantry weapons. Organizational (second echelon) maintenance on all other assigned equipment is provided by maintenance battalion, FSSG. Intermediate (third and fourth echelon) maintenance support on all assigned equipment, less communications-electronics, is provided by maintenance battalion, FSSG.

b Support.--Capable of providing organizational (second echelon) maintenance support for all maintenance battalion communications-electronics equipment less general support maintenance company. Capable of providing intermediate (third and fourth echelon) maintenance support on all Marine Corps furnished communications-electronics of the MAF.

2 Supply.--None organic. Support is provided by H&S company, maintenance battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Capable of providing light motor transport incident to the accomplishment of the company's primary mission. Additional requirements are provided by motor transport battalion, FSSG.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(11) General Support Maintenance Company

(a) Mission and Tasks

1 Mission.--To provide general and backup support for the commodity-oriented companies of the battalion and machin shop facilities for the accomplishment of intermediate (third and fourth echelon) maintenance for all ground equipment of a MAF.

2 Tasks

a Provide intermediate (third and fourth echelon) maintenance on secondary repairables from the secondary repairable float.

b Provide organizatinal (first and second echelon) and intermediate (third and fourth echelon) maintenance on major end items in mount-out and the ORF.

c Prepare in-stock items for issue.

d Provide calibration services in support of direct support elements of the battalion and subsequent to the accomplishment of required general support intermediate maintenance on test/measuring equipment.

e Maintenance and repair of general supply items.

f Provide calibration services for all Marine Corps furnished test and measuring equipment organic to the MAF.

(b) Concept of Organization.--The company is a functionally organized unit consisting of a company headquarters; support platoon containing a maintenance control section, an inspection unit, and a machine shop section; end item repair platoon containing a repair section; component rebuild platoon containing a weapons section, engine rebuild section and a power transmission and suspension section; communications-electronic platoon containing a wire section and a radio section; general support maintenance repair platoon containing three general support maintenance repair teams; operational readiness platoon consisting of a supply administrative section and an equipment section; and electrical/mechanical calibration platoon consisting of electrical and mechanical calibration sections, and a small missile maintenance section. The company is structured to facilitate task organization for operations in support of a MAF from either one or two force logistic support areas (LSA's) while still an integral part of the maintenance battalion. When not deployed as a company, it is organized to provide the personnel and support equipment necessary for the maintenance of all ground equipment of the different configurations of MAGTF's, up to and including two MAB's or four MAU's deployed in widely separated geographical areas.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons and sections.

(c) Concept of Employment.--The company may be deployed as a unit in one LSA, or under decentralized control in two LSA's. It will operate general support intermediate repair facilities for the repair of ground equipment of the MAF. The company is structured to provide the appropriate technical and supervisory personnel and support equipment to augment the maintenance elements of the logistic support unit/group with a general support intermediate maintenance capability. The major items of equipment are shown on the following page.

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizatinal (first and second echelon) maintenance on all assigned equipment.

b Support.--Capable of general support intermediate (third and fourth echelon) maintenance on all ground equipment of the MAF.

2 Supply.--None organic. Support is provided by H&S company, maintenance battalion, FSSG.

3 Medical.--None organic. Support is provided by the

group medical section, H&S battalion, FSSG.

4 Transportation.--Capable of providing light motor transport incident to the accomplishment of the company's primary mission. Additional requirements are provided by motor transport battalion, FSSG.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

GENERAL SUPPORT MAINTENANCE COMPANY, MAINTENANCE BATTALION, FSSG

2	Calibration Complex, Transportable AN/TSM-119
1	Calibration Shop, Transportable AN/TSM-124
2	Communications Central, AN/TSC-15
2	Control Radio Set, AN/GRA-6
2	Distance Measuring Equipment, MRA-301
2	Radio Set, Control Group, AN/GRA-39A
2	Radio Set, AN/GRC-160
2	Radio Set, AN/PRC-47
2	Radio Set, AN/PRC-75A
4	Radio Set, AN/PRC-77
3	Radio Set, AN/TRC-75
2	Radio Set, AN/VRC-47
2	Radio Terminal Set, AN/TRC-166
1	Radio Receiving Set, AN/GRR-17
4	Shelter, Electronics Maintenance Support, AN/GRM-86
4	Shop, Electronic AN/GRM-94
1	Switchboard, Telephone, Manual SB-22/PT
1	Transponder Set, AN/UPN-32
12	Air Conditioner, MC Std, Vertical, 60Hz, 18,000 BTU, A/E 32C-17
2	Air Conditioner, MC Std, Vertical, 60Hz, 36,000 BTU, A/E 32C-24
2	Air Conditioner, MC Std, Vertical, 60Hz, 900 BTU, A/E 32C-29
10	Air Conditiner, MC, Std, Skd-Mtd, A/E 32C-39
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M121A1
2	Welding Machine, Arc, Trlr-Mtd, LM62A
1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
2	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
2	Truck, Cargo, 1-1/4T, 4x4, M880
1	Truck, Cargo, 5T, 6x6, M55A2
2	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
2	Launcher, Tubular, F/GM TOW Weapon System M220AE1
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
4	Machine Gun, 7.62mm, M60
1	Missile Maintenance Shop, AN/GSM-216
1	Van, Maintenance, Dragon Weapon System
2	Van, Maintenance, Tow Weapon System

c. Supply Battalion

(1) Mission and Tasks

(a) Mission.--To provide all functions, including stock control, cross-servicing, and civilian contracting incident to the supply of all classes of supply (except bulk fuel) to a Marine division, Marine aircraft wing, and other force units, including isolated components there-

of, either in garrison when employed separately, as a MAF, or MAGTF's of less than MAF size in the amphibious assault and subsequent operations ashore.

(b) Tasks

1 Manage and provide supply service support to include stock control functions for the MAF, through the supported activities supply system (SASSY) management unit (SMU).

2 Provide salvage functions for deployed logistic support groups (LSG's) and logistic support units (LSU's) of the MAF.

3 Provide technical management, data research, customer service, and assistance to the MAF.

4 Provide intermediate level shop stores issue points for the MAF.

5 Provide management of the MAF's special allowance training pool items and initial issue of provisioning assets.

6 Provide management of the MAF's secondary repairables through the maintenance float.

7 Provide procurement services for the MAF of items decentralized by the IMM.

8 Provide supply status management reports as required.

9 Provide interface with financial and maintenance management systems in support of MAF requirements.

10 Provide firefighting capability for the MAF.

11 Provide accounting for class II, IV, VII, and limited class IX supplies; initial issue provisioning assets; and authorized levels of war reserve.

12 Establish and operate ration dumps to include storage issue and accounting for subsistence items in support of the MAF's landing force.

13 Establish and operate a field bakery in support of the MAF's landing force.

14 Provide technical assistance in the receipt, storage, assembling, and providing of nuclear ordnance and other specified ordnance to ground and aviation elements of the MAF.

15 Provide receipt, storage, and forwarding of package fuel to wing and division elements or force logistic support areas.

16 Provide packing, preservation, and packaging services to the MAF.

(2) Concept of Organization.--The battalion consists of a H&S

company, ammunition company, ration company, supply company, and a medical logistics company. (See Figure 4-5).

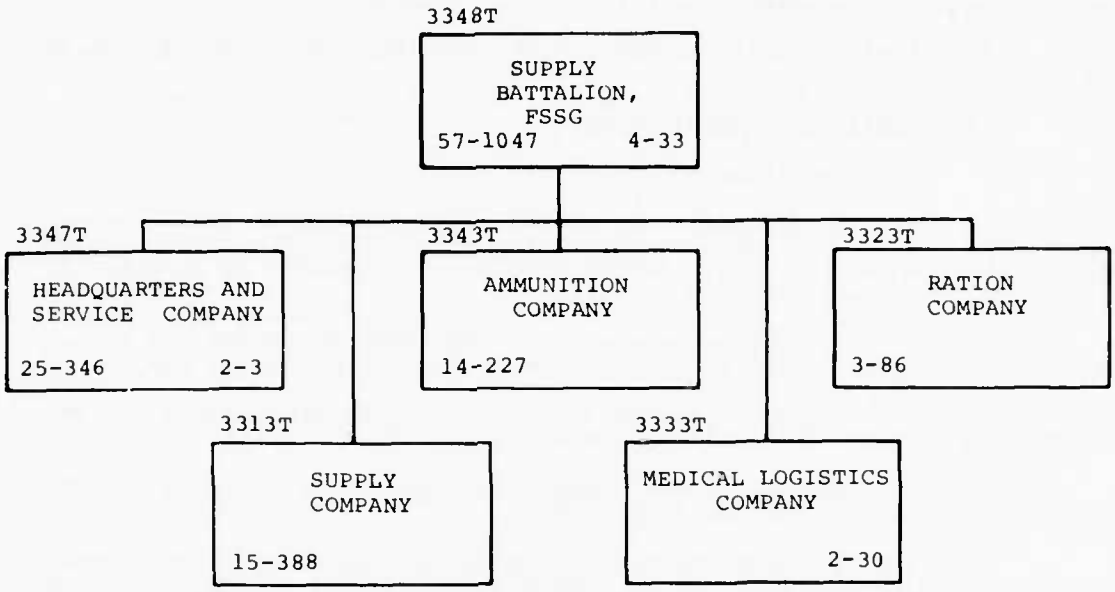


Figure 4-5.--Supply Battalion

(a) Command and Control.--The battalion commanding officer exercises command and control of the battalion through the battalion staff and company commanders.

(b) Firepower.--Organic firepower capability is limited to individual weapons for personal security. The battalion is capable of providing local security and assisting in the defense of its installations against infiltration.

(c) Communications.--None organic. Support is provided by the communications company, H&S battalion, FSSG.

(d) Intelligence.--None organic. Support is provided by the group G-2 section, H&S battalion, FSSG.

(e) Mobilty.--Requires heavy motor transport from the motor transport battalion, FSSG to displace the organic equipment.

(3) Concept of Employment.--The battalion consolidates the supply capability of the FSSG to include stock control, warehouse, cyclic inventory, cross-servicing, and civilian contracting. It is further structured with commodity area companies capable of providing supply support to the MAF, isolated components of the MAF, or MAGTF's less than MAF size up to and including two MAB's or four MAU's deployed in widely separated geographical areas. When providing support to MAGTF's of less than MAF size,

the battalion organizes a detachment using the direct support platoons in each of the commodity companies. In a MAF size operation, the battalion may operate in one or more LSA's. Supply management and control is exercised by the SASSY management unit in the H&S company.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance

1 Organic.--The battalion is capable of providing organizational (first and second echelon) maintenance on all organic equipment. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

2 Support.--Capable of intermediate (third and fourth echelon) maintenance on all medical and dental equipment for the MAF.

(b) Supply.--Capable of providing organic support to the battalion to accomplish its stated mission.

(c) Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

(d) Transportation.--The battalion possesses light organic motor transport capability. Motor transport assistance is required from motor transport battalion, FSSG to effect distribution of supplies as required by the primary mission.

(e) Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(6) Headquarters and Service Company

(a) Mission and Tasks

1 Mission.--To provide for the command and administration of the battalion, furnish organic supply and transportation services to the battalion, and furnish supply management and control to the MAF during the amphibious assault and subsequent operations ashore. To furnish command sections for detachments of the battalion on independent missions in support of MAGTF's of less than MAF size.

2 Tasks

a Provide supply service support to include stock control functions for all supported units through the SMU.

b Provide salvage functions for deployed LSG's and LSU's.

c Provide technical management, data research, customer service, and assistance to all using units.

d Provide intermediate level shop stores issue points.

e Provide management of special allowance training pool items and initial issue provisioning assets.

f Provide management of secondary repairables through the maintenance float.

g Provide procurement services for items decentralized by the IMM.

h Provide supply status management reports to higher headquarters.

i Provide interface with financial and maintenance management systems.

j Provide civilian contracting/cross-servicing functional support for deployed units.

k Provide firefighting capability for the MAF.

l Provide accounting for class II, IV, VII, VIII, and limited class IX supplies, initial issue provisioning assets, and authorized levels of war reserves.

(b) Concept of Organization.--The company consists of a battalion headquarters containing an S-1/adjutant section, S-3 section, and S-4/embarkation section; a SASSY management unit consisting of a headquarters unit/operations section, administrative section, general accounts management section, using unit accounts section, fiscal section, technical section, procurement section, special accounts management section, medical supply section, and shop stores section; battalion supply section; motor transport/maintenance platoon containing a motor transport maintenance section and an engineer maintenance/power section; and company headquarters.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons and/or sections.

(c) Concept of Employment.--The company is structured to provide centralized supply control and management for the MAF from within the SMU. Accounting for all classes of supply is supported through the mechanized supported activities supply system by the SMU, supply battalion, FSSG, with the current exception of clases I, III, V, and VI. The SMU conducts the functions necessary to manage and maintain control of all classes of supplies handled by the other companies of the supply battalion. The company is able to combine elements of the battalion headquarters with other elements of the battalion to provide overall supply support to elements of the MAF or MAGTF's, less than MAF size, or provide small independent units of task organized supply control and management personnel. The major items of equipment are shown on the next page.

H&S COMPANY, SUPPLY BATTALION, FSSG

2	Radiac Set, AN/PDR-56
2	Decontaminating Apparatus, PD, Skd-Mtd, 500 GAl, M121A1
3	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
4	Trailer, Cargo, 3/4T, 2-Whl, M101A1
3	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
1	Trailer, Tank, Water, 400 Gal, M149A1
4	Truck, Cargo, 1-1/4T, 4x4, M880
6	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
3	Truck, Cargo, 2-1/2T, w/o winch, w/E, M36A2
6	Truck, Firefighting, 1/4T, 4x4, MC1051
3	Truck, Utility, 1/4T, 4x4, M151A2
2	Truck, Wrecker, 5T, 6x6, M543A2
7	Machine Gun, Cal.50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60
2	Night Vision Goggles, Individual, AN/PVS-5
2	Night Vision Sight, Crew Served Weapon, AN/TVS-5

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first and second echelon) maintenance on all assigned equipment. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--Capable of providing organizational (second echelon) maintenance support on all equipment assigned to the battalion.

2 Supply.--Capable of providing organic supply support to all elements of the battalion.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Capable of providing motor transport support necessary to accomplish internal battalion support. Requires support from motor transport battalion, FSSG, to fill other requirements.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(7) Ammunition Company

(a) Mission and Tasks

1 Mission.--To provide for the receipt, storage, and issue support of class V general account operating stock, all explosive ordnance disposal (EOD) support, and technical assistance in the receipt, storage assembling, and forwarding of nuclear ordnance (and other specified ordnance) to elements of the MAF during an amphibious assault and subsequent operations ashore.

2 Tasks

a Provides receipt, storage, issue, and accounting functions for all class V items.

b Provides minor rework of grade III ammunition and repackaging support for the MAF

c Provides EOD support as required.

d Provides technical assistance in the receipt, storage, assembling, and forwarding of nuclear ordnance to ground and aviation elements of the MAF.

(b) Concept of Organization.--The company consists of a company headquarters section; two direct support ammunition platoons consisting of an operations section, four ammunition squads, two package helicopter support squads, and an aviation ordnance section each; nuclear ordnance platoon containing two nuclear ordnance sections; and an EOD/nuclear warfare platoon containing two EOD/electronic warfare teams.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG, to displace its various platoons and/or sections.

(c) Concept of Employment.--The company is structured to provide support to the MAF or MAGTF's less than MAF size. Through its direct support ammunition platoons, the company is capable of providing detachment support to elements of the MAF operating independently. In MAF size operations, the company is capable of organizing and operating one or more ammunition supply points in one or more LSA's. The major items of equipment are shown below.

AMMUNITION COMPANY, SUPPLY BATTALION, FSSG

1	Radiac Computer Indicator, CP-95A/PD
5	Radiac Set, AN/PDR-56
2	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M121A1
4	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
5	Trailer, Cargo, 3/4T, 2-Whl, M101A1
3	Trailer, Tank, Water, 400 Gal, M149A1
5	Truck, Cargo, 1-1/4T, 4x4, M880
3	Truck, Cargo, 5T, 6x6, M54A2C
4	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal. 50, Browning, HB Flexible, M2
5	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Organizational (second echelon) maintenance on assigned equipment is provided by H&S company, supply battalion, FSSG. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--None organic. Support is provided by H&S company, supply battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Possesses light organic motor transport capability. Requires motor transport and materiel handling equipment support to effect distribution of supplies as required in the primary mission.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(8) Ration Company

(a) Mission and Tasks

1 Mission.--To provide for the receipt, storage, and issue support of classes I and VI (when prescribed) general account operating stocks to elements of the Marine amphibious force during an amphibious assault and subsequent operations ashore.

2 Tasks

a Establish and operate ration dumps to include storage, issue, and accounting for subsistence items in support of a landing force.

b Establish and operate a field bakery to support the landing force.

(b) Concept of Organization.--The company consists of a company headquarters; a ration platoon with four ration sections; and a bakery platoon containing two bakery sections.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons and/or sections.

(c) Concept of Employment.--The company is structured to

provide ration support to the MAF, MAGTF's less than MAF size, or elements of the MAF operating independently through its direct support rations platoon. The company is capable of establishing and operating ration dumps to include storage, aaccounting, and issuing of subsistence items in support of a landing force. The company is capable of providing detachments from the direct support ration platoon to support deployed BSSG/MSSG's. The major items of equipment are shown below.

RATION COMPANY, SUPPLY BATTALION, FSSG

3	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
9	Trailer, Tank, Water, 400 Gal, M149A1
1	Truck, Cargo, 1-1/4T, 4x4, M880
3	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
3	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Organizational (second echelon) maintenance on assigned equipment is provided by H&S company, supply battalion, FSSG. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--None organic. Support is provided by H&S company, supply battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Possesses light organic motor transport capability. Requires motor transport assistance to effect distribution of supplies as required in the primary mission.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(9) Supply Company

(a) Mission and Tasks

1 Mission.--To provide for the receipt, storage, and issue support of classes II, III (packaged), IV, and IX (consumable) general account operating stocks, to elements of the MAF during an amphibious assault and subsequent operations ashore.

2 Tasks

a Provide bin and bulk storage of identified general account operating stocks.

b Provide supply locator services.

c Provide total receipt, storage, and issue support for all general account operating stocks.

d Provide warehousing capability from one, or all three supply platoons, to perform storage for deployed BSSG/MSSG's.

e Provide receipt, storage, and forwarding of packaged fuel to wing and division elements or force logistics support areas.

f Provide packing, preservation, and packaging (PP&P) services as required.

(b) Concept of Organization.--The company consists of a headquarters platoon consisting of a headquarters section and an operations section; packing, preservation, and packaging platoon containing an operations section and a PP&P team; and three supply platoons consisting of an issue/receiving section, bin storage section, medium bulk storage section, and a lot storage section.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons and/or sections.

(c) Concept of Employment.--The supply company is organized to centralize classes II, III (packaged), IV, and IX (consumable) supply support of the group within one company. The company can operate as a single entity or can be separated into three balanced units to provide support to the MAF or MAGTF's less than MAF size. Each platoon is capable of performing limited in-stock maintenance and the exercise of stock control. Each is capable of establishing several retail stores commodity sections of bin storage material if required. The company is capable of providing supply support in one or more LSA's. The major items of equipment are shown below.

SUPPLY COMPANY, SUPPLY BATTALION, FSSG

3	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
3	Trailer, Tank, Water, 400 GAl, M149A1
2	Truck, Cargo, 1-1/4T, 4x4, M880
3	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
8	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under

the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Organizational (second echelon) maintenance on all assigned equipment is provided by the H&S company, supply battalion, FSSG. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion.

b Support.--None.

2 Supply.--None organic. Support is provided by H&S company, supply battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Possesses light organic motor transport capability. Requires motor transport assistance to effect distribution of supplies as required in the primary mission.

5 Food Service.--None organic. Support is provided by H&S company, H&S battalion, FSSG.

(10) Medical Logistics Company

(a) Mission and Tasks

1 Mission.--To provide class VIII supply support and intermediate (third and fourth echelon) maintenance of medical and dental equipment for the Marine amphibious force during an amphibious assault and subsequent operations ashore .

2 Task.--Provide for the receipt, storage, maintenance, and issue of all class VIII supplies.

(b) Concept of Organization.--The company consists of a headquarters section, a supply platoon, and an equipment repair platoon.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistics support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Requires motor transport support from the motor transport battalion, FSSG to displace its section and platoons.

(c) Concept of Employment.--The company is structured to provide a centralized supply facility for class VIII supplies. The supply platoons are capable of operating as a single unit or decentralizing into three balanced units in support of a MAF, a MAGTF less than MAF size, or elements of the MAF operating independently. The equipment repair platoon is capable of providing in-stores maintenance of equipment stored by the company, and intermediate maintenance of medical and dental equipment of

the MAF. It is capable of operating in a centralized repair site and/or providing contact team maintenance in the field. The major items of equipment are shown below.

MEDICAL LOGISTICS COMPANY, SUPPLY BATTALION, FSSG

2	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
1	Truck, Cargo, 1-1/4T, 4x4, M880
2	Truck, Utility, 1/4T, 4x4, M151A2

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first and second echelon) and intermediate (third and fourth echelon) maintenance of medical and dental equipment. Capable of organizational (first echelon) maintenance of all other assigned equipment. Organizational (second echelon) maintenance of all other assigned equipment is provided by H&S company, supply battalion, FSSG. Intermediate (third and fourth echelon) maintenance on all Marine Corps assigned nonmedical equipment is provided by maintenance battalion, FSSG.

b Support.--Provides intermediate (third and fourth echelon) maintenance on medical and dental equipment of the MAF.

2 Supply.--Capable of providing organic supply support.

3 Medical.--None organic. Support is provided by the group medical section, H&S battalion, FSSG.

4 Transportation.--Possesses light organic motor transport capabilities. Requires motor transport support to effect distribution of supplies as required in the primary mission.

5 Food Service.--None. Support is provided by H&S company, H&S battalion, FSSG.

d. Engineer Support Battalion

(1) Mission, Tasks, and Functions

(a) To increase the combat effectiveness of the landing force by accomplishing general engineer missions of a deliberate nature, to include the technical supervision involved in the installation and provisions for fixed panel and floating bridge equipage, and the performance of all functions incident to the handling, storage, and distribution of bulk class III and III(A).

(b) Tasks

1 The provision of fixed and floating bridge equipage.

2 Fumigation.

3 Bath and laundry services.

4 Water supply.

5 Utility power support.

6 Storage and distribution of bulk fuel (class III and class III(A)).

7 Repair, stablize, and reinforce taxiways and runways within organizational capability.

8 Prepare site, install and maintain expeditionary airfields (EAF's) for tactical support runways and taxiways.

9 Provide repair and maintenance of airfield runways and taxiways beyond the capability of the wing engineer squadron.

(2) Concept of Organization.--The battalion is organized into a headquarters and service company, support company, bridge company, bulk fuel company, and three engineer companies. (See Figure 4-6.)

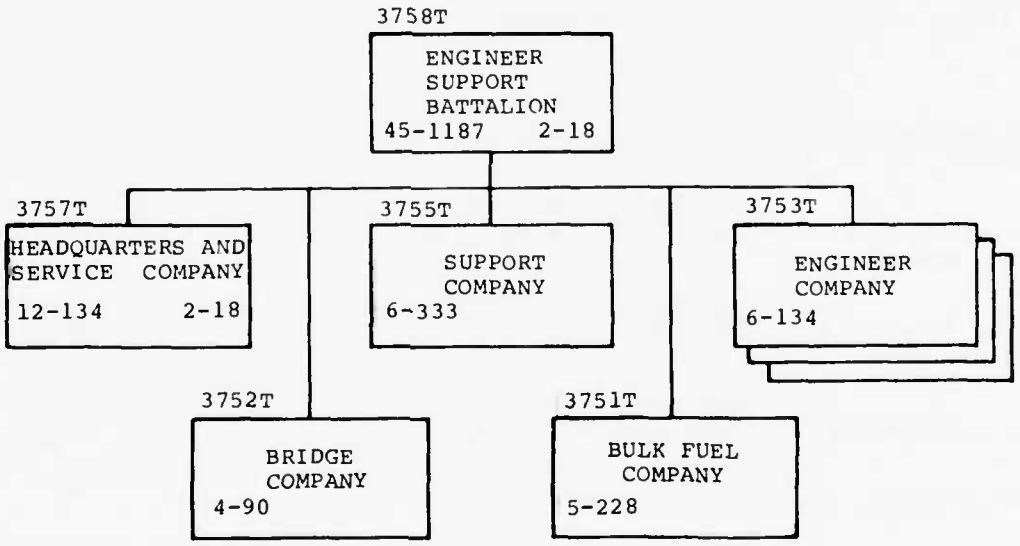


Figure 4-6.--Engineer Support Battalion

(a) Command and Control.--The battalion commanding officer exercises command and control of the battalion through the batalion staff and company commanders.

(b) Firepower.--Limited to light infantry weapons.

(c) Mobility.--Capable of providing sufficient ground vehicular transportation to move essential command, operational, and logistic elements of the battalion. The majority of the equipment within the battalion is not helicopter transportable. Additional support is provided by the motor transport battalion, FSSG.

(3) Concept of Employment.--The engineer support battalion provides general engineer support to the landing force. It gives depth to the engineer effort by furnishing assistance to the combat engineer battalion of the division and the engineer squadron (Marine wing support group (MWSG)), and assuming responsibility for engineer support to elements to the rear of the division. It may also furnish assistance to or receive assistance from Navy construction units supporting the landing force. Although engineer companies with appropriate reinforcement from other elements of the battalion and Navy construction units can provide deliberate engineer support to MAGTF's of less than MAF size, the battalion is most effectively employed when operating as a unit under centralized control.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance

1 Organic.--The battalion provides organizational (first and second echelon) maintenance on all material authorized the battalion.

2 Support.--Intermediate (third and fourth echelon) maintenance of the battalion's equipment is provided by maintenance battalion, FSSG.

(b) Communications.--Support is provided by the communications platoon of headquarters and service company, engineer support battalion, FSSG.

(c) Supply.--Support is provided by headquarters and service company, engineer support battalion, FSSG.

(d) Medical.--Support is provided by headquarters and service company, engineer support battalion, FSSG.

(e) Transportation.--The battalion has organic motor transport incident to its stated mission. Augmentation is provided by the motor transport battalion, FSSG.

(f) Food Service.--Support is provided by headquarters and service company, engineer support battalion, FSSG through consolidated battalion dining facilities.

(6) Headquarters and Service Company

(a) Mission, Tasks, and Functions.--To administer, direct, and coordinate the operations of the battalion to include the provision of communications, supply, medical, and messing support for the battalion.

(b) Concept of Organization.--The company is organized to provide command and control of the companies organic to the battalion. It is organized into a battalion headquarters containing a headquarters section, S-1 section, S-2/S-3 section, construction section with two construction teams each, and an S-4 section. It contains a communications platoon with a platoon headquarters, supply platoon, medical platoon, and chaplain section. It also contains a company headquarters with a headquarters section and a battalion mess section.

1 Command and Control.--The company commander performs the command and staff functions necessary for the operation of the company and support of the battalion.

2 Firepower.--The company possesses light infantry weapons.

3 Mobility.--Support is provided by support company, engineer support battalion, FSSG.

(c) Concept of Employment.--The company provides the necessary command and control and support assets to provide for the efficient operation of the battalion. It provides those assets necessary to support balanced detachments operating in support of a MAF, lesser MAGTF's, or elements of the division or wing operating independently. The major items of equipment are shown below.

H&S COMPANY, ENGINEER SUPPORT BATTALION, FSSG

7	Control Radio Set, AN/GRA-6
3	Distance Mesuring Equipment, MRA-301
1	Radiac Computer Indicator, CP95A/PD
4	Radio Set, Control Group, AN/GRA-39A
4	Radio Set, AN/GRC-160
9	Radio Set, Trk-Mtd, AN/MRC-83A
5	Radio Set, AN/MRC-109
4	Radio Set, AN/MRC-110
2	Radio Set, AN/PRC-47
1	Radio Set, AN/PRC-75
29	Radio Set, AN/PRC-77
1	Receiving Set Radio, AN/GRR-17
4	Switchboard, Telephone, Manual, SB-22/PT
1	Surveying Set, General Purpose
1	Truck, Ambulance, 1/4T, 4x4, M718A1
6	Machine Gun, 7.62mm, M60
4	Night Vision Sight, Individual Served Weapon, AN/PVS-4

(d) Administrative Capabilities.--None. Consolidated under the battalion administrative section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--None. Organizational (first and second echelon) maintenance support is provided by the support company, engineer support battalion, FSSG.

b Support.--None.

2 Medical.--The company provides medical support to the battalion.

3 Transportation.--Motor transport support is provided by support company, engineer support battalion, FSSG.

4 Supply.--The company operates the organic supply account for the battalion.

5 Communications.--The company provides communication support to the battalion.

6 Food Service.--The company provides food service support for the battalion.

(7) Support Company

(a) Mission, Tasks, and Functions.--To provide motor transport and engineer equipment maintenance support, fumigation, bath and laundry services, water supply, utilities, and motor transport support to the engineer battalion and to augment the engineer companies of the battalion with heavy engineer equipment and operators.

(b) Concept of Organization.--The support company is organized to provide command and control over the platoons organic to the company. The company consists of a company headquarters, maintenance platoon with an engineer equipment maintenance section and two motor transport maintenance sections; motor transport platoon with an operations section; utilities platoon; water supply and hygiene platoon with a water supply section and hygiene section; and an engineer equipment platoon.

1 Command and Control.--The company commander executes the normal command and staff functions.

2 Firepower.--The company posesses light infantry weapons.

3 Mobility.--Provided by the motor transport platoon.

(c) Concept of Employment.--The support company performs maintenance functions for the battalion. It augments the other companies of the battalion with maintenance personnel, engineer equipment and personnel, and motor transport as required. It may also be required to reinforce the engineer companies with water supply, electrical utilities equipment, and operational personnel. The water supply and electrical utilities capabilities are applicable to the general support role of the engineer battalion. The major items of equipment are shown on the following page.

SUPPORT COMPANY, ENGINEER SUPPORT BATTALION, FSSG

2	Backhoe, Crane-Shovel, Bay City, MOD37
9	Bath Unit, Trlr-Mtd, EC-88-64
18	Laundry Unit, Trlr-Mtd, M532
4	Crane, RT, Rough Terrain, Hydraulic, 30T, DROH 2500
2	Crane-Shovel, Crawler-Mtd, Bay City, MOD 37-M66
3	Crane, Truck-Mtd, 15T, M315
4	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M121A1
16	Frequency Converter, Solid State, 10kW, 600-400Hz
7	Frequency Converter, Motor Driven, 100kW, 60-400Hz, PPU-742
26	Frequency Converter, Solid State, 4kW, 60-400Hz, CV-3231/4
51	Generator Set, 3kW, 60Hz, Skd-Mtd, MEP-016A
49	Generator Set, 3kW, 400Hz, Skd-Mtd, MEP-21A
26	Generator Set, 10kW, 60Hz, Skd-Mtd, MEP-003A
17	Generator Set, 10kW, 400Hz, Skd-Mtd, MEP-112A
56	Generator Set, 30kW, 60Hz, Skd-Mtd, MEP-005A
6	Generator Set, 30kW, 400Hz, Skd-Mtd, MEP-114A
14	Generator Set, 60kW, 400Hz, Skd-Mtd, MEP-115A
26	Generator Set, 60kW, 60Hz, Skd-Mtd, MEP-006A
14	Generator Set, 100kW, 60Hz, Skd-Mtd,MEP-007A
10	Generator Set, 200kW, 60Hz, Tactical Utility, MEP-009A
5	Grader, Road, Motorized, 5R3999
3	Mixer, Concrete, Kwik Mix, 16S-2A
2	Roller, Tandem, 5 to 8T DED, KT-15A-5M 65
2	Roller, Pneumatic Tired, R-135
2	Roller, Towed, Grid, RG-215
1	Roller, Towed, Sheepfoot, MDG-96
1	Sawmill, Circular, Elect Motor Driven, Trlr-Mtd, P0573-3
5	Scraper, Earthmoving, Towed, Hyd Oper, 8 cu yd, MC80
2	Scraper, Unit, 16 cu yd, Hyd Oper. MRS 105SM71
1	Shovel Front, Crane Shovel, Bay City, MOD 37
42	Tank, Fabric, Collapsible, 3,000 Gal.
20	Tractor, Medium, Full Tracked, 82-30FA-M3
6	Tractor, Full Tracked, W/Multi-Purpose Bucket Case, MC-1150
2	Tractor, RT, Articulated Steering, 72-31MP
5	Tractor, Wheeled, Industrial, MRS-100-M69
1	Tractor, RT, Wheeled, Industrial, MCS80B
2	Welding Machine, ARC, Trlr-Mtd, LM62A
1	Welding Machine, Hard Surfacing, HSM-62
45	Chassis, Trailer, General Purpose, 3-1/2T, 2-Whl, M353
1	Semi-Trailer, Low Bed, 25T, 4-Whl, M172A1
5	Semi-Trailer, Low Bed, 40T, M870
12	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
15	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
30	Trailer, Flatbed, 3/4T, 2-Whl, M762
5	Trailer, Tank, Water, 400 Gal, M149A1
4	Truck, Cargo, 1-1/4T, 4x4, M880
4	Truck, Cargo, 1-1/4T, 6x6, w/Winch, M561
6	Truck, Cargo, 5T, 6x6, M54A2C
36	Truck, Dump, 5T, 6x6, M51A2
2	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, M49A2C
6	Truck, Tractor, 10T, 6x6, M123A1C
12	Truck, Utility, 1/4T, 4x4, M151A2
2	Truck, Wrecker, 5T, 6x6, M543A2
4	Machine Gun, Cal.50, Browning, HB Flexible, M2
4	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of first and second echelon maintenance on all organic equipment.

b Support.--Capable of providing second echelon maintenance on all equipment held by the engineer support battalion.

2 Supply.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

3 Medical.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

4 Communications.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

5 Transportation.--The company provides motor transport support to all elements of the engineer support battalion.

6 Food Service.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

(8) Engineer Company

(a) Mission, Tasks, and Functions

1 To provide engineer support of a deliberate nature to elements of the MAF, lesser MAGTF's, or elements of the division or wing operating independently.

2 Tasks

a Repair, stablize, and reinforce taxiways and runways within organizational capability.

b Prepare site; install and maintain expeditionary airfields, runways, and taxiways.

c Provide repair and maintenance of airfield runways and taxiways beyond the capability of the wing engineer squadron.

(b) Concept of Organization.--The engineer company is organized to provide command and control over the platoons organic to the company. The company consists of a company headquarters; equipment platoon containing a platoon headquarters, engineer equipment section, motor transport section, constuction shop section; two engineer platoons, each containing a platoon headquarters and three engineer squads.

1 Command and Control.--The company commander executes the normal command and staff functions.

2 Firepower.--The company possesses light infantry weapons.

3 Mobility.--The company requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons, sections, and/or squads.

(c) Concept of Employment.--The engineer company normally operates under the centralized control of the engineer battalion on general support tasks of the landing force. It may be reinforced with the necessary equipment and personnel from the headquarters and service company, support company, bridge company, bulk fuel company, or elements of Navy construction units and may then be attached to or placed in direct support of the division, wing, or MAGTF's of less than MAF size. The major items of equipment are shown below.

ENGINEER COMPANY, ENGINEER SUPPORT BATTALION, FSSG

1	Radio Set, AN/GRC-160
1	Crane, Truck-Mtd, 15T, M315T
9	Detecting Set, Mine Portable, Non-Metallic, PRS-7
9	Detecting Set, Mine Portable, Metallic, PSS-11
1	Grader, Road Motorized, 5R3999
18	Kit, Assault, Trackway
1	Roller, Towed, Grid RG-215
1	Roller, Towed, Sheepfoot, MDG-96
1	Scraper, Earthmoving, Towed, Hyd. Oper., 8 cu yd, MC80
1	Scraper, Unit, 16 cu yd, Hyd Oper. MRS 105SM71
4	Tractor, Medium, Full Tracked, 82-30FA-M3
1	Tractor, RT, Articulated Steer, 72-31MP
1	Tractor, Wheeled, Industrial, MRS-100-M69
1	Tractor, TR, Wheeled, Industrial, MC580B
1	Tractor, Rubber-Tired, MRSI-100
1	Welding Machine, ARC, Trlr-Mtd, LM62A
1	Semi-Trailer, Low Bed, 25T, 4-Whl, M172A1
1	Semi-Trailer, Lowbed, 40T, M870
1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
4	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
1	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
4	Truck, Cargo, 1-1/4T, 6x6, w/Winch, M561
2	Truck, Cargo, 5T, 6x6, M54A2C
12	Truck, Dump, 5T, 6x6, w/o Winch, W/PTO, M51A2
2	Truck, Tractor, 10T, 6x6, M123A1C
4	Truck, Utility, 1/4T, 4x4, M151A2
10	Demolition Equip, Engineer Squad
2	Machine Gun, Cal. 50, Browning, HB Flexible, M2
6	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of first echelon maintenance on all organic equipment. Organizational second echelon maintenance on all equipment is provided by support company, engineer support battalion, FSSG.

b Support.--None.

2 Supply.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

3 Medical.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

4 Communications.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

5 Transportation.--Motor transport support is provided by support company, engineer support battalion, FSSG.

6 Food Service.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

(9) Bridge Company

(a) Mission.--To maintain, and have readily available, fixed panel bridge equipage and floating bridge equipage necessary to support the heaviest loads of the Fleet Marine Force; to provide technical supervision for the construction of fixed panel bridge equipage.

(b) Concept of Organization.--The bridge company is organized to provide command and control over the platoons organic to the company. The company consists of a company headquarters, headquarters section, and three bridge platoons, each containing a platoon headquarters and two bridge sections.

1 Command and Control.--The company commander executes the normal command and staff functions.

2 Firepower.--Light automatic weapons are organic for self-defense purposes. The company is capable of providing local security and assisting in the defense of its installations against infiltration.

3 Mobility.--The company possesses motor transport trailer capability to move approximately one-half of its bridging. To move the rest of the bridging and to tow the trailers, the company requires motor transport support.

(c) Concept of Employment.--The bridge company, platoons, or sections normally operate in support of the MAF, MAGTF's of less than MAF size, or elements of the division or wing operating independently. Functions of the company include maintenance of bridging equipment, provision of bridging equipment, and technical assistance/supervision for erection of bridges by supported units. The major items of equipment are shown on the following page.

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of first echelon maintenance on all organic equipment. Capable of first and second echelon maintenance on all bridge peculiar equipment.

b Support.--None.

2 Supply.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

BRIDGE COMPANY, ENGINEER SUPPORT BATTALION, FSSG

1	Radio Set, Control Group, AN/GRA-39B
1	Receiving Set, Radio, AN/GRR-1
3	Boat, Bridge Erection, HP-127C
3	Bridge, Fixed-Floating, 60T, M4T6
3	Bridge, Fixed-Highway Type, 60T
6	Bridge, Floating, Foot
3	Detecting Set, Mine Portable, Non-Metallic, PRS-7
3	Detecting Set, Mine Portable, Metallic, PSS-11
12	Outboard Motor, Gasoline, 35HP, Merc-350ML-5
1	Welding Machine, ARC, Trlr-Mtd, LM62A
96	Semi-Trailer, Stake, 6T, 2-Whl, M118A1
1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
6	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
1	Trailer, Tank, Water, 400 Gal., M149A1
3	Truck, Cargo, 1-1/4T, 4x4, M880
6	Truck, Cargo, 5T, 6x6, M54A2C
1	Truck, Utility, 1/4T, 4x4, M151A2
6	Demolition Equip, Engineer Squad
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
8	Machine Gun, 7.62mm, M60

3 Medical.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

4 Communications.--None organic. Support is provided by the communications company, headquarters and service battalion, FSSG.

5 Transportation.--Only light vehicles are organic to the company. Augmentation is required to transport bridging material to the job site. Support is provided by motor transport battalion, FSSG.

6 Food Service.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

(10) Bulk Fuel Company

(a) Mission.--To perform all functions incident to the receipt, storage, and distribution of bulk class III and III(A) to elements of the MAF to include distribution to, but not within, air bases during an amphibious assault and subsequent operations ashore. To assure that class III(A) products distributed to supported air elements are of the required type, quality, and purity. To furnish detachments for reinforcing divisions and wings as may be required and to support MAGTF's of less than MAF size.

(b) Concept of Organization.--The bulk fuel company is organized to provide command and control over the platoons organic to the company. The company consists of a company headquarters, headquarters section, engineer equipment section, three bulk fuel platoons, each containing a platoon headquarters, and two amphibious assault bulk fuel system sections.

1 Command and Control.--The company commander executes the normal command and staff functions.

2 Firepower.--Capability is limited to light infantry weapons. Capable of defense against guerilla type units, but must be reinforced to protect fuel hose laid overland.

3 Mobility.--The company requires heavy motor transport support from the motor transport battalion, FSSG to displace its various platoons and/or sections.

(c) Concept of Employment.--The bulk fuel company is organized to centralize and provide all of the bulk fuel support capability of the FSSG. It has the capability of providing elements to operate (light) amphibious assault bulk fuel systems in support of a MAF, or of MAGTF's less than MAF size. Capable of delivering bulk fuel by hose for a distance of about 3-1/2 miles and, with tanker truck augmentation to a distance of 20-25 miles. The major items of equipment are shown below.

BULK FUEL COMPANY, ENGINEER SUPPORT BATTALION, FSSG

4	Crane, Wheel-Mtd, SP, 3T, M71
56	Drum, Fabric, Collapsible, Liquid Fuel, 500 Gal
6	Fuel Sys. Amphib Assault, 600,000 Gal., M69HC
32	Pump Assembly, Expedient Refueler, Fuel Dispensing, M81 TDH
4	Tractor, RT, Articulated Steer, Terex, 72d-31MP
5	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
4	Trailer, Cargo, 3/4T, 2-Whl, M101A1
3	Trailer, Tank, Water, 400 Gal, M149A1
4	Truck, Cargo, 1-1/4T, 4x4, M880
8	Truck, Firefighting, 1/4T, 4x4, MC1051
5	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
4	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of first echelon maintenance on all organic equipment. Capable of first and second echelon maintenance on all bulk fuel systems peculiar equipment. Organizational (second echelon) on all other authorized equipment is provided through the support company, engineer support battalion, FSSG.

b Support.--None.

2 Supply.--None organic. Internal support is provided

by headquarters and service company, engineer support battalion, FSSG. External support capability is limited to the provision of class III and III(A) to the MAF or MAGTF's less than MAF size.

3 Medical.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

4 Communications.--None organic. Support is provided by the communications company, headquarters and service battalion, FSSG.

5 Transportation.--Only light vehicles and firefighting vehicles are organic to the company. Requires motor transport support from motor transport battalion, including 5,000-gallon petroleum tank trucks, to perform its primary mission.

6 Food Service.--None organic. Support is provided by headquarters and service company, engineer support battalion, FSSG.

e. Motor Transport Battalion

(1) Mission, Tasks, and Functions

(a) Mission.--To provide general or direct medium and heavy motor transport support to the major elements of the MAF in the amphibious assault and subsequent operations ashore.

(b) Tasks

1 To provide heavy motor transport support for both bulk dry cargo and class III and IIIA (bulk) to tactical or service elements.

2 To provide adverse terrain transportation support as required.

3 To provide refrigerated van storage capability for class I perishables.

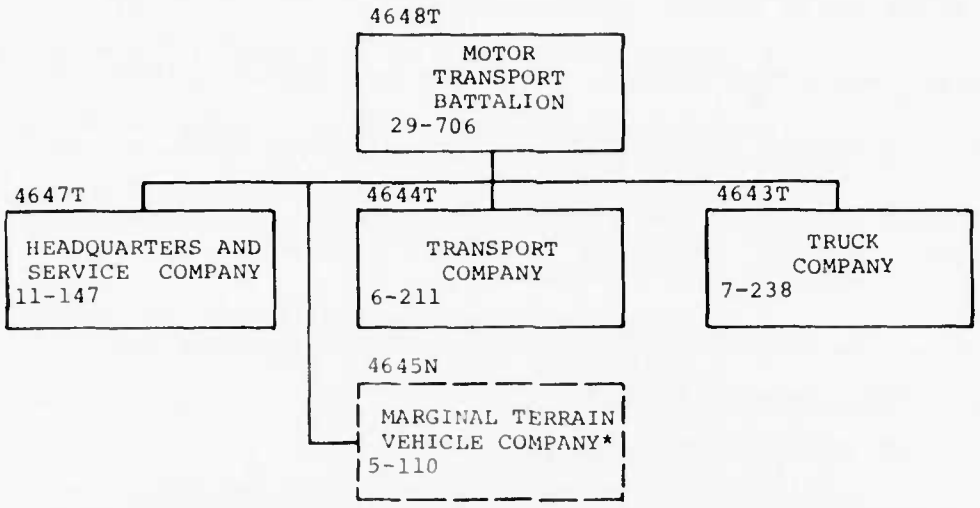
4 To provide heavy equipment lift capability to tactical or service elements.

(2) Concept of Organization.--The battalion is structured to provide command and control over subordinate organic units. The battalion consists of a headquarters and service company, transport company, truck company, and (when activated by CMC) a marginal terrain vehicle company. (See Figure 4-7.)

(a) Command and Control.--The battalion commanding officer exercises command and control of the battalion through the battalion staff and the company commanders.

(b) Firepower.--Organic firepower capability is limited to individual weapons for personal security. The battalion is capable of providing local security and assisting in the defense of its installations against infiltrations.

(c) Mobility.--Possesses organic capability to accomplish displacement.



*Cadred in all FSSG's.

Figure 4-7.--Motor Transport Battalion

(d) Communications.--The battalion is capable of providing internal mission radio communications support for assigned units. Other support is provided by communications company, headquarters and service battalion, FSSG.

(e) Intelligence.--Requires support of external intelligence agencies for transportation intelligence information.

(3) Concept of Employment.--The battalion is equipped and organized to provide a pool of tactical cargo type vehicles and marginal terrain vehicles for logistic support. The transport, truck, and marginal terrain vehicle companies, or elements thereof, are structured so they may be attached to or placed in direct support of the major tactical and service organizations of the MAF and MAGTF's of less than MAF size. The battalion is equipped and structured to provide sustained operations on a 24-hour per day basis in the execution of its assigned mission.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance

1 Organic.--Capable of organizational (first and second echelon) maintenance on all assigned motor transport, engineer, and ordnance equipment authorized. Intermediate (third and fourth echelon)

maintenance is provided by maintenance battalion, FSSG.

2 Support.--None.

(b) Supply.--Capable of providing organic supply support functions to the battalion.

(c) Medical.--None organic. Medical support is provided by the group medical section, headquarters and service battalion, FSSG.

(d) Transportation.--Capable of providing organic transportation support to the battalion to accomplish its stated mission.

(e) Food Service.--None organic. Support is provided by headquarters and service battalion, FSSG.

(6) Headquarters and Service Company

(a) Mission.--To provide the command and coordination for operations of the motor transport battalion in its logistic support capacity during the amphibious assault and subsequent operations ashore.

(b) Concept of Organization.--The company is organized into a battalion headquarters which contains an S-1/adjutant, S-2/S-3, S-4/supply section, and radio section; maintenance platoon containing a repair section and marginal terrain vehicle maintenance section (activated only when directed by CMC); and company headquarters.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Possesses sufficient ground vehicular capacity to displace command, logistic, and operations personnel.

4 Communications.--Capable of providing internal mission radio communications support for the battalion. Other support is provided by communications company, headquarters and service battalion, FSSG.

(c) Concept of Employment.--The company provides necessary operational logistic support to the battalion to aid it in the accomplishment of its mission. The company provides support to the battalion whether it is employed in general support as a company or employed as detachments to provide support to battalion detachments. The company provides the battalion commander with the operational command and coordination necesary to accomplish his mission. The company is capable of continuous operations on 24-hour per day basis. The major items of equipment are shown on the following page.

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first and second echelon) maintenance on all battalion motor transport, ordnance, and engineer equipment authorized. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

H&S COMPANY, MOTOR TRANSPORT BATTALION, FSSG

1	Communications Central, AN/TSC-15
1	Control Radio Set, AN/GRA-6
1	Radiac Computer Indicator, CP95A/PD
6	Radio Set, Control Group, AN/GRA-39A
10	Radio Set, AN/GRC-160
3	Radio Set, Trdk-Mtd, AN/MRC-83A
5	Radio Set, AN/MRC-110
1	Radio Set, AN/PRC-47
10	Radio Set, AN/PRC-77
1	Receiving Set Radio, AN/GRR-17
3	Switchboard, Telephone, Manual, SB-22/PT
8	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M121A1
1	Welding Machine, ARC, Trlr-Mtd, LM62A
2	Trailer, Tank, Water, 400 Gal, M149A1
4	Truck, Cargo, 1-1/4T, 4x4, M880
2	Truck, Cargo, 5T, 6x6, M54A2C
2	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, M49A2C
9	Truck, Tank, Water, 1000 GAl, 2-1/2T, 6x6, M50A2
9	Truck, Utility, 1/4T, 4x4, M151A2
9	Truck, Wrecker, 5T, 6x6, M543A2
6	Machine Gun, Cal.50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60
2	Night Vision Goggles, Individual, AN/PVS-2
4	Night Vision Sight, Individual Served Weapon, AN/PVS-4
4	Night Vision Sight, Crew Served Weapon, AN/TVS-5

2 Supply.--Capable of providing organic supply support to the battalion.

3 Medical.--None organic. Support is provided by the group medical section, headquarters and service battalion, FSSG.

4 Transportation.--The battalion possesses organic transportation support necessary to accomplish its stated mission.

5 Food Service.--None organic. Support is provided by headquarters and service battalion, FSSG.

(7) Transport Company

(a) Mission, Tasks, and Functions

1 Mission.--To provide general motor transport support, in augmentation and reinforcement of the organic land transport capability, of the major elements of a MAF in the amphibious assault and subsequent operations ashore.

2 Tasks

a To provide heavy motor transport support for both bulk dry cargo and class III and III(A) (bulk) to tactical or service units.

b To provide refrigerated van storage capability for class I perishables.

c To provide heavy equipment lift capability to tactical or service elements.

(b) Concept of Organization.--The company is organized into a company headquarters; three transport platoons, each containing four transport sections; heavy transport section; and fuel transport platoon containing four fuel transport sections.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistics support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Possesses organic capability to accomplish displacement.

4 Communications.--None organic. Internal mission radio communication support is provided by headquarters and service company, motor transport battalion, FSSG. Other support is provided by communications company, headquarters and service battalion, FSSG.

(c) Concept of Employment.--The transport company is equipped with 5-ton truck tractors, 10-ton truck tractors, 5,000 gallon semitrailer tank fuelers, semitrailer van refrigerators, 25-ton semitrailer lowbeds, and 12-ton semitrailers. It may be employed to transport cargo and supplies over extended distances for a sustained period of time in logistical support of elements of the MAF or MAGTF's of less than MAF size. It may be employed in general support as part of the force motor transport battalion, or attached to a task organization element providing heavy motor transport support. The company is capable of continuous operations on a 24-hour per day basis. The major items of equipment are shown on the following page.

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Organizational (second echelon) maintenance on assigned motor transport, engineer, and ordnance equipment is provided by headquarters and service company, motor transport battalion, FSSG. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

TRANSPORT COMPANY, MOTOR TRANSPORT BATTALION, FSSG

6	Air Conditioner, MC Std, Vertical, 60Hz, 36,000 BTU, A/E 32C-24
20	Semi-Trailer, Refueler, 5000 Gal, 4-Whl, M970
3	Semi-Trailer, Lowbed, 40T, M870
3	Semi-Trailer, Lowbed, 25T, 4-Whl, M172A1
120	Semi-Trailer, Stake, 12T, 4-Whl, M127A2C
7	Semi-Trailer, Van, Refrigerator, 7-1/2T, 2-Whl, EL49A4
3	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
3	Trailer, Tank, Water, 400 Gal, M149A1
4	Truck, Cargo, 1-1/4T, 4x4, M880
1	Truck, Cargo, 5T, 6x6, M54A2C
1	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, M49A2C
80	Truck, Tractor, 5T, 6x6, M52A2
6	Truck, Tractor, 10T, 6x6, M123A1C
4	Truck, Utility, 1/4T, 4x4, M151A2
6	Machine Gun, Cal.50, Browning, HB Flexible, M2
4	Machine Gun, 7.62mm, M60

2 Supply.--None organic. Support is provided by headquarters and service company, motor transport battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, headquarters and service battalion, FSSG.

4 Transportation.--The company has organic transportation capability necessary to provide required support and fulfill the primary mission of the company.

5 Food Service.--None organic. Support is provided by headquarters and service battalion, FSSG.

(8) Marginal Terrain Vehicle Company

(a) Mission.--To provide adverse terrain transportation support in augmentation and reinforcement of the organic land transport capability of the major elements of the MAF in the ashore phase of assault amphibious operations and other operations ashore, over marginal terrain or inland waters.

(b) Concept of Organization.--The company is organized into a company headquarters, two amphibious transport platoons consisting of three amphibious transport sections each, and an armored amphibious transport platoon consisting of two armored amphibious transport sections, and an amphibious transport section.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Possesses organic capability to accomplish displacement.

4 Communications.--None organic. Internal radio communication support is provided by headquarters and service company, motor transport battalion, FSSG. Other support is provided by communications

company, headquarters and service battalion, FSSG.

(c) Concept of Employment.--The marginal terrain vehicle company is equipped with cargo carriers, and may be employed to transport personnel, cargo, and supplies over marginal and/or adverse terrain during the ashore phase of assault amphibious operations. It is capable of providing mobility for logistic support during special operations where organic motor transport equipment is not environmentally adequate or suitable. The company may be employed in general support as part of the motor transport battalion or attached to the major ground elements of a MAF in direct support of tactical and service support organizations. The company is capable of continuous operations on a 24-hour per day basis. The major items of equipment are shown below.

MARGINAL TERRAIN COMPANY, MOTOR TRANSPORT BATTALION, FSSG

2	Radio Set, Control Group, AN/GRA-39A
1	Radio Set, AN/MRC-109
1	Radio Set, AN/PRC-47
5	Radio Set, AN/PRC-77
1	Switchboard, Telephone, SB-22/PT
35	Carrier, Cargo, Amphib, Ft., Unarmored, M116A1
10	Carrier, Cargo, Armor, Amphib, Full-Tracked, M733
1	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
4	Truck, Cargo, 5T, 6x6, M54A2C
1	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, M49A2C
2	Truck, Utility, 1/4T, 4x4, M151A2
26	Machine Gun, Cal.50, Browning, HB Flexible, M2
9	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Organizational (second echelon) maintenance on assigned motor transport, engineer, and ordnance equipment is provided by headquarters and service company, motor transport battalion, FSSG. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--None organic. Support is provided by headquarters and service company, motor transport battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, headquarters and service battalion, FSSG.

4 Transportation.--The company has organic transportation capability necessary to provide required support and fulfill the primary mission of the company.

5 Food Service.--None organic. Support is provided by headquarters and service battalion, FSSG.

(9) Truck Company

(a) Mission, Tasks and Functions.--To provide general support, medium motor transport capability, in support of the organic land transport capability of the major elements of the MAF, during the amphibious assault and subsequent operations ashore.

(b) Concept of Organization.--The company is organized into a company headquarters, and five truck platoons containing five truck sections each.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Mobility.--Possesses organic capability to accomplish displacement.

4 Communication.--None organic. Internal mission radio communication support is provided by headquarters and service company, motor transport battalion, FSSG. Other support is provided by communications company, headquarters and service battalion, FSSG.

(c) Concept of Employment.--The truck company is equipped with five ton tactical cargo type vehicles, which may be task organized and attached in direct support of a tactical or service organization of the MAF or MAGTF's less than MAF size. The company may be employed in general support as part of the motor transport battalion, or as part of a task organized element providing medium motor transport support. The company, or elements of the company, may be employed in general support of a logistic support area, in the amphibious assault, or in subsequent operations ashore. The company is capable of continuous operations on a 24-hour per day basis. The major items of equipment are shown below.

TRUCK COMPANY, MOTOR TRANSPORT BATTALION, FSSG

6	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
72	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
6	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
2	Truck, Cargo, 1-1/4T, 4x4, M880
151	Truck, Cargo, 5T, 6x6, M54A2C
1	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, M49A2C
8	Truck, Utility, 1/4T, 4x4, M151A2
33	Machine Gun, Cal.50, Browning, HB Flexible, M2
4	Machine Gun, 7.62mm, M60
8	Night Vision Sight, Crew Served Weapon, AN/TVS-5

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment. Organizational (second echelon) maintenance on assigned motor transport, engineer and ordnance equipment is provided by headquarters and service company, motor transport battalion, FSSG. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--None organic. Support is provided by headquarters and service company, motor transport battalion, FSSG.

3 Medical.--None organic. Support is provided by the group medical section, headquarters and service battalion, FSSG.

4 Transportation.--The company has organic transportation capability necessary to provide required support and fulfill the primary mission of the company.

5 Food Service.--None organic. Support is provided by headquarters and service battalion, FSSG.

f. Medical Battalion

(1) Mission, Tasks, and Functions

(a) Mission.--To provide for the collection, emergency treatment, temporary hospitalization, specialized surgery, and evacuation of casualties, and other medical support to the Marine amphibious force.

(b) Tasks

1 Coordinate and support the MAF medical requirements.

2 Plan, supervise, and coordinate preventive measures for the control of disease.

3 Assist in identification of remains.

(2) Concept of Organization.--The medical battalion consists of a headquarters and service company, three medical companies, and a hospital company. (See Figure 4-8.)

(a) Command and Control

1 Command and Staff.--Command and staff functions of the battalion are accomplished by the commander through his staff and company commanders.

2 Communications.--The battalion communication section provides radio support to the battalion. Other communication support is provided by communication company, headquarters and service battalion, FSSG.

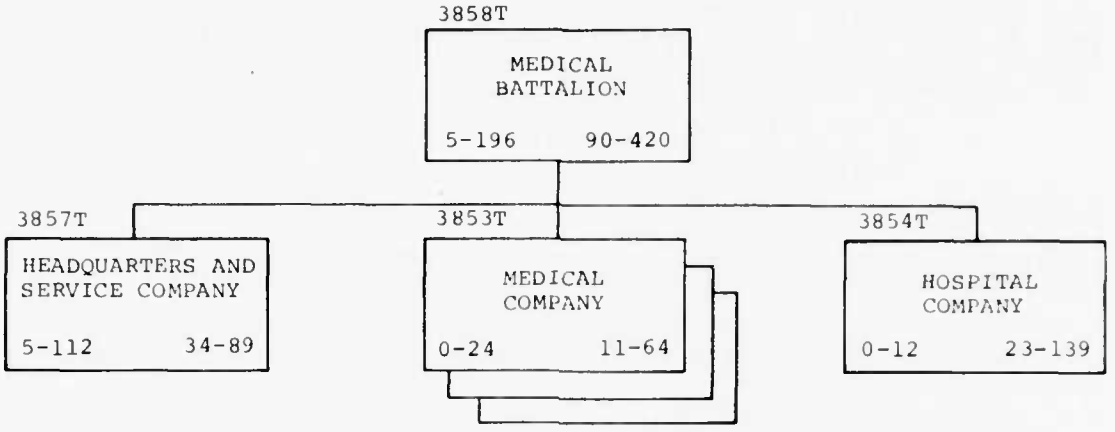


Figure 4-8.--Medical Battalion.

3 Intelligence.--Provided by the FSSG headquarters G-2. The battalion assists the FSSG by providing technical medical intelligence.

4 Firepower.--Limited to light infantry weapons.

(b) Mobility.--The battalion has sufficient motor transport capability to evacuate wounded from the units it supports and administrative vehicles to accomplish internal battalion support. Other ground transportation support is provided by motor transport battalion, FSSG. The majority of the battalion's authorized equipment is helicopter transportable.

(3) Concept of Employment.--The battalion provides medical support to the MAF. Elements of the battalion provide similar support to MAGTF's less than MAF size, or division/wing elements operating independently in widely separated areas. Task organized elements from the medical companies, appropriately reinforced by the headquarters and service company, will be tailored to the mission requirements of the MAGTF's. Medical companies are capable of operating individually or as a part of the battalion. They may be located in proximity to combat units or in designated logistic support areas. The hospital company may or may not be located in the amphibious objective area (AOA). The hospital company is deployed in support of MAF size operations. It should be located adjacent to a fixed-wing aircraft installation and provide necessary extended medical care to the wounded prior to their evacuation from the AOA.

(4) Administrative Capabilities.--Capable of self-administration.

(5) Logistical Capabilities

(a) Maintenance

1 Organic.--Organizational (first and second echelon) maintenance of all authorized medical battalion equipment.

2 Support.--None.

(b) Supply.--The service platoon of headquarters and service company provides supply support to the battalion.

(c) Medical.--Support is organic to the battalion.

(d) Transportation.--Sufficient capability for evacuation of wounded and internal transportation requirements. Other transportation support is provided by motor transport battalion, FSSG.

(e) Food Service.--Headquarters and service company, medical battalion, FSSG provides support to the battalion.

(6) Headquarters and Service Company

(a) Mission, Tasks, and Functions

1 Mission.--To command, administer, support, and coordinate subordinate elements of the battalion.

2 Tasks

a Provide medical specialist augmentation personnel to the subordinate elements of the battalion.

b Provide shock and surgical teams to augment the medical companies or beach evacuation/helicopter support team evacuation stations.

c Provide surgical support platoon reinforcements for the medical companies.

d Provide preventive medicine support to the MAF.

e Assist in the identification of remains.

(b) Concept of Organization.--The company is organized into a battalion headquarters section consisting of an administrative medical records section, logistic section, training/education section, medical specialists section, preventive medicine section, shock/surgical teams, medical support operations section, chaplin section; service platoon consisting of a supply section, medical supply section, maintenance service section, communications section, motor transport section and mess section; and company headquarters.

1 Command and Control

a Command and Staff.--The company commander performs the necessary functions for operation of the company.

b Communications.--Radio communications for the battalion are organic to the company. Additional communications support is provided by communications company, headquarters and service battalion, FSSG.

c Intelligence.--None organic.

d Firepower.--Limited to the light infantry weapons.

2 Mobility.--The majority of the company's authorized equipment is helicopter transportable.

(c) Concept of Employment.--The company will provide the required command, administration, communication, and logistic support to elements of the medical battalion, FSSG as needed. The company will provide necessary personnel augmentation and medical specialists support to the medical companies and the hospital company from its organic section/platoons. For MAGTF's of less than MAF size, task organized detachments will be assigned to the deploying force. The major items of equipment are shown below.

H&S COMPANY, MEDICAL BATTALION, FSSG

9	Control Radio Set, AN/GRA-6
1	Radiac Computer Indicator, CP95A/PD
1	Radiac Set, AN/PDR-56
4	Radio Set, Control Group, AN/GRA-39B
32	Radio Set, AN/GRC-160
2	Radio Set, Trk-Mtd, AN/MRC-83A
8	Radio Set, AN/PRC-47
7	Radio Set, AN/PRC-77
2	Receiving Set, Radio AN/GRR-17
13	Switchboard, Telephone, Manual, SB-22/PT
1	Bath Unit, Trlr-Mtd, EC-88-64
1	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M121A1
6	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
5	Trailer, Cargo, 1-1/2T, 2-Whl, M105A2
1	Trailer, Tank, Water, 400 Gal, M149A1
3	Truck, Cargo, 1-1/4T, 4x4, M880
10	Truck, Cargo, Dropside, 2-1/2T, 6x6, M35A2C
10	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60
2	Night Vision Goggles, Individual, AN/PVS-5
4	Night Vision Sight, Individual Served Weapons, AN/PVS-4

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logistical Capabilities

1 Maintenance

a Organic.--The service platoon provides organizational (first and second echelon) maintenance on all equipment organic to the company.

b Support.--Provides organizational (first and second echelon) maintenance on all organic equipment for the companies of the battalion.

2 Supply.--The company operates the supply account for the medical battalion, FSSG.

3 Medical.--Organic to the company.

4 Transportation.--Capable of providing ground transportation support for the evacuation of the wounded from the units the battalion supports and administrative vehicular support for the medical battalion. Other ground transportation is provided by motor transport battalion, FSSG.

5 Food Service.--Organic to the company. Provides support to the medical companies, medical battalion, FSSG.

(7) Medical Company

(a) Mission, Tasks, and Functions

1 Mission.--To provide for lifesaving surgery, temporary hospitalization, and collecting and evacuation of casualties for supported elements of the Marine amphibious force.

2 Tasks

a Provide for the collection of casualties from the next forward echelon in the casualty evacuation chain.

b Establish and operate a temporary surgical hospital facility in support of Marine Corps operations.

c Prepare patients and arrange for rearward evacuation of casualties.

(b) Concept of Organization.--The company is organized into a headquarters section, services section, surgical platoon, and two evacuation platoons.

1 Command and Control

a Command and Staff.--The company commander performs the necessary functions for the operation of the company.

b Communications.--None organic. Support provided by headquarters and service company, medical battalion, FSSG.

c Intelligence.--None organic.

d Firepower.--Limited to light infantry weapons.

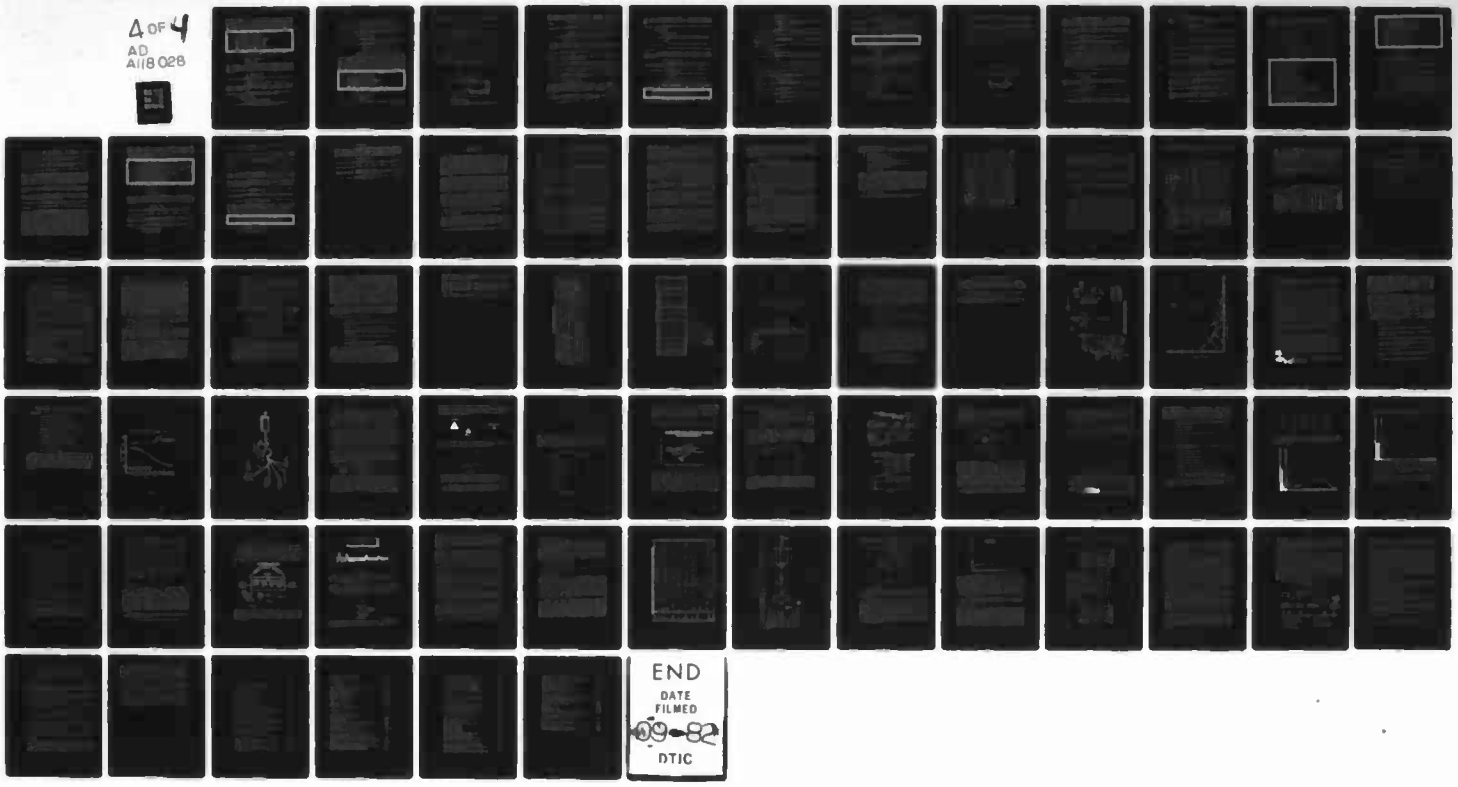
2 Mobility.--The company is helicopter transportable.

(c) Concept of Employment.--The medical company contains one surgical platoon and two evacuation platoons. The surgical platoon is capable of providing two surgical operating rooms and 60 hospital beds in support of a MAB-sized MACTF. With augmentation from the headquarters and service company surgical support platoons, the capacity can be expanded by 1-surgery/20-bed increments. With augmentation of shock/surgical teams,

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the medical company augmentation block, and table of equipment (T/E) equipment, the company can extend its capability by an additional two surgeries and forty hospital beds. The evacuation platoon provides a means for casualty evacuation from the next forward echelon. Further, when reinforced with a shock/surgical team from the headquarters and service company, the platoon has the capability of establishing and operating beach and/or helicopter support team evacuation stations. The major items of equipment are shown below.

MEDICAL COMPANY, MEDICAL BATTALION, FSSG

1	Laundry Unit, Trlr-Mtd, M532
2	Tank, Fabric, Collapsible, 3000 Gal
1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
2	Trailer, Tank, Water, 400 Gal, M149A1
3	Truck, Ambulance, 1/4T, 4x4, M718A1
3	Truck, Ambulance, 1-1/4T, 4x4, M886
3	Truck, Ambulance, 1-1/4T, 6x6, M792
1	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance of all authorized equipment. Organizatinal (second echelon) maintenance support is provided by H&S company, medical battalion, FSSG. Intermediate (third and fourth echelon) maintenance support on medical equipment is provided by medical logistics company, supply battalion, FSSG.

b Support.--None.

2 Supply.--None organic. Provided by headquarters and service company, medical battalion, FSSG.

3 Medical.--Support is organic to the company.

4 Transportation.--Sufficient capability exists to assist in ground evacuation of the wounded. Motor transport support is provided by headquarters and service company, medical battalion, or motor transport battalion, FSSG.

5 Food Service.--None organic. Support is provided by headquarters and service company, medical battalion, FSSG.

(8) Hospital Company

(a) Mission, Tasks, and Functions

1 Mission.--To provide resuscitation and primary definitive surgical facilities for the Marine amphibious force.

2 Tasks

a Establish and operate a 200-bed hospital for the relatively minor wounded, sick, and injured personnel of the MAF.

b Stabilize the condition of patients requiring prolonged hospitalization and arrange for their evacuation rearward.

(b) Concept of Organization.--The company is organized into a headquarters platoon, hospital platoon, and service platoon.

1 Command and Control

a Command and Staff.--The company commander performs the necessary functions to accomplish the company mission.

b Communications.--None organic. Support provided by headquarters and service company, medical battalion, FSSG.

c Intelligence.--None organic.

d Firepower.--Limited to light infantry weapons.

2 Mobility.--The company is helicopter transportable.

(c) Concept of Employment.--The company provides facilities for the establishment of six surgical operating rooms and a 200-bed hospital. The hospital is equipped to provide highly specialized surgical facitities including neurosurgical, thoracic, opthalmic, and maxillio-facial surgery. At the hospital company, an appropriately staffed medical regulating office is established to provide for coordination of casualty evacuation within and from the area of operations. Provisional medical detachments, or surgical teams, may be tasked organized to reinforce/augment other medical units of the battalion. The major items of equipment are shown below.

HOSPITAL COMPANY, MEDICAL BATTALION, FSSG

1	Bath Unit, Trlr Mtd, EC-88-64
1	Laundry Unit, Trlr Mtd, M532
2	Tank, Fabric, Collapsible, 3000 Gal
1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
4	Trailer, Tank, Water, 400 Gal, M149A1
6	Truck, Ambulance, 1-1/4T, 4x4, M886
2	Truck, Utility, 1/4T, 4x4, M151A2
2	Machine Gun, Cal.50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--Capable of self-administration.

(e) Logisitical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on organic equipment. Organizational (second echelon)

maintenance support on organic equipment is provided by H&S company, medical battalion, FSSG. Intermediate (third and fourth echelon) maintenance equipment is provided by medical logistics company, supply battalion, FSSG.

b Support.--None.

2 Supply.--Capable of performing supply and fiscal functions required for company operations.

3 Medical.--Organic to the company.

4 Transportation.--The company possesses sufficient assets for internal operations. Other support is provided by headquarters and service company, medical battalion, FSSG.

5 Food Service.--Capable of operating dining facilities in support of the company and the normal patient load.

g. Dental Battalion

(1) Mission and Tasks

(a) Mission.--To provide dental service support for a Marine amphibious force and to provide specialized care of casualties with maxillo-facial injuries.

(b) Tasks.--To coordinate and support MAF dental service support requirements.

(2) Concept of Organization.--The dental battalion consists of a headquarters and service company and three dental companies. (See Figure 4-9.)

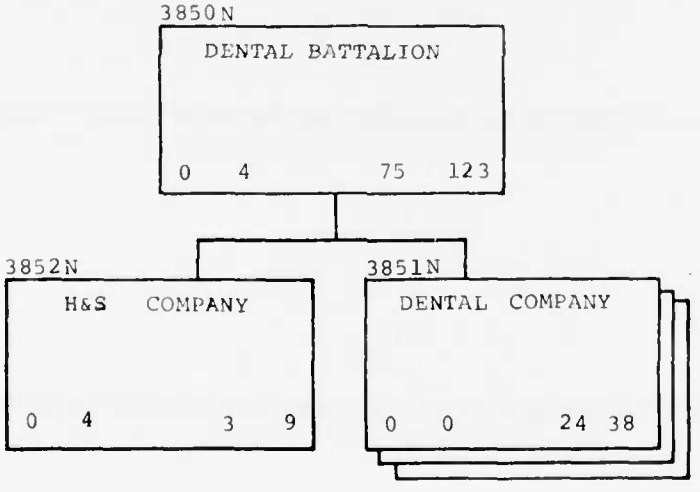


Figure 4-9.--Dental Battalion

(a) Command and Control

1 Command and Staff.--Command and control is exercised by the commanding officer through subordinate company commanders. The com-

manding officer of the battalion also functions as the staff dental officer. During the commanding officer's absence, the commanding officer of a dental company will be designated as the acting battalion commander.

2 Communications.--None organic. External support required.

3 Intelligence.--Provided by the G-2 section of the FSSG. The battalion assists in the provision of technical intelligence as required.

4 Firepower.--Possesses only individual weapons.

(b) Mobility.--The battalion is vehicular transportable but contains no general purpose or special purpose transportation.

(3) Concept of Employment

(a) The battalion is structured to provide command, control and administrative support to the dental companies and is designed to attain maximum utilization of professional dental manpower while providing the most effective and timely dental service support in combat or other FMF operations.

(b) The administrative services are centralized in the headquarters and service company.

(c) Each dental company is designed to provide dental support to a major subordinate element of a MAF, i.e., one company in support of a division, wing, MAB, or FSSG.

(d) The organization and equipment are designed to permit a considerable degree of flexibility and mobility. Detachments of varying size may be formed for assignment to separate or independent units.

(e) Provisional detachments may be formed to provide necessary assistance in the care and evacuation of mass casualties and for the purpose of reinforcing a medical battalion.

(4) Administrative Capabilties.--Capable of dental administration and limited Navy personnel administration only. Other administrative support must be provided by appropriate units of the FSSG.

(5) Logistical Capabilities

(a) Maintenance.--The dental battalion is capable of maintenance and repair of dental equipment. The medical logistics company of the supply battalion, FSSG services the dental equipment while maintaining the authorized dental allowance lists and provides assistance to the dental battalion as required. The battalion commander is responsible to ensure that the authorized dental allowance lists are in a deployable status at all times.

(b) Supply.--Capable of performing those supply functions necessary for battalion operations. Other supply support including class VIII management is provided by the supply battalion, FSSG.

(c) Medical.--Support is required from the medical resources of the FSSG.

(d) Transportation.--None organic. All transportation support in garrison wil be provided by the headquarters and service battalion, FSSG. When deployed, transportation will be furnished by the supported unit.

(e) Food Service.--None organic. Support is provided by the FSSG or supported unit.

(6) H&S Company

(a) Mission and Tasks

1 Mission.--Responsible for the coordination of administrative and logistical support for all elements of the dental battalion.

2 Tasks

a To provide personnel administrative support to the dental battalion.

b To provide support to all elements of the dental battalion.

(b) Concept of Organization.--The headquarters and service company is organized into battalion headquarters section and a company headquarters designed to provide Navy personnel administrative and logistical support.

1 Command and Control

a Command and Staff.--The commanding officer performs the command and staff functions necessary for the operation of the headquarters and service company.

b Communications.--None organic. Support is provided by the FSSG or the supported unit.

c Intelligence.--None organic. Support is provided by the FSSG or the supported unit.

d Firepower.--Possesses only individual weapons.

2 Mobility.--The unit is helicopter transportable.

(c) Concept of Employment.--The company can provide detachments to render the necessary administrative support of various elements of the dental battalion. The major items of equipment are shown below.

HEADQUARTERS & SERVICE COMPANY, DENTAL BATTALION, FSSG

1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
1	Truck, Utility, 1/4T, 4x4, M151A2

(d) Administrative Capabilities.--Capable of dental and Navy personnel administration. Other administrative support will be provided by the FSSG or the supported unit.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all organizational equipment.

b Support.--None.

2 Supply.--Capable of performing the supply and fiscal functions required in support of the dental battalion.

3 Medical.--None organic. Support is provided by the FSSG or supported unit.

4 Transportation.--Limited to light administrative vehicles. Additional motor transport support is provided by the FSSG or supported unit.

5 Food Service.--None organic. Support is provided by FSSG or the supported unit.

(7) Dental Company

(a) Mission, Tasks, and Functions

1 Mission.--To maintain the dental health of the force and to provide specialized care of casualties with maxillo-facial injuries.

2 Tasks

a Provide operative dental treatment as required.

b Provide maxillo-facial and surgical treatment as may be required.

c Provide limited prosthetic treatment until definitive treatment can be obtained.

(b) Concept of Organization.--The company is organized into a headquarters and service section and a clinic section.

1 Command and Control

a Command and Staff.--The company commander performs command and staff functions necessary for the operation of the company.

b Communications.--None organic. Support is provided by the FSSG or supported unit.

c Intelligence.--None organic. Support is provided by the FSSG of supported unit.

d Firepower.--Possesses only light infantry type weapons.

2 Mobility.--The unit is helicopter transportable.

(c) Concept of Employment

1 The company is designed to attain maximum utilization of professional dental manpower while providing the most effective and timely dental support to FMF operations in combat and in garrison.

2 The company can provide detachments to render necessary assistance in the care and evacuation of mass casualties, reinforce another dental company, a medical company, or a hospital company, in support of offensive operations of infantry units or elements of the MAF.

3 The major items of equipment are shown below.

DENTAL COMPANY, DENTAL BATTALION, FSSG	
1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
1	Truck, Utility, 1/4T, 4x4, M151A2

(d) Administrative Capabilities.--None. Centralized under H&S company, dental battalion.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all organizational equipment. Capable of organizational (second echelon) maintenance on dental equipment. Intermediate (third and fourth echelon) maintenance on dental equipment is provided by medical logistics company, supply battalion, FSSG. Organizational (second echelon) maintenance on all other equipment is provided by the FSSG, or supported unit. Intermediate (third and fourth echelon) maintenance on all equipment other than dental is provided by maintenance battalion, FSSG.

b Support.--None.

2 Medical.--None organic. Provided by FSSG or supported unit.

3 Supply.--Capable of performing supply and fiscal functions required for company operations.

4 Transportation.--Limited to light administrative vehicles. Additional motor transport support provided by FSSG, or supported unit.

5 Food Service.--None organic. Provided by FSSG or supported unit.

h. Landing Support Battalion

(1) Mission and Tasks

(a) Mission.--To provide landing support to the landing force during the amphibious assault and subsequent operations ashore.

(b) Tasks

1 Provide the command structure and nucleus of control, administrative and operational personnel and equipment to support landing force operations (shore party, helicopter support teams, air delivery, departure airfield control groups, and arrival airfield control groups).

2 During the conduct of amphibious operations, provide the nucleus of personnel and equipment around which other elements of the MAGTF may be attached to task organize the landing force support party to provide combat service support to units up to MAF size.

3 Provide the nucleus of specialized material handling equipment and personnel expertise for management of break-bulk cargo/containers throughout during terminal operations at ports, railheads, airheads and beaches.

4 Provide air-delivery-support equipment and expertise during extended operations ashore.

5 Perform limited combat engineer task, commensurate with organizational capabilities.

6 Establish routes of egress from beach.

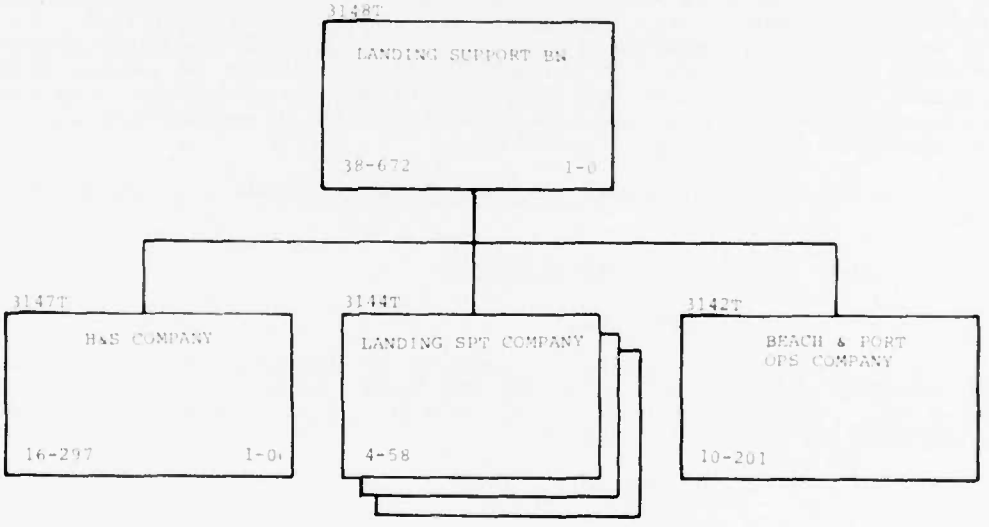


Figure 4-10.--Landing Support Battalion

(2) Concept of Organization.--The landing support battalion is organized to provide for three command and control agencies (the three landing support companies) for the operation of colored beaches or helicopter support areas during an amphibious assault. The battalion has the capability to consolidate the management of cargo throughout operations of the MAF under a single agency, the beach and port company.

(a) Command and Control.--The battalion commander directs and controls all matters pertaining to administration and logistics support, through the battalion headquarters, within the headquarters and service company.

(b) Firepower.--Organic firepower capability is limited to individual and automatic weapons for security.

(c) Communications.--The landing support battalion is organized to provide internal communications support between all levels of command for continual control of subordinate units as required.

(d) Mobility.--Organizational vehicles of the battalion provide limited mobility. The battalion is not considered a mobile unit due to the extent and complexity of resident equipment.

(3) Concept of Employment.--Elements of the landing support companies of the battalion are augmented with other elements of the FSSG, through task organization, to provide the initial combat service support for amphibious/helicopterborne operations requiring substantial logistics support in excess of the supported units' organic capability. The beach and port company is augmented with other elements of the FSSG through task organization to provide for management and operation of ports, railheads, airheads and other cargo terminal operations, as required. The battalion headquarters provides augmentation for the initial centralization of logistic management for MAF-size operations.

(4) Administrative Capabilities.--Capable of Self-administration.

(5) Logistical Capabilities

(a) Maintenance

1 Organic.--Capable of organizational (first and second echelon) maintenance on communications, motor transport and ordnance equipment. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

2 Support.--None.

(b) Supply.--Capable of providing organic supply support to elements of the battalion.

(c) Medical.--None organic. Support is provided by medical battalion, FSSG.

(d) Transportation.--The battalion has minimum essential motor transport for command and administrative purposes. Augmentation from motor transport battalion, FSSG or from the supported unit will be neces-

sary for displacement requirements.

(e) Food Service.--The headquarters and service company is capable of operating a battalion dining facility in garrison or in the field.

(6) Headquarters and Service Company

(a) Mission and Tasks

1 Mission.--To provide command, control, administrative, internal supply functions, equipment and maintenance support for the battalion.

2 Tasks

a To provide the nucleus of the command and control organization upon which landing force support party headquarters is formed.

b To provide communications, material handling equipment, motor transport and dining necessary for internal operation and support of task organized landing support parties.

c To provide heavy material handling equipment support to meet landing support battalion requirements and to augment the MAF, as required.

(b) Concept of Organization.--The headquaters and service company consists of a battalion headquarters, heavy equipment/motor transport platoon, communications platoon and a company headquarters. The heavy equipment/motor transport platoon is organized to provide engineer equipment support to the landing support companies and minimum essential transportation for the landing support companies.

1 Command and Control

a Command and Staff.--Responsibilities are discharged through a battalion headquarters consisting of a command section and a supply/dining section. The battalion headquarters is capable of providing both primary and alternate command groups.

b Communications.--The communications platoon is capable of providing internal communications support for the battalion and provides communications support for detachments of the landing support battalion in support of isolated units.

2 Firepower.--Firepower is limited to light infantry weapons. The company has a limited capability for providing local security and of assisting in defense against an organized attack.

3 Mobility.--Certain elements of the company are helicopter transportable. Organic ground mobility is limited. Motor transport support, as required, is furnished from the motor transport battalion, FSSG, or augmented, when required, from other units in the landing force.

(c) Concept of Employment.--The battalion headquarters

conducts operational planning and has the capability to exercise command and control of the landing force support party. Service and communication elements provide support for detachments of the battalion, as required. The company headquarters is employed to direct and control all internal administration, logistics and security matters of the company. The major items of equipment are shown below.

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance.--Capable of performing organizational maintenance (first and second echelon) on communications, motor transport and ordnance equipment.

2 Medical.--None organic. Medical support is provided by the medical battalion, FSSG.

3 Transportation.--The company has minimum essential motor transport for command and administrative purposes.

4 Supply.--Capable of performing supply functions for the battalion.

5 Food Service.--Capable of operating a battalion dining facility in garrison or in the field.

HEADQUARTERS AND SERVICE COMPANY, LANDING SUPPORT BATTALION, FSSG

12	Control Radio Set, AN/GRA-6
2	Radiac Computer Indicator, CP95A/PD
14	Radio Set, Control Group, AN/GRA-39B
12	Radio Set, AM/GRC-160
3	Radio Set, Trk-Mtd, AN/MRC-83A
4	Radio Set, AN/MRC-109
8	Radio Set, AN/PRC-47
4	Radio Set, AN/PRC-75A
35	Radio Set, AN/PRC-77
2	Radio Terminal Set, AN/MRC-134
2	Radio Terminal Set, AN/MRC-135
6	Radio Terminal Set, AN/TRC-166
1	Receiving Set, Radio, AN/GRR-17
1	Signal, Lamp, Equipment SE-11A
3	Switchboard, Telephone, Automatic, SB-3614(V)TT
1	Teletypwriter Set, AN/GGC-3-A
4	Bucket, Multi-purpose, 2-1/4 yd cap., Drott 4-in-1
18	Crane, RT, Rough Terrain, Hydraulic, 30T, DROH 2500
12	Crane-Shovel, Crawler, Mtd, Bay, Koehring 2N M65
3	Crane, Trk-Mtd, 15T, M-315T
6	Crane, Whl-Mtd, SP, 3T, M71
4	Decontaminating Apparatus, PD, Skd-Mtd, 500 Gal, M12lA1
3	Grader, Road, Motorized, 5R3999
90	Kit, Assault Trackway
6	Tractor, Full-Tracked, W/Multi-Purpose Bucket, Case MC-1150
18	Tractor, Rubber-Tired, Articulated Steer, 72-31MP
6	Tractor, Rubber-Tired, MRS, I-100

HEADQUARTERS AND SERVICE COMPANY, LANDING SUPPORT BATTALION, FSSG (CON'T)	
12	Truck, Forklift, 05-3354
12	Truck, Forklift, Rough Terrain, MC-4000
1	Welding Machine, ARC, Trlr-Mtd, LM62A
6	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
9	Trailer, Tank, Water, 400 Gal, 1-1/2T, 2-Whl, M149A1
3	Truck, Ambulance, 1/4T, 4x4, M718A1
5	Truck, Cargo, 1-1/4T, 6x6, w/Winch, M561
10	Truck, Cargo, 5T, 6x6, M54A2C
3	Truck, Dump, 5T, 6x6, M51A2
3	Truck, Platform, Utility, 1/2T, 4x4, M274A5
1	Truck, Tank, Fuel Servicing, 1200 Gal, 2-1/2T, 6x6, w/Winch M49A2C
7	Truck, Utility, 1/4T, 4x4, M151A2
1	Truck, Wrecker, 5T, 6x6, M543A2
6	Machine Gun, Cal.50, Browning, HB Flexible, M2
2	Machine Gun, 7.62mm, M60
10	Night Vision Goggles, Individual, AN/PVS-5
4	Night Vision Sight, Individual Served Weapon, AN/PVS-4

(7) Landing Support Company

(a) Mission and Tasks

1 Mission.--To provide the command, control, and operational personnel required to form a nucleus for task organized support of landing support operations during either surface or helicopter amphibious assault and subsequent operations ashore.

a To facilitate the waterborne landing and movement of troops, equipment and supplies across the beach; to evacuate casualities and prisoners of war from the beach; and the beaching retraction, and salvage of landing ships and craft and amphibious vehicles.

b To facilitate the landing and movement of helicopterborne forces, equipment and supplies within the landing zone and to evacuate casualties and prisoners of war from the landing zone.

c To facilitate the control and coordination of loading and unloading of units for deployment or redeployment by fixed-wing aircraft during DACG/AACG operations.

d To provide limited close combat engineer support to meet esential requirements during operations ashore.

2 Tasks.--The landing support company is organized to provide the nucleus of personnel required to task organize the shore party group/helicopter group, or subordinate elements thereof.

a Provide shore party and/or helicopter support teams, as required.

b Prepare, mark and control the landing beaches or zones.

c Locate and establish interim multi-class dumps.

d Unload supplies from the landing craft, ships and helicopters. (The landing support company cannot totally perform this task unless reinforced with appropriate personnel and equipment).

e Provide emergency maintenance (the landing support company must be reinforced with augmentation personnel and equipment capable of performing second and third echelon maintenance).

f Provide for evacuation of casualties and prisoners of war. Augmentation of medical personnel from medical battalion, FSSG, and MP company, headquarters battalion, FSSG, required.

g Perform limited combat engineer tasks, commensurate with organizational capabilities.

(b) Concept of Organization.--The landing support company consists of a company headquarters and two landing support platoons. The company is organized to provide the basic structure necessary to accomplish the primary mission and provides the nucleus of personnal required to task organize a shore party group/helicopter support group, and subordinate elements thereof. Shore party groups, composed of landing force and naval units, are organized into teams to provide logistic support to the landing force during the surface assault phase of amphibious operations.

1 Command and Control.--The company commander directs and controls all matters pertaining to company logistic support. A company headquarters is provided to command and control organic and attached elements.

2 Firepower.--Firepower is limited to individual weapons. The company has a limited capability for providing local security and assisting in defense against organized attack. The company is capable of coordinating the defense of a colored beach.

3 Communications.--None organic. Support is provided by headquarters and service company, landing support battalion, FSSG.

4 Logistics.--Capable of providing internal supply functions.

(c) Concept of Employment.--The landing support company, augmented as required by elements of other Marine units and by elements of the naval beach group, can be task organized into a shore party group consisting of shore party teams, or a helicopter support group consisting of two helicopter support teams. This task organization provides for the operation of two separate numbered beaches, one colored beach, or two helicopter landing zones. The functioning and capabilities of landing support organizations are dedicated to the management of personnel and materials in the initial phases of the assault and subsequent inland movement. The Marine elements of the shore part group will prepare, mark, and control the landing beach or zone; locate and establish interim multiclass dumps; unload supplies from landing craft, ships and helicopters; provide emergency maintenance; and evacuate casualties and prisoners of war. The shore party group will operate in the beach support area in a progressively diminishing degree as the scope of logistic operations extends inland. Elements of the shore party group are attached to the assault forces for embarkation and landing. As the logistic support system

develops ashore, the shore party group organizations will be modified. When no longer required for landing support functions, attachments will revert to parent control, or otherwise be assigned as appropriate. Upon establishment ashore of the MSSG/BSSG, selected command and control elements of the shore party group will pass to operational control of the MSSG/BSSG for continuation of landing support as required. The major items of equipment are shown below.

LANDING SUPPORT COMPANY, LANDING SUPPORT BATTALION, FSSG

3	Signal, Lamp, Equipment SE-11A
1	Air Conditioner, MCS, Horizontal, 60Hz, 9,000 BTU, MC9HAL6-208
2	Air Conditioner, MCS Horizontal, 60Hz, 18,000 BTU, MC18HA6-208
4	Air Conditioner, MCS Vertical, 60Hz, 18,000 BTU, A/E 32C-17
3	Air Conditioner, MC Std, Vertical, 60Hz, 36,000 BTU, A/E 32C-24
2	Air Conditioner, MC Std, Skd-Mtd, A/E 32C-39
2	Detecting Set, Mine, Portable, Non-Metallic PRS-7
2	Detecting Set, Mine, Portable, Metallic PSS-11
200	Sling, Cargo, Chain Leg, 15,000 lb Cap.
1	Trailer, Amphib Cargo, 1/4T, 2-Whl, M416
1	Truck, Cargo, 1-1/4T, 6x6, w/Winch M561
3	Truck, Utility, 1/4T, 4x4, M151A2
4	Machine Gun, 7.62mm, M60

(d) Administrative Capabilities.--None. Consolidated under battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of providing organizational (first echelon) maintenance on all organic equipment. Organizational (second echelon) maintenance on all assigned equipment is provided by headquarters and service company, landing support battalion. Intermediate (third and fourth echelon) maintenance is provided by maintenance battalion, FSSG.

b Support.--None.

2 Supply.--None organic. Support is provided by headquarters and service company, landing support battalion, FSSG.

3 Medical.--None organic. Support is provided by medical battalion, FSSG.

4 Transportation.--Limited organic motor transport. Augmentation by headquarters and service company, landing support battalion required to accomplish the company's primary mission.

5 Food Service.--None organic. Support is provided by headquarters and service company, landing support battalion, FSSG.

(8) Beach and Port Company

(a) Mission and Tasks

1 Mission.--To direct designated beaches/port, railhead, airhead, and cargo terminal operations.

2 Tasks

a To provide personnel and equipment for the loading and unloading, movement of supplies at a port, railhead, airhead, beach and in dumps or depots.

b To develop and maintain skills in cargo handling operations to include container handling and management.

c To provide air-delivery support in support of the MAF, as required.

d To provide air freight operational capability, as required.

(b) Concept of Organization.--The company consists of a company headquarters, two longshoreman platoons, a shipping and receiving platoon, and an air-delivery platoon. The company is organized to provide the basic structure necessary to accomplish the primary mission.

1 Command and Control.--The operations officer performs the staff functions necessary to effect coordination and control of functionally assigned sections in the accomplishment of the primary mission. The company commander directs and controls all matters pertaining to company logistic support.

2 Firepower.--Organic firepower capability is limited to individual weapons for personal security.

3 Communications.--None organic. Support is provided by the communications platoon, headquarters and service company, landing support battalion.

4 Mobility.--The company is not considered mobile due to the extent and complexity of resident equipment.

(c) Concept of Employment.--The beach and port company, when directed, assumes the beach/port operation functions after control has been passed to the FSSG. The company provides aerial-delivery support, and when augmented by other elements of the FSSG, an air terminal can be provided for the MAF. In addition, the company is capable of conducting departure/arrival airfield control groups. The major items of equipment are shown below.

BEACH AND PORT COMPANY, LANDING SUPPORT BATTALION, FSSG

1	Trailer, Amphib, Cargo, 1/4T, 2-Whl, M416
2	Truck, Utility, 1/4T, 4x4, M151A2

(d) Administrative Capabilities.--None. Consolidated under the battalion S-1/adjutant section.

(e) Logistical Capabilities

1 Maintenance

a Organic.--Capable of organizational (first echelon) maintenance on all assigned equipment and (second echelon) maintenance on all air delivery equipment. Organizational maintenance (second echelon) on all other equipment will be provided by headquarters and service company, landing support battalion, FSSG. Intermediate (third and fourth echelon) maintenance wil be provided by maintenance battalion, FSSG.

a Support.--None.

2 Supply.--None organic. Support is provided by headquarters and service company, landing support battalion, FSSG.

3 Medical.--None organic. Support is provided by medical battalion, FSSG.

4 Transportation.--Support is provided by headquarters and service company, landing support battalion, FSSG, and/or augmentation from the motor transport battalion, FSSG.

5 Food Service.--Support is provided by headquarters and service company, landing support battalion, FSSG.

SECTION 4B

FORCE SERVICE SUPPORT GROUP
Q-1 PERIOD (1979-1983)

407. GENERAL

a. The mission and organization of the FSSG should remain relatively unchanged for the period 1979-1983. The concept of employment for the FSSG will be fully developed for the first time in FMFM-4-1. State of the art advances in commercial automotive and engineer equipment are continually being monitored for potential application by the Marine Corps. Starting in the Q-1 period and continuing into the Q-2 period, the majority of the current inventory of wheeled vehicles will be replaced by the Tactical Vehicle Fleet. To enhance combat capability through improved mobility and flexibility, the Tactical Vehicle Fleet will provide the FSSG with a mix of wheeled prime movers and trailers tailored to the requirements of the modern battlefield. This will include two types of High-Mobility Tactical Trucks (HMTT's), two types of commercial prime movers, and three types of commercial trailers.

b. Q-1 will see the advent of an integrated system of standard size modular shelters and containers and their corresponding trailers and prime movers as introduced in Section 1E. This system integrates a conceptual vehicle fleet mix of prime movers and trailers with various shelters (Marine Corps expeditionary shelter system (MCESS)), environmentally controlled medical systems (MCEMS), Marine Corps liquid transporting, storage and handling system (SIXCON), and other standard size containers. The reverse osmosis water purification unit, housed in a frame meeting ISO standards, is also due in Q-1. The lightweight amphibious container handler (LACH) will arrive in the FSSG during late Q-1 or early Q-2.

c. While no items of communications equipment scheduled for arrival during Q-1 are unique to the FSSG, many new and improved items will be utilized within the command. For a graphic display of these communications items, see Figure 4-11. For descriptions of these equipments, see Section 1B and 2B (FMF and division, respectively). With the introduction of the CSS concept, the T/E's and T/O's for FSSG units are essentially compilations of those from similar units in the FSR,. It is anticipated that the actual field application of FSSG will determine the adequacy of this concept and mix of communications personnel and equipment.

d. Figure 4-12 at the conclusion of this section provides a summary of FSSG developments for the Q-1 period (less communication equipment).

408. FSSG ORGANIZATION

a. General.--Those items of equipment and systems listed below are items that may be found throughout the FMF, but because of their basic combat service support nature, they are included in the FSSG portion of LFOSS. Similarly, there are some items of equipment listed in LFOSS under organizations other than FSSG that may eventually appear in FSSG T/E's. Examples are the individual night-vision goggles AN/PVS-5 (section on Marine division); and the engineer survey set.

(1) Protective Construction System.--The Marine amphibious forces ashore require protective materials and construction techniques that

		FSSG	H&S BN	SUP BN	MAINT BN	ENGR SPT BN	MT BN	MEDICAL BN	DENTAL BN
SWITCHING EQUIP	SB-3614 (AUTO SWITCHBOARD)		△						
MULTI CHNL TRANS EQUIP									
SINGL CHNL TRANS EQUIP	AN/PRC-104 (MANPACK HF RADIO)		△	△	△	△	△	△	△
	AN/PRC-105 (MANPACK HF RADIO)		△						
	AN/GRC-160 (VEH MOUNT VHF RADIO)		△						
	AN/MRC-138 (HF RADIO VEHICLE)		△						
	AN/PRC-68 (HANDHELD VHF RADIO)		△			△			
TERMINAL DEVICES	AN/GXC-7A (FACSIMILE)		△						
	AN/MSQ-( ) (AUTO MSG ENTRY SYS)		△						
	AN/UGC-74 (TELETYPE SYSTEM)		△						
TECH-SYSCON EQUIP									
SATCOM EQUIP	AN/TSC-93 (BENCH MOUNT SATCOM)		△						
INTERFACE EQUIP	AN/GRA-39B (HF/VHF REMOTE CONTROL GROUP)		△	△	△	△	△	△	△
	AN/GRA-( ) (HF REMOTE CONTROL GROUP)		△	△	△	△	△	△	△
	HYX-57 (WIRELINE ADAPTER)		△	△	△	△	△	△	△
COMSEC DEVICES	TSEC/KY-57,-58 (VINSON, SECURE VHF/UHF)		△	△	△	△	△	△	△
	TSEC KY-67 (BANCROFT, SECURE VHF RADIO)		△	△	△	△	△	△	△

Figure 4-11.--Communications Equipment, Force Service Support Group Q-1 Period.

enable them to rapidly provide protection against the effects of conventional weapons on selected items of equipment and personnel. This is a modular, lightweight, protective construction system that will replace current techniques which utilize expedient materials, concrete, sandbags, etc. Consisting of three basic components--a basic panel, a column/girder, and a connector/spacer panel--it will provide reusable protection for selected items of equipment, command posts, aid stations, ammunition storage, and selected crew-served weapons emplacements primarily of combat support and combat service support units in relatively static positions. Issued as a Class IV material, it should be available (IOC) in FY 1980.

(2) Site Sanitation Unit.--The purpose of the site sanitation unit is to provide the FMF with a self-contained portable head unit suitable for use in combat operations, training exercises, and for Marines embarked aboard merchant shipping. The system is composed of a series of self-contained, self-operating modules compatible for use in MCESS shelters and compatible with International Organization for Standardization (ISO) containers to facilitate transportation. They will require minimal field skills and manpower for erection. Each module will weigh approximately 400 lbs and will be capable of completely processing the daily waste of at least 16 Marines. The maximum combination of modules will be capable of accomodating up to 20 Marines at one time. Modules will be transportable by truck, helicopter, or trailer. An IOC in the early 1980's is expected.

(3) Reverse Osmosis Water Purification Equipment.--This equipment will be capable of producing potable water from polluted fresh water, seawater, and brackish water; will remove chemical and radiological contaminants, and will filter certain viruses and bacteria when aided by chlorination.

(4) Expeditionary Electrical Power Distribution System.--This system is a modular, lightweight, reusable expeditionary electrical power distribution system capable of supplying 60Hz electrical power when used with 10, 30, 45, 60, 100, and 200kW DoD standard 600- and 700- series generator sets. It will provide power to all Marine Corps units for lighting and other power requirements, including that required by MCESS. It will consist of skid-mounted distribution panels interconnected with color coded cables which are sized by amperage, keyed for voltage and frequency, and capable of rapid connect/disconnect. It can be emplaced by two men and will replace the current field-expedient means of power distribution in FY 81.

(5) Simplified Test Equipment for Internal Combustion Engines.--State-of-the-art advances in automoive diagnostic and test equipment have resulted in the evaluation of manual, semiautomatic, and automatic test measurement, and diagnostic equipment/systems for spark and compression ignition internal combustion engines. Designed for use at the organizational level, they will assist the mechanic in fault detection and isolation on vehicle engines, and electrical and fuel systems, thereby replacing the variety of equipment currently used. A similar system is being developed for the LVTP-7A1. An IOC of FY 81 is anticipated.

(6) Field Refrigeration System.--The refrigerators in the current inventory were developed to meet World War II requirements and do not provide the capabilities offered by the latest developments in refrigeration technology. They are nearing the end of their service life and require excessive maintenance. Additionally, they are not compatible with

ISO standards relative to dimensions and structure. The current model under evaluation is a rigid, unitized field refrigeration system, which will be compatible with ISO containers and replace current models on a one-for-one basis. Each unit will consist of an insulated container and refrigeration unit with a total weight of 4,000 lb, making it air and ground transportable. It will provide 200 to 300 cubic feet of storage space and offer an optional dual freeze and chill storage capability. An IOC of FY 81 is predicted.

b. Headquarters and Service Battalion

(1) Heavy Motorized Road Grader.--This item is a key piece of engineer equipment for general grading, bank sloping and ditching, and for general construction and maintenance of roads, airfields, and hardstand storage areas. It will replace the existing road grader, Model 550-M-66, in the combat engineer battalions, engineer support battalions, beach and port companies, and MAW wing engineer squadrons. The grader will be a heavy duty, diesel engine driven, pneumatic tired, 6x4 front-wheel steer with articulating features, or it may be of a 6x6 all-wheel drive, all-wheel steer design. Weight will be between 28,000 and 32,000 lb, and it will be transportable by the M870 trailer. An IOC of FY 79 is expected.

(2) Forklift, RT, 4,000 lb Capacity.--In order to retain a helicopter transportable, rough terrain forklift capability, the Marine Corps developed the RT 4,000. This four-wheel drive, articulated steer, diesel (or JP-5) powered forklift was the replacement for the ART-30. Currently, a product improvement program is underway to outfit the RT 4,000 with such equipment as a new mast. The RT 4,000 is more effective than the 6,000 lb and 10,000 lb forklift for stuffing and unstuffing the 8-foot-wide family of containers. It will also lift and move breakbulk cargo, container inserts, and palletized loads. The proposed improvements for the RT 4,000 may reach the fleet as early as 1982.

(3) Forklift, RT, 6,000 lb Capacity.--This item of equipment is a four-wheel drive, diesel (or JP-5) powered replacement for the RTF, 6,000 lb capacity, currently in the inventory. It will accomplish material handling tasks across the beach, and load and unload combat vehicles and landing craft in the surf. It can also perform general cargo handling in the LSA. It will be found in the beach and port operations company, tank battalion, and the motor transport squadron of the MWSG (IOC if FY 79).

(4) Forklift, RT, 10,000 lb Capacity.--This is a four-wheel drive, articulated steer, diesel (or JP-5) powered replacement for the Terex Model 72-31 MP. It will be used for heavy material handling tasks: handling up to 10,000 lb containers and components of the expeditionary family of shelters; material handling across the beach; loading and unloading combat vehicles and landing craft in up to 60 inches of surf; and handling the large, heavy bundles of SATS matting. It will also be capable of being used as a scoop loader with the addition of a 2-1/2 to 3 cubic yard general-purpose bucket. It will be utilized by the beach and port operations company and the bulk fuel company, support company, and engineer company of the engineer support battalion, and the motor transport support squadron and wing engineer support squadron of the MAW (IOC is FY 79).

c. Supply Battalion

(1) M274A5 Product Improvement.--In an attempt to extend the life expectancy of the MECHANICAL MULE, the Marine Corps will improve its

mobility, reliability, and utility. All FMF units which currently utilize the M274A5 will benefit from improved engine design, which includes an electric start capability among other features expected in this product improvement (IOC is FY 82).

d. Maintenance Battalion

e. Engineer Support Battalion

(1) Heavy Motorized Road Grader.--See para b(1).

(2) Forklift, RT, 4,000 lb Capacity.--See para b(2).

f. Motor Transport Battalion

g. Medical Battalion

(1) Marine Corps Environmentally Controlled Medical System (MCEMS).--The introduction MCEMS will replace the present system of tents, providing a controlled environment which will significantly improve the physiological stability of the patient and enhance his chances of survival. The system consists of numerous components covering all facets of medically related functions from administrative units to surgical units and patient wards. Each will contain the emergency supplies and equipment necessary for a minimum of 24 hours continuous operation. Utilizing standard MCESS rigid and knockdown 8'x8'x20' ISO configured modules, it will be transportable by FLS vehicle fleet or helicopter, and can also be employed on various military or commercial ships to complement shipboard facilities or provide facilities where they are now nonexistent.

h. Dental Battalion

(1) Dental Battalion will also benefit from the introduction of standard shelters to replace tents under the MCEMS program.

	FSSG	H&S Bn	SUPPLY Bn	MAINT Bn	ENGR BPT Bn	MED Bn	DENT Bn	MT Bn
PROTECTION CONSTRUCTION	○							
SITE SANITATION	○							
USMC EXPEDIT SHELTER SYSTEM		△	△	△	△			
EXPEDIT ELEC POWER DIST SYSTEM		△	△	△	△	△	△	
SIMPLIFIED TEST EQUIP FOR INTERNAL COMBUSTION ENGINES		△	△	△	△	△	△	
HEAVY MOTORIZED ROAD GRADER		△			△			
FORKLIFT, RT, 4,000 LB CAPACITY		△						
FORKLIFT, RT, 6,000 LB CAPACITY		△						
FORKLIFT, RT, 10,000 LB CAPACITY		△			△			
M274A2 PRODUCT IMPROVEMENT			△					
ENVIRONMENTALLY CONTROLLED MED SYSTEMS						△	△	
FIELD REFRIGERATION SYSTEM		△	△		△	△		
INDIVIDUAL NIGHT VISION GOGGLES, AN/PVS-5	○							
ENGINEER SURVEY SET					△			
CABLE DITCHER AND TRENCHER/ LINE LAYER		△						
LIGHTWEIGHT AMPHIBIOUS CONTAINER HANDLER (LACH)	○							
REVERSE OSMOSIS WATER PURIFICATION UNIT					△			
HEAVY HMTT		△	△	△	△			△

○- Distribution to be determined.

Figure 4-12.--Equipment, Force Service Support Group, Q-1 Period.

SECTION 4C

FORCE SERVICE SUPPORT GROUP
Q-2 PERIOD (1983-1987)

409. GENERAL

a. There will be no significant changes to the mission, organization, and concept of employment of the FSSG as a result of the items of equipment listed herein; however, the anticipated introduction of the Marine Corps Tactical Command and Control System (MTACCS) in the FMF could have significant impact on the organization and equipment required to maintain the sophisticated equipment required by MTACCS. This could include items ranging from increased repair facilities to additional prime movers and generators. Of greater impact may be the need for more and more highly-skilled technicians to keep these systems operational.

b. There are several efforts still in the developmental stage which may affect all or some of the FSSG organizations during this Q-2 period. Areas of probable impact, beyond those discussed in Section 1E, include vibratory compactor for increasing soil density prior to construction of buildings, and laser surveying equipment. The Marine Corps is also evaluating, on a continual basis, commercial office equipment to include duplicating, reproduction, visual graphic and micrographic viewing equipment for use throughout the FMF.

c. The communications equipment and its impact previously discussed in Section 1B, Fleet Marine Force Communications Development (1979-1993), and Section 2C, Marine Division Q-2 Period, will also apply to the FSSG Q-2 period. See Figure 4-13 for a complete listing of communications equipment to be introduced during this period.

410. FSSG ORGANIZATION

a. Engineer Support Battalion

(1) Heavy Crawler Tractor.--Successful prosecution of amphibious operations is, in part, dependent on engineer equipment to open lines of communications (LOC's). Crawler tractors are a vital piece of engineer equipment for constucting and maintaining roads, airfields, staging areas, land clearing, earth-moving, and field fortifications. A heavy crawler tractor is required for large earth-moving missions in tough soil conditions where the smaller tractor is ineffective. This vehicle will be a diesel powered, 60,000 to 70,000 lb tractor with a three-tooth hydraulic ripper and a hydraulic, semi-U earth moving blade. It will replace the Terex 82-30. It can also be used as a pushdozer for loading the MRSI-100 and MRS-100 scraper, and can operate in up to 60 inches of surf. It will be capable of being transported by the 70,000 lb, low bed commercial trailer, as well as by rail and amphibious or commercial shipping. The heavy crawler tractor will be used by combat engineer battalions and engineer support battalions of the FSSG (IOC is FY 85).

(2) Light Crawler Tractor.--The light crawler tractor meets the Marine Corps requirement for a highly mobile, CH-53E transportable, replacement (IOC 1985) for the Case 1150 loader and Case 450 bulldozer. The new light crawler-dozer will be diesel powered and weighs about 32,000 lb with angle blade and single drum winch, and has a rated flywheel horsepower of 140. This item of equipment will be used in combat engineer battalions,

engineer support battalions, and the wing engineer squadron for road building, construction, land clearing, material stockpiling, towing of other vehicles, and extraction of bogged-down equipment in up to 60 inches of surf.

		FSSG	H&S BN	SUP BN	MAINT BN	ENG SPT BN	MT BN	MEDICAL BN	DENTAL BN
SWITCHING EQUIP	SB-3865 (AUTO SWITCHBOARD)		△						
	AN/TCC-42 (AUTO TELEPHONE CENTRAL)		△						
	AN/GYC-7 (AUTO MSG SWITCH)		△						
	AN/TYC-11 (AUTO MSG SW CNTRL)		△						
MULTI CHNL TRANS EQUIP	DGM FAMILY (MULTIPLEX EQUIPMENT)		△						
	AN/MRC-( ) (MUX RADIO)		△						
SNGL CHNL TRANS EQUIP									
TERMINAL DEVICES	AN/UXC-4 (FACSIMILE)		△						
	TA-954 (DIGITAL PHONE)		△						
	AN/PSG-( ) (BURST COMM DEVICE)		△	△	△	△	△	△	△
	MRTT (TRAFFIC TERMINAL)		△						
TECH-SYSCON EQUIP	AN/TSQ-111 (COMM TECHCON CTR)		△						
SATCOM EQUIP									
INTERFACE EQUIP									
COMSEC DEVICES	ANDVT (COMSEC DEVICE)		△	△	△	△	△	△	△
	KG-81 (COMSEC DEVICE)		△	△	△	△	△	△	△
	KG-82 (COMSEC DEVICE)		△	△	△	△	△	△	△
	KG-94 (COMSEC DEVICE)		△	△	△	△	△	△	△
	KG-93 (COMSEC DEVICE)		△	△	△	△	△	△	△
	KGX-93 (COMSEC DEVICE)		△	△	△	△	△	△	△
	TSEC/KY-68 (SECURE DIGITAL PHONE)		△						

Figure 4-13.--Communications Equipment, Force Service Support Group, Q-2 Period.

(3) Marine Corps Liquid Transporting, Storage, and Handling System (SIXCON).--As introduced in Section 1E, the SIXCON is a liquid transporting, storage and refueling system which can replace a number of liquid transporting vehicles (tankers) currently in use. The unit consists of two modules: a storage/transporting module and a pumping module. Six storage modules can be latched together to form a standard 8'x8'x20' container and used in conjunction with the new vehicle fleet as a large liquid transporter, refueler, or storage unit, or used in any combination of pumps and modules to meet various liquid (fuel or water) requirements. Prototypes are currently being evaluated with the probability of the system becoming available during this Q-2 period. The foregoing Q-2 developments, their intended organizations, and IOC's are shown in Figure 4-14 below.

b. Maintenance Battalion.--The advent of the MTACCS will probably necessitate an increase in maintenance personnel. MIFASS, for example, calls for four additional billets. Other MTACCS subsystems have not progressed to the point where their maintenance personnel impact can be accurately predicted.

	FSSG	H&S BN	SUPPLY BN	MAINT BN	ENGR SPT BN	MED BN	DENT BN	MT BN
LIGHT CRAWLER TRACTOR					△			
HEAVY CRAWLER TRACTOR					△			
SIXCON					△			△
LIGHT HMTT, 3/4 TON	△	△	△	△	△	△	△	△
SEMITRAILER, 65 TON				△	△			△
MEDIUM PRIME MOVER		△	△	△	△			△
HEAVY PRIME MOVER				△	△			△
TRAILER, 12.5 TON		△	△	△	△			△
TRAILER, 22.5 TON				△	△			△

Figure 4-14.--Equipment, Force Service Support Group, Q-2 Period.

SECTION 4D

FORCE SERVICE SUPPORT GROUP
Q-3 PERIOD (1988-1992)

411. GENERAL

a. Pending R&D projects are not expected to result in changes to the mission, organization, or concept of operations of the FSSG during this period.

b. The AN/TRC-( ), a multichannel configuration of the SINCGARS AN/GRC-( ) fielded in Q-2, is presently the only new communications equipment item to be introduced in the Q-3 period. See Figure 4-15 below.

		FSSG	H&S BN	SUP BN	MAINT BN	ENGR SPT BN	MT BN	MEDICAL BN	DENTAL BN
MULTI CHNL TRANS EQUIP	AN/TRC-( ) (MUX RADIO)		△						

Figure 4-15.--Communications Equipment, Force Service Support Group, Q-3 Period.

SECTION 5

ANALYSIS AND CONCLUSIONS

501. GENERAL

While the title of this publication ends with the word "Study", the document has been, and still is, more a "report and review" than a study in the usual sense. This issue is intended to continue this trend.

It is intended that the expanded "Baseline" section in this issue will serve to better inform the general reader by providing, in one document, a comprehensive compilation of the organizational structures of the Fleet Marine Forces, their mission statements and a selected representation of the tables of equipment. The general response from the users with regard to this part of LFOSS has been continuously favorable and was partly responsible for the expansion of this section.

The presentation of data in the three quinquenniums follows closely the schema of LFOSS-78, and readers of that issue will note but a few changes in the information contained in this year's issue. This is to be expected, since the development cycle is now averaging five to ten years for many systems, and little change in the overall R&D picture occurs within the one year cycle of publication of LFOSS. There are changes, however, as new projects begin and others either mature or are delayed, or canceled.

The analysis and conclusions of this year's issue of LFOSS is somewhat more comprehensive than in past issues, but still does not approach the depth of research usually associated with documents entitled "Studies". There are several reasons for this, not the least of which are limitations on manpower and funding. A review of the utility of the LFOSS publication is now under way, and in the event that the decision is made to continue publication, the reader can expect to see a future document which is quite different from the present model.

In this regard, early in 1979, the Fleet Marine Forces were asked to review the past LFOSS publications and to assess the general direction of Marine Corps R&D. The responses on the question of the utility of LFOSS were generally favorable, and the recommendations for changes in the publication are receiving serious consideration. Responses to the question of the thrust of future procurements, as they affect the field commanders ability to accomplish their mission, are very revealing and will be referenced within this section. Generally, the field commanders are somewhat apprehensive about the trends toward greater sophistication and the pursuit of technology as these movements affect the commanders' ultimate ability to man and maintain the new systems, and to move them about the battlefield.

Finally, the original intent for this years' Analysis and Conclusions Section was to provide the reader with a more-than-cursory view of the development of the various systems which make up MTACCS. However, the review of the status of the development of these systems has led to a much broader issue, which will be addressed here at some length. That issue is the managaement of the Marine Corps systems acquisition process.

While questions about the status of the various MTACCS systems are applicable to the management of the development of those systems, the questions are, more importantly, applicable to the total management practices of all research and development activities. For this reason, the

status of the MTACCS will be reviewed and serve as a point of departure for discussions on broader questions.

The intent here is not to resolve issues, but to give voice to potential problems and further discussion. It must be admitted that, for some within the development community, there does not appear to be an issue as perceived herein, especially when addressing sensitive issues. However, most will agree that now is an opportune time to review the Corps' system acquisition process. The principal document guiding Marine Corps research and development, MCO P5000.10, is now being reviewed and revised; funding constraint trends are leading to major reductions; manpower shortages are approaching critical junctures; and new and rigorous management practices and planning requirements are being instituted by the Executive Department and the Department of Defense. Furthermore, costs for systems development are increasing; the time required to development systems is increasing; equipment replacement (such as motor transport, NBC, a new rifle, and aging aircraft) is pressing; and concern over efficiency in the management of our dwindling resources is increasingly evident. Given this atmosphere, it seems necessary that the conduct of research and development and the management of the acquisition of equipment should be as efficient, responsive, productive, and ordered as possible. We need to be getting the most we can for the few dollars we have. We need to spend our money wisely and be able to set priorities from an informed, knowledgeable, and far-seeing vantage point. Do our present management structure and practices accomplish these goals? How well? Does Marine Corps Systems Acquisition Management need a major overhaul, or merely fine tuning? Should things be left as they are?

While few will agree with the last option, there is, not surprisingly, a wide variation of opinions on how to proceed. Perhaps one of the first steps is to clearly define some of the issues. LFOSS has looked at some of the major issues as they pertain to MTACCS.

502. MARINE TACTICAL COMMAND AND CONTROL SYSTEMS (MTACCS)

"The objective of the MTACC systems acquisition is to provide the FMF commanders with command and control means to cope with the increased tempo and complexity of the post-1980 battlefield. This envisions, where tactically necessary and logistically supportable, the use of integrated systems which can automatically receive, process, display, and distribute information. However, it is not intended that automation become an end in itself. Systems must be as austere as the threat will permit."

The preceeding quote is from the MTACCS Master Plan published by Headquarters Marine Corps (Code CC) and states the objective to be achieved by the introduction of the MTACCS systems. The purpose of that plan is to provide guidance for the integrated management of the Marine Corps programs designed to improve the tactical command and control capabilities. It is recommended reading for those who are looking for a source document which provides a thorough background on the development of MTACCS. Much of what is presented here is derived from this plan. Additionally, a brief description of the various systems which make up MTACCS was included in the 1978 edition of LFOSS, in section 1B. The MTACCS Master Plan is revised and updated annually as more detailed analyses are conducted and the critical decisions concerning systems acquisition are made. The master plan accomplishes the following:

* Sets forth the MTACCS concept and describes the systems included therein,

* Provides the general guidance necessary for the integration of these systems with one another, with existing systems, and with other management information system,

* Describes those considerations necessary for the integration of MTACCS with tactical communication,

* Provides general guidance for the interoperability of these systems with the tactical command and control systems of other services,

* Outlines the responsibilities of the agencies involved in the development and acquisition of the MTACCS,

* And identifies funding and other support requirements and discusses effective analysis procedures.

Because the various systems within MTACCS were described in LFOSS-78 and quite thoroughly in the Master Plan, there will be no descriptions here. It may be useful, however, to list the various systems. They are:

* Marine Integrated Fire and Air Support System (MIFASS).

* Tactical Combat Operations (TCO) System.

* Tactical Air Operations Center (TAOC-85). (Formerly: Marine Air Command and Control System-MACCS-85)

* Marine Air-Ground Intelligence System (MAGIS).

* Position Location Reporting System (PLRS).

* Marine Integrated Personnel System (MIPS).

* Marine Integrated Logistics System (MILOGS).

* Tactical Warfare Simulation, Evaluation, and Analysis System (TWSEAS).

The acquisition schedule for these systems is depicted in figure 5-1. It should be noted that the MAGIS consists of four sub-systems and that only two of these are shown on the figure. The sub-systems, Imagery Interpretation (II) and Intelligence Analysis Center (IAC) are developmental projects in the full sense and are therefore included in the schedule. The remaining two sub-systems are Imagery Processing (IP) and Tactical Electronic Reconnaissance Processing and Evaluation (TERPE). These two sub-systems have been product improvement programs and are currently fielded. Additionally, TWSEAS is also fielded. Figure 5-2 reflects the status of a selection of the documentation required throughout the acquisition process. It should be noted that all the systems do not have a complete documentation background since some of the systems were begun before the applicable documentation was a requirement.

As evinced by figures 5-1 and 5-2, each system within the MTACCS con-

cept has its own acquisition schedule and is separate for development and funding. MTACCS itself is not a program, but a concept. The design concept calls for maximum commonality of equipment, operational procedures, data bases, and extensive interoperability, via a common communications system. All of the systems, except TWSEAS, are designed for tactical combat use and are designed to satisfy the unique needs of an amphibious force. Because of these unique needs, much of the MTACCS is being developed unilaterally by the Marine Corps. Exceptions to this general rule are the MAGIS system (joint U. S. Air Force development) and PLRS (joint U. S. Army development). The development of MTACCS has been, and continues to be, a major undertaking for the Marine Corps. There are numerous constraints on the development of each system which impede the progress of development. Fiscal considerations, manpower requirements, equipment replacement scheduling, mobility requirements, and electrical power requirements must be addressed at each stage in the evolution of each system. More importantly perhaps, the overall impact of the entire development must be addressed. Some of these considerations will be discussed later in this section. The true magnitude of the acquisition of all the MTACCS components is partially reflected in figures 5-3 and 5-4.

The stated acquisition strategy for MTACCS is that the system must remain mobile, flexible, and amphibious. System complexity and sophistication must be kept to a minimum, proven technology should be used when it satisfies the requirement, standard equipment must be used where possible, and developmental efforts of other services must be used where possible to enhance commonality.

The MTACCS maintenance concept requires:

* A standard three-level/five-echelon maintenance structure;
* Maximum standardization/commonality to reduce procurement and supply costs;
* Minumum field maintenance to increase availability;
* Easy-to-replace end items to reduce the number of spares, supply parts, storage requirements, and transportation requirements;
* Field maintenance by replacement to reduce downtime;
* Central repair;
* And standardized MTACCS maintenance training to improve the efficiency of maintenance manpower.

What has been briefly presented are some of the requirements that the MTACCS must meet. How well the fielded systems meet these requirements is a measure of the effectiveness of the development community and all the managers within the systems acquisition structure. No evaluation of that effectiveness is intended here, for the scope of such an endeavaor far exceeds the capabilities and expertise of this publication. It is intended that the information presented here serves to facilitate that examination by appropriate personnel. That such an over-all, broad examination ought to be made may be argued, but the response from the field commanders leads to the following conclusion. Outside the pressing questions of affordability and manpower requirements, there is a pervasive feeling on the part of

field commanders that perhaps technology is geing pursued as an end in itself. Commanders see a trend away from simplicity and ruggedness/reliability to sophistication and reduced mobility, with an attending increase of support-to-supported ratios.

There are concerns over equipment supportability; size/weight/quantity of new equipment in relation to lift assets; manpower quantity; and more recently, quality. Since the MTACCS is such a large portion of the new acquisitions, and since it portends a major, if not a revolutionary departure from previous command and control capabilities, it is, perhaps, the proper vehicle with which an appropriate examination of R&D effectiveness can be conducted.

The developments in communications equipment are on a magnitude comparable with MTACCS and are also worthy of closer examination.

MTACCS CONSOLIDATED ACQUISITION SCHEDULE

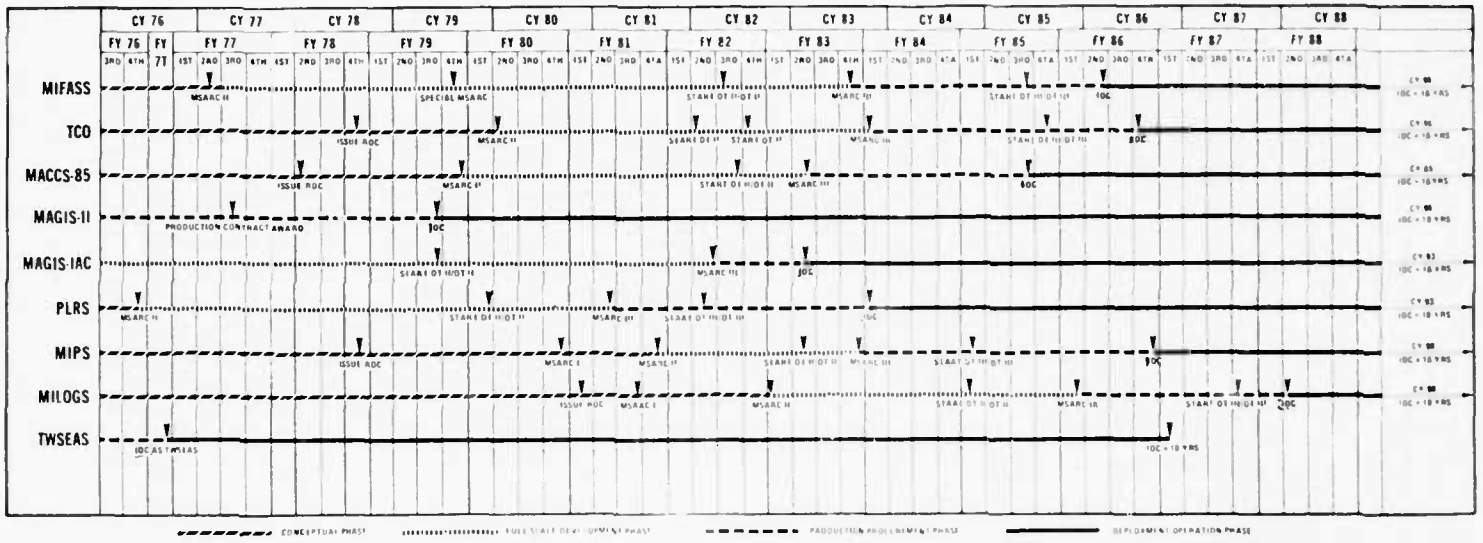


Figure 5-1

SELECTED MIACS DOCUMENTATION SCHEDULE

SYSTEM	ROC		IOC		MILESTONE I							MILESTONE II					MILESTONE III					CURRENT MILESTONE	NEXT MILESTONE
	OPNS	REV	OPNS	REV	AP (DPD)	DP (PDA)	APP (APC)	COEA (APO)	LCCE (DPO)	MIP (CIC)	ADM (PDASS)	AP (APO)	DP (APS)	APP (APC)	COEA (PDA)	ADM (PDA)	AP (APC)	ILSP (APS)	ASU (APS)	AP & APP (APC)	ADM (PDA)		
MAGIS																							
TERPE																							
II	Apr 76		Sep 77				Nov 75											Mar 77					
IP	Mar 76	Mar 77																					
IAC	Jun 75	Jul 76	Jan 77		Sep 77																		
PLRS	Nov 73	Aug 76	Jan 79	Feb 83	Sep 76	Apr 76	Sep 75	Jan 76	Apr 76		Jul 76	May 77	Jul		Jul 77	Jul	Jan 78	Mar 78					
TAOC-85	Jan 74		Jan 81		Dec 74	Jun 74	Mar 74	Jul 74	May 74	Aug 74	Dec 74						Dec	Aug 79					
MIFASS	Aug 75		Jan 86	Jan 88	Nov 76	Dec 75	Jul 77	Nov 76	Feb 77		May 76							Nov					
TCO		Aug 74	Jan 86																				
MIPS		Aug 74																					
MILOGS																							
TWSEAS	May 72	Jul 73	Jan	Jan 84		Aug 72											Nov	Nov					

AP=ACQUISITION PLAN (PRIOR TO MILESTONE I) (DPD) APC AT MILESTONE III)

DP=DEVELOPMENT PROPOSAL (PRIOR TO MILESTONE I) (PDA)

APP=ADVANCED PROCUREMENT PLAN (AVAILABLE BEFORE MILESTONE III) INITIATED AT ADVANCED DEVELOPMENT STAGE (APO) AM PM

COEA=COST & OPERATIONS EFFECTIVENESS ANALYSIS (AT EACH MILESTONE) (APO)

LCCE=LIFE CYCLE COST ESTIMATE (PRIOR TO MILESTONE I) DPO) UPDATED FOR MILESTONES II & III) BY MATERIAL DEVELOPER & APO

MIP=MINI MASTER INFORMATION PAPER (MILESTONE I) (CIC) UPDATED (AS ANNUAL PDM GUIDANCE)

ADM=ACQUISITION DECISION MEMORANDUM (AFTER EACH MILESTONE) (DCP MCN)

LAP=LETTER OF ADOPTION & PROCUREMENT (PART I AFTER MILESTONE I) PART II AT MILESTONE III) (APC)

SDD=SYSTEM DESCRIPTION DOCUMENT (NOT LATER THAN MILESTONE II) (PARAGRAPH AT MILESTONE II) (MITSIA OR MATERIAL DEVELOPER)

CMP=CONFIGURATION MANAGEMENT PLAN (MILESTONE II) (APO MATERIAL DEVELOPER)

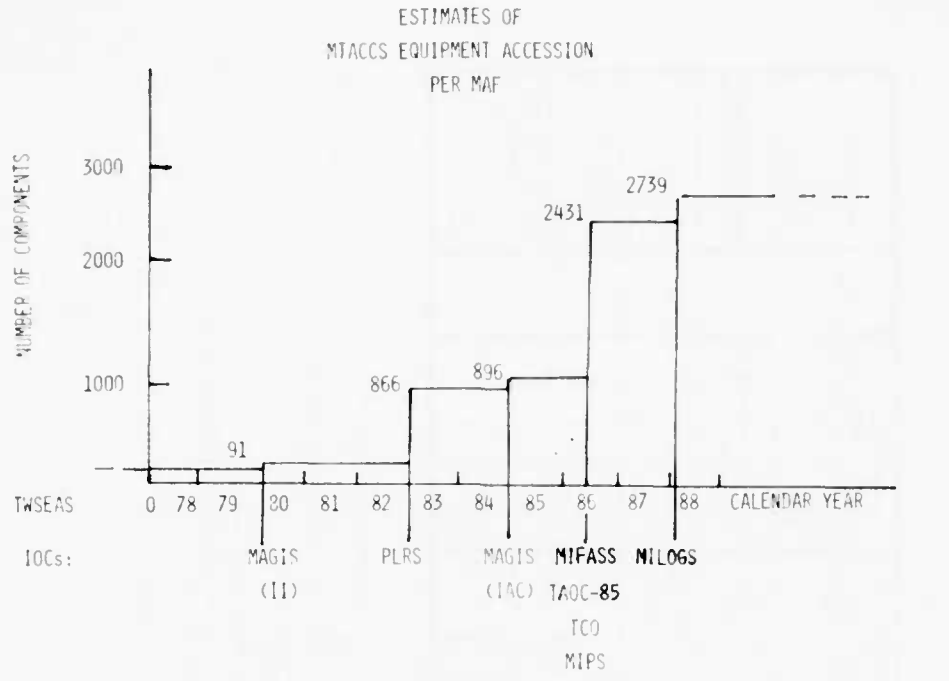
DRD=DETAILED REQUIREMENTS DOCUMENT (MILESTONE II) (DPD)

ILSP=INTEGRATED LOGISTIC SUPPORT PLAN (PRIOR TO MILESTONE III) (LCD & ESM CONTRACTORS)

ASU=APPROVAL FOR SERVICE USE (MILESTONE III) (APS)

APS=ACQUISITION PROGRAM SPONSOR
APO=ACQUISITION PROJECT OFFICER
DPO=DEVELOPMENT PROJECT OFFICER
PDA=PRINCIPAL DEVELOPMENT ACTIVITY
PM=PROJECT MANAGER
AM=ACQUISITION MANAGER
DC=DEVELOPMENT COORDINATOR
CD=CONTRACT DEFINITION
EDM=ENGINEERING DEVELOPMENT MODEL

Figure 5-2



SOURCE: HQMC(I&L)

FIGURE 5-3

ESTIMATES OF
MTACCS UNITS (END ITEMS)
BY CATEGORIES AND QUANTITIES PER MAF

GNERAL CATEGORY	SYSTEM AND QUANTITIES								
	TWSEAS	MAGIS	PLRS	TAOC-85	MIFASS	TCO	MIPS	MILOGS	TOTAL
COMPUTERS	1	12	18	16	47	40	52	52	238
DISPLAYS	5	6	6	32	56	67	52	59	283
PRINTERS	5	13	-	8	99	42	52	55	272
COMM INTERFACES	1	5	-	8	80	70	52	55	271
DIGITAL COMM EQUIPMENT	-	-	-	8	37	-	-	-	45
MEMORIES	2	12	-	8	4	8	52	32	118
OTHER	51	8	751	24	316	109	196	55	1512
TOTAL	65	56	775	104	639	336	456	308	2739

SOURCE: HQMC(I&L)

FIGURE 5-4

503. COMMUNICATIONS

As evinced by what has been presented in Section 1.b, communications developments through the 1979-1993 time period portends a major impact on Marine Corps operational effectiveness. The positive aspects of automation, improved security, and digital capability are indeed exciting to contemplate, but they will not come without some costs. Those costs, easiest to measure, will be the dollars spent for new and improved capabilities, and such monetary costs will undoubtedly be high; so high at times that IOC's may have to be delayed if shortages of procurement dollars occur. Other costs will be the additional manpower likely to be required to operate duplicate analog and digital systems during the transition period. The time and manpower cost involved in training and retraining operators and maintenance technicians for these myraid equipments is a further cost to be considered. Finally, the desire for secure and rapid communications, coupled with the joint interoperability requirements, may dictate sizes and weights of equipment that will eventually militate against desired mobility. These are trends which field commanders are wary of and which must be guarded against and prepared for. In view of the foregoing, the following questions should be addressed.

* Can we reasonably expect to be able to afford all the equipment now planned for?

* Can we keep it operational (maintenance/logistics)?

* Can the transition from analog to digital communications be made without a loss of operational effectiveness?

* Will the new communications systems produce a reduction in mobility?

* Can we expect to be able to recruit and retain the quality of manpower required?

In addition to the impacts alluded to above, there will undoubtedly be some organizational changes. Communications units will naturally be affected most, but all units can expect some changes. Besides the probable organizational changes wrought by the acquisition of these new systems and their increased capabilities, our concept of command and control may also be altered. With the increased rapidity of communications, and the potential for increases in volume and accuracy of information flow up and down the chain of command, it is not unreasonable to expect some changes in command and control procedures. Indeed, substantive changes in authority and responsibility at various command levels may result. MTACCS and LFICS amount to a revolution in capabilities and may very well lead to sweeping organizational and doctrinal changes. Whether such changes ensue, and whether or not they should ensue, it is largely dependent upon how well we prepare for them. It now appears most appropriate that we make a determined effort to prepare for such possibilities. At a minimum, at least two specific steps should be taken:

* The impact of the MTACCS/LFICS technological revolution should be examined for its potential impact on organization and doctrine.

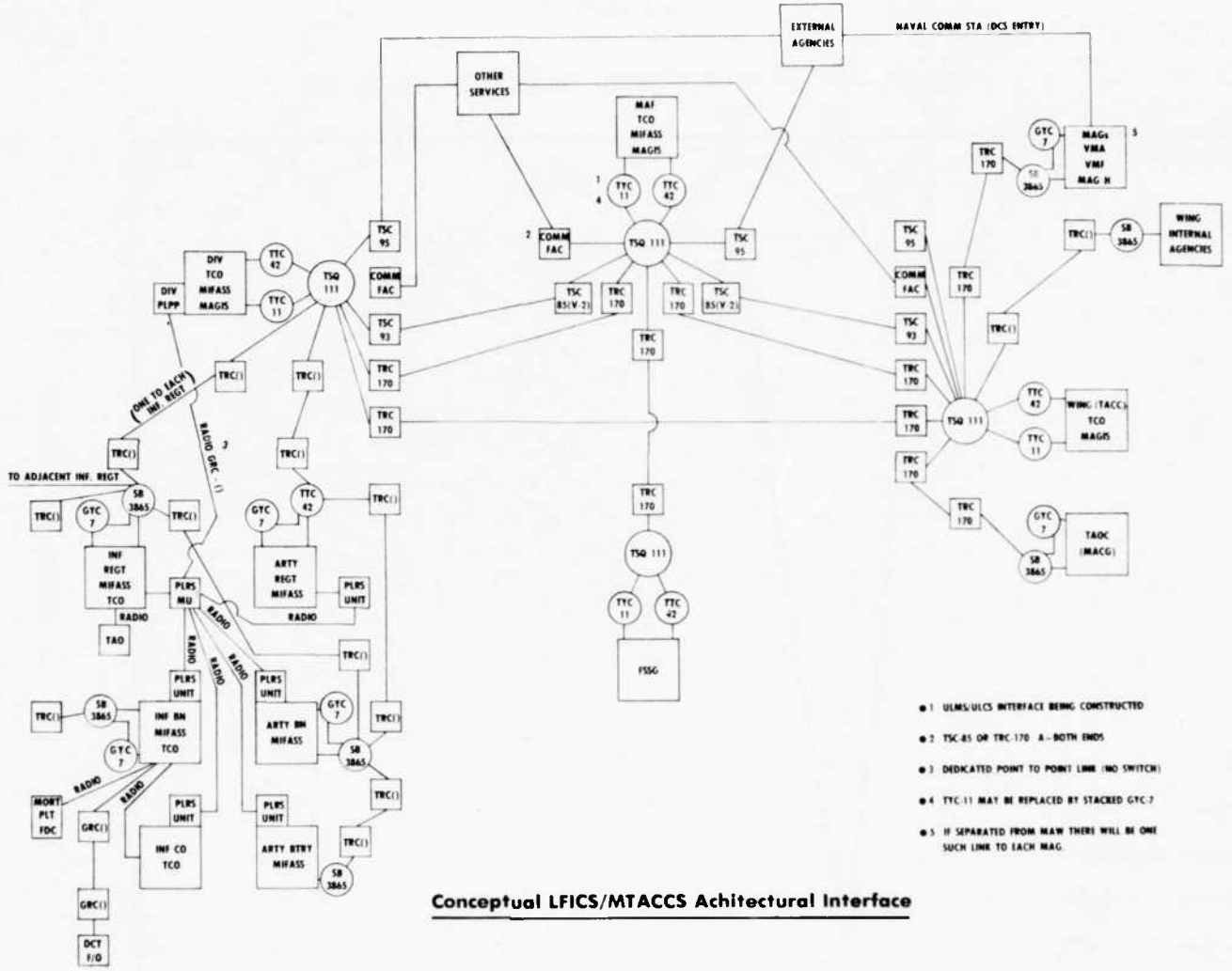
* The education of the users of MTACCS/LFICS should begin as soon as practicable since the long range

success of such sweeping changes will depend largely on user understanding and acceptance.

In order to stimulate thinking along the lines of the aforementioned points, figure 5-5 is provided. It is anticipated that this encapsulation of an MTACCS/LFICS equipment mix into a feasible scenario will allow the reader to begin to comprehend the magnitude of the new capabilities and the potential costs. Comments, suggestions, and recommendations concerning this conceptual mix are encouraged.

Note: The figure shows, for simplicity, only one regt/Co. The true extent of the number of systems is determined by the number of units in the task organization.

Finally, figure 5-6 is included to depict the relative magnitude of communications equipment accessions in relationship to other acquisitions. The comparisons are made between number of systems only, and in no way reflects manpower or monetary differences.



Conceptual LFICS/MTACCS Achitectural Interface

FIGURE 5-5

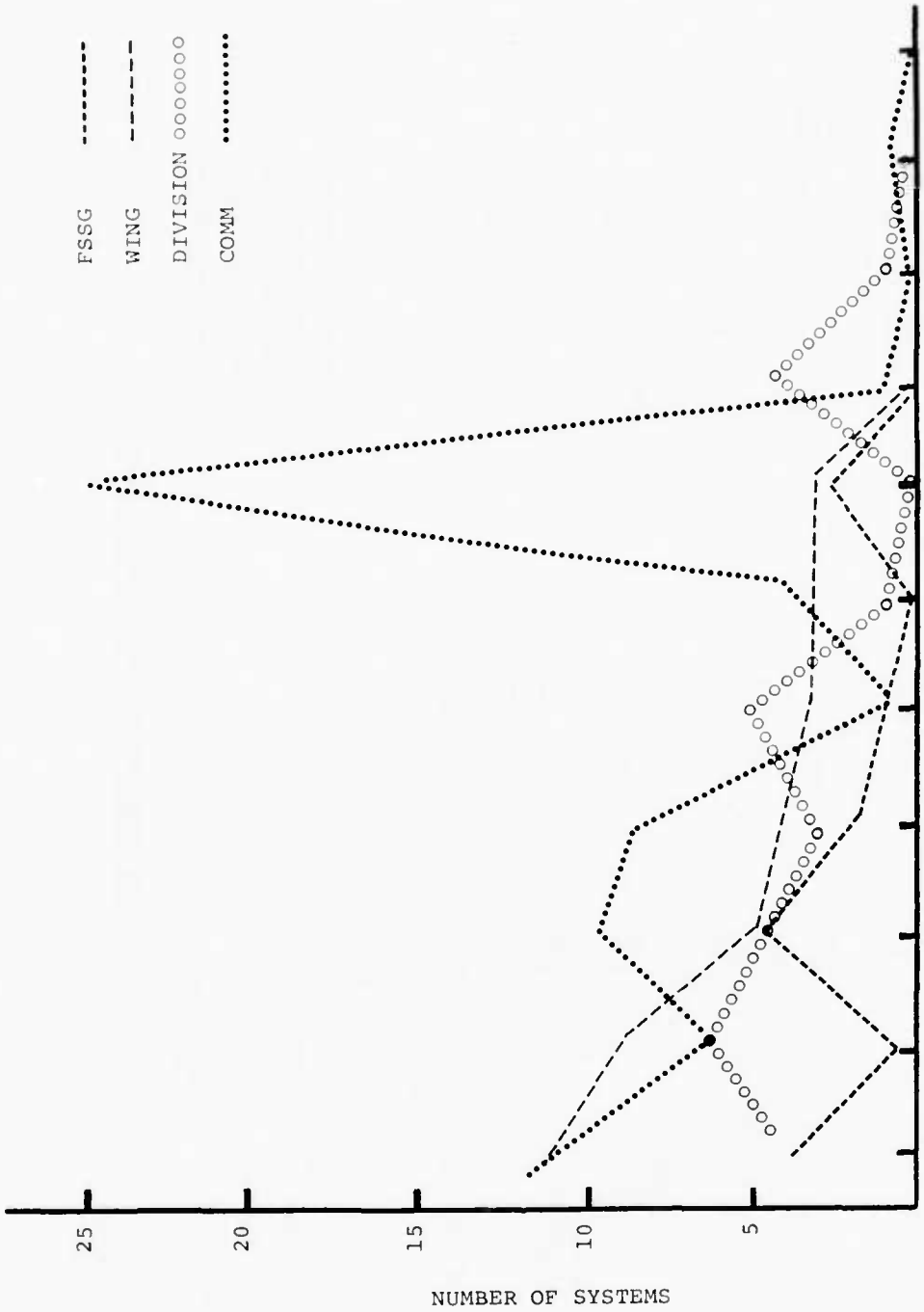


FIGURE 5-6. PROJECTED INTRODUCTION OF NEW SYSTEMS.

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504. MANPOWER

Can we reasonably expect to be able to recruit, train, and retain the quality and quantity of manpower required to operate and maintain the various MTACCS systems? The nature of programs presently in the systems acquisition process has created a great deal of concern over this potential difficulty. The basis of this concern is rooted in several emerging obstacles.

The present projections of manpower requirements for MTACCS related systems have revealed a probable need for manpower quality and quantity which the Marine Corps may not be able to afford in the 1980's. The trend toward complexity and sophistication in MTACCS systems appears to increase the requirements for both the mental capability and the number of operational/maintenance personnel. If these projections materialize, they will do so when the total number of qualified and available men to fill the billets is diminishing (see figure 5-7). Will the Marine Corps be able to recruit the numbers and quality necessary from this diminishing pool?

The exact number of personnel and their specific qualifications needed to fill the required MTACCS peculiar billets are not known. This situation is produced, in part, as a result of the precise definition of manpower needs not occuring in the acquisition process until late in the systems development. This is to be expected since the developing system must reach a clearly defined stage before truly accurate manpower requirements can be identified. It should be noted, however, that provisions exist within present acquisition management practices for estimations and projections of manpower needs to be made early and entered into the planning and decision making apparatus. These estimations are begun with the issuance of the requirement document and are necessarily very coarse at this level. They are refined at each step in the acquisition process as part of the Integrated Logistic Support Plan (ILSP). (See figure 5-8). The personnel and training portion of a systems ILSP should address the programs requirements for trained operators and maintenance personnel, the need for special training activities and supporting training devices, and the generation of specific manning plans and requirements. By milestone III (the Production/Deployment decision point), personnel requirement issues for a particular system should have been resolved.

If, however, a systems program sponsor neglects or postpones his analysis of manpower and training requirements, or makes inaccurate estimates, the true cost in manpower may not be realized until the system is fully developed and fielded. The difficulty in such a case is that manpower requirements may not then be achievable, or achievable only with great difficulty and not in time to effectively employ the new system. The development and acquisition cost will then have been wasted or, at best, produce very little return; and combat readiness will have declined. It is therefore imperative that the manpower requirements for the various MTACCS systems be identified as precisely as possible and as early as possible. Not only must the requirements be identified, but they must be reflected in all the applicable planning and budgeting activities in an orderly and timely way so that the new equipment and the required personel will reach the operating forces simultaneously.

Field commanders have voiced concern about the Marine Corps' ability to accomplish this goal, and manpower managers within the acquisition management structure have repeatedly voiced doubts about our ability to recruit and train increasing numbers of "hard skill" personnel. This

increasing demand on quality is often referred to as "quality creep" and is manifested in the estimations for increasing numbers of such skills as tactical computer technician/repairman, operational communications technician, data systems operator, aviation ground electronics technician, and data communications technician. The "creep" referred to occurs when the present lower skill occupational specialties are converted to the higher skill specialties, and the situation is aggravated when there is an increase in the gross number of personnel required. In such cases, trade-offs, realignments, and compensatory reductions must be made within the overall Marine Corps manpower structure, in order not to exceed the authorized end strength.

As already stated, the fielding of the MTACC systems also appears to require an aggregate increase in the number of personnel over the number performing similar duties within the present command and control milieu. Where a new system, such as TAOC-85, replaces an existing and similar system, the difficulty may not be unsurmountable. In other cases, such as PLRS, where the new system is not a replacement but a totally new capability, finding compensatory reduction billets may prove to be more difficult. Unfortunately, the general trend in systems development is to assume that current organizational structures will absorb the new system without great difficulty and that similar numbers of personnel and mixes of skills will suffice. Additionally, it is often assumed that personnel and training problems can be overcome with relatively short lead times. These assumptions appear to be erroneous in the case of MTACCS. Moreover, these trends exist throughout all the services and apply generally across the board for many research and development programs. A recent report entitled Manpower Planning For New Weapon Systems was prepared by the Logistics Management Institute for the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) and found that:

* Most estimates of manpower requirements made during acquisition programs are too low.

* The reasons for the low estimates are varied (optimism-increases in equipment capabilities-changes in operating scenario).

* Operating and support concepts are likely to vary throughout the acquisition process, causing fluctuations in the estimates of manpower requirements.

* Estimates of new system manpower requirements frequently reflect program goals, rather than unbiased assesments of manpower needs.

* Manpower goals or constraints established for new systems have addressed only the aggregate manning of the using unit, not total manpower or skill level requirements.

* Controlling training requirements can be as important as constraining manning levels.

* There is greater uncertainty associated with maintenance manning than with any other element of new weapon system manpower requirements.

* Actual manpower requirements of a new system are not determined until years after the final DSARC review of the program.

* Manpower planning for the new system requires a broader perspective than that provided by a program manager alone.

In summary, it would appear that the MTACC systems developments are pointing toward:

* A greater number of personnel.
* An increase in personnel quality requirements.
* An increase in training requirements.
* Grade creep (from repairman to technician), and
* Maintenance concept changes from organizational to depot).

In consequence, the Marine Corps manpower issues center around:

* The increasing complexity/sophistication of emerging systems,
* Increasing demands for quality manpower,
* Imbalances in manpower specialities,
* Recruiting as it applies to training requirements and
* Constrained end strengths.

These trends and issues are of increasing concern to the various systems sponsors within Headquarters, Marine Corps, and the issues, are being widely discussed. The Manpower Department within Headquarters, Marine Corps, has established the objectives of developing procedures and controls which will assist in determining manpower requirements and allocations, recruiting goals and projections, and training requirements. Additionally, the problems of identifying and incorporating the manpower requirements of new systems and equipment into the decision apparatus are being addressed. Solutions to these problems will facilitate the necessary organizational and force structure changes which ensue from new major systems acquisition.

FORECAST OF DOD QUALITY ENLISTMENT SHORTFALL

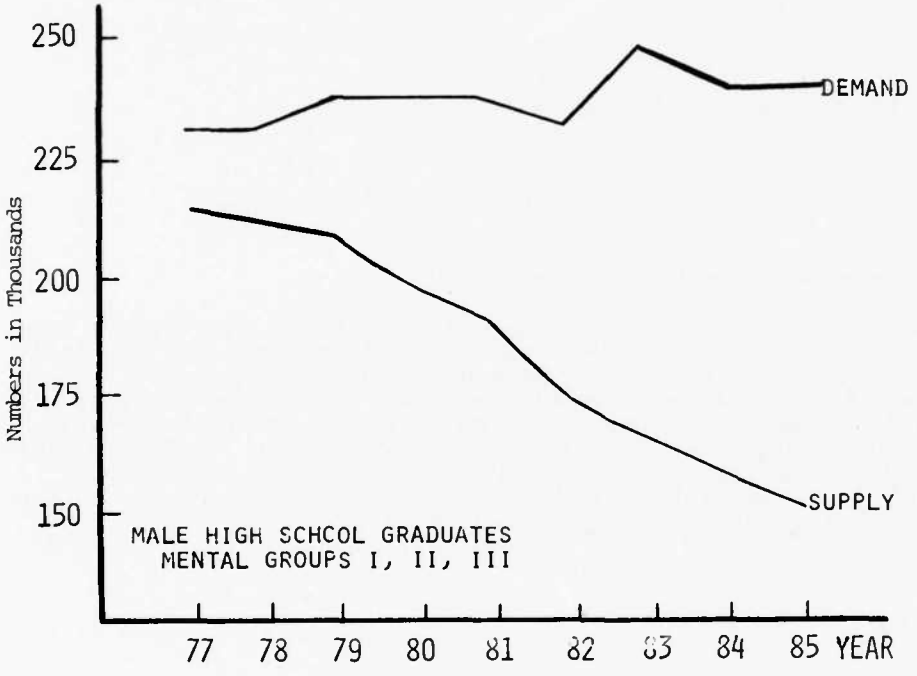
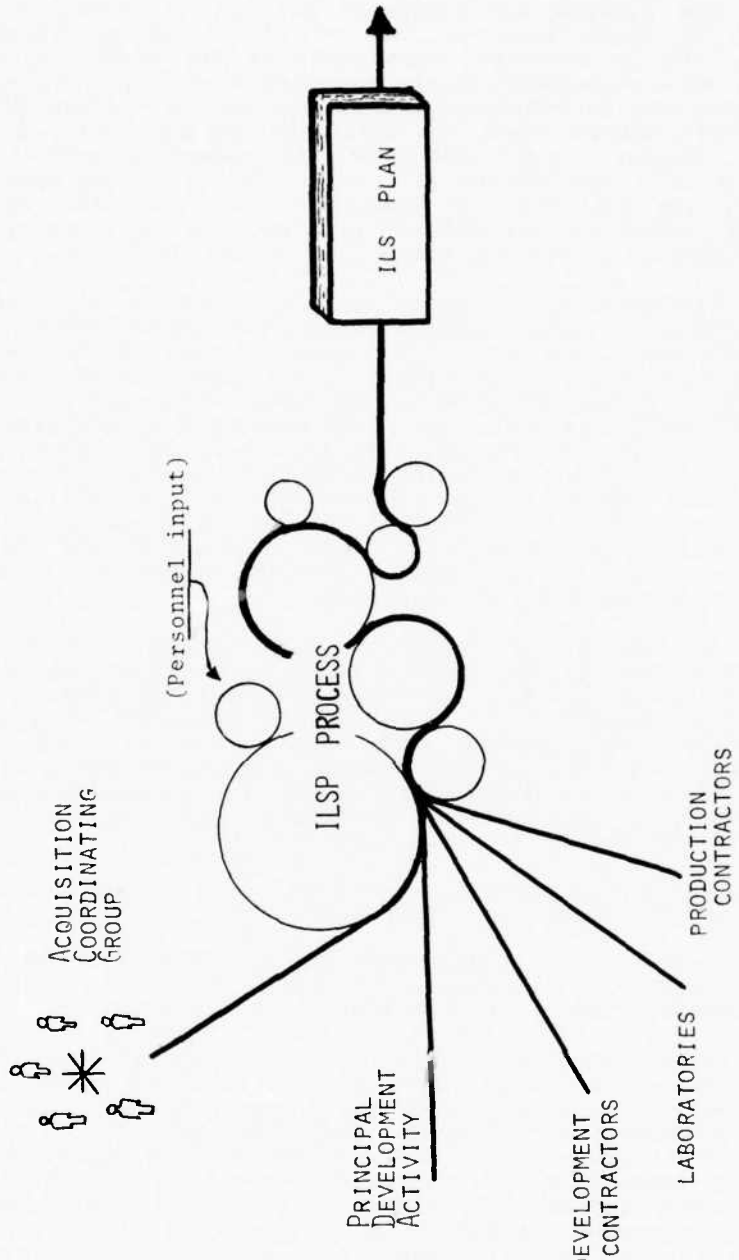


Figure 5-7

FIGURE 5-7



Manpower Planning in the ILS Process

Figure 5-8

505. FINANCIAL ASPECTS

One of the most important aspects of research, development, and procurement of new systems and equipment is that of financing and funding. This aspect is also, perhaps, one of the least understood and least appreciated. It is important because it is the means, or mechanism, by which we are able to accomplish the modernization of our forces. No amount of threat analysis, determining of deficiencies, or setting of requirements will bear fruit unless funds are available and allocated to fill the requirements. Research and development of modern weapons and technology which support this development will mean nothing to the operating forces, unless funds are available to procure and maintain the equipment which research and technology are able to provide. It is therefore appropriate that a few comments on the subject should be included here.

Recent technological advances have provided an unprecedented opportunity to modernize. New materials which have application, or the potential for application, to many of the areas of need of the operating forces are becoming available. From helmets to helicopter rotor blades, these new materials can be made into items of equipment which are stronger, lighter, and when necessary, smaller. The miniaturization of electronic components has made the option of tactical computers very attractive. Advances in communications portends a major improvement in command and control capabilities. From the lighter and more durable cloth for utilities to the laser guided artillery round, the number of "things" which we could use is exciting to contemplate. But these net "things" cost money, and the question is, can the Marine Corps afford them? In order to provide a perspective on this issue, some background is necessary.

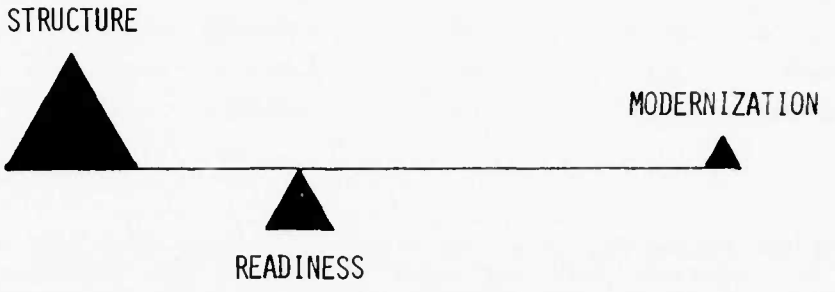
First, the annual generation of the Program Objective Memorandum (POM), and subsequently the budget, requires an assessment of the current status of the Corps, and the determination/identification of "needs". The needs are those necessary in order to "do business" as required by the stated mission. Subsequently, from these perceived needs, and within a fixed boundary, a prioritization process fixes these needs in a hierarchical order. Finally, the prioritized needs are defended during the various states of subsequent appraisal and evaluation in the planning, programming, and budgeting process (PPBS). (See figure 5-9).

Second, financial planning and programming is conducted using three broad areas of identification. They are:

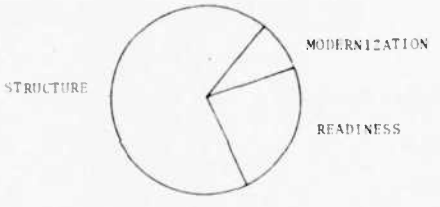
READINESS	(Operations and Maintenance Costs (O&M))
STRUCTURE	(Manpower Costs)
MODERNIZATION	(Procurements Costs (PMC))

Because the total costs must be kept within a prescribed limit, the allocation of available funds must be balanced with these three areas. A pictoral representation of this balance is shown on the following page and reflects a balancing of structure and modernization on the fulcrum of readiness. While procurements and manpower may be considered elements of readiness, the operations and maintenance costs are more directly translatable to readiness and are thus the point about which deliberations on the magnitude of structure and modernization must turn. This pictorial representation is intended to illustrate, (1) that the funds available for all three areas of cost are a definite and limited amount, (2) that the priority is on readiness, and (3) that to add to one area requires a corresponding reduction in another area. One can not, therefore, expect to expend

large sums in an effort to modernize without accepting a compensatory reduction in the amount of funds for the maintenance of manpower or for operational costs. This fiscal reality is one which decision makers within the acquisition process must face when considering the development and procurement of new systems or equipment. Modernization through procurement is not an open-ended opportunity.



Third, the costs associated with manpower and the maintenance of readiness at a minimum of C-2 leaves a limited (and relatively small) remainder of funds for modernization when the total budget is being constrained. The chart below depicts this reality and is representative of FY 80.



* READINESS (O&M) = 23% to maintain C-2.
* STRUCTURE (Manpower) = 68% to maintain 189K.
* MODERNIZATION (PMC) = 9%.

Note: For FY-80 based on January 79 FYDP. *Includes USMCR.*

It should be noted that budgetary control over manpower costs are relatively limited because these costs are basically fixed by the number of Marines in uniform. Since this represents more than half of the total budget, and since the cost of readiness amounts to nearly one fourth of the total budget, the funds left for modernization through procurement are relatively few.

In this regard, it is interesting to compare the distribution of the funds, within the budget with that of the other services. A quick glance at the figures below will reveal that the Marine Corps will spend proportionally more for manpower and less for procurement than any other service.

FY-80 BUDGET COMPARISONS
(BILLIONS)

	BUDGET	END STRENGTH (000)	MANPOWER	O&M	PROCUREMENT
ARMY	33.1	771	11.23(34%)	11.2(34%)	5.78(17.5%)
NAVY	43.3	528	7.08(16%)	13.1(30%)	14.77(34%)
AIR FORCE	38.4	599	7.88(21%)	11.54(30%)	12.89(34%)
MARINE CORPS	3.26	189	2.22(68%)	.757(23%)	.285(8.7%)

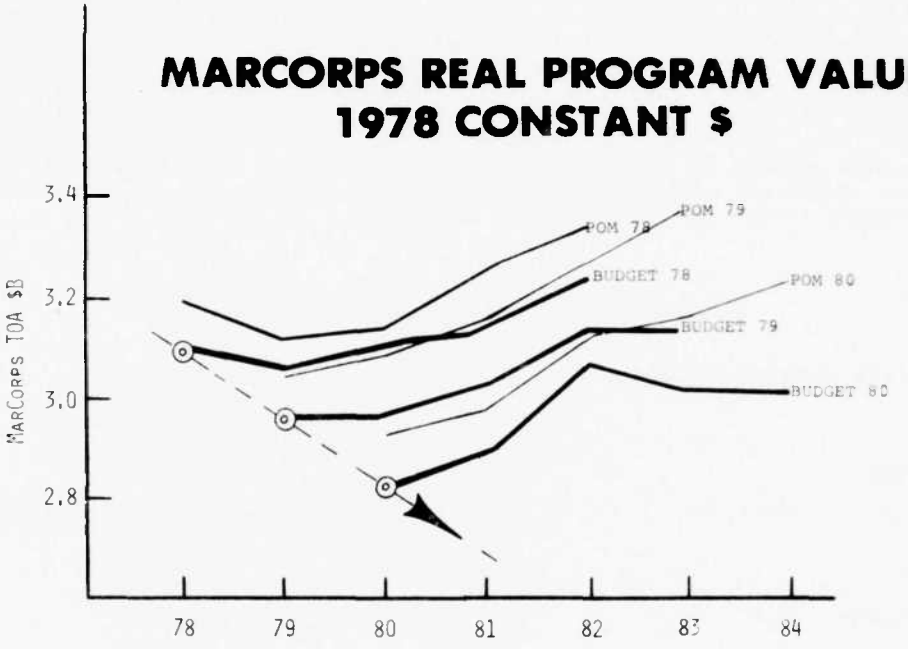
To find the reason for this, one must examine the structure of the Marine Corps in comparison with the other services. The following chart is a comparison of one of the services (Navy) with the Marine Corps for the years 1964 and 1978 and shows the changes which have occurred. For the period examined, it can been seen that the Navy has reduced its manpower by 21%; number of ships by 34%; and number of aircraft by 22%. For the same period, the Marine Corps has maintained its manpower level, retained its force structure of three wings and three divisions, and experienced a

DON 1964 (PRE-VIETNAM) - 1978

NAVY:	1964	1978
PERSONNEL (ACTIVE)	668K	527K
WARSHIPS	444	292
CARRIERS	24	13
AMPHIBIOUS SHIPS	113	63
OPERATING AIRCRAFT	6949	5393
FIGHTER/ATTACK SQUADRONS	84	60
HELICOPTER SQUADRONS	3	5
PATROL SQUADRONS	30	24
MARINE CORPS:		
PERSONNEL (ACTIVE)	190K	190K
DIVISIONS	3	3
WINGS	3	3
FIGHTER/ATTACK SQUADRONS	26 (510 UE)	25 (344 UE)
HELICOPTER SQUADRONS	15 (327 UE)	22 (432 UE)

reduction in number of aircraft of only 7%. While the Navy has been reducing its structure, the Marine Corps has essentially maintained its previous level. The attendant proportional costs of manpower and operational readiness have been retained in the Corps while those of the Navy have been reduced. This trend is also evident with the Army and Air Force, and goes a long way in accounting for the disparity in budget distribution between those services and the Marine Corps. This reduction of force structure is one of the methods used to permit larger expenditures in procurement from a constrained total budget. Should the Marine Corps adopt this option?

A review of the present Five Year Defense Program (FYDP) and the following chart will reveal that the fiscal constraint now being experienced will probably continue for the near term, with the possibility that it will become more severe.



The result: We can not expect to have an appreciable increase in procurement funds, unless there is a force reduction or an increase in total authorized obligations. Barring relief by either of these options, any modernization will have to be highly selective in nature. There will have to be trade-offs between quantity and quality, thorough analysis of the long term effects (costs) of new procurements, and the establishment of a strictly adhered-to priority system. On a constrained budget, the Corps can not afford to "buy something for everyone" but will have to be very selective. Many of the very desirable and highly effective items of equipment now in research and development may have to be either deleted from programming or programmed at a much reduced level. The various systems within MTACCS are no exception and, because of their relatively high costs, must receive close scrutiny. A recent study entitled A Function-Based Cost-Benefit Analysis of MTACC Systems, (prepared by Decisions and Designs,

Inc. for Headquaters Marine Corps (Code CC)) was such an effort. The objectives of this study were:

a. To determine the relative benefits of improving command and control functions from present levels to those which could be expected from corresponding MTACC system.

b. To determine the relative benefits of improving the performance of command and control agencies from present levels to that which could be expected from such agencies using applicable MTACC systems.

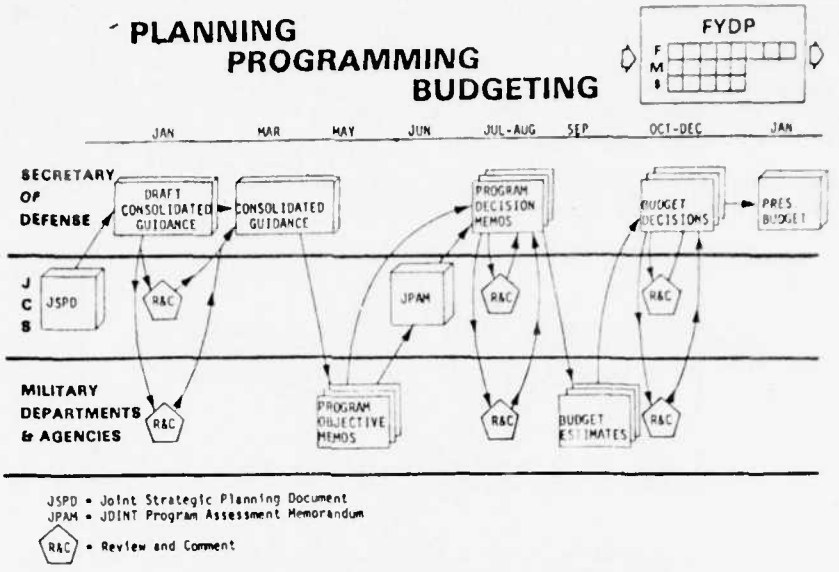
c. To determine the benefit-cost ratios for each of the MTACC systems.

The results of this kind of cost-benefit analysis are very useful tools for the various systems sponsors, and for all participants in the systems acquisition process. It is just this sort of analysis which must be repeated for many of the other systems in development, although not necessarily at this magnitude. Some rather difficult trade-offs may have to be made between items of equipment which are all highly desirable. Establishing priorities from the "menu" of what is in the present research and development process should be a paramount concern. A partial listing of several systems or items of equipment which the reader may expect to be procurement affordability issues is shown below.

ITEMS PROJECTED AS PMC AFFORDABILITY ISSUES

167 M-198 HOWITZERS/AMMO	AN/TPQ-27	TRI-TAC
CVF	DCT	SIAS/CCS/AFRF
SHELTERS	AMES	PGM'S
PLRS	TRA ( )	MED. CIRD BRIDGE
MIFASS	MILES	MACCS-85
XM-1 TANKS	IAC	MTACCS
MPWS	TLQ-17A	LVT(X)

In summary, the opportunity to modernize through procurement is a tantalizing and exciting prospect. This prospect, however, is dulled by the hard fiscal realities of constrained budgets and reduced procurement funds. Some hard choices will have to be made to select those items which are most needed and affordable. The operating forces can not expect to receive all of the new equipment now being developed, unless there is an appreciable increase in the budget, or a compensatory reduction in structure or readiness.



PLANNIND, PROGRAMMING & BUDGETINO SYSTEM

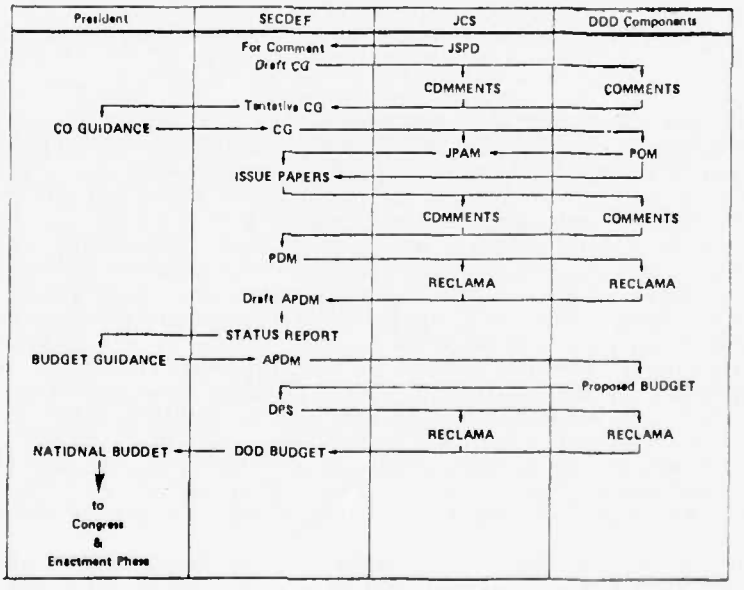
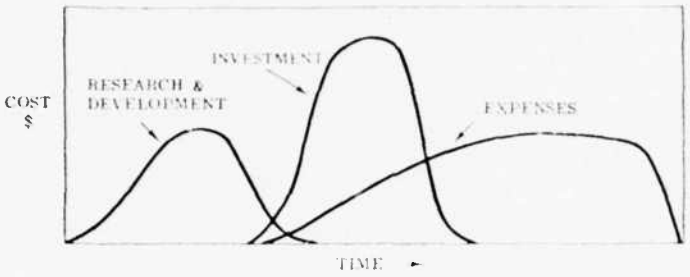


FIGURE 5-9

506. LIFE CYCLE COSTING

The life cycle cost (LCC) of a system is defined as the total cost to the government for the research and development, procurement, and subsequent operation and support for that system. Because LCC represents the total costs for a system throughout its lifespan, it is an important tool for use by decision makers in the acquisition process. A brief review here may be helpful to the reader in order to promote a fuller understanding of the costing process, and of the full impact of the acquisition of a particular system or item of equipment.

There are three categories of cost associated with ICC and their sequence of occurence is depicted by the following chart.



RESEARCH & DEVELOPMENT	Development of a New Capability to the Point of Introduction into Operational Use
INVESTMENT	Costs Required Beyond the Development Phase to Equip Forces with New Capability
EXPENSES	Recurring Costs Required to Operate and Maintain the Capability

Cost by Categories as a Function of Time

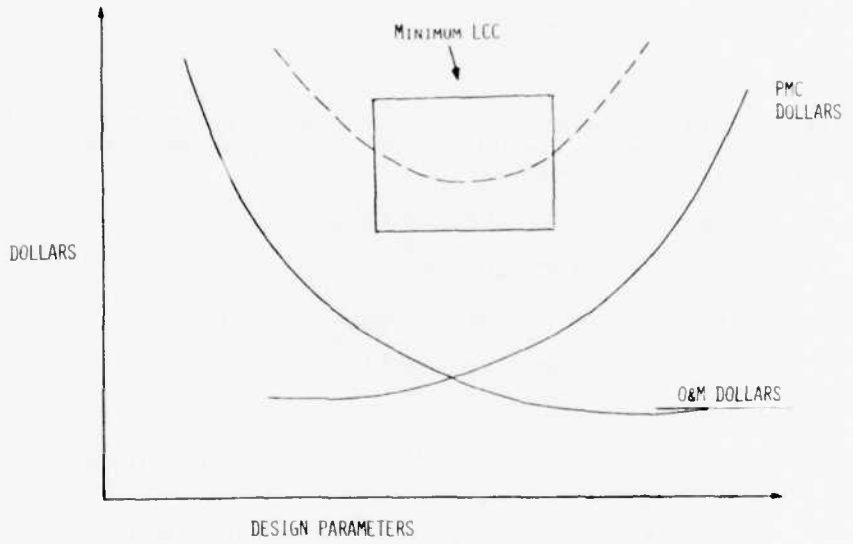
The research and development costs refer to all costs associated with research, development, test, and evaluation occurring throughout the various phases of development, from concept formulation to final full-scale development. These costs terminate with the completion of the development test and evaluation and the initial operational test and evaluation (OT-II). The procurement costs, or investment, refer to all those costs associated with the full-scale production of a system and are nonrecurring in nature. These costs cover such items as management, materials, fabrications, initial logistic support, and testing of operational systems in production models. They terminate when there is a satisfactory turnover of an operationally usable system to supply activities and using commands or organizations. The operating and support costs refer to all costs associated with the subsequent operation and logistic support for a system throughout its lifespan. These costs are for such items as operation, maintenance, supply, manpower training, materials, utilities, overhead, facilities, modifications, etc. The final cost in this category is incurred when an item is phased out because of wearout or obsolescence.

Life cycle costing is begun early in the development process and becomes more accurate as the development of a system or item of equipment proceeds through the acquisition phase. There are several activities and

offices involved. While the Fiscal Division at Headquarters Marine Corps (Code FDR) is responsible to conduct independent LCC estimates, it is the acquisition program sponsor (APS) who is responsible for all system economic analyses. The DC/S I&L estimates the operational and support costs; the Development Center, through CG, MCDEC, budgets RDT&E costs; and the DC/S R&P provides RDT&E budget management and coordinates PPBS inputs. The development project officer (DPO) is responsible for the preparation of the initial LCC estimate (LCCE) document required at Milestone I and this document is revised and updated for Milestones II and III by the material developer and the RDT&E manager.

LCC information and concepts should be used during all stages of the systems acquisition process as a management tool to assist in ensuring that the total life cycle costs are within acceptable limits and commensurate with the capabilities being bought. The following figure represents how the design parameters of a particular system under develoment are considered for their impact on procurement and operational costs, and how, through analysis of various trade-offs, the minimum LCC is achieved.

DESIGN TRADEOFF ANALYSIS



Since subsequent ownership costs may exceed acquisition costs, it is apparent that LCC estimates, together with systems effectiveness data, may lead to a decision for a different alternative from that when cost considerations are limited only to initial acquisition costs. In such instances, it may be appropriate to select an alternative with a higher acquisition cost in order to achieve a lower cumulative life-cycle cost. Too, the LCC may indicate that the total cost is excessive in terms of effectiveness or production of anticipated benefits, and lead to program termination or a search for alternative solutions.

Currently, data collection for LCC is generally the result of special studies or analyses directed at obtaining performance and cost figures for specific systems under development. There are limitations associated with this type of data collection and a method is needed which will enhance the

value and increase the validity of LCC estimates. Different cost estimating techniques are employed as a systems development progresses. Existing cost models are inadequate to meet program management information requirements of timeliness, accuracy, validity, and ease of understanding. They are specifically deficient in the areas of RDT&E costs and costs of software development and maintenance. In recognition of this inadequacy, the DC/S I&L is developing a LCC model for use in connection with all MTACC systems. The general requirements for this model are that it should:

* Address all costs, e.g., hardware, software, and personnel, which are associated with development, procurement, operations, and support
* Be well documented.
* Be easy to update.
* Contain easily understood cost estimating relationships.
* Be easy to defend.
* Be easy to modify.
* Be modular.

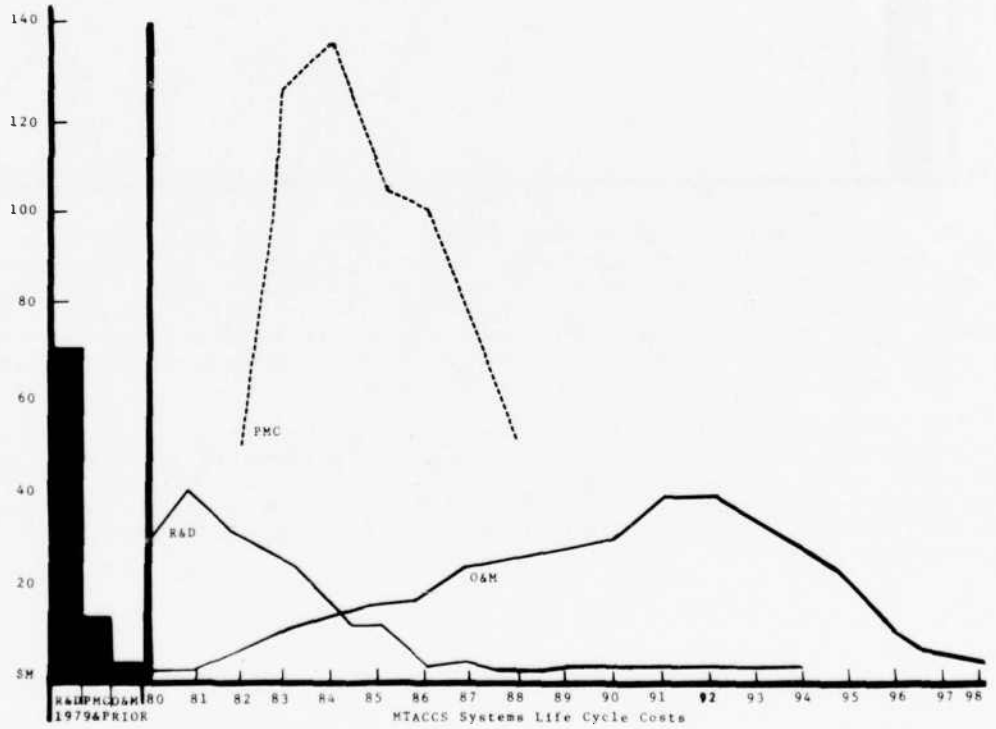
Once this model is developed and the associated management issues of model custody, maintenance, configuration, location, and accessability are resolved, the model can be used to:

* Determine system affordability.
* Conduct tradeoff analyses.
* Evaluate maintenance concepts.
* Evaluate commonality issues.
* Coordinate input to PPBS.
* Provide a framework for baseline cost estimating prior to Milestone I.
* Highlight economic risks of development and operation.
* Differentiate and aggregate hardware and software components of MTACCS systems for the categories of R&D, investment, operations and maintenance, and personnel and training.

Insofar as the present LCC for MTACCS is concerned, they are quite significant in view of the monetary constraints now being imposed on the Marine Corps. The following list is drawn from the 1979 MTACCS Master Plan (draft) and shows actual costs to date, plus estimated future LCC requirements in millions of FY 80 dollars.

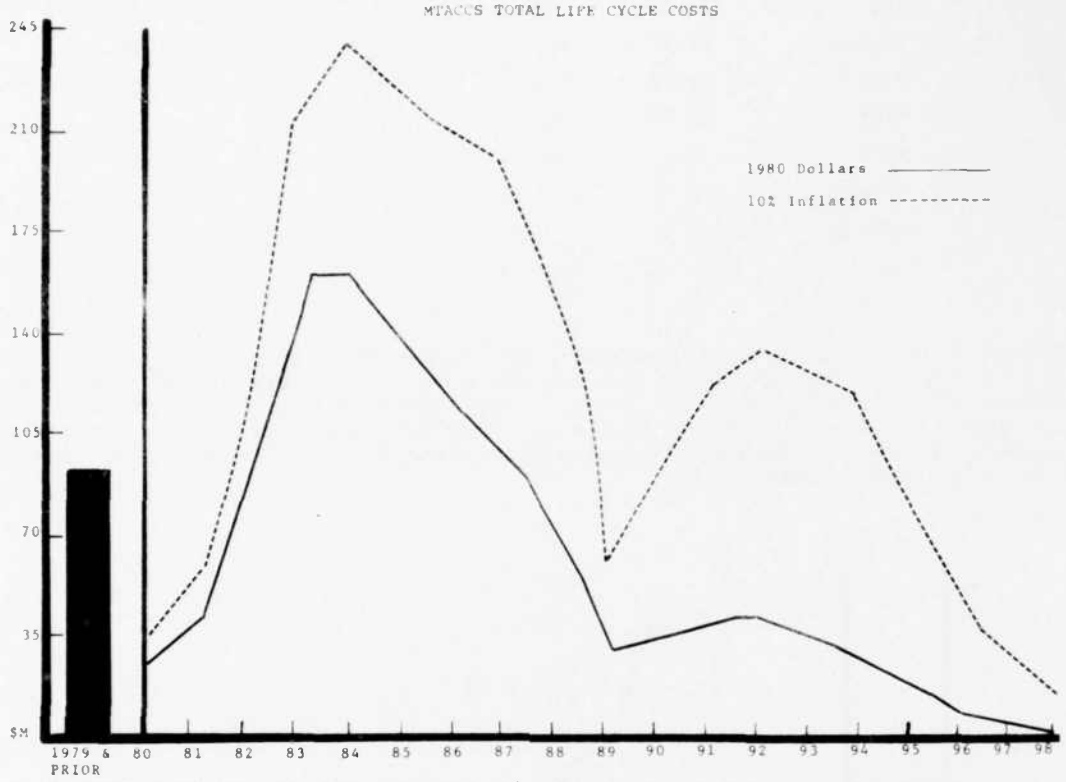
System	R&D	PMC	O&M	TOTAL
MIFASS	$48.90	$102.28	$ 135.91	$ 187.09
TCO	33.30	98.00	34.50	165.80
TAOC-85	68.40	126.50	21.45	216.35
MAGIS	38.24	106.01	23.59	167.84
PLRS	26.10	107.00	135.70	268.80
MIPS	8.50	49.04	63.12	120.66
MILOGS	19.92	54.60	34.24	108.76
TWSEAS	16.90	5.60	14.04	36.54
	$260.26	$649.03	$362.55	$1,271.84

Figure 5-10 is a further breakdown of these estimates by fiscal year and the following graph reflects the totals from this figure in the three categories of R&D, PMC, and O&M costs. The length of the life span for MTACC systems is defined as that period of time from program initiation through the tenth year following the initial operational capability (IOC) date of the individual system.



It should be remembered that the estimates are in FY 80 dollars and do not account for any anticipated cost rise due to inflation. If a nominal inflation rate of 10% is considered, the attendant total costs would then be appreciably higher as reflected in the following chart.

MTACCS TOTAL LIFE CYCLE COSTS



A continuation of the present fiscal constraints may, therefore, prohibit fielding of the entire MTACC system. Some systems may experience delays in fielding; some may be fielded at a reduced level; some systems may experience both of these; and some may not be fielded at all. From a comparison of data in figure 5-11 (the POM-81/EPA submissions) and the LCC estimates from figure 5-10, it is apparent that the projected availability of funds falls well below the estimated costs.

As previously stated, the Marine Corps will have to be highly selective in its modernization efforts and make trade-offs between items of equipment which may all be highly desirable. As an aid in prioritizing our acquisitions and making these hard choices, the use of life cycle costing and the timely development and use of an effective LCC model will be most helpful.

ANNEX Q-2

MTACC SYSTEMS LIFE-CYCLE COSTS

FY	79 Prior	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	TOTAL
MIFASS																					
R&D	10.90	14.00	13.20	6.10	2.20	1.90	0.60														48.90
PMC						40.69	34.19	27.40													102.28
O&M							2.14	2.14	2.68	2.68	2.68	4.29	4.29	4.29	2.68	2.68	2.68	2.68			15.91
TOTAL	10.90	14.00	13.20	6.10	2.20	42.59	36.93	29.54	2.68	2.68	2.68	4.29	4.29	4.29	2.68	2.68	2.68	2.68			167.09
TCO																					
R&D	7.00	1.70	3.20	8.50	9.20	2.50	1.20														33.30
PMC								32.00	32.00	29.00											93.00
O&M									2.24	2.24	2.82	2.82	5.72	5.72	2.24	2.24	2.82	2.82	2.82		34.50
TOTAL	7.00	1.70	3.20	8.50	9.20	2.50	1.20	32.00	34.24	31.24	2.82	2.82	5.72	5.72	2.24	2.24	2.82	2.82	2.82		165.80
TAOC-R5																					
R&D	16.60	8.40	19.80	8.70	7.90	3.30	3.70														68.40
PMC					48.00	36.00	42.50														126.50
O&M							1.97	1.97	1.97	2.09	1.74	1.86	1.97	1.97	1.97	1.97	1.97				21.45
TOTAL	16.60	8.40	19.80	8.70	55.90	39.30	48.17	1.97	1.97	2.09	1.74	1.86	1.97	1.97	1.97	1.97	1.97				216.35
MAGIS																					
R&D	11.51	0.47	0.52	0.49	0.57	0.98			2.33	1.59	2.12	3.53	3.53	3.53	3.53	3.53					36.24
PMC	7.29			16.90	44.36	37.46															106.01
O&M	0.89								2.30	2.50	2.60	2.80	2.90	3.10	3.30	0.30	1.40	1.50			23.59
TOTAL	19.69	0.47	0.52	17.39	44.93	38.44			4.63	4.09	4.72	6.33	6.43	6.63	6.83	3.83	1.40	1.50			167.84
PLRS																					
R&D	19.90	0.60	1.60	1.80	1.30	0.10	0.80														26.10
PMC				32.10	32.10	21.40	21.40														107.00
O&M				5.50	8.30	11.10	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	7.40	4.40				135.70
TOTAL	19.90	0.60	1.60	39.40	41.70	32.60	33.20	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	7.40	4.40				268.80
MIPS																					
R&D	0.40	0.30		1.40	2.10	2.20	2.10														8.50
PMC							9.85	23.79	15.40												49.04
O&M				1.28	2.32	1.04	1.04	1.16	5.22	5.22	5.22	5.22	9.87	9.87	5.22	5.22	5.22				63.12
TOTAL	0.40	0.30		2.68	4.42	3.24	12.99	24.95	20.62	5.22	5.22	5.22	9.87	9.07	5.22	5.22	5.22				120.66
MILOGS																					
R&D	0.83	0.79	1.27	3.92	1.96	3.27	2.62	1.96	1.30												19.92
PMC								16.38	20.02	10.20											54.60
O&M											1.74	2.32	2.32	2.32	6.97	6.97	2.90	2.90	2.90	2.90	34.24
TOTAL	0.83	0.79	1.27	3.92	1.96	3.27	2.62	18.34	21.32	10.20	1.74	2.32	2.32	2.32	6.97	6.97	2.90	2.90	2.90	2.90	108.76
TASEAS																					
R&D	9.70	0.80	1.20	0.90	0.90	1.10	0.50	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20					16.90
PMC	5.60																				5.60
O&M	1.52	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83					14.04
TOTAL	16.89	1.63	2.03	1.73	1.73	1.93	1.33	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03					36.54
MTACCS TOTALS																					
R&D	76.84	27.06	42.79	31.81	26.33	15.36	11.52	2.16	3.83	1.79	2.32	3.73	3.73	3.73	3.73	3.73					260.26
PMC	12.89			49.00	124.46	135.55	107.94	99.57	72.42	47.20											649.03
O&M	2.48	0.83	0.83	7.61	11.45	12.97	16.98	17.10	26.24	26.56	28.63	31.14	38.90	39.10	34.21	27.61	21.39	9.90	5.72	2.90	362.55
TOTAL	92.21	27.89	43.62	88.42	162.04	163.88	136.44	118.83	102.49	75.55	30.95	34.87	42.63	42.83	37.94	31.34	21.39	9.90	5.72	2.90	1,271.84

FY 79 and prior LCCs are in millions of those years dollars. Dollar figures for FY 80 and beyond are in millions of FY 80 dollars. LCCs inlcude program costs already incurred plus the best estimate of future year funding requirements. Future year costs in this table do not necessarily reflect POM or FYDP figures.

FIGURE 5-10

MTACCS Systems POM-81/EPA Submissions

FY	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	TOTAL
MIFASS																
R&D	14.00	13.20	6.10	2.20	1.90	0.60										38.00
PMC					13.26	20.96	27.40									61.62
TCO																
R&D		3.20	8.50	9.20	2.50	1.20										24.60
PMC							32.00	37.00	29.00							98.00
TAOC-85																
R&D		19.80	8.70	7.90	3.30	3.70										43.40
PMC				48.00	36.00	42.50										126.50
MAGIS																
R&D								2.33	1.59	2.12	3.35	3.53	3.53	3.53	3.53	23.51
PMC													30.00			30.00
PLRS																
R&D		1.60	1.80	1.30	0.10	0.80										5.60
PMC			21.40	21.40	21.40	21.40	21.40									107.00
MIPS																
R&D			1.40	2.10	2.20	2.10										7.80
PMC																
MILOGS																
TWSEAS																
R&D		1.20	0.90	0.90	1.10	0.50	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	6.40
PMC																
TOTAL	14.00	39.00	27.40	23.60	11.10	8.90	0.20	2.53	1.79	2.32	3.55	3.73	3.73	3.73	3.73	149.31
R&D																
PMC			21.40	69.40	70.66	84.86	80.80	37.00	29.00				30.00			423.12

Costs in millions of FY80 dollars.
Extended Planning Annex (EPA) figures are for FY86-94.
There are no POM-81 or EPA O&MMC costs identified.

FIGURE 5-11

507. THE TIME FACTOR

One of the most unyielding factors in the systems acquisition process is the element of time. Often overlooked, time is one of those commodities which may easily be considered an expendable. This is not, however, the case in RDT&E; and the activities which contribute to the factor of time, and those which are most affected by it, are worthy of study. Not surprisingly, one's position both within and outside the systems acquisition process can determine how critically the factor of time is viewed. To the user who perceives a need for a new capability, time is of great importance, and the urgency with which he views the passage of time waiting for the delivery of a new system is keenly felt. To the developer, time can be a frustrating consumer of interest and effort which produces a debilitating malaise. The manager within the acquisition process may view the passsage of time as a necessary evil which is required in order to accomplish his goals. It is useful, therefore, to address the subject here in order to promote understanding and appreciation for the various viewpoints.

What contributes to the time required to develop and field an item, and what are the effects of this extension? Some of the principal contributors are found in the areas of:

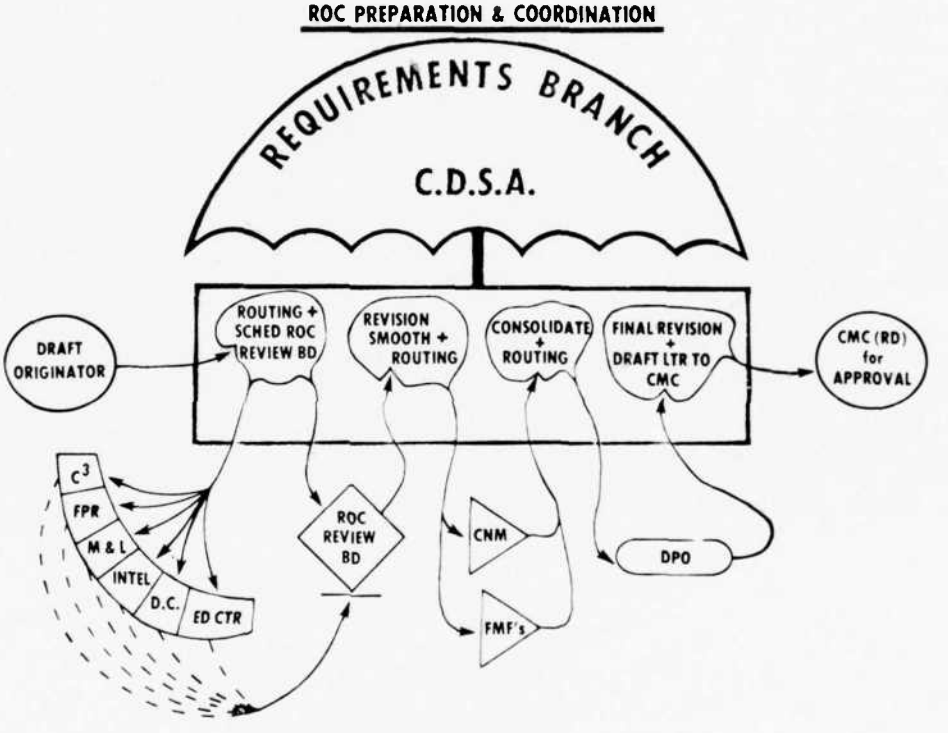
* The requirements definition and approval process.

* The fiscal process.

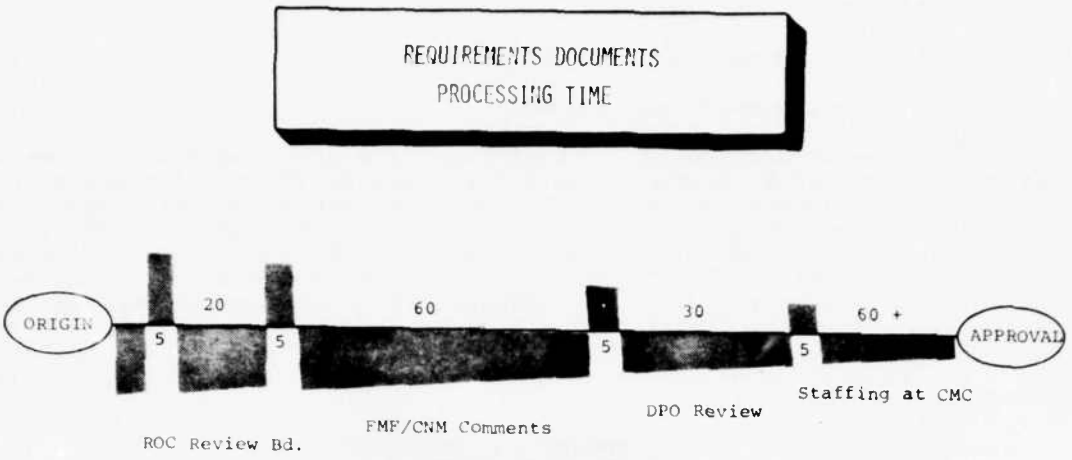
* Development and review procedures.

* Procurement constraints.

First, the definition of a requirement for a new system or item of equipment is achieved through a series of steps designed to ensure that a new item of equipment is the best method for satisfying an operational need. An approved required operational capability (ROC) provides the basis for subsequent programming and budgeting actions, and serves as the Commandant's official statement and description of a requirement to another service or agency that may have the responsibility for satisfying that requirement. They must, therefore, be accurate and complete statements, and the measured, though time consuming process, is designed to achieve this end. The following chart depicts some of the major steps in the requirements determination process.



The operational requirement (OR) utilized for Marine Corps acquisitions, which are Navy funded, is guided through the same process with an additional time period required for approval by the Chief of Naval Operations. The adoption of other service requirements documents also passes through the process, except for the drafting and review board steps. The average time required for this process is depicted on the following page.



TOTAL TIME (AVG) - 9 MONTHS

While this time period may not constitute a major portion of the total required for development and fielding an item, it is, nonetheless, one of several which contributes to the whole and can be quite lengthy when controversy or complications ensue. An effort is now being made to reduce this time period to less than six months.

Second, the fiscal process addresed previously in this section (paragraph 505) is a necessary cyclical evolution, the observance of which is mandated and closely prescribed (see figure 5-9). This cycle of activity, as depicted below, requires 24 months to complete. It is an ongoing and iterative process, but it is still necessary to begin planning at least two years before the funded activity is to occur. The difficulty here is not with the fiscal the cycle itself, but with the timing of the decision for a future R&D event with the fiscal cycle.

FISCAL CYCLE

(24 MONTHS)

15 MONTHS - PPBS

5.0 MONTHS - PLANNING
5.5 MONTHS - PROGRAMMING
4.5 MONTHS - BUDGETING

9 MONTHS - ENACTMENT

AUTHORIZATION
APPROPRIATION

APPORTIONMENT

For example, during a particular systems development, a R&D decision is made which requires PPBS activity, but the current PPBS cycle is beyond the planning/programming state for that evolution. In this case the R&D decision cannot be effected until the next planning and programming stage of

the next PPBS cycle. Also, during each PPBS cycle various R&D programs are often funded at a lower level than desired or not funded at all. R&D activity must then be curtailed and schedules readjusted. Additionally, changes within a particular program can occur quite rapidly, at times, with respect to the more rigidly structured fiscal cycle and, in such instances, time is lost and the program slows down until the new change can be funded. There is some ability to adjust funding within an approved budget to alleviate disharmonies between cycles in funding and R&D activities, but it is limited.

Third, the procedures required throughout the development process and the milestone review sequence must be followed closely. These procedures make it necessary to complete several steps before each review (work performed/plans made/analyses conducted/ estimates made), schedule and conduct the review, and thereafter begin the process of funding for the decisions made. A glance at figure 5-2 will provide the reader with a sample of the required documentation and the level of effort required. This listing is by no means complete, but only a selected sampling of major documents required. The point to be made here is that the development process is not a simple one but rather it is extensive, encompassing, and time consuming. The degree of complexity and the level of effort required varies with the magnitude of each individual program, but the procedures are the same regardless of the size of the development effort.

The final, major contributor to development and fielding time that is singled out here for attention is the constraints imposed on procurement. Even if a system or item of equipment is developed quickly, there must be sufficient funds available to procure the item. Often, and more so recently, new items reach the end of the development cycle, become ready for procurement, but procurement is delayed or the level reduced due to budgetary constraints. This hard reality is addressed more fully in paragraph 505 of this section. In such instances, hard choices must be made in order to procure those items for which the Corps has the most critical need and other items which, though highly desirable and available, must be deleted or postponed. Fielding of new items is thereby delayed until more money is available or the need for the item becomes more critical.

The effects of these and other delays compound the difficulties. In the case of requirements documents, program initiation is delayed. An approved mission element needs statement (MENS) is required before program initiation (Milestone 0) for major systems, and an approved ROC or OR is required for lesser programs. When the approval of the requirement document is delayed, the entire program is delayed. This kind of delay, however, is less troublesome than later ones.

After a program is initiated, considerable inertia is developed in many areas and this inertia is destroyed or diminished when the program schedule is interrupted. These delays lead to additional costs. Program cost growth is a continuing problem in systems acquisition management and, although generated from several separate areas, can itself lead to program delay or cancellation. Finally, because of economic factors, the unit cost for procurement tends to go up when procurement is curtailed. The phenomenon is most severe when the production level is lowered from initial estimates to appreciably fewer units, unless the initial number was small.

The factor of time, then, is an important one in systems development. Delays which result from numerous sources, are perceived differently according to one's perspective, and then tend to increase program costs.

508. MANAGEMENT CONSIDERATIONS

As stated earlier in paragraph 501, the systems acquisition management structure and the management practices now in use are being evaluated, and considerations are being made for some revisions. Several outside influences are prompting this examination and many perceived deficiencies in the Marine Corps Order P5000.10, which describes the management process, are relevant. The following comments are designed to enhance the reader's understanding of the present management structure and practices, and to promote dialogue and the eventual resolution of the issue. The scope of this exposition and analysis is necessarily limited in keeping with the purpose and intent of the publication. Descriptions will be brief, and only a cursory examination of problems and potential improvements will be offered. In order to provide some structure to what will be presented, the following sequence will be used:

Systems acquisiton process overview,

Some perceived deficiencies outlined,

Some suggestions for improving the process itemized, and

A few comments on constraints.

Systems Acquisition Process

The relationships of the major events in the acquisition process are depicted in figure 5-12. This chart is a modification of the one in MCO P5000.10, and is one of the few visual aids in existence which attempts to portray simply what is in reality a quite complex and comprehensive structure. The activities and events depicted are, for the most part, described and required by the order, but there are exceptions since the order is somewhat dated, and currently under revision. The flow of events are principally sequential with some iteration for certain operations. Each program must pass through a series of clearly defined decision points, or "milestones", beginning with program initiation at milestone '0'. At each milestone, a review is conducted of the status of the entire program and a decision is made to continue to the next phase or alter the programs progress in some way. Figure 5-13 is a sampling of the basic steps taken early in the life cycle of a program.

Regardless of the method of acquisition or location of project management responsibilities, the end result of the acquisition effort must be acceptable to the Marine Corps. This requires an internal management system to ensure timely direction, influence, and monitoring of program activity, and the integration of system compatability, priority, schedule, and cost. The overall responsibility within Headquarters Marine Corps for each weapon system or item of equipment in the acquisition process is exercised by the Acquisition Program Sponsor (APS); a major division within the headquarters. The sponsor is supported by various staff principals within HQMC and by the Development Center at Quantico, through CG, MCDEC. Key project officers are assigned to each program and collectively make up the Acquisition Coordinating Group (ACG). This group is composed of the Acquisition

RELATIONSHIP OF MAJOR EVENTS IN THE SYSTEMS ACQUISITION PROCESS

ACQUISITION PHASE	CONCEPTUAL				FULL-SCALE DEVELOPMENT		PRODUCTION PROCUREMENT		DEPLOYMENT OPERATION
RESEARCH AND DEVELOPMENT PHASE	RESEARCH	EXPLORATORY DEVELOPMENT	ADVANCED DEVELOPMENT FEASIBILITY	ADVANCED DEVELOPMENT VALIDATION	ENGINEERING DEVELOPMENT OR OPERATIONAL SYSTEMS DEVELOPMENT				
FUNDING CATEGORY	R&D (6.1)	R&D (6.2)	R&D (6.3A)	R&D (6.3B)	R&D (6.4) OR (NON-PROGRAM 6)		INVESTMENT PMC		O&M,MC
FUNCTION	DEVELOP KNOWLEDGE BASE	DEVELOP TECHNOLOGY BASE	COMBINE NEW TECHNOLOGIES INTO TECHNOLOGICAL BUILDING BLOCKS		ASSEMBLE TECHNOLOGICAL BUILDING BLOCKS INTO SYSTEMS		PRODUCTION		OPERATION
HARDWARE CONFIGURATION	BREADBOARD AND EXPERIMENTAL HARDWARE		SUBSYSTEMS, COMPONENTS, MODELS	ADV DEV OF CANDIDATE SYSTEM(s) OR, MAJOR COMPONENTS AND SUBSYSTEMS	ENGINEERING DEVELOPMENT PROTOTYPES (INCLUDES ILS HARDWARE)	PILOT PRODUCTION MODELS/PRE-PRODUCTION PROTOTYPES	INITIAL PRODUCTION ITEMS; 1ST ARTICLES (INCLUDES ILS HARDWARE)	FULL SCALE PRODUCTION ITEMS	OPERATIONAL SYSTEMS
TESTING AND EVALUATION	SIMULATION INVESTIGATIONS		FEASIBILITY DEMONSTRATION TESTS	DEV TEST WITH OPN TEST OBJECTIVES (VALIDATION OF SYSTEM CONCEPT, HARDWARE TECHNOLOGY)	DEV TEST; IOT&E TO SUPPORT PRODUCTION PROCUREMENT DECISION (ILS VALIDATION)	DEV TEST	FINAL DEV TESTS; FOLLOW-ON OT&E IN FIRST USING UNITS (ILS VALIDATION)		POST PRODUCTION TESTING AND EVALUATION
REPRESENTATIVE DOCUMENTATION	MLRP MMROP STUDIES TCP TECHNICAL STRATEGIES	PTDE TAP GOR S&TO	OP AP LAP RFP/IFB LCCE HCA COEA APP	ADM ACQUISITION PLAN TENTATIVE ILSP T&E REPORT MD SDO	ORD DD FORM 1634 APP CMP MIPR ROC/OR REVISIONS	PILSP LAP LETTER T&E REPORTS ADM COEA DTP'S	CONGRESSIONAL DATA SHEET ADM ALO OTP ASU DB'S MIPR CORL MCPR ILSP PR DTP'S SSP		UER
DECISION MILESTONES SYSTEM ACQUISITION REVIEW BY MDAC	MILESTONE 0 PROGRAM INITIATION	MILESTONE I ADVANCED DEVELOPMENT DECISION	MILESTONE II ENGINEERING DEVELOPMENT DECISION		MILESTONE III PRODUCTION PROCUREMENT DECISION		DECISION FOR MODIFICATION/ PRODUCT IMPROVEMENT/DEPLOYMENT		

MAA → MENS → (MAJOR SYSTEMS)
MENS → ROC/OR

FIGURE 5-12

TYPICAL ACQUISITION PROCESS INITIATION

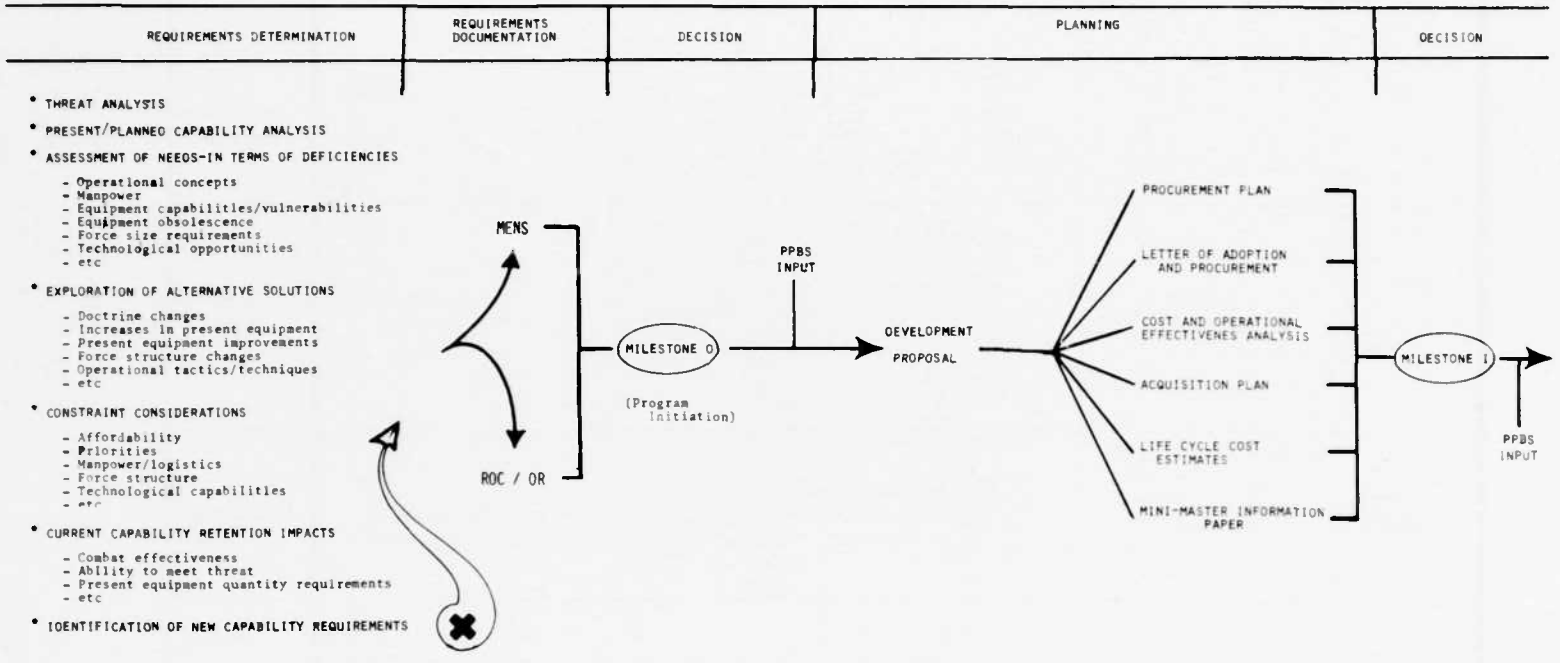
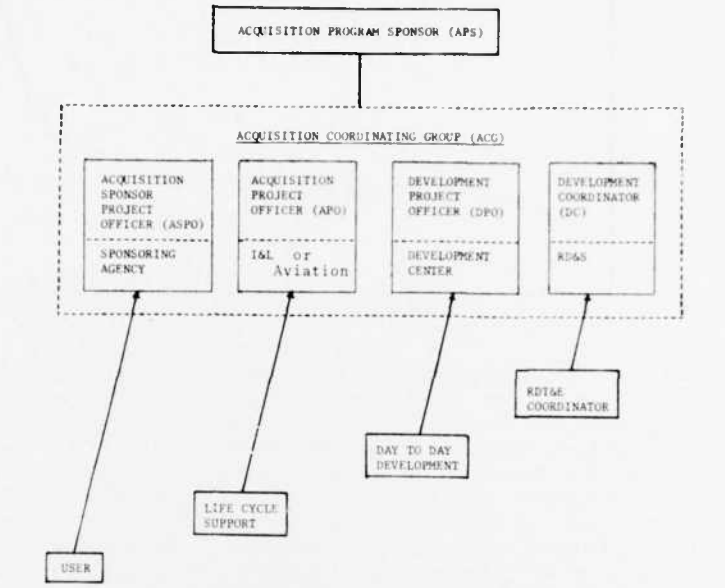


FIGURE 5-13

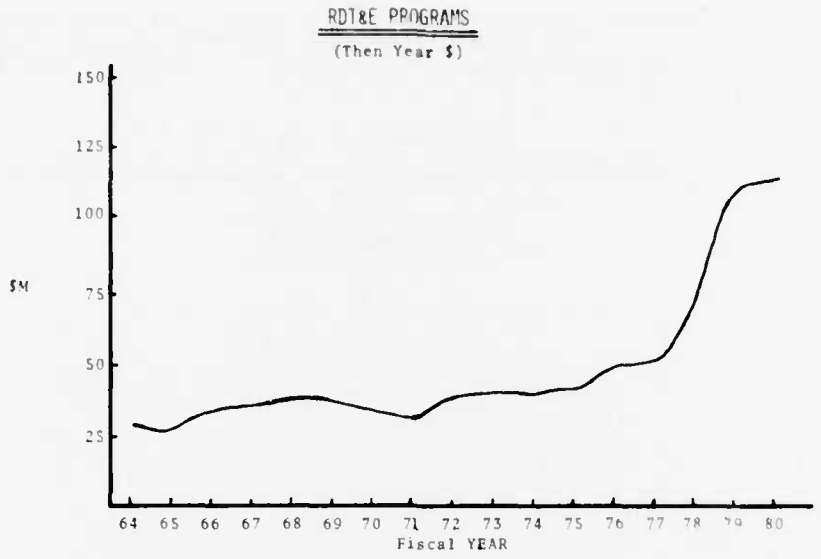
Sponsor Project Officer (ASPO), Acquisition Project Officer (APO), Development Coordinator (DC), and the Development Project Officer (DPO). Their relationships and resident unit, or division, are depicted below.

ACQUISITION MANAGEMENT STRUCTURE



While the duties and responsibilities of the program sponsor and the ACG vary with each phase of the acquisition cycle, the intent and overall effect is a coordinated "team effort." The group meets informally on an as-required basis to facilitate an exchange of information, conduct planning, and coordinate matters affecting the progress of a developing system or item of equipment.

Throughout the acquisition process, individual programs are subjected to high level reviews at specified milestones for evaluation as to their operational effectiveness, suitability, logistic supportability, and affordability. For major programs, these reviews are conducted by the Marine Corps System Acquisition Review Council (MSARC), and for "less than major" programs, by the In-Progress Review (IPR) Committee. The MSARC members are the HQMC Chief of Staff, the Deputy Chiefs of Staff, the Fiscal Director, and CG, MCDEC. The IPR Committee membership is composed of the DC/S's for RD&S, R&P, I&L, and OT. The procedures, documentation, and criteria are generally the same for both levels of review. Major programs are those which have an RDT&E cost of more than $5 million or procurement cost of more than $20 million. With very small programs, the APS may be delegated to conduct the review at each milestone. Some of the major programs must be further reviewed at the Department of the Navy and Department of Defense levels. The following chart will provide some perspective of the size of the total RDT&E program.



It should be remembered that each individual R&D program has it's own management "team" and that this team operates on an informal basis. This method of management is unique to the Marine Corps, as opposed to the "Program Manager" approach utilized by the other services. The essential difference is one of centralization of authority and responsibility. The program Manager management approach is characterized by straight lines of authority/responsibility and centralized control. The Marine Corps team management is characterized by an informal cooperation and decentralized operations, albeit under the overall control of one of the Deputy Chiefs of Staff of HQMC. Some grasp of the magnitude of the multiplicity of working groups and the number of offices and organizations involved, can be had by referring to figure 5-14. This chart reflects the management teams concerned with the development of the various MTACC systems and shows the internal management organization.

As will be seen, there are compelling arguments for the consolidation of authority and responsibility which characterizes Program Management, but the Marine Corps' unique structure and limitations of resources may be irreconcilable with this option.

Perceived Deficiencies

The principal Marine Corps order on systems acquisition is MCO P5000.10. This order was promulgated in June of 1974 and established policy for Marine Corps acquisition management. During the intervening years, experience and changes in DOD acquisition policies have made it necesary to modify the procedures described in the order. The recent publication of OMB Circular A-109, changes in DOD Directives, and organizational changes in OSD and SecNav, emphasize "Systems Acquisition" as a functional area of management. Organizations have been restructured accordingly, and Defense Acquisition Executive designated. To date, this change has had little impact on the Marine Corps, but, as time goes on it must be expected that HQMC will be required to provide a single point of contact on acquisition matters. Under the present Marine Corps committee approach to acqui-

sition management, the Chief of Staff performs those functions associated with an acquisition executive. If such a billet is created by the revision

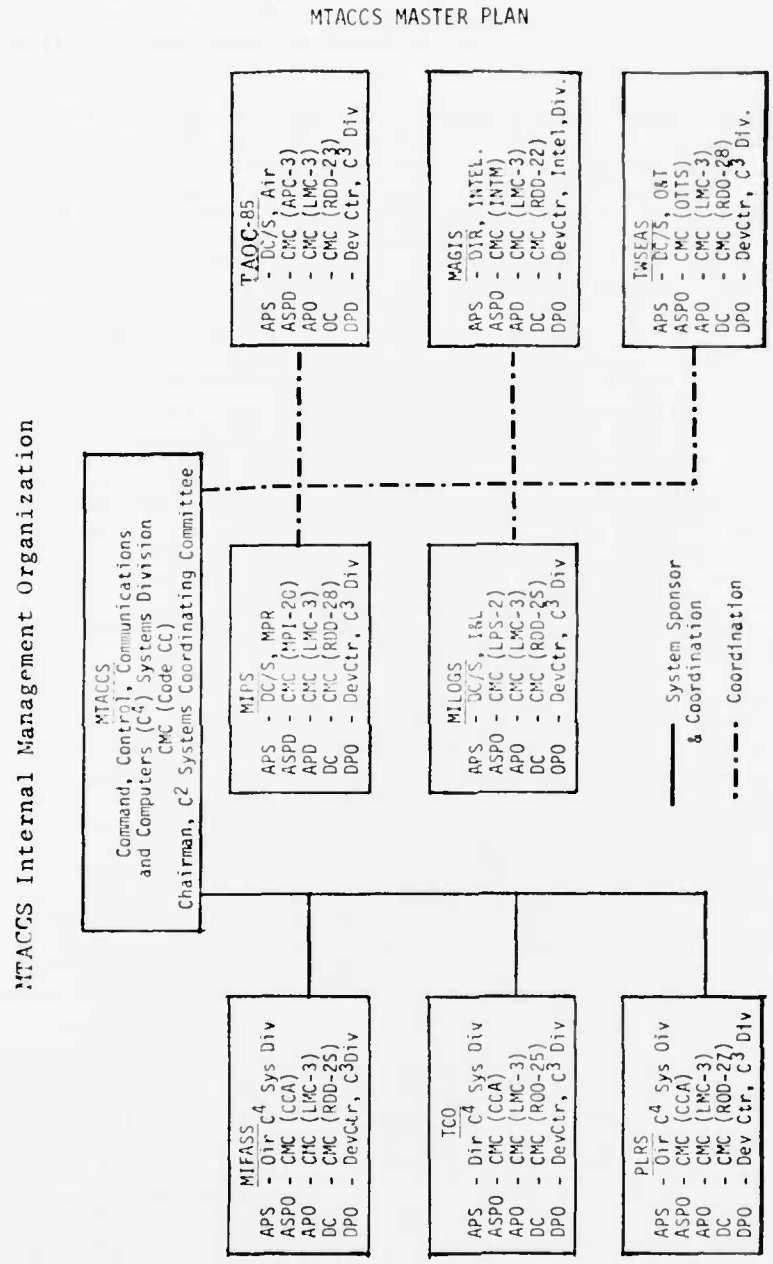


FIGURE 5-14.--MTACCS INTERNAL MANAGEMENT ORGANIZATION

of the basic Marine Corps order, the term "R&D Systems Acquisition Executive" should be clearly defined, to include term of assignment and extent of authority and responsibility. It is assumed that this individual will be concerned principally with the R&D side of the acquisition process, but responsibilities for procurement matters may also be included. In any case, the requirement to provide a single point of contact for all acquisition matters should be satisfied.

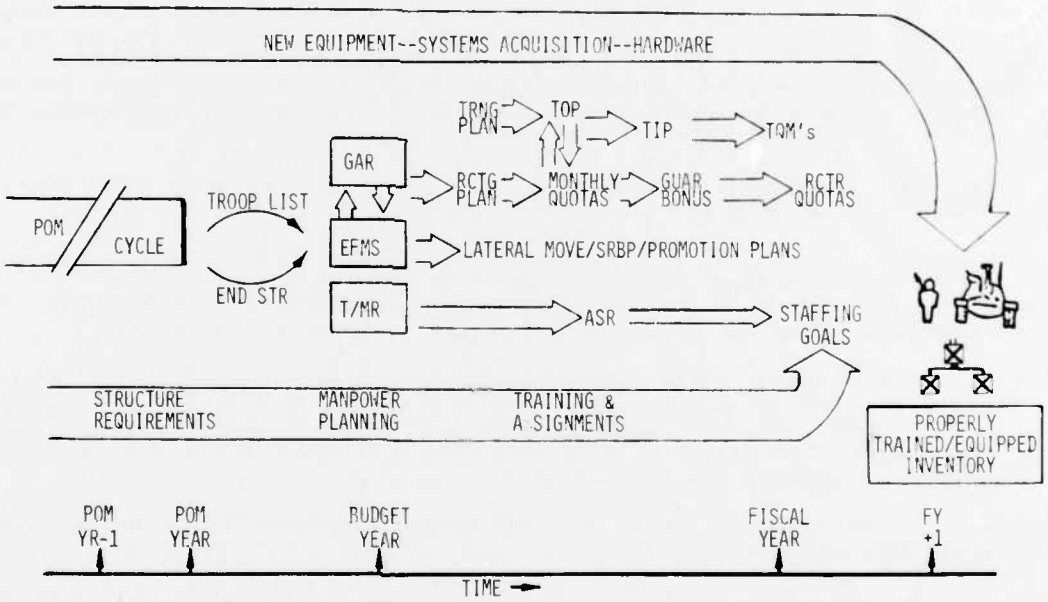
When internal management is addressed, the central issue revolves around the question of whether or not to convert to the "Program Manager" method. Some feel that strong centralized management of the Corps' acquisition process is long overdue. OSD requires a Program Manager organization for major systems. While not required for less-than-DSARC level programs, the endorsement of this form of management is strong, and other services use it extensively for less-than-major programs. The current Marine Corps management structure does not provide for such a "central authority" to which all issues can be addressed, or for relationships with external agencies or offices. Under the present structure, the Principal Development Activity (PDA) (charged with the management and technical responsibility for a development effort) may receive direction from any of the members of the ACG, or from none. The result can be confusing and time consuming when inconsistent or contradictory guidance is provided. When no guidance is provided, the PDA acts independently, the program may proceed on a course which is contrary to Marine Corps desires, or progress slowly, or not at all. This difficulty also arises when another service has the lead in a development effort and the Marine Corps is participating in a joint program. Additionally, under the present process, the responsibilities and authority for such items as budgeting, contracting, and field execution are spread among different offices and organizations. A Program Manager approach to management and the consolidation of responsibility and authority could avoid these, and similar, difficulties.

Another perceived deficiency in the current management process is that of insufficiently clear management responsibilities. While the present order does address this issue, it is judged by some to be less than sufficient in breadth and detail. There is a need for clarification of major acquisition responsibilities to identify who has the lead for each program and who and when the supporting offices are to participate. This kind of clarification would facilitate integration of the RDT&E process with the cyclical POM evolutions, and provide for closer alignment, integration, and awareness between the participants during such activities as planning, budgeting, procurement, life cycle support, and the multiple disciplines necessary to accomplish these functions. If the option for retention of the present management method is selected, the assignment to, and responsibilities of, the members of the decision/review groups should be more clearly defined than in the case in the current order.

The present acquisition process does not appear to facilitate the easy adoption of the products of other services' development programs. While MCO P5000.10 specifies that most of the needs for new material will be satisfied through the development programs and with the assistance of the other services, and through joint acquisition programs, there is a paucity of instructions and directions on how this is to be accomplished. Considerable savings in money and manpower might be realized if instructions were expanded and procedural steps clearly explained which promoted the acquisition of material through other services. The problem lies in the "good ideas" that are developed by other services and the off-the-shelf procure-

ments which are attractive, but contain pitfalls in documentation, support, and training. Such programs are sometimes given birth in the POM development process, but few of them show any of the characteristics inherent in an orderly systems acquisition process. In addition, with emphasis on other services' programs, there will be less incentive to pursue unilateral development. In this regard, it is noteworthy that of the 127 promulgated Marine Corps requirements documents, 101 of them appear directed toward unilateral development; and of the 122 current RDT&E work directives, 73 are directed toward unilateral development.

As pointed out in paragraph 504 of this section, the manpower and training impacts produced by the development of many of the new systems are far reaching and of considerable magnitude. The present management process in systems acquisition does not reflect this important element of planning in relationship to its importance. The integration of manpower and training requirements and planning with the management group (ACG) is presently only tangential. Currently, an officer from the Manpower Division is assigned as a point of contact for the APO and ASPO. This officer typically has other duties, as well, and is not always present during planning activities. Too, the resources available for sufficiently thorough manpower and training planning are lacking. There is a need to emphasize, very early in the acquisition and R&D cycle, a continuous and comprehensive manpower and training determination process and set of procedures. Guidance is needed on staff interrelationships between military occupational specialty (MOS) and table of organization (T/O) sponsors, program or project sponsors, and manpower, operation, and training action officers. The following schema demonstrates some of the complexity which is associated with the manpower and training demands of systems acquisition.



GAR-GRADE ADJUSTED RECAMPULATION

EFMS-ENLISTED FORCE MANAGEMENT SYSTEM

T/MR-TABLE OF MANPOWER REQUIREMENTS

TOP-TRAINING OUTPUT PLAN

TIP-TRAINING INPUT PLAN

TQM-TRAINING QUOTA MEMORANDUM

RCTG PLAN-RECRUITING PLAN

GUAR BONUS-GUARANTEED BONUS

RCTR QUOTAS-RECRUITING QUOTAS

SRBP-SERVICE REENLISTMENT BONUS PLAN

ASR-ADJUSTED STRENGTH REPORT

The Program Sponsors are rightfully concerned with such issues a the quality and quantity of the future manpower supply, about equipment maintenance concepts, and about systems design concepts as they affect demands on manpower. Currently, however, there is no formalized process or set of procedures by which these demands can be identified and met.

There is a recognized need for education and training for personnel involved in systems acquisition. This is particularly true in the Marine Corps where personnel policies do not permit career mobility within the field of systems acquisition management, as other services are able to do. The need for this kind of expertise is still a reality, however, and is partly the product of the increasing demands for program justification, and the defense of programs at the various levels of review. The number of documents necessary throughout the acquisition cycle has increased considerably, and the level of effort required to generate these documents and system life cycle planning adds to the need for highly trained personnel. The systems acquisition cycle has lengthened and become more complex. While the Marine Corps may not be able to afford a primary specialty field in defense acquisition management, there is a wide diversity of training available. The establishment of a mandatory requirement for a minimum level of training for personnel engaged in acquisition management might well satisfy the needs of the Marine Corps. This requirement, plus stability in billet assignments, has the potential for high pay-back in both the amount and utility of new equipment fielded, and in the cost savings and increased combat effectiveness which might be realized.

Some Suggestions For Improving the Process

What follows is a listing of some suggestions for improving the acquisition process. This list is by no means a complete one, but is, rather, a sampling of some of the major issues attendant to the discussion of acquisition management review. They are drawn from the various offices and organizations within the Marine Corps acquisition management structure, but they are not representative of any consensus.

1. The feasibility of adopting the "Program Manager" approach, or some derivative of this aproach, should be examined.

2. The feasibility of adopting a strongly centralized management structure for Marine Corps Systems acquisition should be examined. The desirability of consolidating the functions of budgeting, contracting, and field execution into one organization should be included here.

3. The Systems Acquisition Management Manual (MCO P5000.10) should be revised as soon as practicable. Consideration should be given to conversion of this manual to a "users manual," and to assigning the writing and production of the manual to a contractor. The revised manual should include, at a minimum, the following:

a. Incorporation of all management procedures and requirements of current higher directives.

b. A clear definition of all staff relationships and responsibilities.

c. A resolution of the perceived deficiencies alluded to here and expressed elsewhere within the present management structure.

d. A thorough formalization of the documentation process.

e. Provide clear definitions of the breaks between the various program levels (i.e., major, less-than-major, other).

f. Formalize the program initiation procedures.

g. Clearly define the functional mission areas of responsibilities between sponsors.

h. Include annexes on each of the documents required in the acquisition process.

i. Require separate documents for manpower/training impact analysis and for manpower/training support. These documents should be required at milestone one and revised and updated at each subsequent milestone much like the ILSP is now treated.

4. The option of requiring defense acquisition management training for selected personnel should be considered. This training should be commensurate with billet assignment and occur before assignment is affected.

5. Consider the addition of a representative from DC/S Manpower as a full member of the ACG, if the ACG is retained.

6. Formally integrate RDT&E activities with production/procurement activities and planning.

7. Formally integrate RDT&E decisions with the POM development process.

8. The responsibilities and authority for staff relationships with outside agencies and offices should be clearly enunciated.

9. The early formulation and general use of the LCC model should be considered.

10. An analysis of the sufficiency of the level of other service RDT&E activity applicable to the Marine Corps should be made with a view toward reduction of unilateral development activity.

11. Goal setting and prioritizing of RDT&E efforts within the systems acquisition process should be formalized.

12. Designation of a "Marine Corps Acquisition Executive" to provide a single point of contact for acquisition matters. The duties, responsibilities, and authority of this office, should be clearly established.

Constraints

Many of the deficiencies within the present acquisition process require timely resolution, and many of the proposed changes are very attractive. It must, however, be recognized that there are inherent limitations on the amount of change which can be brought about. The Marine Corps personnel who are responsible for acquisition management, generally are not experienced in systems acquisition and have not received acquisition management training. The difficulty here is that systems acquisition is now a

very complex process. The need, therefore, is either to change the acquisition process, or provide greatly expanded training and experience opportunities for these personnel. The financial and manpower costs associated with this kind of training may be quite high, and exceed the resources available. On the other hand, the changes to the acquisiton process which are necessary to create a "Program Manager" operation will undoubtedly require additional manpower. Both of these commodities are quite limited in the Marine Corps and both must be a factor in any deliberations. The consequence of these inherent limitations is that manpower and financial resources will define the parameters, within which, any changes can be made.

Additionally, the required heavy reliance on the products of other services RDT&E programs may dictate the option for one certain management structure over any others. This service-unique feature may prove to be beneficial, however, if the resources required for this option are less than those required for other management systems.

Finally, the management changes required by higher directives must be included as constraining factors. Many recent changes have been mandated and, unless exceptions are made, must eventually be expressed in Marine Corps acquisition management practices. The interpretation of these higher directives is not yet complete and their application to the Marine Corps structure and needs has not, to date, been fully realized. It is, therefore, an opportune time to examine these changes, and create a system acquisition management organization which both complies with higher directives, and yet satisfies the unique needs of the Corps, while remaining within the manpower and fiscal resources available.

APPENDIX A

INDEX OF MAJOR DEVELOPMENTS

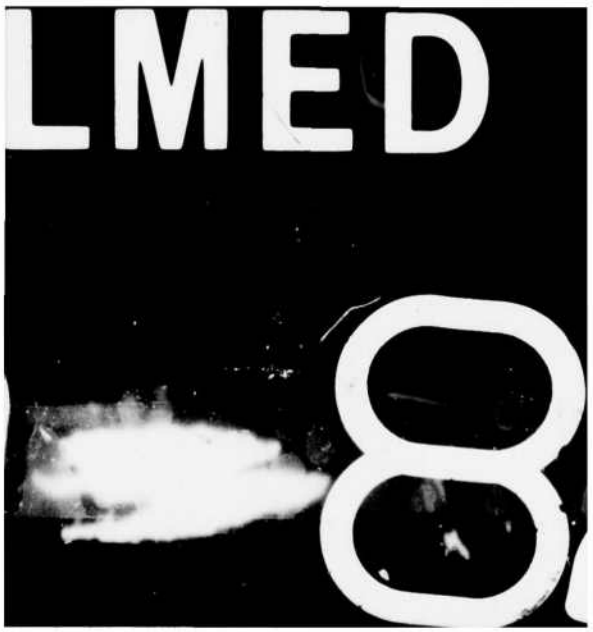
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