PERSONNEL QUALIFICATION STANDARD (PQS)



FOR FLEET MARINE FORCE QUALIFIED OFFICER (FMFQO)

STUDY GUIDE

History & Significance of the FMFQO Device



The Eagle, Globe and Anchor (EGA - Marine Corps Emblem) is centered on the breast insignia as the capture of the device, making a clear statement that the wearer is a member of the Navy/Marine Corps team.

Background - At the time the advice was designed, Forward... From the Sea was the Navy and Marine Corps joint vision for the future. This is represented in the background of the device; a **surf wave crashing on the sandy beach** (the littoral zone), the place where Sailors have served alongside Marines as the earned their reputation, "on the shores of Tripoli" and the "sands of Iwo Jima". The littoral (or coastal) regions of the world are also where the Navy and Marine Corps team will exert the U.S. Interests in future conflicts as reflected in the doctrine of the time, "Operational Maneuver from the Sea".

Crossed Rifles - Warfare programs have served the purpose of installing warrior ethos in Sailors as well as enhancing mission effectiveness in both individual and unit survivability since their inception. On ships and submarines, every Sailor is trained as a firefighter and damage control man to fight and save the ship in an emergency. With the Marines, it is essential in combat for every person to have the knowledge and skill of a rifleman, if the unit is to survive. The **two crossed rifles** symbolize the rifleman ethic this program is designated to install in Sailors assigned to the Marines.

Scroll - The scroll along the bottom of the breast insignia is emblazoned with "**Fleet Marine Force**" Although Marine componency was established in 1982, significantly changing the operational environment in which Marine Corps forces deploy and operate in a joint environment. The Navy continues to utilize the title Fleet Marine Force in their role as a Naval Type Commander, therefore since programs are a distinct part of Navy culture, it is appropriate our program be titled after the role in which Marine Forces are tied to the Navy.

TABLE OF CONTENTS

	Page
History & Significance of the FMFQO Device	I
ACKNOWLEDGEMENTS	
101 Navy and Marine Corps History, Customs, and Courtesies	
102 United States Marine Corps (USMC) Mission and Organization	
103 Safety	
104 Administrative	
105 Air Combat Element (ACE)	105-1
106 Ground Combat Element (GCE)	
107 Logistics Combat Element (LCE)	107-1
108 Command Element (CE)	
109 Amphibious Operations	109-1
110 Force Protection	110-1
111 General Combat Leadership	111-1
112 United States Marine Corps (USMC) Operations	112-1
113 Environmental Awareness	113-1
114 Communications	114-1
115 Weapons	115-1
116 Tactical Measures	116-1
117 Land Navigation	117-1

ACKNOWLEDGEMENTS

The I MEF FMFQO Coordinator gratefully acknowledges the assistance of the following personnel in writing this study guide:

LCDR Bill Miles
CDR Paul Hammer
CAPT Daniel Zinder
CAPT Mark Doherty
LtCol Mike "Moose" Evans
Capt Kristy McCutchan
1st Lt Phillip Tracy
Maj Matt Seay

I MEF Medical Planner, Camp Pendleton 1st MARDIV Psychiatrist, Camp Pendleton I MEF (FWD) Force Surgeon, Camp Pendleton I MEF (Rear) Force Surgeon, Camp Pendleton I MEF, G3 Assist. Air Off, Camp Pendleton Truck Co., I MHG, Camp Pendleton 9th Comm BN, I MHG, Camp Pendleton 1st MLG, Camp Pendleton

Although the words "he", "him," and "his" are used sparingly in this manual to enhance communication, they are not intended to be gender driven nor to affront or discriminate against anyone reading this material

This page was intentionally left blank

101 NAVY AND MARINE CORPS HISTORY, CUSTOMS, AND COURTESIES FUNDAMENTALS

References

- a. Naval Doctrine Publication 1, Naval Warfare (PCN 0700LP0099550)
- b. Marine Corps Common Skills Handbook, Book 1A, All Marines, Individual Training Standards, May 2001(PCN 50600000900)
- c. MCO P1020-34, Marine Corp Uniform Regulations

101.1 State the six areas of naval doctrine.

- **NDP 1, Naval Warfare,** describes the inherent nature and enduring principles of naval forces.
- NDP 2, Naval Intelligence, points the way for intelligence support in meeting the requirements of both regional conflicts and operations other than war.
- NDP 3, Naval Operations, develops doctrine to reaffirm the foundation of U.S. Navy and Marine Corps expeditionary maritime traditions.
- **NDP 4, Naval Logistics**, addresses the full range of logistical capabilities that are essential in the support of naval forces.
- NDP 5, Naval Planning, examines planning and the relationship between our capabilities and operational planning in the joint and multinational environment.
- NDP 6, Naval Command and Control, provides the basic concepts to fulfill the information needs of commanders, forces, and weapon systems.

101.2 Discuss the origin of the Marine Corps.

The Marine Corps was created on 10 Nov, 1775 in Philadelphia at Tun Tavern, by a resolution of the Continental Congress, which "raised two battalions of Marines."

101.3 Explain the Marine Corps motto, Semper Fidelis.

The official motto for the Marine Corps, "Semper Fidelis," is Latin for "Always Faithful." The motto, sometimes abbreviated, "Semper Fi," was adopted about 1883.

101 Marine Corps History, Customs and Courtesies

101.4 Describe the Marine Corps emblem and state its significance.



The Marine Corps emblem is the Eagle, Globe and Anchor, often shortened to the "Globe and Anchor", or EGA. Adopted in its present form in 1868, it derives partially from ornaments worn by the Continental Marines and the British Royal Marines, and is usually topped with a ribbon reading "Semper Fidelis". The eagle stands for a proud country, the globe signifies global service, and the fouled anchor signifies maritime traditions. The eagle is a crested eagle found worldwide, not the bald eagle that appears in other American symbols and is native to North America. The eagle is standing on the western hemisphere and is a holding a scroll with the Marine Corps motto, Semper Fidelis, on it.

101.5 Explain the following terms/phrases used throughout the Marine Corps:

Leatherneck - This nickname dates back to the leather stock, or neckpiece worn as part of the Marine Uniform during the years of 1775-1875. Utilized to protect the neck from saber slashes, the leather bands around their throats had a side effect of ensured that Marines kept their heads erect.

Devil dog - In 1918, during the battle of Belleau Wood near the Marine River in France, the Germans received a thorough indoctrination on the Marines fighting ability. The Marines persistent attack had the Germans calling them "Teufelhunden" translated "Devil Dogs."

Esprit de corps - This implies devotion and loyalty to the Marine Corps, with deep regard for its history, traditions and honor. It is the epitome of pride in a unit.

Uncommon valor was a common virtue - Refers to largest of all-Marine battles in history. Admiral Nimitz applied the Marines' fighting ability on Iwo Jima to the entire Corps' contribution during that war, stating, "Uncommon valor was a common virtue."





First to fight - Marines have been in the forefront of every American war since the founding of the Marine Corps. They entered the Revolution in 1775, just before the Declaration of Independence was signed. They have carried out more than 300 landings on foreign shores. They have served everywhere, from the poles to the tropics. Their record of readiness reflects pride, responsibility and challenge.

101.6 Discuss Marine Corps rank and pay grade in order of seniority from E-1 to O-10.

Enlisted Rank Structure:

Private E-1	No Chevron
Private First Class E-2	
Lance Corporal E-3	
Corporal E-4	
Sergeant E-5	
Staff Sergeant E-6	
Gunnery Sergeant E-7	
Master Sergeant/ First Sergeant E-8	
Master Gunnery Sergeant E-9 Sergeant Major	
Sergeant Major of the Marine Corps E-9	

101 Marine Corps History, Customs and Courtesies

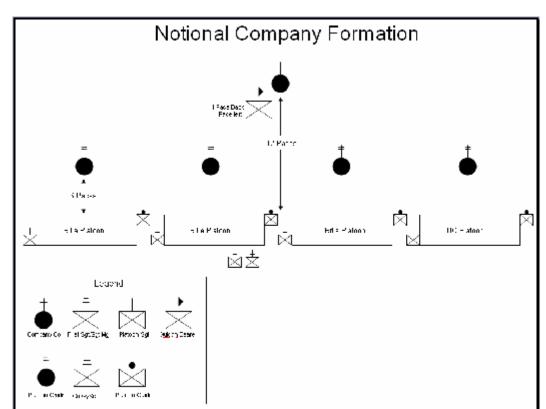
Warrant Officer Rank Structure:

Lieutenant General O-9

General O-10

Warrant Officer W-1	2 Red/ 1Gold
Chief Warrant Officer 2 W-2	3 Red/ 2Gold
Chief Warrant Officer 3 W-3	2 Red/ 1 Silver
Chief Warrant Officer 4 W-4	3 Red/ 1 Silver
Chief Warrant Officer 5 W-5	1 Red / Silver

	1100, 211,01	1
Officer Rank Structure:		_
Second Lieutenant O-1	Gold	8
First Lieutenant O-2	Silver	
Captain O-3		
Major O-4	Gold	*
Lieutenant Colonel O-5	Silver	*
Colonel O-6	,	
Brigadier General O-7		*
Major General O-8		**
		444



101.7 Discuss the general concepts for a company level formation.

- A company consists of the company headquarters and two or more platoons.
- For close order drill and ceremonies, company headquarters personnel may be attached to platoons without interfering with the permanent squad organization and that for marches, members of the company headquarters command group are formed as the company or as higher authority directs.
- The company uses formations such as line, column, (of threes, etc.) mass, extended mass, and column of platoons in line.
 - O Note: In all these formations, the platoons that comprise the company will either be in line (each squad forming one rank) or in column (each squad forming one file). The company may also form a column of two's or files in a manner similar to that of a platoon. In this case, the platoons are arranged in the same manner as a company in column, except that each platoon is in a column of two's or files.
- When the company commander is absent, the senior officer present with the
 company takes post and drills the company for the company commander and
 that in the absence of the First Sergeant, the senior SNCO, normally a
 Gunnery Sergeant, takes post and performs the duties of the First Sergeant.

101 Marine Corps History, Customs and Courtesies

- For drills and ceremonies, the guidon bearer carries the company guidon and that in all formations, the guidon bearer is one pace to the rear and one pace to the left of the company commander or the First Sergeant, and for marches in the field, the guidon is kept with the company headquarters baggage unless otherwise directed.
 - Note: If a guidon is carried in the field on marches the guidon bearer takes his post as described above for drills and ceremonies.

101.8 Discuss the procedures for conducting a personnel inspection.





- Conduct a personnel inspection
- Note all discrepancies as necessary
- Determine corrective actions as necessary
- Report all discrepancies to appropriate personnel.

101.9 Discuss the following Marine Corps service uniforms and their Navy equivalents:

Service Alpha







Navy equivalent = Service Dress Blue / Service Dress White

The service "A" uniform may be prescribed for parades, ceremonies, social events, and as the uniform of the day. It will normally be worn when reporting for duty, unless otherwise prescribed by the commander. The service "A" uniform will be prescribed for the following official military occasions:

- When assigned as a member of courts-marital or courts of inquiry.
- Official visits and calls of, or to, United States civil officials, officers of the United States Armed Forces, and officials/officers of foreign governments per chapter 12, U.S. Navy Regulations.
- When visiting the White House and the temporary White Houses at all times, except in a tourist capacity or when an individual is specifically invited either on a social or official occasion for which another uniform is indicated on the invitation.

101 Marine Corps History, Customs and Courtesies

Service Bravo





Navy equivalent = Winter Blue The service "B" uniform (with long sleeve shirt and tie) is the same as the service "A" uniform except that the service coat is not worn. This uniform may be worn as the uniform of the day and for leave and liberty, unless otherwise prescribed by the commander, and may be prescribed for formations at parades or ceremonies on and off the military activity. This uniform will not be worn for formal or semi-formal social events.

Service Charlie







Navy equivalent = Summer Khaki / Summer White The short sleeve khaki shirt with appropriate service trousers or skirt/slacks is designated as the service "C" uniform. During the winter season, commanders may, at their discretion, when the weather requires, authorize the service "C" uniform. This uniform may be worn as a uniform of the day and for leave or liberty, unless otherwise prescribed by the commander, and may be prescribed for formations at parades or ceremonies on and off the military activity. This uniform will not be worn for formal or semiformal social events.

NOTES: The service sweater may be worn at the individual's option as a component of the service "B"/"C" uniforms worn as the uniform of the day, unless the commander determines that the service "A" uniform is more appropriate. Commanders may prescribe the service uniform with sweater for inspections; however, this uniform will not be worn for ceremonial formations or parades on or off the military installation.

The service uniform with sweater may be worn on leave or liberty. Female Marine may wear slacks as part of the service "A", "B," or "C" uniforms per paragraph 3026. Individual may wear either the all-season polyester/wool gabardine uniform or the phase-out summer and winter weight service uniforms on a year-round basis for all formations and for duty, leave, or liberty at the individual's option.

Camouflage Utilities



Navy equivalent = Winter Working Blue/Working Khaki The camouflage utility uniform is not authorized for wear except when in the field, for field-type exercises, or for those work conditions where it is not practical to wear the service uniform. When the camouflage utility uniform is prescribed as the working

101 Marine Corps History, Customs and Courtesies

uniform Marines may wear it to and from their domicile, unless otherwise prohibited by the commander. Commanders may authorize the wear of the utility uniform for brief and appropriate stops off-base during duty hours or while commuting. Defining appropriate and necessary is a command responsibility requiring the exercise of sound judgment and common sense. Preventing abuse of the privilege demands that commanders know where their Marines are during to ensure that stops are in fact brief, appropriate and in keeping with the spirit of regulations. In no case will the utility uniform be treated or regarded as a leave or liberty uniform except when prescribed by commanders to meet special (normally overseas/deployed/etc.) requirements to include certain emergency leave situations.

102 UNITED STATES MARINE CORPS (USMC) MISSION AND ORGANIZATION FUNDAMENTALS

References:

- a. Marine Corps Common Skills Handbook, Book 1A, All Marines, Individual Training Standards, May 2001
- b. Marine Corps Official Web Site (www.usmc.mil)
- c. Marine Corps Combat Development Command Official Web Site (www.mccdc.usmc.mil)
- d. Marine Corps Systems Command Official Web Site (www.marcorsyscom.usmc.mil)
- e. NWP 3-02.3/MCWP 3.32, Maritime Prepositioning Forces Operations
- f. MCRP 5-12D, Organization of the Marine Corps Forces (PCN 14400005000)
- g. MCWP 5-1, Marine Corps Planning Process

102.1 State the mission and function of the Marine Corps.

The official mission of the Marine Corps established in the 1952 Amendment to the National Security Act of 1947:

"Marines are trained, organized, and equipped for offensive amphibious employment and as a *force of readiness*."

According to the Act, Marines stand prepared to meet mission requirements:

- *Provide Fleet marine Forces* with combined arms and supporting air components for service with the United States Fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the execution of a naval campaign.
- Provide detachments and organizations for service on armed vessels of the Navy and security detachments for the protection of naval property at naval stations and bases.
- *Develop*, in coordination with the Army, Navy, and Air Force, the doctrine, tactics, techniques, and equipment employed by landing forces in *amphibious operations*.
- Provide marine forces for airborne operations, in coordination with the Army, Navy, and Air Force, according to the doctrine established by the Joint Chiefs of Staff.
- Develop, in coordination with the Army, Navy, and Air Force, the doctrine, tactics, techniques, and equipment for *airborne operations*.
- Expand peacetime components to meet wartime needs according to the joint mobilization plans.
- Perform such other duties as the President may direct.

102.2 State the mission and function of the following:

Headquarters Marine Corps (HQMC)

Headquarters, U.S. Marine Corps, consists of the Commandant of the Marine Corps and those staff agencies that advise and assist the Commandant in discharging those responsibilities prescribed by law and higher authority as describe below in US CODE TITLE 10.

Per TITLE 10 - ARMED FORCES, Subtitle C - Navy and Marine Corps PART I - ORGANIZATION, CHAPTER 506 - HEADQUARTERS, MARINE CORPS, HEAD Sec. 5041. Headquarters, Marine Corps: function; composition

STATUTE-

- 1. There is in the executive part of the Department of the Navy a Headquarters, Marine Corps. The function of the Headquarters, Marine Corps, is to assist the Secretary of the Navy in carrying out his responsibilities.
- 2. The Headquarters, Marine Corps, is composed of the following:
 - a) The Commandant of the Marine Corps.
 - b) The Assistant Commandant of the Marine Corps.
 - c) The Deputy Commandants.
 - d) Other members of the Navy and Marine Corps assigned or detailed to the Headquarters, Marine Corps.
 - e) Civilian employees in the Department of the Navy assigned or detailed to the Headquarters, Marine Corps.
 - f) Except as otherwise specifically prescribed by law, the Headquarters, Marine Corps, shall be organized in such manner, and its members shall perform such duties and have such titles, as the Secretary may prescribe.

EXPCITE-TITLE 10 - ARMED FORCES Subtitle C - Navy and Marine Corps PART I – ORGANIZATION CHAPTER 506 - HEADQUARTERS, MARINE CORPS

HEAD-Sec. 5042. Headquarters, Marine Corps: general duties

STATUTE-

- 1. The Headquarters, Marine Corps, shall furnish professional assistance to the Secretary, the Under Secretary, and the Assistant Secretaries of the Navy and to the Commandant of the Marine Corps.
- 2. Under the authority, direction, and control of the Secretary of the Navy, the Headquarters, Marine Corps, shall
 - a) subject to subsections (c) and (d) of section 5014 of this title, prepare for such employment of the Marine Corps, and for such recruiting, organizing, supplying, equipping (including research and development), training, servicing, mobilizing, demobilizing, administering, and maintaining of the Marine

- Corps, as will assist in the execution of any power, duty, or function of the Secretary or the Commandant;
- b) investigate and report upon the efficiency of the Marine Corps and its preparation to support military operations by combatant commanders;
- c) prepare detailed instructions for the execution of approved plans and supervise the execution of those plans and instructions;
- d) as directed by the Secretary or the Commandant, coordinate the action of organizations of the Marine Corps; and
- e) perform such other duties, not otherwise assigned by law, as may be prescribed by the Secretary.

HQMC Agencies include:

- Aviation
- Chaplain of the Marine Corps
- Command, Control, Communications, and Computers
- Counsel for the Commandant
- Director, Marine Corps Staff
- Headquarters Battalion
- Health Services
- Historical Division
- Inspector General
- Installations and Logistics Department
- Intelligence Department
- Marine Corps Recruiting Command
- Programs and Resources
- Safety Division
- Staff Judge Advocate to the Commandant

- Marine Corps Systems Command
- Manpower and Reserve Affairs
- Marine Corps Combat Development Command
- Marine Corps Community Services
- Marine Corps Uniform Board
- Marine Corps Logistics Command
- Navy and Marine Corps Appellate Leave Activity
- Office of Legislative Affairs
- Plans, Policies and Operations
- Logistics Modernization
- Public Affairs
- Sexual Assault Prevention & Response Office

Marine Forces (MARFOR)

The "Forces for Unified Commands" memorandum assigns Marine Corps operating forces to each of the combatant commands. A force assigned or attached to a combatant command may be transferred from that command only as directed by the Secretary of Defense and under procedures prescribed by the Secretary of Defense and approved by the President. The Marine Corps has established multiple Marine Corps component headquarters to support the unified commands.

Marine Corps Forces are organized as MAGTFs and are either employed as part of naval expeditionary forces or separately as part of larger joint or combined forces.

The commanders of Marine Corps Forces Command (MARFORCOM), Marine Corps Forces, Pacific (MARFORPAC), Marine Corps Forces Europe (MARFOREUR), Marine Corps Forces Central (MARCENT), serve as Marine Corps component commanders to their respective combatant commanders and provide forces for service with Commander US Joint Forces Command, US Pacific Command, US European Command, and US Central Command respectively. The Marine Corps component commander deals directly with the joint force commander (JFC) in matters affecting assigned MARFOR. He commands, trains, equips, and sustains MARFOR.

The Commander, Marine Corps Forces Command, is assigned to the Commander U.S. Joint Forces Command, and the Commander, Marine Corps Forces, Pacific, is assigned to the Commander, U.S. Pacific Command. In order to provide three-star, general officer representation to the remaining three geographic combatant commands, Commander, Marine Corps Forces Command (COMMARFORCOM), is designated as the Marine Corps component commander to both Commander, U.S. European Command (COMUSEUCOM), and Commander, U.S. Southern Command (COMUSSOUTHCOM). The Commander, Marine Corps Forces Central, is designated as the Marine Corps component commander to the Commander, U.S. Central Command (COMUSCENTCOM).

The Goldwater-Nichols Defense Reorganization Act of 1986 added a new level of commander-in-chief (CINC) to the U.S. military's chain of command. Regional CINCs were created in order to have a local supreme commander who could exercise unified command and control across service boundaries, ideally eliminating or diminishing interservice rivalries. CINCs reported directly to the United States Secretary of Defense, and through him to the President of the United States. The best-known CINC was probably Norman Schwarzkopf, CINC of U.S. Central Command (CENTCOM) during Operation Desert Storm.

On October 24, 2002, Secretary of Defense Donald H. Rumsfeld announced that the title of "Commander-in-Chief" would thereafter be reserved for the President, consistent with the terms of Article II of the United States Constitution. Armed forces CINCs in specified regions would thereafter be known as "combatant commanders," heading the Unified Combatant Commands.

A **Unified Combatant Command** is a United States military group composed of forces from two or more services, has a broad and continuing mission, and is organized either on a geographical basis (known as "Area Of Responsibility", AOR) or on a functional basis.

As of May 2006, there are ten Unified Combatant Commands. Five have regional responsibilities, and five have functional responsibilities.

The chain of command runs from the President to the Secretary of Defense to the combatant commanders of the Unified Combatant Commands. The Chairman of the Joint Chiefs of Staff may transmit communications to the Commanders of the Unified Combatant Commands from the President and Secretary of Defense, but does not exercise military command over any combatant forces.

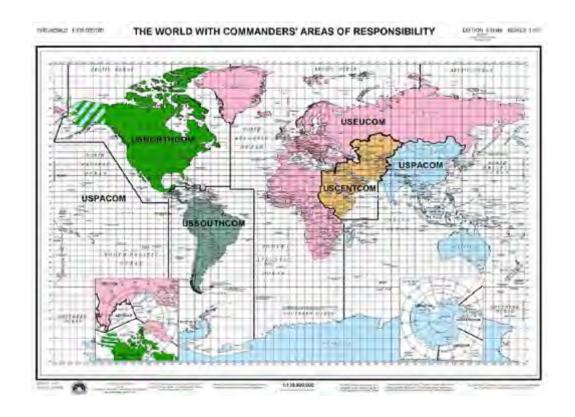
List of Unified Combatant Commands

Regional Responsibilities:

- United States Central Command USCENTCOM
- o United States European Command USEUCOM
- o United States Pacific Command USPACOM
- o United States Northern Command USNORTHCOM
- United States Southern Command USSOUTHCOM

Functional Responsibilities:

- United States Joint Forces Command USJFCOM
- o United States Special Operations Command USSOCOM
- o United States Strategic Command USSTRATCOM
- o United States Transportation Command USTRANSCOM
- o Reserve Affairs Worldwide Support Reserve and National Guard



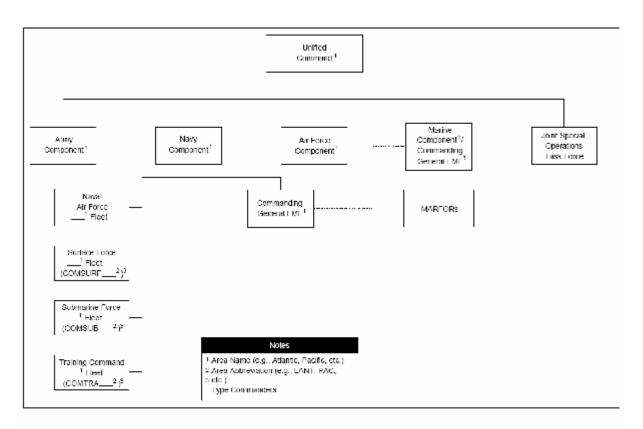


Figure 1-1. Command Relationships.

Marine Corps Combat Development Command (MCCDC)

Develop fully integrated Marine Corps warfighting capabilities; including doctrine, organization, training and education, materiel, leadership, personnel, and facilities, to enable the Marine Corps to field combat-ready forces. Located at MCB Quantico, VA.

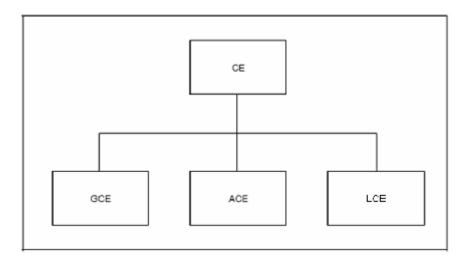
Marine Corps Systems Command (MARCORSYSCOM)

To serve as the Commandant's principal agent for equipping the Operating Forces to accomplish their warfighting mission. Located in Quantico, VA



MARCORPSYSCOM, Quantico, VA

102.3 Discuss the Marine Air/Ground Task Force (MAGTF) organization and its four functional components.



The MAGTF is the Marine Corps' principle organization for the conduct of all missions across the range of military operations. MAGTFs are balanced, combined-arms forces with organic ground, aviation, and sustainment elements. They are flexible, task-

organized forces that can respond rapidly to a contingency anywhere in the world and are able to conduct a variety of missions. Although MAGTFs are task organized, each MAGTF, regardless of its size or mission, has the same basic structure. Each MAGTF has four core elements: a Command Element (CE), a ground combat element (GCE), an aviation combat element (ACE), and a Logistics Combat Element (LCE).

- The CE is the MAGTF headquarters. It is task organized to provide command and control capabilities (including intelligence and communications) necessary for effective planning, direction, and execution of all operations.
- The GCE is task organized to conduct ground operations in support of the MAGTF mission. It is normally formed around an infantry organization reinforced with requisite artillery, reconnaissance, armor, and engineer forces and can vary in size and composition from a rifle platoon to one or more Marine divisions.
- The ACE is task-organized to support the MAGTF mission by performing some or all of the six functions of Marine aviation. The ACE is normally built around an aviation organization that is augmented with appropriate air command and control, combat, combat support, and combat logistic support units. The ACE can operate effectively from ships, expeditionary airfields, or austere forward operating sites and can readily and routinely transition between sea bases and expeditionary airfields without loss of capability. The ACE can vary in size and composition from an aviation detachment with specific capabilities to one or more MAWs.
- The LCE is task organized to provide the full range of combat logistics functions and capabilities needed to support the continued readiness and sustainability of the MAGTF as a whole. It is formed around a combat logistics headquarters and may vary in size and composition from a support detachment to one or more Marine FSSG.

102.4 Discuss the concept of task organization as it relates to the MAGTF organization and its four functional components.

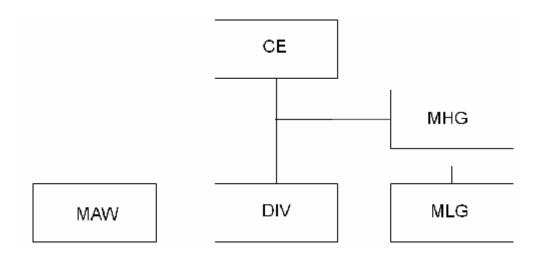
Organization for combat is a commander's visualization of how he will group organic and attached combat, combat support, and combat service support elements for employment with other supporting forces to support his scheme of maneuver, and he will group the command relationships to most effectively control his organization. It is determined after consideration of the unit's mission, missions assigned in subordinate units, terrain and enemy strength in each sub-ordinate unit area, and the amount of combat power, including maneuver and fire support units, available to the unit commander. The organization for combat and the scheme of maneuver are developed concurrently. The purpose of Annex A (Task Organization) is to identify the command's organization for combat.

The command's task organization graphically provides the command relation-ships and the assignment of means for the accomplishment of the mission. The G-3/S-3 prepares the task organization after considering the recommendations of appropriate unit commanders. Its purpose is to establish groupings into which the command will be divided to accomplish its mission and to establish command relationships. These groupings may be shown, if simple, in paragraph 3 of the basic operation order or plan. If these groupings are complex, the task organization will be shown in a separate annex or just before paragraph 1 of the basic operation order or plan.

At a minimum, the task organization lists all major commands or task groupings directly subordinate to the commander issuing the basic operation order or plan. In addition, all organizations that directly support the operation are listed and designated as "support," although they are not under the command of the supported commander. Organizations to be established specifically to implement the basic operation order or plan should appear in the task organization. The level of detail in the task organization should only be that necessary to convey a clear understanding of the significant forces committed to the operation.

102.5 Identify the elements that comprise each of the following MAGTFs:

Marine Expeditionary Force (MEF)



Notional MEF Diagram

The MEF is the largest and most powerful of the MAGTF's and is the principal war fighting MAGTF in the active force structure.

- The Command Element (CE) exercises command and control of the entire MAGTF, is commanded by a lieutenant general, and includes an MEF Headquarters Group (MHG).
- o The Ground Combat Element (GCE) is a Marine division reinforced.
- o The Air Combat Element (ACE) is a Marine Aircraft Wing.

 The Logistics Combat Element (LCE) is the Marine Logistics Group (MLG).

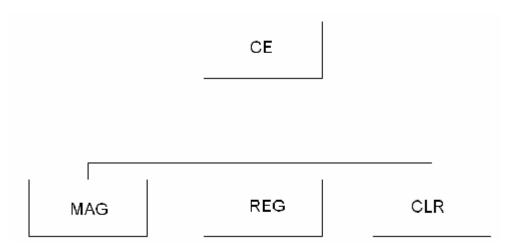
The MEF is the principal Marine Corps warfighting organization.

It is capable of missions across the range of military operations, through amphibious assault and sustained operations ashore in any environment. With appropriate augmentation, the MEF CE is capable of performing as a JTF headquarters. There are three standing MEFs:

- I Marine expeditionary force (I MEF), based in southern California and Arizona;
- II Marine expeditionary force (II MEF), based in North and South Carolina; and
- III Marine Expeditionary Force (III MEF), based in Japan and Hawaii.

Marine Expeditionary Brigade (MEB)

Marine Expeditionary Brigades (MEB's) are task-organized to respond to a full range of crises, from forcible entry to humanitarian assistance. They are our premier response force for the small-scale contingencies that are so prevalent in today's security environment. The Marine Corps has three numbered MEB's, one within each MEF with the capability to deploy the MEB's in several ways. Similar to a MEU, a MEB deploys on 15 amphibious ships of which 5 are large deck ships such as LHA or LHD ships and has a 30 day sustainment.

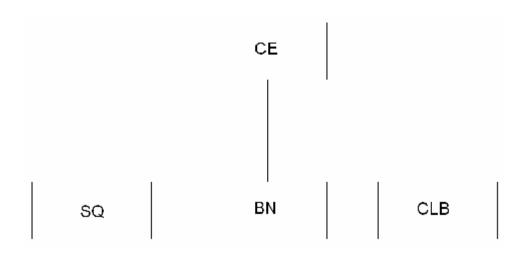


The MEB consists of

- o *Command Element* sourced from the parent MEF staff with the Deputy MEF Commander as the MEB Commander. Ready to enable a Joint task Force or form a nucleus to enable introduction of follow on forces.
- o Ground Combat Element built on an infantry regiment
- o Aviation Combat Element consisting of a composite Marine Air Group capable of conducting all (6) functions of Marine aviation including

- Offensive Air Support, Assault Support, Electronic Warfare, Control of Aircraft and Missiles, Antiair Warfare, Air Reconnaissance.
- Combat Logistic Regiment (CLR) for the Logistics Combat Element (LCE), which can logistically support a community of 30,000 Marines and Sailors.

Marine Expeditionary Unit (Special Operations Capable) (MEU (SOC))



The MEU is forward deployed as the immediate responsive, on-scene, sea-based Marine component of the fleet commander's amphibious and power projection forces.

The Command Element (CE) exercises command and control, is commanded by a colonel, and includes detachments from the MHG.

The Ground Combat Element (GCE) is a reinforced infantry battalion.

The Air Combat Element (ACE) is a Marine reinforced medium helicopter squadron frequently reinforces with fixed wing and light attack helicopters.

The Logistics Combat Element (LCE), is a Combat Logistics Battalion (CLB) with sustainment for 15 days

Embarked aboard a Navy Expeditionary Strike Group (ESG), a deployed MEU (SOC) provides a combatant commander or other operational commander with a quick, sea-based reaction force for a wide variety of situations. In many cases, the MEU (SOC) embarked on amphibious shipping may be the first U.S. force at the scene of a crisis and can conduct enabling actions for larger follow-on forces. It can provide a visible and credible presence in many potential trouble spots and can demonstrate the United States' willingness to protect its interests overseas.

The MEU(SOC) mission is to provide the National Command Authority (NCA) and the combatant commanders with a forward deployed, sea-based, rapid crisis response capability to execute a full range of military operations. It is organized, trained, and equipped as a self-sustaining, general-purpose expeditionary MAGTF that possesses the capability to conduct operations across the spectrum of conflict, from military operations other than war, to amphibious and other conventional operations in support of various contingency requirements, including selected maritime special operations such as:

- o Amphibious Raid (Boat, Helicopter, and Mechanized).
- o Non-combatant Evacuation Operations (NEO) (Single and Multi-Site).
- Security Operations (Area and Physical Security to Embassy or Consulatetype Facility).
- o Tactical Recovery of Aircraft and Personnel (TRAP).
- o Direct Action Mission (Destruction or Recovery Operations).
- o Humanitarian Assistance/Disaster Relief.
- o R2P2.
- o Intelligence, Surveillance and Reconnaissance (ISR).
- Long Range Raid (Requiring Forward Arming and Refueling Point (FARP) Operations).
- o Mass Casualty (Evaluation of PHIBRON/MEU Medical Capabilities).
- o Airfield/Port Seizure Operations.
- o Maritime Special Operations (either as an independent Maritime
- Special Purpose Force (MSPF) mission, or together with the PHIBRON NavSpecWar Det).
- o Additional missions and capabilities as required by the MEF Commander or operational commander who is to employ the MEU(SOC).

Special purpose MAGTF

A special-purpose MAGTF (SPMAGTF) is a <u>nonstanding</u> MAGTF temporarily formed to conduct a specific mission. It is normally formed when a standing MAGTF is either inappropriate or unavailable. SPMAGTFs are organized, trained, and equipped to conduct a wide variety of missions ranging from crisis response, to regionally focused training exercises, to peacetime missions. Their SPMAGTF designation derives from the mission they are assigned, the location in which they will operate, or the name of the exercise in which they will participate (e.g., "SPMAGTF (X)," "SPMAGTF Somalia," "SPMAGTF UNITAS," "SPMAGTF Andrew," etc.).

An SPMAGTF may be any size, but normally it is the size of a MEU (or smaller) with narrowly focused capabilities chosen to accomplish a particular mission. It may be task organized deliberately from the assets of a standing MEF, or may be formed on a contingency basis from an already-deployed MAGTF to perform an independent, rapid-response mission of limited scope and duration. By definition, SPMAGTFs include all four of the basic elements of a MAGTF.

102.6 State the mission of your unit and its relationship to the MAG	02.6 Stat	ate the missio	n of vour uni	t and its relation	onship to the	MAGTF.
--	-----------	----------------	---------------	--------------------	---------------	--------

102.7 Describe the mission and purpose of the Maritime Prepositioning Force (MPF).

The maritime prepositioning force (MPF) Marine air-ground task force (MAGTF) can directly support our national maritime strategy of protecting key naval chokepoints and sea lines of communications (SLOCs). An MPF operation includes the airlift of MAGTF and Navy elements, the Navy support element (NSE), and naval coastal warfare (NCW) units with selected equipment into an arrival and assembly area (AAA) to join with equipment and supplies carried aboard maritime prepositioning ships (MPSs).

Maritime prepositioning provides a combatant commander with deployment flexibility and an increased capability to respond rapidly to a crisis or contingency with a credible force. An MPF operation may consist of one ship interacting with a forward-deployed Marine Expeditionary Unit (MEU); a maritime prepositioning ships squadron (MPSRON) and a Marine Expeditionary Brigade (MEB) fly-in echelon (FIE); or a Marine Expeditionary Force (MEF) falling in on all three MPSRONs. The MPF is one component of the Marine Corps' rapid response capability triad, which also includes the air contingency MAGTF (ACM) and forward-deployed amphibious forces (AFs). Each triad component can be used separately or integrated to further enhance a combatant commander's options. An MPF operation is an economy of force measure that allows deployment of an appropriate force if a crisis arises. The MPF offers an augmentation capability for amphibious operations, but is not a substitute due to an inherent lack of forcible entry capability. An MPF operation provides a method to rapidly augment a forward-deployed MAGTF, an ongoing amphibious operation or other joint, multinational or combined force operations.

MPSRONs are strategically based around the globe (see fig. 1-1). Naval forces can link-up with them in an operational area in a matter of days. This capability demonstrates commitment, reinforces alliances, enhances regional stability, promotes US influence and access, and is especially responsive to regional crises or natural disasters.

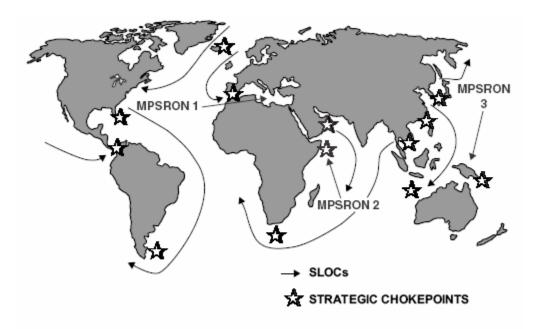


Figure 1-1. MPSRON Operational Locations.

The MPF is designed to respond independently or with other forces to a variety of regional crises. The MPF provides a quick and credible response to deter an escalation in hostilities or engage decisively if deterrence fails. The essential contribution of an MPF operation is mobility and flexibility, allowing a quick concentration of forces in a specific area. The MPF permits rapid deployment into secure areas where force introduction is essentially unopposed and is expected to remain so through the arrival and assembly phase. The MPF enables MAGTF employment as follows:

- Augment an amphibious deployment or operation.
- Occupy or augment an advanced base.
- Defend key chokepoints along SLOC.
- Establish a blocking position for offensive and defensive operations.
- Reinforce multinational partners with a credible force before hostilities, and sustain relations with routine exercises and operations.
- Establish a sizable force ashore to enable closure of additional forces.
- Deter potential adversaries by positioning MPSs and alerting Marine and Navy forces (NAVFOR).
- Provide a rapid peacetime response in support of foreign humanitarian assistance and civil support.
- Provide economy of force through reduction of strategic airlift requirements, and reduction or elimination of the need to employ AFs capable of forcible entry to a contingency that does not require such force.
- Augment fleet defense by providing tactical air support from ashore.

The following is provided to give an overview of the Navy's MPF Operations. You will also learn more about MPF elements in the section 107.

MPF Operations Phases:

Planning

The planning phase begins upon receipt of the alert/warning order and is characterized by two planning methodologies: deliberate planning and crisis action planning (CAP). Deliberate planning is ongoing, preparing for future, hypothetical military operations. CAP is conducted to respond to present situations that might require a US military response.

Marshalling

Units organize and complete final preparations to deploy, including preparing personnel and equipment, moving to an aerial port of embarkation (APOE), staging, and loading aboard aircraft. The marshalling phase begins on arrival of the first unit at a designated marshalling point and ends on departure of the last unit from a departure airfield.

Deployment encompasses all activities from origin or home station through destination, specifically including intra-CONUS, intertheater, and intratheater movement legs, staging, and holding area. (JP 1-02) The key point is that MPF deployment involves movement from home station all the way to the TAA. Deploying echelons, organized by plane or ship teams, assemble at their home station, prepare for deployment, and move in accordance with the established plan or when called to stage at APOEs or SPOEs.

Movement

The movement phase entails moving forces by air and sea to the AAA. It begins on lift-off of the first aircraft from the departure airfield or when the first MPF ship transits to the AAA. This phase ends when the last FIE aircraft arrives in the AAA and the last ship arrives at the offload point.

The MPF is divided into two movement groups based on deployment mode: sea or air. The sea movement group is divided into movement elements that deploy from the same SPOE at approximately the same time. The air movement group (collectively called FIE) is divided into elements that deploy from different APOEs at different times (see fig. 6-1 on p. 6-2).

Arrival and Assembly

The arrival and assembly phase begins on arrival of the first MPF ship or first aircraft of the main body at the designated AAA. This phase ends when adequate MPE/S are offloaded and issued to awaiting units, C2 is established, and the MAGTF commander reports that all essential MAGTF elements of the MPF are combat-ready. The arrival and assembly phase includes the following:

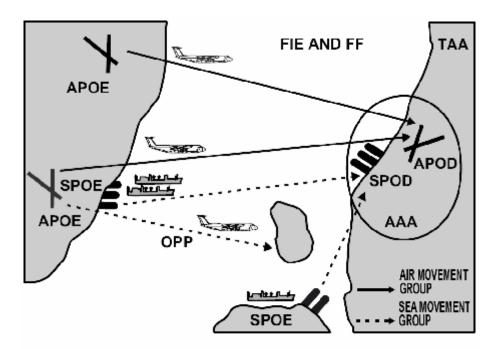


Figure 6-1. Movement Concept.

- Prepare the AAA.
- Receive MAGTF, US Navy (USN), and US Coast Guard (USCG) personnel and equipment at nearby airfields.
- Coordinate arrival and offload of equipment and supplies from MPSs.
- Issue MPE/S to arriving units.
- Provide local force protection for arrival and assembly.
- Establish the MAGTF's combat capability (force standup).
- Prepare the MAGTF mission; e.g., moving the MAGTF to the tactical assembly area (TAA) or the line of departure (LD).

AAA Overlay. MPF terrain management, associated control measures, and force protection units must be graphically represented to provide a comprehensive display of units and activities. Overlays (AAA, beach, port, and airfield as seen in figs. 5-7 thru 5-10) are essential for integrating MPF activities with force protection responsibilities. Accordingly, terrain management is an essential function of MPF staff planning.

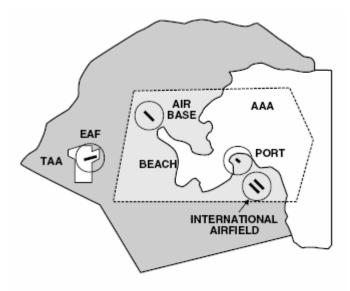


Figure 5-7. AAA Overlay.

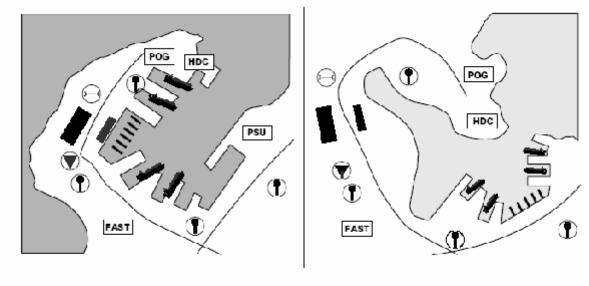


Figure 5-8. Port Overlay.

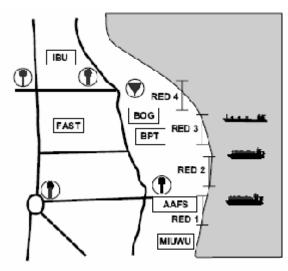


Figure 5-9. Beach Overlay.

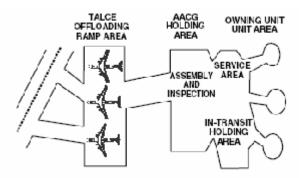
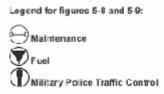


Figure 5-10. Airfield Overlay.



Reconstitution

This fifth phase of MPF operations is referred to as *reconstitution*. It involves regenerating and replenishing the MPE/S to attain the PO and reestablish the warfighting capability aboard the MPS as rapidly as possible upon completion of MAGTF employment operations. MPS reconstitution may include replenishing equipment and supplies from the CONUS.

Detailed planning for reconstituting the MPF is the responsibility of the designated MARFOR commander supported by augmentation from the supporting establishment. Specific intheater reconstitution objectives and operational and logistical factors will ultimately influence the supported combatant commander's guidance to the MARFOR.

MPF Shipping

The 16 **Maritime Propositioning Ships** are part of the United States Military Sealift (MSC) Command's Propositioning Program. They preposition U.S. Marine Corps vehicles, equipment and ammunition throughout the world.

The MPS ships are assigned to three Maritime Propositioning Ship squadrons located in the Mediterranean, the Indian Ocean at *Diego Garcia* and the Western Pacific at *Guam* and *Saipan*. The MPS ships in each squadron have sufficient equipment, supplies and ammunition to support a U.S. Marine Expeditionary Brigade of about 15,000 personnel for 30 days. The MPS ships are self-sustaining, having cranes which enable them to unload their own cargo at sea or pierside or offshore with special lighterage equipment. Each ship has roll-on/roll-off capability and a flight deck for helicopter operations.

MPF ships are designated MV for motor vessel and SS for steam ship. MPF ships designated USNS are government-owned ships operated by mariners employed by companies under contract to MSC.

The *Corporal Louis J. Hauge, Jr.* Class is the original class of MPS ships chartered by Military Sealift Command. The five ships are <u>Maersk Line</u> ships converted by Bethlehem Steel. During conversion, the ships gained an additional 157 feet (48 m) amidships and a helicopter landing pad, among other things.

The *Sergeant Matej Kocak* Class, the second class of MPS ships chartered by MSC, also gained 157 feet (48 m) amidships and a helicopter landing platform after conversion. These ships, delivered to MSC in the mid-1980s, are National Steel and Shipbuilding, San Diego, conversion ships owned and operated by *Waterman* Steamship Corp.

The 2nd Lieutenant John P. Bobo Class ships are new construction ships delivered to MSC in the mid-1980s from <u>General Dynamics</u>, Quincy, Mass. They are owned and operated by American Overseas Marine.



MV CAPT Steven L. Bennett



USNS 1st LT Harry L. Martin



MV SGT William R. Button,



MV PFC James Anderson Jr.



USNS GYSGT Fred W. Stockham



Pier Side Roll-on Roll-off



In-strean Literage Off-Load



In-stream Literage Off-Load



Pier Side Off-Load



At Sea Tail Off-Load

102.8 Discuss the proper sequence for conducting a military formation.

General concepts for a company formation.

• A company consists of a headquarters and two or more platoons.

Close-order drill and ceremonies, headquarters personnel may be attached to platoons without interfering with the permanent squad organizations and that for the marchers, members of the company headquarters command group are formed as the company or as higher authority directs.

Company uses formations such as lines, column (of three, etc.), mass extended mass, and column of platoons in line.

Note: In all these formations, the platoons which comprise the company will either be in line (each squad forming one rank) or in column (each squad forming one file). The company may also form a column of twos or files in a manner similar to that of a platoon. In this case, the platoons are arranged in the same manner as a company in column, except that each platoon is in a column of twos or files.

When the company commander is absent, the senior officer present with the company takes post and drills the company for the company commander and that in the absence of the first sergeant, the senior SNCO, normally a gunnery sergeant, takes post and performs the duties of the first sergeant.

For drills and ceremonies, the guidon bearer carries the company guidon and that in all formations, the guidon bearer is one pace to the rear and one pace to the left of the company commander or the first sergeant, and for marches in the field, the guidon is kept with the company headquarters baggage unless otherwise directed.

Note: If the guidon is carried in the field on marches, the guidon bearer takes his post as described above for drill and ceremonies.

When Marines are to execute the same movements simultaneously, the platoon commanders repeat all preparatory commands of the company commander except the following.

- When commands such as "Fall Out" are given, combine the preparatory command and the execution command.
- When the preparatory command of the company commander is "COMPANY", the platoon commander gives the preparatory command "PLATOON".
- When in mass formation, platoon commanders repeat preparatory only when the order requires an independent movement by a platoon.
- When the platoons of the company are to execute a movement in successive order, such as a column movement, the platoon commander of the first platoon repeats the company commander's preparatory command. Platoon commander's of the following platoons give an appropriate caution such as "CONTINUE THE MARCH." After giving the caution command, the platoon commanders of the execution at the proper time to cause their platoons to execute the movement on the same ground just as the first platoon.

102 USMC Mission and Organization

When commands involve movements of the company in which one platoon stands fast or continues march, while one of more of the other platoons do not, the commands "STAND FAST" or "CONTINUE THE MARCH" are given.

The company marches, executes change of direction, closes and extends intervals between squads in column, open and closes ranks, and stacks and takes arms as in platoon drill.

Then company marches in line only for minor changes in position.

Unless otherwise specified for the company to be at close interval, all changes in formation must be executed with the files and rank formed at normal interval and distance.

Note: When platoons cannot be formed in regular organized squads forming the company, the platoon sergeants give the commands "INSPECTION, <u>ARMS</u>: PORT, <u>ARMS</u>: RIGHT SHOULDER, <u>ARMS</u>" and then call the roll. Each Marine answers "HERE" and then executes order arms as his name is called. The platoon sergeant then organizes the platoon into squads and executes an about face. The manual of arms is omitted for personnel not armed with rifles.

103 SAFETY FUNDAMENTALS

References:

- a. OPNAVINST 3500.39A/MCO 3500.27A, Operational Risk Management MCO
- b. P5100.8F, Marine Corps Occupational Safety and Health Program Manual
- c. OPNAVINST 3750.6Q, Naval Aviation Safety Program

103.1 Discuss the concept of Operational Risk Management (ORM). Background

NDP-1 (Naval Warfare) states, "By its nature, uncertainty of war invariably involves the acceptance risk. .. Because risk is often related to gain, leaders weigh risks against the benefits to be gained from an operation." We rely on the judgment of individual Commanders to balance the requirements of mission success with the inherent risks of military action. Naval leaders have always practiced risk management in their operational decision making. However, the approach to risk, and degree of success in dealing with it, have varied widely depending on the leader and his/her level of training and experience. The principles of Operational Risk Management can be taught and effectively applied throughout the Navy and Marine Corps to enhance the decision making capabilities of our personnel. Many Operational Risk Management techniques are currently incorporated into our operational planning and decision making processes. The evaluation and wargaming of different courses of action, the establishment of mission go/no-go criteria, the employment of maximum/minimum operating envelopes, and the use of mission/confirmation briefings are all examples of how Commanders and units evaluate and manage risk. In addition to continuing to utilize these techniques, the remainder process of this enclosure outlines a formalized process which may be applied in dealing with risk

Concept

The Operational Risk Management process

- is a <u>decision making tool</u> used by people at all levels to increase operational effectiveness-by anticipating hazards and reducing the potential for loss, thereby increasing the probability of a successful mission.
- increases our ability to make informed decisions by providing the best baseline of knowledge and experience available.
- minimizes risks to acceptable levels, commensurate with mission accomplishment. The amount of risk we will take in war is much greater than that we should be willing to take in peace, but the process is the same. Applying the Operational Risk Management process will reduce mishaps, lower costs, and provide for more efficient use of resources.

Operational Risk Management Terms:

- Hazard A condition with the potential to cause personal injury or death, property damage or mission degradation.
- Risk An expression of possible loss in terms of severity and probability.
- Risk Assessment The process of detecting hazards and assessing associated risks.
- Operational Risk Management (ORM) The process of dealing with risk associated with military operations, which includes risk assessment, risk decision making and implementation of effective risk controls.

103.2 Explain the following as they apply to ORM.

Identifying hazards

Begin with an outline or chart of the major steps in the operation (operational analysis). Next, conduct a Preliminary Hazard Analysis by listing all of the hazards associated with each step in the operational analysis along with possible causes for those hazards.

Assessing hazards

For each hazard identified, determine the associated degree of risk in terms of probability and severity. Although not required, the use of a matrix may be helpful in assessing hazards.

Making risk decisions

First, develop risk control options. Start with the most serious risk first and select controls that will reduce the risk to a minimum consistent with mission accomplishment. With selected controls in place, decide if the benefit of the operation outweighs the risk. If risk outweighs benefit or if assistance is required to implement controls, communicate with higher authority in the chain of command.

Implementing controls

The following measures can be used to eliminate hazards or reduce the degree of risk. These are listed by order of preference:

- Administrative Controls Controls that reduce risks through specific administrative actions, such as:
 - Providing suitable warnings, markings, placards, signs, and notices.
 - Establishing written policies, programs instructions and standard operating procedures (SOP).

- Training personnel to recognize hazards and take appropriate precautionary measures.
- Limiting the exposure to a hazard (either by reducing the number of personnel/assets or the length of time they are exposed).
- Engineering Controls Controls that use engineering methods to reduce risks by design, material selection or substitution when technically or economically feasible.
- Personal Protective Equipment Serves as a barrier between personnel and ahazard. It should be used when other controls do not reduce the hazard to an acceptable level.

Supervising

Conduct follow-up evaluations of the controls to ensure they remain in place and have the desired effect. Monitor for changes which may require further ORM. Take corrective action when necessary.

103.3 Discuss the requirements for the provision and use of Personal Protection Equipment (PPE) and why it is necessary.

Issue, maintenance, and use of PPE is necessary for protecting Marine Corps personnel and hobby shop patrons when engineering and administrative controls are not available or effective. Appropriate PPE shall be provided and used for emergencies such as hazardous materials spills (including biohazards), hazardous materials cleanup operations, ventilation malfunctions, emergency egress, and damage control activities

Marine Corps installations, commands, units, departments, and non-appropriated fund activities will fund for provision and maintenance of PPE described in this Manual, including prescription safety glasses, for Marine Corps personnel. Expenditure of funds for PPE is economical, since loss of time for the injured, compensation costs claims, and loss of materials and equipment are reduced.

Environmental differential pay for civilian employees, where warranted, does not relieve the responsibility to provide appropriate PPE or continue efforts to abate hazardous conditions which justify such pay. Requirement to wear PPE in any particular work area does not, of itself, provide justification for differential pay.

Managers will ensure compliance with the prescribed use of PPE and document cases of noncompliance. Managers should consider disciplinary action as a corrective measure against the offender and supervisor, as necessary.

Installation/unit safety manager shall conduct a PPE survey per reference 13-2, to determine if hazards are, or are likely to be, present which necessitate use of PPE. All areas designated as eye, foot, head, and noise hazardous shall be posted with an appropriate warning sign as determined by installation or unit safety manager.

103 Safety Fundamentals

TRAINING

Installation or unit safety office shall provide training to all Marine Corps personnel who are required to use PPE as identified by PPE survey. Each worker shall be trained to know at least the following:

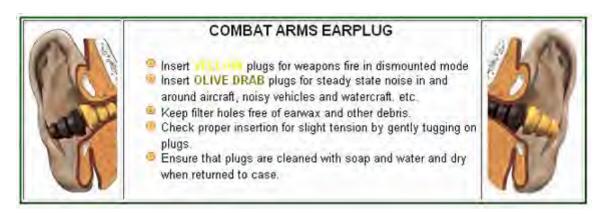
- o When PPE is necessary.
- o What PPE is necessary.
- o How to properly put on, take off, adjust and wear PPE.
- o Limitations of PPE.
- o Proper care, maintenance, useful life, and disposal of PPE.

HEAD PROTECTION



Head protection equipment is designed to protect workers' head from bumps, cuts, impact, penetration, and electric shock, or any combination thereof.

HEARING PROTECTION (HEARING CONSERVATION PROGRAM)



Hearing protective devices shall be worn by all personnel when they enter or work in an area where the operations generate noise levels of:

- o Greater than 84 dBA (8 hour TWA) sound level.
- o 140 dB peak sound pressure level or greater.

 A combination of insert type and circumaural hearing protective devices (double protection) shall be worn in all areas where noise levels exceed 104 dBA (8 hour TWA) sound level.

FOOT PROTECTION



All Marine Corps personnel occupationally exposed to foot-hazardous operations or areas shall be furnished appropriate safety footwear at organizational expense.

EYE PROTECTION (SIGHT CONSERVATION PROGRAM)



Marine Corps personnel working in eye-hazardous areas or operations identified in PPE survey shall be provided adequate eye protection at government expense. Objectives of this program are to safeguard personnel from eyestrain or injury due to defective vision and protect them against other eye injuries by providing protective eye wear.

Types of Eye Protection. Type of eye protection used is dependent upon operation and hazard. Type of eye protection shall be identified on the PPE Survey.

- o Plan or prescription safety glasses (with side protection)
- o Goggles (e.g., splash-resistant goggles for working with chemicals (covered ventilation ports), impact-resistant goggles for working with particles (open ventilation)).
- o Face shields may be required, in addition to safety glasses or goggles
- o Welding goggles, hoods, and shields

RESPIRATORY PROTECTION (RESPIRATORY PROTECTION PROGRAM)



Marine Corps personnel working in areas where they may be exposed to harmful levels of airborne dust, fogs, fumes, mists, gases, smokes, sprays, or vapors shall be provided appropriate respiratory protection, per guidelines of industrial hygienist, at government expense.

103.4 Discuss the four general classes of fires and which types of extinguishers are used on each.

CLASS A

Involve solid substances such as - wood, cloth, and paper – which, usually leave an ash. Explosives are in this category. Water is the usual means of extinguishing a Class A fire.

CLASS B

Involve flammable liquids - oil, gasoline etc. For small fires or in confined spaces, CO2 & purple "K" powder (PKP) are effective. For large fires, aqueous film-forming foam (AFFF) is the usual means of extinguishing. Spaces subjected to major fuel or lube-oil spills (fire rooms, engine rooms, fuel transfer etc.) are equipped with HALON 1301 (fluorocarbon gas flooding systems; these are manually activated only after other fire fighting methods fail.

CLASS C

Ignite in electrical/electronic equipment, primary extinguishing method is to deenergize the equipment. CO2 is the preferred extinguishing agent.

CLASS D

Involve combustible metals (magnesium, titanium, etc.) and any fires that required special handling. High or Low - velocity fog at extreme range upwind of this type of fire.

<u>Not testable</u>: Class-K fires are fires that involve cooking oils. Though by definition Class-K is a subclass of Class-B, the special characteristics of these types of fires are considered important enough to recognize.

103.5 Discuss the purpose of safety stand-downs

In 1989, in response to a rash of Navy mishaps, the CNO called a Navy wide safety stand-down is a period, usually of 1 or 2 days, set aside for safety training, awareness, and drills. Type commander instructions required afloat units to conduct safety stand-downs at least once a year, while yearly stand-downs are recommended to other units. Shore commands may also take part in safety stand-downs. A stand-down may be called any time the command notes a particular safety on a specific topic. For example, if a command has serious mishap, it may have personnel take part in a safety stand-down for morning instead of working. Personnel may then review the events leading to the mishap and discuss the lessons learned.

103.6 Discuss the purpose of the Naval Aviation Safety Program.

The Naval Aviation Safety Program enhances operational readiness when it preserves the lives and enhances the well-being of its members by protecting the equipment and material they need to accomplish their mission. The Naval Aviation Safety Program supports every aspect of naval aviation. Knowledge gained here may assist other safety efforts. The program may, therefore, yield benefits and preserve resources far beyond its intended scope

The Naval Aviation Safety Program succeeds by preventing damage and injury. Potential causes of damage and injury under human control are termed hazards. The goal of the Naval Aviation Safety Program is to eliminate or control hazards.

The Naval Aviation Safety Program is based on the concept of necessitarianism which teaches us that mishaps are the inevitable result of their antecedent causes which preceded them in time. (Nothing "just happens.") Thus, it should be clear that we can prevent mishaps when we eliminate their causes beforehand. Preventing injury to people and damage to equipment, requires that we eliminate the hazards that cause damage and injury. The goal of the program is, therefore, to eliminate causes of damage and injury: to eliminate hazards.

103.7 State the purpose of the Laser Safety Hazard Control Program.

The policy of the Department of Navy (DON) is to preserve and maintain the health of its personnel by adopting practices which eliminate or control potentially hazardous radiation exposures. This policy encompasses:

Limiting personnel exposures to levels that are within permissible exposure Guidelines

103 Safety Fundamentals

Identifying, attenuating or controlling through engineering design, administrative actions or protective equipment, hazardous exposure levels and other dangers associated with non-ionizing radiation sources

Controlling areas in which harmful exposure to unprotected personnel could occur

Ensuring personnel are aware of potential exposures in their work places and duty assignments and the control measures imposed to limit their exposures to levels that are within the permissible guidelines

Investigating and documenting overexposure incidents.

104 ADMINISTRATIVE FUNDAMENTALS

References:

- a. MCRP 5-12D, Organization of Marine Corps Forces (PCN 14400005000)
- b. MCWP 3-40.1 Marine Air Ground Task Force Command and Control (PCN 143 00006400)
- c. NWP 1-03.3, Status of Resources and Training Systems
- d. World Wide Web: www.defenselink.mil

104.1 Discuss the following as they apply to your chain of command:

Two parallel chains of command - Service and Operational - exist within the Marine Corps. The Service chain begins with the President, through the Secretary of Defense, and continues through the Secretary of the Navy and the Commandant of the Marine Corps. The operational chain runs from the President, through the Secretary of Defense, directly to commanders of Combatant Commands (COCOM) for missions and forces assigned to their commands. Marine Corps component commanders provide operational forces to commanders of combatant commands and other operational commanders as required.

Secretary of Defense

Deputy Secretary Defense

Deputy Secretary

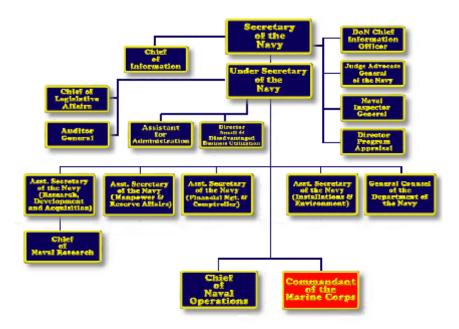
104.1 a. Secretary of the Navy

The Secretary of the Navy is responsible for, and has the authority under Title 10 of the <u>United States Code</u>, to conduct all the affairs of the Department of the Navy, including: recruiting, organizing, supplying, equipping, training, mobilizing, and demobilizing. The Secretary also oversees the construction, outfitting, and repair of naval ships, equipment and facilities. SECNAV is responsible for the formulation and implementation of policies and programs that

104 Administrative Fundamentals

are consistent with the national security policies and objectives established by the President and the Secretary of Defense.

104.1 b. Commandant Marine Corps



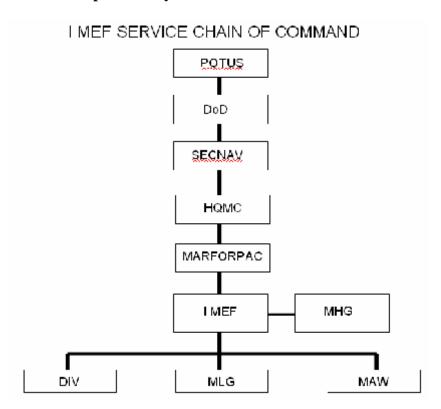
The Commandant of the United States Marine Corps is the highest ranking officer of the United States Marine Corps and a member of the Joint Chiefs of Staff, reporting to the Secretary of the Navy parallel to but not to the Chief of Naval Operations. As with the other joint chiefs, the commandant is responsible for ensuring the organization and readiness of his respective service branch and for advising the President. However, as with the other joint chiefs, the commandant has no operational command authority.

104.1C. Marine Forces

The Marine Corps' operating forces consist of:

- Marine Corps forces (MARFOR)
- Marine Corps security forces (MCSF) at naval installations
- Marine security guard detachments at embassies and consulates around the globe.

The "Forces for Unified Commands" memorandum assigns Marine Corps operating forces to each of the combatant commands. A force assigned or attached to a combatant command may be transferred from that command only as directed by the Secretary of Defense and under procedures prescribed by the Secretary of Defense and approved by the President. The Marine Corps has established multiple Marine Corps component headquarters to support the unified commands with the mission to provide forces to COCOMs.



104.1 d. Marine Expeditionary Force

104.2 Discuss the role of the following senior enlisted personnel in the chain of command:

104.2 a. Sergeant Major

Duties are those specifically assigned by the commander on the discipline, welfare, conduct, morale, and leadership of enlisted personnel.

Specific Responsibilities of the Sergeant Major

- Advises the commander and staff about enlisted personnel, including appraisals of the
- morale and discipline of the unit.
- Implements policies and standards on enlisted personnel performance, training, personal appearance, and conduct.
- Maintains communications with unit SNCOs and other enlisted personnel through SNCO channels.
- Provides guidance and counsel to SNCOs and other enlisted personnel.
- Participates in the reception and orientation of newly assigned enlisted personnel.

104 Administrative Fundamentals

104.2 b. Command Master Chief

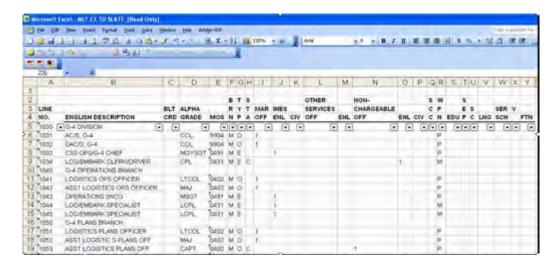
The primary responsibility of the Command Master Chief is to advise the Commanding General, staff and unit commanders regarding Navy policy for Navy enlisted matters.

Specific Responsibilities of the Command Masterchief

- Interfaces and maintains the communication with the Command Master Chiefs and Navy personnel of Major Subordinate Commands (MSC's), and providing them assistance and guidance as appropriate.
- Advises the CG, Surgeon, Chaplain, and Dental Officer on all matters pertaining to the morale, welfare, utilization, and training of Navy enlisted members.
- Accompanies the CG, MEF and the MEF Surgeon on staff visits and official functions as appropriate.

104.3 Discuss the Table of Organization (T/O) as it pertains to your unit.

The table setting out the authorized numbers of personnel in a unit/formations. Sometimes called table of organization or table of organization and equipment (TOE) The TOE is a table which prescribes the *normal wartime mission, organizational structure, and personnel and equipment requirements* for a military unit. The TOE is the basis for an authorization document, the MTOE. The TOE is not an authorization document



104.4 Discuss the Table of Equipment (T/E) as it pertains to your unit.

A document that prescribes basic allowances of organizational equipment, and provides the control to develop, revise, or change equipment authorization inventory data.

Table 3-4. Selected Items of Equipment for the MWCS.

TAM Number	Item	Quantity
A0248 A1795 A1930 A1935 A1955	Central office, telephone, automatic, AN/TTC42(V) Radio set, AN/GRC 193B(V) Radio set, AN/MRC110A Radio set, AN/MRC 138B(V) Terminal set, radio, AN/MRC142	3 25 8 10 12
A1957 A2069 A2070 A2164 A2167 A2179 A2505 A2608 D1059	Radio set, AN/MRC145 Radio set, UHF, AN/PRC113(V)3 Radio set, UHF, AN/PRC113(V)3 Radio set, manpack, AN/PRC119A Radio set, AN/VRC83(V)2 Radio set, vehicular, AN/VRC88A Terminal, radio, troposcatter, digital, AN/TRC170(V)5 Switchboard, telephone, automatic, SB3614(V)TT Switching unit, telephone, automatic, SB3865 Truck, cargo, 5 ton, 6 x 6, M923A1	8 8 30 4 6 16 2 4

104.5 Discuss the Training Allowance (T/A) as it pertains to your unit.

Will vary on the command you are attached to.

104.6 Discuss Status of Resources and Training System (SORTS) as it applies to your unit.

Will vary on the command you are attached to.

104.7 Define the following staff sections:

J/G/S-1 Administration and Personnel

The G-1/S-1 is the principal staff officer for all matters on personnel management, personnel administration, and headquarters management. Every unit staff has a personnel officer.

Specific Responsibilities of the G-1/S-1

- Personnel Strength Management
- Personnel Replacement Management
- Discipline, Law, and Order
- Prisoners of War
- Headquarters Management
- Casualty Management
- Personnel Management
- Morale and Personnel Services
- Operation Plan and Operation Order

Special Staff Officers under Staff Cognizance of the G-1 Officer

 Adjutant: On general staffs, the adjutant is responsible for office management. On executive staffs, the S-1 will be dual-hatted as the

- adjutant, and in the S-1 role, will have staff cognizance over personnel administration and office management.
- <u>Career Planning Officer</u>: The career planning officer performs the general duties of a special staff officer with respect to career planning matters.
- Disbursing Officer: The disbursing officer performs the general duties of a special staff officer with respect to the safekeeping of all public money collected or otherwise placed in his custody. The disbursing officer falls under the staff cognizance of the comptroller or, if a comptroller is not authorized, the G-1.
- <u>Postal Officer:</u> The postal officer performs the general duties of a special staff officer, with respect to postal matters.
- Morale, Welfare, and Recreation Officer: The MWR officer performs the general duties of a special staff officer, with respect to special services matters.
- <u>Personnel Officer:</u> The personnel officer performs the general duties of a special staff officer with respect to personnel administration.

J/G/S-2 Intelligence

The AC/S G-2 (S-2) has staff responsibility for intelligence and intelligence operations. The commander relies on the intelligence officer to provide information on weather, terrain, and enemy capabilities, status, and intentions.

Specific Responsibilities of the G-2/S-2

- Develops and answers outstanding intelligence-related priority intelligence requirements (PIRs) and intelligence requirements (IRs) by planning, directing, integrating, and supervising organic multidiscipline MAGTF and supporting intelligence operations.
- Prepares appropriate intelligence, CI, and reconnaissance plans and orders, and reviews and coordinates the all-source intelligence, CI, and reconnaissance plans of JTFs, theaters, and other organizations.
- Submits and coordinates all-source collection, production, and dissemination requirements beyond the capability of the MAGTF through higher headquarters for JTF, theater or national intelligence support.
- Ensures intelligence information is rapidly processed, analyzed, and incorporated where appropriate in all-source intelligence products, and rapidly disseminates to all MAGTF and external units requiring these.
- Evaluates JTF, theater, and national all-source intelligence support and adjusts stated IRs.
- Identifies deficiencies in intelligence, CI, and reconnaissance personnel and equipment resources. Incorporates exercise

- intelligence in training exercises to improve individual, collective, and unit readiness.
- Facilitates understanding and use of intelligence in support of the planning and execution of operations.

Special Staff Officers under Staff Cognizance of the G-2 Officer

- G-2 Operations Officer: The G-2 operations officer has primary responsibility for intelligence support to current and future operations.
- <u>G-2 Plans Officer</u>: The G-2 plans officer has primary responsibility for intelligence support to the future plans cell.
- Intelligence Battalion Commander/Intelligence Support Coordinator: The intelligence battalion commander is responsible for planning, directing, collecting, processing, producing, and disseminating intelligence, and providing CI support to the MEF, MEF MSCs, subordinate MAGTFs, and other commands as directed.
 - O Garrison: In garrison the principal task of the intelligence battalion commander is to organize, train, and equip detachments that support MAGTFs or other designated commands to execute integrated collection, intelligence analysis, production, and dissemination of intelligence products.
 - O Actual Operations: During operations the intelligence battalion commander is dual-hatted as the ISC, serving under the direct staff cognizance of the AC/S G-2. The S-3 section, along with the operations center element of the G-2, form the core of the ISC support effort, with planning, direction, and command and control conducted within the intelligence operation center's (IOC's) support cell. As the ISC, the commander is responsible to the AC/S G-2 for the overall planning and execution of allsource intelligence operations.
- Collection Management/Dissemination Officer: The collection management/dissemination officer (CM/DO) is sourced from the intelligence battalion's S-3 section and is a key subordinate to the intelligence battalion commander/ISC during operations. The CM/DO is responsible for formulating detailed intelligence collection requirements (ICRs) and intelligence dissemination requirements (IDRs) and tasking and coordinating internal and external operations to satisfy these. The CM/DO receives validated PIR and IRs and direction from the ISC, and then plans and manages the best methods to employ organic and supporting collection and dissemination resources through the intelligence collection and dissemination plans. The CM/DO is also responsible for validating and forwarding national and theater intelligence

- collection requests from the MAGTF and MSCs typically using appropriate intelligence tools and TTP. He also is responsible for coordinating intelligence CIS requirements and maintaining awareness of available CIS connectivity throughout the MAGTF and with key external organizations. During operations the CM/DO works within the support cell.
- Surveillance and Reconnaissance Center Officer in Charge: The SARC OIC is also an immediate subordinate of the ISC and is responsible for supervising the execution of the integrated organic, attached, and DS intelligence collection and reconnaissance operations. The SARC OIC is responsible to the ISC for the following:
- Production and Analysis Cell Officer in Charge: The P&A cell OIC is the third principal subordinate to the integrated staff cell.
 Primary responsibility is to manage and supervise the MAGTF's all-source intelligence processing and production efforts.

J/G/S-3 Operations

The G-3 is the principal staff officer for all matters on training, plans, operations, and organization. At the MEF/MARFOR levels, the G-3 shares responsibility for planning with the AC/S G-5, plans officer. Every unit staff has an operations officer.

Specific Responsibilities of the G-3/S-3

- Training
- Operations
- Planning and Operation Orders
- Organization

Special Staff Officers under Staff Cognizance of the G-3 Officer

- Air Officer: The air officer has staff responsibility for the coordination of air support. The following functions are performed: Serves as a member of the force fires coordination center (FFCC) or force support coordination center (FSCC).
- Target Intelligence Officer: The target intelligence officer (TIO) is the head of the target information section in the division FSCC, and is responsible for targeting. His duties require him to work closely with the G-2 section TIO. There are no TIOs at regiment and battalion FSCCs. The FSC at these echelons may have to perform some TIO duties or delegate some to the supporting arms representatives.
- Civil Affairs Officer: The civil affairs officer has the responsibility to enhance the relationship between military forces and the civilian population in the AO to ensure the success of the military operation. The civil affairs officer is normally the commanding officer of the civil affairs group (CAG), the detachment commander of the civil affairs detachment or the team leader of a

civil affairs team. Currently, all Marine Corps civil affairs units reside in the Reserve establishment. School trained personnel in the active force may provide limited civil affairs capability when Reserve civil affairs assets are not available. In joint operations, other-Service augmentation of the Marine Corps civil affairs capability may be an option. In some situations; e.g., humanitarian operations, it may be more effective to authorize the civil affairs officer to act as a member of the general/executive staff rather than under the cognizance of the G-3.

- <u>Future Operations Officer</u>: The future operations officer conducts detailed planning for the command's next mission. The future operations officer focuses on new fragmentary orders and/or changes to the mission for subordinate elements, and forms and leads the integrated planning effort.
- <u>Current Operations Officer</u>: The current operations officer coordinates the current battle and ensures adherence to the commander's intent.
- <u>Information Operations Officer</u>: The IO officer is responsible for coordinating IO. An IO officer may be found on MEF, division, and wing staffs.
- Marine Expeditionary Force Force Fires Officer/Fire Support Coordinator: The MEF force fires officer/FSC is responsible for the planning, coordination, integration, direction, and monitoring of organic and supporting lethal and non-lethal fires. All ground combat maneuver units, division through battalion, include an FSC. An FSC will be assigned to the rear area operations center (RAOC).
- Naval Gunfire Officer: The naval gunfire officer is responsible for coordinating, planning, integrating, and monitoring naval gunfire support.
- Nuclear, Biological, and Chemical Defense Officer: The NBC defense officer is responsible for planning and coordinating all activities relating to NBC defense.
- Psychological Operations Officer: When one is assigned, the PSYOPs officer performs the general duties of a special staff officer with respect to PSYOP.
- Visual Information Officer: The visual information officer performs the general duties of a special staff officer with respect to the use of photography to record operations, training, and other activities for use in future operations, training, study, planning, historical documentation, and public information.
- <u>Air Control/Antiair Warfare Officer</u>: The air control/antiair warfare officer performs the general duties of a special staff officer with respect to tactical air control and antiair warfare.

104 Administrative Fundamentals

- Assault Amphibian Officer: The assault amphibian officer performs the general duties of a special staff officer with respect to assault amphibian matters.
- <u>Artillery Officer</u>: The artillery officer performs the general duties of a special staff officer with respect to artillery.
- Aviation Safety Officer: The aviation safety officer performs the general duties of a special staff officer with respect to aviation safety.

J/G/S-4 Logistics

The AC/S G-4 (S-4) is the principal staff assistant for all logistic matters. The G-4 plans, coordinates, and supervises the provision of combat logistics in the areas of supply, maintenance, transportation, health services, engineer support, landing support, materials handling, food services, mortuary affairs, and host-nation support. Every unit staff has a logistics officer. Aviation logistics, supply, maintenance, ordnance, and avionics functions are unique to the ACE and fall under the staff cognizance of the aviation logistics officer. At regiments and battalions, the S-4 also has staff responsibility for financial management.

Specific Responsibilities of the G-4/S-4

- Management of War Reserve Materiel
- OPLAN Sustainability
- Ground Equipment Readiness
- Aircraft Readiness
- Strategic Mobility
- Ground training and contingency ammunition management
- Force Modernization
- Unit equipment and allowance changes
- Combat Service Support
- Mobility
- Maintenance/Maintenance related programs
- Ordnance
- Motor Transport
- Interservice Support Agreement Management
- Ground Safety
- Engineer related landing support matters
- Facilities matters

Special Staff Officers under Staff Cognizance of the G-4 Officer

- <u>Supply Officer</u>: The supply officer is responsible for all general supply activities within the command.
- <u>Dental Officer</u>: The dental officer is responsible for dental matters and coordinating dental activities within the command.
- Medical Officer: The medical officer has responsibility for medical matters and coordinating medical service support or the command. Most unit staffs include a medical officer.

- Ordnance Officer: The ordnance officer is responsible for all ordnance matters.
- <u>Embarkation Officer</u>: The embarkation officer performs the general duties of a special staff officer with respect to loading and unloading of personnel, equipment, and supplies in movement by ship, aircraft, and railroad.
- <u>Engineer</u>: The engineer performs the general duties of a special staff officer with respect to engineering. The force/division engineer is normally the senior engineer. He advises the commander on the employment of engineer forces.
- Fiscal Officer: The fiscal officer performs the general duties of a special staff officer under the staff cognizance of the accounting officer, comptroller or the G-4 as directed with respect to allotments of appropriated funds. If the command does not have a comptroller, the disbursing officer or fiscal officer assumes the comptroller's duties. The supply officer, under the staff cognizance of the G-4/S-4, may also be designated as the fiscal officer. See also MCWP 4-11, *Tactical-Level Logistics*. The following functions are performed:
- <u>Food Service Officer</u>: The food service officer performs the general duties of a special staff officer, with respect to food service. The following functions are performed:
- Ground Safety Officer: The ground safety officer performs the general duties of a special staff officer, with respect to ground safety. The following functions are performed:
- <u>Landing Support Officer</u>: The landing support officer performs the general duties of a special staff officer. The following functions are performed:
- Maintenance Management Officer: The maintenance management officer performs the general duties of a special staff officer and is the primary point of contact in maintenance management. Responsibilities encompass all commodities of Marine Corps ground equipment.
- Motor Transport Officer: The motor transport officer performs the general duties of a special staff officer with respect to motor transport and advises the commander on the employment of motor transport assets.
- <u>Transportation Officer</u>: The transportation officer performs the general duties of a special staff officer with respect to transportation.

Special Staff Officers under Staff Cognizance of the Aviation Logistics Officer

Aviation maintenance, ordnance, supply, and avionics officers are unique to ACE and Marine aircraft wing (MAW) headquarters. In ACEs based on a single aircraft group or composite squadron, these posts are normally

assumed as additional duties by the commanding officer of the assigned host Marine aviation logistics squadron (MALS) and the squadron or detachment staff. See also MCWP 4-11.

- <u>Aircraft Maintenance Officer</u>: The aircraft maintenance officer is the senior maintenance manager of the command and performs the general duties of a special staff officer with respect to the support and maintenance of aircraft and associated ground support equipment.Staff responsibilities include the following:
- Aviation Ordnance Officer: The aviation ordnance officer performs the general duties of a special staff officer with respect to aviation munitions and ordnance. Staff responsibilities include the following:
- Aviation Supply Officer: The aviation supply officer performs the general duties of a special staff officer with respect to aviation supply. The following functions are performed:
- Avionics Officer: The avionics officer performs the general duties of a special staff officer with respect to the maintenance of aircraft electrical and electronic systems and the associated special support equipment.

J/G/S-5 Planning

The AC/S G-5 is the principal staff assistant for all long-range (future) planning and joint planning. Normally, a G-5 is found only at the MEF and MARFOR levels. At lower echelons of the MAGTF, future planning is the responsibility of the G-3/S-3.

Specific Responsibilities of the G-5

- Conducts future planning and supervises the future plans section by performing the following:
 - o Provides a liaison element to participate in the higher headquarters planning process.
 - Receives the MAGTF mission from higher headquarters and initiates the MAGTF planning process.
 - o Analyzes the mission assigned and develops an outline plan.
 - o Exercises responsibility for OPLAN development with the G-3.
 - o Transitions the outline plan to the G-3 to initiate detailed planning.
- Supports planning for current operations.
- Ensures general staff participation in the joint planning process.
- Conducts contingency planning for joint operations by performing the following:
 - o Determines forces required and available.
 - o Coordinates force deployment and employment planning.
 - o Provides planning recommendations for hostnation support.
 - o Coordinates and reviews the TPFDD input through the Joint Operation Planning and Execution System (JOPES).

• Trains the staff on JOPES procedures.

J/G/S-6 Communications and Information Systems

The AC/S G-6 (S-6) is the principal staff assistant for all CIS matters. Every unit staff has a CIS officer.

Specific Responsibilities of the G-6

- Analyzes COAs and estimates supportability from a CIS perspective.
- Maintains visibility of CIS status.
- Identifies CIS requirements—personnel, equipment, supplies, and facilities—and prioritizes CIS support through close and continual coordination with the G-3.
- Develops CIS plans, orders, and SOPs based on the concept of operations and in close coordination with the G-3 and supporting CIS units.
- Recommends and supervises the employment of organic and assigned/attached CIS elements.
- Recommends intelligence requirements to the G-2.
- Advises the staff on the technical and operational aspects of CIS employment.
- In coordination with functional area users, plans and supervises CIS training.
- Coordinates with the G-3 on the location, echelonment, and displacement of the headquarters and command and control facilities for adequate and continuous CIS support.
- Plans and supervises the installation, operation, and maintenance of communications networks.
- Manages radio frequency assignments.
- Provides LAN/WAN management, including internet protocol (IP) address and routing management.
- Complies with interoperability standards and communications protocols.
- Coordinates with the G-4 for the supply and maintenance of CIS.
- Implements CIS security procedures in coordination with the other staff sections.
- Establishes CIS liaison with senior, subordinate, adjacent, supported, and supporting units.
- Prepares OPLANs/OPORDs (has staff cognizance for preparing Annex K [Communications and Information Systems] to the OPLAN/OPORD).

J/G-7 Inspector and Safety

The inspector performs the general duties of a special staff officer with respect to the inspections of activities and units to ensure compliance with regulations, directives, and orders.

Specific Responsibilities of the G-7

- Conducts inspections and investigations as directed by the commander.
- Recommends measures and actions to correct deficiencies.
- Processes request mast petitions to the commanding general and acts as his agent by hearing request mast cases during the commanding general's command inspection program.
- Plans, conducts, and reports on inspection and readiness evaluation of subordinate, major subordinate commands units to ensure compliance with regulations, directives and orders, and to determine if these units are capable of executing assigned missions.
- Coordinates and monitors action, until completed, on all evaluation/inspection reports provided as a result of Inspection team visits.
- Recommends corrective action on deficiencies and discrepancies noted during inspections and readiness evaluations.
- Reviews inspection reports of the Inspector General of the Marine Corps, subordinate commanders, and any other pertinent reports for required corrective action or referral to appropriate staff sections for action.
- Coordinates action on all DOD and Marine Corps Hotline and Fraud, Waste and Abuse cases referred to the Commanding General.

104.8 Define the role of the following staff officers:

Chief of Staff

The C/S (or executive officer to the extent authorized by the commanding officer) is responsible for directing, coordinating, supervising, and training the staff. The C/S frees the commander from routine managerial duties. The C/S is the primary conduit for the exchange of critical information and insight between the staff and the commander. It is critical that the C/S shares a common vision of the goals of the organization with the commander. The C/S must fully understand the commander's intent in all situations and must help focus the staff. The C/S must understand the commander's personality and style as they influence planning and execution. No staff member or subordinate unit commander should be denied full access to the commander. However, the C/S is responsible for monitoring the commander's schedule to avoid inefficient use of the commander's time. The C/S will establish the operational cycle of the organization and orchestrate briefings and meetings for the commander. Staff members should inform the C/S of any recommendations they pass directly to the commander or of instructions they receive directly from the commander. In units not authorized a C/S, the executive officer will provide staff supervision.

Specific Responsibilities of the Chief of Staff

- Keeps the commander informed of current and developing situations.
- Receives the commander's decisions and ensures staff takes appropriate actions to implement those decisions.
- Supervises the activities of the headquarters commandant (HQCOMDT) and the staff.
- Serves as chief information officer.
- Monitors the currency, accuracy, and status of commander's critical information requirements (CCIRs).
- Directs and supervises the planning and execution process.
- Monitors the development of plans, orders, and instructions.
- Obtains the commander's approval of and then promulgates plans, orders, and instructions.
- Monitors, with the assistance of the staff, the execution of plans, orders, and instructions.
- Determines liaison exchange requirements and
- receives liaison teams.
- Monitors staff discipline, morale, and combat readiness.
- Organizes, plans, and supervises staff training.
- Ensures proper coordination of staff activities internally, vertically (with higher headquarters and subordinate units), and horizontally (with adjacent units).
- Ensures proper staff support to subordinate commanders and staffs.

Special Staff Officers under Staff Cognizance of the Chief of Staff

- <u>Staff secretary</u>.: The staff secretary is an administrative assistant to the C/S. The staff secretary is not a member of the general or special staff. The nature of his duties requires a close relationship with the officers of the general and special staffs.
- Security manager: The security manager is responsible for managing the command information and personnel security program, and operates under the staff cognizance of the C/S. Although the security manager is responsible for the coordination of the overall program, he may delegate individual duties; e.g., the adjutant may handle classified material control. Every staff will include a security manager, although the billet will often be an additional duty.
- Information management officer (IMO): The unit IMO is responsible for establishing the policy and procedures for information management within the command. The IMO operates under the staff cognizance of the C/S or executive officer. If an IMO is not designated, then this duty is the responsibility of the C/S or executive officer. In some cases, an IMO may be designated for each staff section when the volume of information is

significant, in an exercise or operation. The following functions are performed:

Chaplain

The staff chaplain has responsibility for matters pertaining to the moral, spiritual, and religious well-being of the command. The chaplain operates under the cognizance of the C/S.

Specific Responsibilities of the Chaplain

- Assists the G-1 in determining and improving the state of morale.
- Advises the commanding officer or commander on all matters related to religious ministries.
- Prepares Appendix 6 (Chaplain Activities) to Annex E to the OPLAN, OPORD or campaign plan.
- Administers the Command Religious Program (CRP).
- Conducts divine services; administers sacraments and ordinances; performs rites and ceremonies in accordance with the manner and forms of the chaplain's faith group; provides outreach programs, spiritual growth retreats and religious education; and facilitates religious ministries for personnel of other faith groups.
- Provides pastoral care and pastoral counseling, including visiting the sick and confinees.
- Advises the commanding officer or commander on moral issues and provides input to programs that emphasize Marine Corps core values.
- Reports to an assigned position or battle station in combat, at general quarters or similar situations to provide ministry.
- Assists in the casualty assistance calls program by providing ministry to the next of kin of deceased and seriously ill personnel. Chaplains shall not be designated as casualty assistance calls officers.
- Develops plans, programs, and budgets to execute religious ministries within the command.
- Advises the command chaplain of the unit or command to which the unit is attached of necessary actions on programming of chaplain and Religious Program Specialist (RP) billets and other support requirements.
- Provides liaison with local religious groups and NGOs in the US or foreign countries.
- Fulfills faith group requirements for maintaining ecclesiastical endorsement.
- Provides supervision and training for assigned junior officers, enlisted members, and civilian personnel.
- Prepares and maintains directives and procedures pertinent to the CRP, including chapel usage instructions, turnover files, etc.

 Reports a summary of activities semi-annually to the major claimant staff chaplain on a report form to be determined by the same.

Surgeon

The Surgeon is directly responsible to the Commanding General and functions under the staff cognizance of the AC/S, G-4 with respect to medical and medical service matters. Staff responsibilities include:

Specific Responsibilities of the Surgeon

- Advising the Commanding General, staff and unit commanders and representing them on all medical and medical service issues.
- Advising of the medical effects on personnel of the environment and weapons, including those from NBC weapon systems.
- Exercising staff supervision and technical control over medical activities throughout the MEF via the major subordinate command surgeons including: environmental health, first aid, sanitation aspects of food service, and other preventive medical activities affecting the health of all personnel.
- Monitoring the professional health services provided in subordinate commands and for enemy prisoners of war and civilian internees/detainees, to include the processing of medical supplies and equipment.
- Acting as the agent for the Commanding General, when credentialing all medical officers providing health care to include those TAD to the command.
- Evaluating medical evacuation, medical regulating and treatment of casualties.
- Coordinating the activities of the Medical Planner to include approving health care appendixes and input for operational and contingency plans.
- Ensuring deploying medical sections are provided current medical intelligence.
- Preparing reports on the records of sick, injured and wounded Marines and Sailors.
- Serves as a member of the Medical Coordinating Committee.
- Directing the activities of other Naval personnel of the medical section who carry out the daily operations of the section.

Public Affairs Officer (PAO)

The Public Affairs Officer (PAO) is responsible for advising the Commanding General on all public affairs matters.

Specific Responsibilities of the PAO

- Conducts all public affairs staff planning for FMF operations, to include authorizing Public Affairs Guidance and preparing Annex F for operational orders.
- Gathers information from appropriate sections for news releases, internal stories and civilian media queries associated with the command.
- Assigns correspondents from CPAO to exercises conducted by the command and MSC's as appropriate.
- Provides assistance and support to subordinate commands on the conduct of public affairs programs.
- Assists in planning and scheduling interviews for the Commanding General with internal and external media representatives.
- Prepares designated anniversary messages for the Commanding General's approval.
- Functions as a political/military advisor to the Commanding General with special emphasis on local government/host nation issues and concerns. In this capacity, the PAO also prepares and presents a political/military overview briefing for designated visiting officials.
- Provides a representative to the G-5 Plans Cell, when required.

Comptroller

The comptroller has responsibility for financial management. Operating under the staff cognizance of the C/S, a comptroller will be assigned only to major commands. At commands not authorized a comptroller, staff duties pertaining to fiscal matters may be assigned to one or more staff sections. (All comptroller responsibilities would normally be assigned to the AC/S G-4 except for disbursing matters, which would be assigned to the G-1.) In commands without a comptroller the disbursing officer or fiscal officer assumes the comptroller's duties.

Specific Responsibilities of the Comptroller

- Advises the Commanding General, staff and special staff on all financial matters.
- Prepares and submits budgets, budget updates.
- Translates mission objectives into measurable financial goals and issues appropriate guidance.
- Measures and reports financial progress against stated objectives
- Exercises general staff cognizance of disbursing.
- Formulates the budget, develops and executes financial plans and allocates O&M, MC resources to the CE and subordinate commands.
- Coordinates and monitors the activities of external audit agencies and congressional delegations.
- Coordinates Internal Management Control Program.
- Administers the Savings Bond Program.

- Provides a representative to the G-5 Plans Cell.
- Coordinates and monitors the JCS funded Commercial Ticket Program (CTP) and Port Handling/Inland Transportation (PHIT) Program.

Staff Judge Advocate (SJA)/Legal Officer

The SJA (senior judge advocate in commands not having general court-martial authority) is responsible for assisting the commander in the administration of military justice and the processing of legal matters. In units not authorized an SJA, these duties are performed by the legal officer. The SJA operates under staff cognizance of the C/S. The legal officer will normally operate under the staff cognizance of the G-1/S-1.

Specific Responsibilities of the Staff Judge Advocate

- Assists the commander in the administration of military justice.
- Prepares all court-martial orders issued by the headquarters.
- Reviews and recommends action on investigations and claims.
- Advises and provides legal assistance to military personnel.
- Advises and provides legal assistance to the commander and staff on other legal matters, including the following:
- Law of war and ROE.
- Civil-military relations and jurisdiction.
- Civil affairs and civic action.
- Civil and administrative law.
- International law and relations.
- Claims, litigation, investigations, and reports.
- Local law in the AO.
- Negotiation of contracts with indigenous organizations.
- Contract law.
- Labor law.
- Environmental law.
- Conducts training for members of the command on legal matters, including training on the law of war and standing ROE, the administration of military justice, and the conduct of investigations.

104 Administrative Fundamentals This page was intentionally left blank.

105 AIR COMBAT ELEMENT (ACE) FUNDAMENTALS

References:

- a. MCRP 5-12D, Organization of Marine Corps Forces (PCN 14400005000)
- b. FMFRP 5-85, Marine Aviation Equipment and Systems (PCN 14005850000)
- c. OPNAVINST 4790.2G, Naval Aviation Maintenance Program, Vol. V

105.1 Explain the mission and purpose of Marine Corps aviation.

The primary mission of Marine Corps aviation is to participate as the air component of the MAGTF in the seizure and defense of advance naval bases and to conduct such land operations as may be essential for 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 so direct.

105.2 Explain the six functions of Marine Corps aviation.

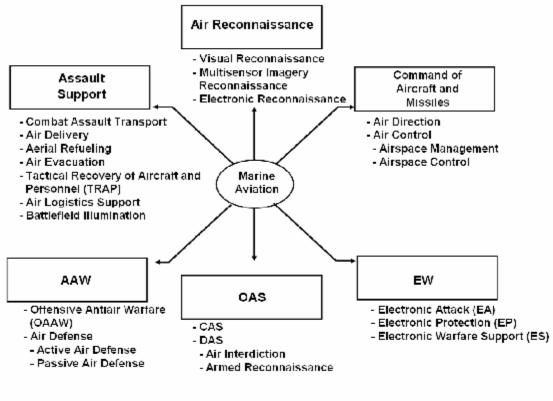


Figure 2-1. The Six Functions of Marine Aviation.

MAGTF aviation tasks are divided into six functional areas that guide the commander in planning aviation allocation and employment. The commander considers the functional area to be used, rather than the specific means (individual weapons system), for accomplishing the mission. Individual weapons systems perform missions that are part of

105 Air Combat Element (ACE)

each function of Marine aviation. The six functions of Marine aviation are described in the following paragraphs.

Offensive Air Support

OAS is "air operations conducted against enemy installations, facilities, and personnel to directly assist the attainment of MAGTF objectives by the destruction of enemy resources or the isolation of his military force." . OAS includes the categories of close air support (CAS) and deep air support (DAS).

CAS

CAS is "air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require <u>detailed</u> <u>integration</u> of each air mission with the fire and movement of those forces."

DAS

DAS is "air action against enemy targets at such a distance from friendly forces that detailed integration of each mission with fire and movement of friendly forces is not required. Deep air support missions are flown on either side of the fire support coordination line; the lack of a requirement for close coordination with the fire and movement of friendly forces is the qualifying factor." DAS missions include strike coordination, air interdiction, and armed reconnaissance.

Antiair Warfare

AAW is "that action 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, antiair-craft guns, surface-to-air and air-to-air missiles, electronic attack, 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, deception (including electronic), and mobility." (Joint Pub 1-02) The primary purpose of AAW is to gain and maintain some degree of air superiority. AAW includes both offensive and defensive means to accomplish its objective.

Offensive AAW

Offensive AAW constitutes operations conducted against the enemy air 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, air defense systems, and supporting areas. Offensive AAW includes theater missile defense (TMD) attack operations and suppression of enemy air defense operations.

Air Defense

Air defense includes all defensive measures designed to destroy attacking enemy aircraft or missiles in the earth's atmosphere or to nullify or reduce the effectiveness of such attack. There are two forms of air defense: active and passive.

- Active air defense is direct defensive action taken to destroy attacking enemy aircraft or missiles or to nullify or reduce the effectiveness of such an attack. Active air defense includes the use of aircraft, air defense weapons, supporting weapons (weapons not typically used in an air defense role), and EW.
- <u>Passive air defense</u> constitutes all measures, other than active defense, taken to minimize the effects of hostile air action. These include the use of cover, concealment, camouflage, deception, dispersion, electronic protection, and protective construction. Passive air defense is a command responsibility of every unit commander.

Assault Support

Assault support is "the use of aircraft to provide tactical mobility and logistic support for the MAGTF, the movement of high priority cargo and personnel within the immediate area of operations, in-flight refueling, and the evacuation of personnel and cargo." (Fleet Marine Force manual (FMFM) 5-30, *Assault Support*) The tasks of assault support fall within the following seven categories:

Combat Assault

Combat Assault provides mobility and logistic support to the MAGTF. It can be used to rapidly deploy forces, bypass obstacles, or redeploy forces to meet the enemy threat, thus allowing for a rapid buildup of combat power at a specific time and location.

Aerial Delivery Operations

Aerial deliver operations transport equipment and supplies to FOBs or remote areas either by landing at the desired location or through air drop.

Aerial Refueling

Aerial Refueling allows MAGTF aircraft to conduct flight-ferrying operations, extend time on station, and extend mission range. In addition, aerial refueling aids in the recovery of damaged or low-fuel aircraft by extending their time in the air, when required.

Air Evacuation

Air evacuation provides transportation of personnel and equipment from FOBs or remote areas by using transport helicopters and fixed-wing aircraft.

Tactical Recovery of Air Craft and Personnel (TRAP)

TRAP facilitates the recovery of personnel and equipment while preventing additional loss. The TRAP mission is an implied task associated with all MAGTF operations. Specially briefed aircrews are assigned to perform TRAP missions. TRAP missions are conducted when the tactical situation prevents the use of traditional search and reserve techniques. TRAP is normally conducted only when survivors and their locations are confirmed.

Air Logistical Support

Air logistical support operations are conducted by using fixed-wing aircraft to provide assault support of MAGTF forces on the ground in much the same manner as helicopters. Air logistical support delivers troops, equipment, and supplies to areas beyond helicopter range and lift capability or when surface transportation is slow or unavailable.

Battlespace Illumination

Battlespace illumination can be provided by both fixed-and rotary-wing aircraft and is used to provide light in the battlespace area.

Air Reconnaissance

Air reconnaissance is "the acquisition of intelligence information by employing visual observation and/or sensors in air vehicles."

Visual Reconnaissance.

Any airborne platform may conduct visual aerial reconnaissance operations. An observer or pilot can visually search a route, point, or area. Visual aerial reconnaissance is frequently related to offensive action such as artillery, naval surface fires (NSF), or air support.

Multisensor Imagery Reconnaissance.

Multisensor imagery reconnaissance includes photographic, side-looking airborne radar, and infrared reconnaissance techniques. When the imagery is processed, it provides intelligence information to all interested commands.

Electronic Reconnaissance.

EW-configured aircraft provide the means to detect, identify, evaluate, and locate foreign electromagnetic radiation that is emanating from other-than-nuclear detonations or radioactive sources, thereby providing up-to-date electronic order of battle and technical intelligence.

Electronic Warfare (EW)

EW is "any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy." (Joint

Pub 1-02) The three major subdivisions of EW are electronic attack (EA), electronic protection, and EW sup- port.

Electronic Atack (EA)

EA is "that division of electronic warfare involving the use of electromagnetic, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability." (Joint Pub 1-02)

Electronic Protection

Electronic Protection involves "actions taken to protect personnel, facilities, and equipment from any effects of friendly or enemy employment of electronic warfare that degrade, neutralize, or destroy friendly combat capability." (Joint Pub 1-02)

Electronic Warfare

Electronic Warfare support involves "actions tasked by, or under direct control of, an operational commander to search for, intercept, identify, and locate sources of intentional and unintentional radiated electromagnetic energy for the purpose of immediate threat recognition." (Joint Pub 1-02)

Control of Aircraft and Missiles

The control of aircraft and missiles involves the coordinated employment of facilities, equipment, communications, procedures, and personnel that allows the ACE commander to plan, direct, and control the efforts of the ACE to support accomplishment of the MAGTF's mission. Control of aircraft and missiles is executed through the Marine Air Command and Control System (MACCS). The control of aircraft and missiles function serves to integrate the activities of the other five functions of Marine aviation into a coordinated effort.

The control of aircraft and missiles integrates the other five functions of Marine aviation by providing the commander with the ability to exercise command and control authority over Marine aviation assets. It enhances unity of effort and disseminates a common situational awareness. It involves the integrated employment of facilities, equipment, communications, procedures, and personnel. It also allows the ACE commander to plan operations and to direct and control aircraft and missiles to support accomplishment of the MAGTF's mission. The control of aircraft and missiles supports the warfighting function of command and control. The ACE commander maintains centralized command, while control is decentralized and executed through the Marine air command and control system (MACCS).

The Marine air control group (MACG) is responsible for providing, staffing, operating, and maintaining the principal MACCS agencies. These agencies include the TACC, TAOC with the early warning/control (EW/C) center, Marine air traffic control detachment (MATCD), DASC, and the direct air support center

(airborne) (DASC[A]). All Marine aircraft have the capability to provide some form of airborne coordination and control during assault support missions, and HMLAs and VMFA(AW)s can provide FAC(A) or tactical air coordinator (airborne) (TAC[A]) services supporting the MACCS. The methods of aviation control are depicted in figure 2-2 and discussed in the following paragraphs.

- **Air Direction.** Air direction is the authority to regulate the employment of air resources (including both aircraft and surface-to-air weapons) to maintain a balance between their availability and the priorities assigned for their use. The purpose of air direction is to achieve a balance between the MAGTF's finite aviation resources and the accomplishment of the ACE's mission.
- **Air Control.** Air control is the authority to direct the physical maneuver of aircraft in flight or to direct an aircraft or surface-to-air weapons unit to engage a specific target. Air control includes airspace management and airspace control.

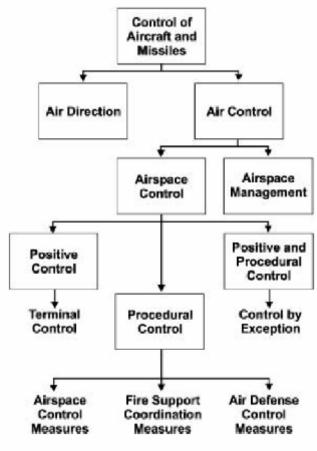


Figure 2-2. Categories of Air Control.

105.3 Explain the composition, mission, and purpose of a Marine Aircraft Wing (MAW).

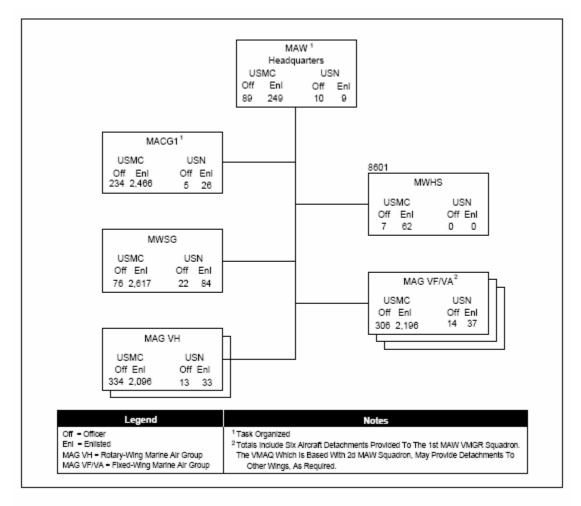
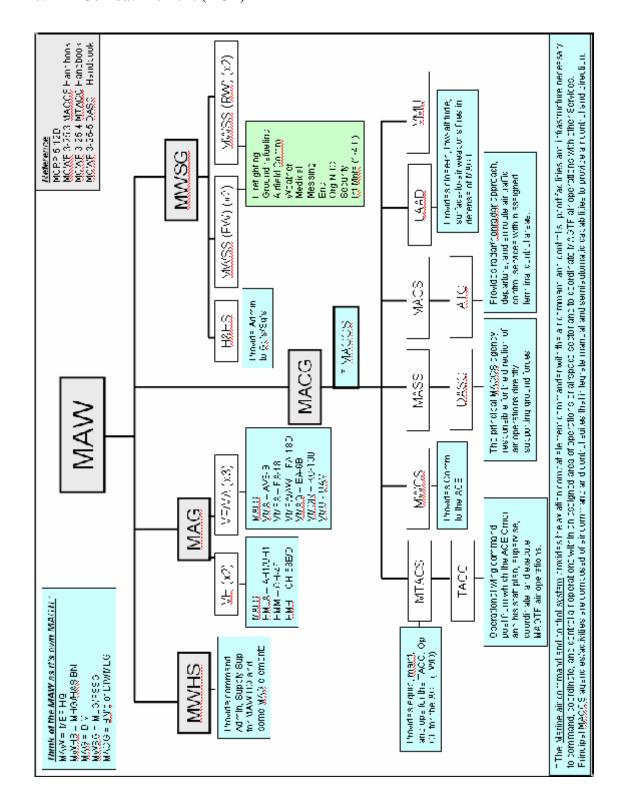


Figure 3-5. Notional MAW.

(Note: Actual MAW may very between MEFs)



Organizationally, Marine aviation is divided into three active duty MAWs and one Reserve MAW. Each MAW has a unique organizational structure; these structures are represented in figures 3-1 through 3-4 of the reference. The MAW provides the personnel and equipment for the MAGTF ACE. Operationally, the ACE task organizes with various resources from the MAW that are necessary to complete the ACE's assigned mission. Typically, the ACE supports a MEF with one or more MAWs. Support to the MEF may include assets from more than one MAW that are task organized to form a MAW (reinforced). The ACE supports a MEU with a task-organized squadron that usually consists of a mix of rotary-wing aircraft, short take-off and landing aircraft, a Marine air control group (MACG) detachment, a fixed-wing Marine aviation logistics squadron (MALS) detach-ment, and a rotary-wing MALS detachment. The ACE normally supports an SPMAGTF with a task-organized squadron that consists of a mix of rotary-wing aircraft, short take-off and landing aircraft, a MACG detachment, a fixedwing MALS detachment, and a rotary-wing MALS detachment. Actual squadron composition will depend on mission requirements. MAWs include Marine aircraft, air control, and wing support groups. Each group includes the squadrons and/or battalions that are necessary to complete the groups' roles in Marine aviation. MAWs and groups are not organized according to tables of organization (T/Os), but rather are task organized to accomplish the missions assigned. Each of the four wings may have a different organization; however, each wing is capable of performing all six functions of Marine aviation.

105.4 What is the function of a Marine Wing Support Group (MWSG)?

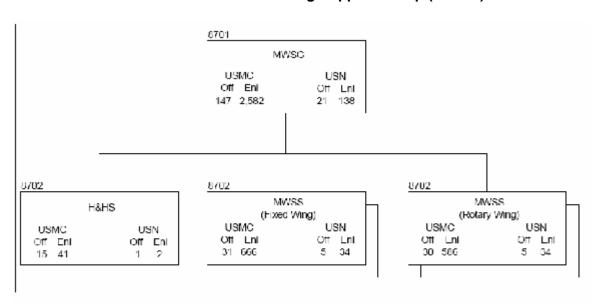


Figure 3-11. Marine Wing Support Group.

The MWSG provides all essential ground support requirements to aid designated fixedor rotary-wing components of a Marine FOB. The MWSG typically includes a headquarters and headquarters squadron (H&HS), two MWSSs (fixed wing), and two MWSSs (rotary wing). The group is organized to provide motor transport, engineering services, and organizational maintenance (motor transport and engineering) for units of the MAW. 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 or deployed posture of the MAW.

105.5 What is the function of a Marine Air Control Group (MACG)?

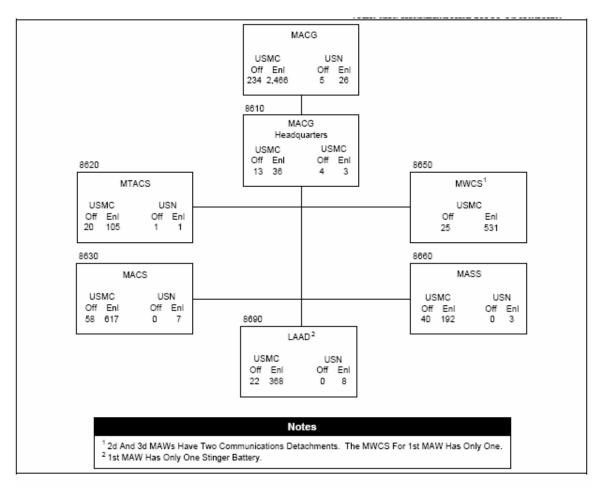


Figure 3-6. Marine Air Control Group.

MACG headquarters coordinates all aspects of air command and control and air defense within the MAW. It provides the command and staff functions for the MACG commander when deployed as part of the MAGTF ACE.

Tasks

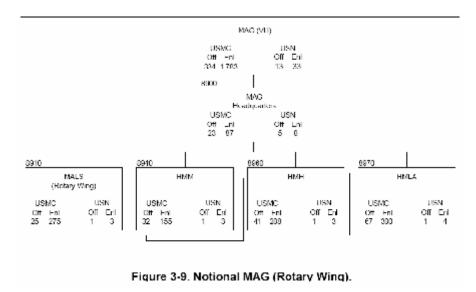
- Provide the CE of the MACG or MACG detachment for the MAGTF ACE.
- Plan and coordinate the operations, maintenance, and supply of the MACCS.
- o Plan and coordinate the air defense operations of the MAGTF.
- Coordinate with appropriate commands to plan for the deployment and employment of the MACG and its separately deployable detachments as the MACCS of an ACE.

- Coordinate with other U.S. Services and allies for planning and conducting MAGTF air operations in joint and multinational force operations.
- O Advise the ACE commander on applicable matters pertaining to the employment of agencies comprising the MACCS.
- Perform command and staff functions associated with fulfilling the MACG's mission.
- o Conduct operations while in a nuclear, biological, and chemical (NBC) and/or EW environment.
- o Maintain the capability for deploying independent units.
- Coordinates all aspects of air command and control and air defense within the MAW.

105.6 What is the function of a Marine Aircraft Group (MAG)

The MAG is the smallest aviation unit that is designed to conduct operations with no outside assistance except access to a source of supply. MAGs normally contain either fixed-wing or rotary-wing aircraft in order to streamline logistic support requirements. MAGs can be task-organized to include any combination of fixed-wing and rotary-wing aircraft, as well as other supporting units. A MAG can also be task-organized into an ACE for a particular mission in order to provide one or more aviation functions to a MAGTF. When it is deployed as a MAGTF's ACE, the MAG headquarters becomes the tactical command element for the ACE. Currently, there are two types of MAGs within the MAW: the fixedwing MAG (MAG VF/VA) and the rotary-wing MAG (MAG VH).

The primary mission of a MAG VF/VA is to conduct AAW and OAS operations from advance bases, FOBs, and aircraft carriers. MAG VF/VAs may consist of any combination of Marine attack squadron (VMAs), Marine fighter attack squadrons (VMFAs), Marine all-weather fighter attack squadrons (VMFA(AW)s), Marine aerial refueler transport squadrons (VMGRs), Marine unmanned aerial vehicle (UAV) squadrons (VMUs), Marine tactical EW squadrons (VMAQs), or MALS (fixed wing). The primary mission of the MAG VH is to provide assault support. Normally, the MAG VH includes one Marine light/attack helicopter squadron HMLA), three Marine medium helicopter squadrons (HMMs), and two Marine heavy helicopter squadrons (HMHs), and one MALS (rotary wing). Each fixed- and rotary-wing MAG has a MALS.



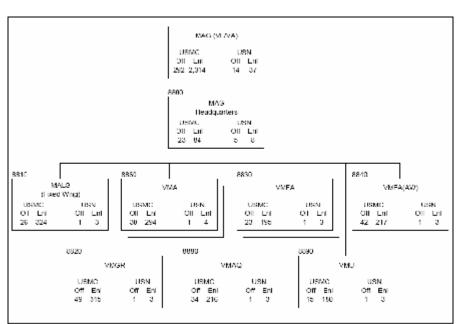
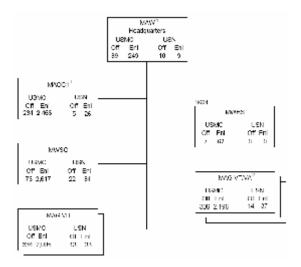


Figure 3-10. Notional MAG (Fixed Wing).

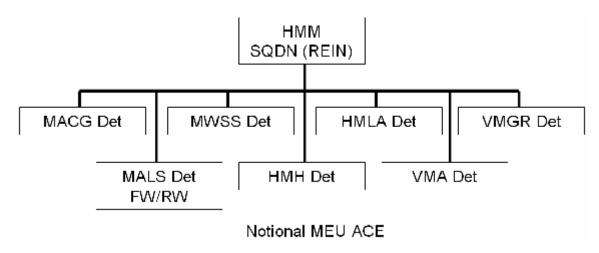
105.7 What is the Air Combat Element (ACE) of a Marine Expeditionary Force (MEF) and how does it relate to the support/supported concept of operations?

Typically, the ACE supports a MEF with one or more MAWs. Support to the MEF may include assets from more than one MAW that are task organized to form a MAW (reinforced).



105.8 What is the ACE of a Marine Expeditionary Unit (MEU)?

The MEU ACE generally consists of a medium lift helicopter squadron reinforced with several heavy-lift helicopters and AV-8B attack aircraft. Aerial refueling support is provided by a shorebased aerial refueling detachment. Normally, the aviation maintenance support for MEU aircraft is provided by the aviation intermediate maintenance department (AIMD) of the general purpose amphibious assault ship on which the ACE is embarked. The MALS augments the ship's capabilities with personnel and materiel. If the MEU ACE is directed ashore, the ship operating offshore or a MALS deployed ashore provides intermediate level support.



105.9 What is the ACE of a Marine Expeditionary Brigade (MEB)?

The ACE normally supports an SPMAGTF with a task-organized group that consists of a mix of rotary-wing aircraft, short take-off and landing aircraft, a MACG detachment, a fixed-wing MALS detachment, and a rotary-wing MALS detachment. Actual squadron composition will depend on mission requirements.

105 Air Combat Element (ACE)

Table 2-2, MAG Squadrons and Aircraft.

Squadron Type	Aircraft Type	# of Squadrons ¹	# of Primary Aircraft Authorized ²
VMA	AV-8B	7	16
VMLA.	L/A 18A/C	12	12
VMLA (AW)	T/A 180	6	12
VWV2	LA 6B	4	5
VWCR	KC-130	.5	12
VMAT	AV-8 Learning	1	30
VMEAT	HA-18 Training	1	17 F/A-18A/C 17 F/A-18D
VMFT	Aggresson Squadron F-S	1	11 F-SF 1 F-SF
VMGRT	KC 100 Training	1	0
VMU	UAV	2	5
HMH	CH 53E	6	16
нин3	GH 53D	h	9
HMM	CH-46I	18	17
HWLA	UH-1N AH-1W	10	9 UH-1N 12 AH-1W
HMT HMMT(T)	Helicopter Training	HMM(T) 1 CH 46E 1 CH-53E 1 CH-53D 1 UH-1N/AH-1W	18 CH-18F 16 CH 53E 6 CH-53D 14 UH-1N 20 4H-1W
VWM	MV-22	TBO	12
VWMT	MV-22 Training	1	TBD

¹ The primary should subtrain the sector spectrum is a fixed number. However, the sector number of should in a separation varies based on production timelines, scheduled depot level maintenance cycles, aircraft transfers, etc.
³ Although CH CSO squadrens have retained their HMH designation, they are considered medium lift like a CH 49L squadron, instead of heavy lift like a CH 50E squadron.

105.10 Discuss the characteristics and employment of the following Marine aircraft:

a. UH-1

The UH-1N is a twin-engine, two-seat, singlepiloted, single-rotor, utility helicopter. HML/A squadrons use the UH-1N. The mission of the UH-1N is to provide utility support for the MAGTF. It can transport a maximum of 13 passengers or provide airborne command and control using the ASC-26 communication package. The aircraft can aid local search and rescue assets and provide aeromedical evacuation of casualties. The UH-1N can carry two 7.62mm GAU-17 or M-60 machine guns and a defensive armament system. This system allows the UH-1N to use 2.75-inch rockets, crew-served .50 caliber machine guns, and fixed forward and crew-served 7.62mm machine guns.



b. CH-46

The CH-46E is a dual-piloted, twin-engine, tandom rotor assault support helicopter.

Marine medium helicopter squadrons (HMMs) use the CH-46E. The prmary mission of the CH-46E is to provide assulat transport of troops. The cabin section has provisions for 25 personnel. Normal configuration is for 15 combat-loaded troops. The CH-46 can transport supplies and equipment (internally and externally) and provide medical ecavuation for 15 litter patients. The CH-46 can mount two 7.62 M-60 machine guns or two .50 caliber XM-218 machine guns for self protection. The CH-64E has the following features:



- Crash attenuating pilot seats
- Exhaust infrared suppressors
- Crashworthy fuel system

c. CH-53D

The CH53D is dual piloted, twin-engine, single-rotor assault support helicopter. Marine heavy helicopter squadron (HMHs) use the CH-53. The primary mission of the CH-53 is to provide helicopter transport of supplies and equipment. The cabin contains cargo winches, roller conveyors, and tiedown fittings. The external cargo hook allows the movement of large or out-sized cargo. The Ch-53 can also transport up to 55 personnel. Normal configuration is 30 combat-loaded troops. The aircraft can carry 24 litters during medical evacuation operations. The CH-53D can mount two 7.62 M-60 machine guns or two .50 XM-218 machine guns for self-protection



d. CH-53E.

The CH-53E is a growth variant of the CH-53D. It is a dual-piloted, single-rotor helicopter with three engines. The CH-53E is the free world's largest helicopter and can transport up to 16 tons over a mission radius of 50 nautical miles. The CH-53E can lift 93 percent of the Marine division's equipment. While doubling the lift of the CH-53D, the CH-53E requires only 10 percent more deck space than a CH-53D with tip tanks. Mission features include:

- Utility hoist
- Dual hook external capacity
- External auxiliary fuel tanks
- In-flight refueling
- Machine gun armament



The EA-6B is a four-place (one pilot and three electronic countermeasures officers), twinengine, subsonic electronic warfare aircraft. Marine Tactical Electronic Warfare squadrons (VMAQ) us the EA-6B. The EA-6B supports the MAGTF by suppressing enemy electronic activity and by gaining tactical electronic intelligence. The aircraft can carry up to five integrally powered pods for jamming early warning, acquisition, and fire control radars. The aircraft detects, analyzes, and records signals for post mission evaluation.





f. F/A-18

The F/A-18 is a single-place, twin-engine, strike figher. The F/A-18 began to replace the F-4 in 1983. The F/A-18 can intercept enemy aircraft and perform ground attack. It has an internal 20mm M-61 gun and can carry over 17,000 pounds of ordnance. The F/A-18D is the two-seat variant of the F/A-18.

VMFA(AW) use the F/A-18D. A FLIR system , NVG compatible cockpit lighting, and digital moving map display enable the F/A-18D aircraft to perform ground attacks at night under the weather. Some F/A-18D aircraft carry the advanced tactical airborne reconnaissance system (ATARS).



g. AV-8B

The AV-8B is a single-seat, transonic, vectored-thrust, light attach aircraft. Marine attack squadron (VMAs) us the AV-8B. The AV-8B has GAU-12 25mm bun system and can carry up to 9,200 pounds of external ordnance. Its V/STOL capability provides increased responsiveness to MAGTF commander's OAS requirements through basing flexibility and high sortie rates. The angle rate bombing system (ARBS) allows accurate first pass attacks and high kill probability using laser spot or TV tracking. The aircraft has an inertial navigation system. Its forward looking infrared (FLIR) system, night vision goggle NVG compatible cockpit t lighting, and moving map display allow ground attacks at night under the weather.



h. MV-22

Primary function: Amphibious assault transport of troops, equipment and supplies from assault ships and land bases.

Manufacturer: Bell Boeing

Description: The V-22 Osprey is a multiengine, dual-piloted, self-deployable, medium lift, vertical takeoff and landing (VTOL) tiltrotor aircraft designed for combat, combat support, combat service support, and Special Operations missions worldwide. It will replace the Corps' aged fleet of CH-46E and CH-53D medium lift helicopters.



105 Air Combat Element (ACE)

i. KC-130

KC-130 is a four-engine, turboprop, aerial refueler and assault transport aircraft. Marine aerial refueler transport squadron (VMGRs) use the KC-130. The KC-130 provides the MAGTF commander a self-deployable, multimission aircraft. The KC-130 can aerial refuel aircraft equipped with refueling probes, and they can ground refuel helicopters and AV-8s at austere landing sites. Additional tasks include aerial delivery of troops and cargo, and operation of airborne direct air support center. As a tactical transport, the KC-130 can carry 92 troops, 64 paratroops, 74 litters, or 35,000 pounds of cargo.



j. AH-1

The AH-1W is a two-place, tandem-seat, twinengine helicopter capable of land- or sea-based operations. The AH-1W provides fire support and fire support coordination to the landing force during amphibious assaults and subsequent operations ashore. The AH-1W distinguished itself with its more powerful T700-GE-401 fully marinized engines and advanced electronic weapons capability. The AH-1W can fire TOW. Hellfire, and Sidewinder missiles and can be outfitted with Zuni rocket launchers. The AH-1W is currently being outfitted with a Night Targeting System/Forward Looking Infrared Radar that provides laser range finding/designating and camera capabilities.



k. C-12

The C-12 Huron, a twin turboprop passenger and cargo aircraft, is the military version of the Beachcraft Super King Air. The C-12 aircraft, manufactured by Raytheon Aircraft Company (RAC) (formerly Beech Aircraft Corporation), is a high-performance, fixed-wing, T-tail, pressurized, twin engine turboprop that accommodates places for a pilot, co-pilot, and passengers. It is powered by two Pratt and Whitney PT6A-41/42/65 turbo prop engines. The Government's C-12 aircraft fleet is similar to the Beech Super King Air 200 & 1900C,



which is operated extensively around the world by many private and commercial users. The aircraft provides operational support for military bases, sites, fleet and shore units The aircraft provides on-call, rapid response, modern air transport for high priority supply and movement of key personnel. Specifically, it is used for VIP transport or to deliver repair parts; equipment; and technical, crash investigation, and accident investigation teams wherever needed. Its support role also includes such functions as range clearance, medical evacuation, administrative movement of personnel, transportation connections, and courier flights

1. UAV

USMC Curently is using two UAVs. The first is the Pioneer which was procured starting in 1985 as an interim UAV capability to provide imagery intelligence (IMINT) for tactical commanders on land and at sea. In ten years, Pioneer has flown nearly 14,000 flight hours and supported every major U.S. contingency operation to date. It flew 300+ combat reconnaissance mission during Persian Gulf operations in 1990-91. Since September 1994, it has flown in contingency operations over Bosnia, Haiti and Somalia; most recently it flew in Task Force Eagle and IFOR operations again over Bosnia.



The Second is the Scan Eagle. a joint Boeing and The Insitu Group project. The ScanEagle is a small, autonomous remote-control airplane with a stabilized camera. It generally flies itself, but we have operators to tell it where to go. The ScanEagle's long-endurance capabilities and small size make it the ideal plane for aerial surveillance. It is one of the smallest UAVs to have a stabilized video camera in it. With the engine it has, it can stay in the air, orbiting a certain point for up to 15 plus hours. The small size makes it stealthy. The ScanEagle is launched by Insitu's patented "SuperWedge" launcher, which is a pneumatic wedge catapult system. Then a 50-foot-high



105 Air Combat Element (ACE)

pole called the "Skyhook" retrieves it. Using	
the (global positioning system) antenna, the	
aircraft comes in and finds the rope on the	
'Skyhook' itself.	

105.11 Discuss the three levels of aviation maintenance. MAINTENANCE LEVELS

Maintenance tasks are divided into the number of levels required so common standards can be applied to the many and varied aircraft maintenance activities of the military establishment. They are increments of which all maintenance activities are composed. JOINT PUB-1-02 defines the three levels as depot, intermediate, and organizational.

DEPOT -LEVEL MAINTENANCE

Maintenance done on material requiring major rework or a <u>complete</u> <u>rebuild of parts</u>, <u>assemblies</u>, <u>subassemblies</u>, and end items, including <u>manufacture</u>, <u>modification</u>, <u>testing</u>, and <u>reclamation of parts</u> as required. D-level maintenance serves to support lower levels of maintenance by providing technical assistance and performing maintenance beyond the responsibility of O-level and I-level maintenance. D-level maintenance provides stocks of serviceable equipment by using more extensive facilities for repair than are available in lower level maintenance activities.

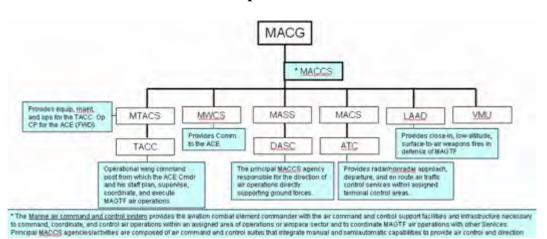
INTERMEDIATE -LEVEL MAINTENANCE

Maintenance which is the responsibility of, and performed by, designated maintenance activities for direct support of using organizations. Its phases normally consist of <u>calibration</u>, <u>repair</u> or <u>replacement of damaged</u> or <u>unserviceable parts</u>, <u>components</u>, or <u>assemblies</u>; the <u>emergency manufacture of nonavailable parts</u>; and the provision of technical assistance to using organizations.

ORGANIZATIONAL-LEVEL MAINTENANCE

Maintenance which is the responsibility of, and performed by, a using organization on its assigned equipment. Its phases normally consist of <u>inspecting</u>, <u>servicing</u>, <u>lubricating</u>, <u>adjusting</u>, and <u>replacing parts</u>, <u>minor assemblies</u>, and <u>subassemblies</u>.

105.12 Explain the mission and composition of the following Marine Corps aviation elements:



105.12.a. Marine Air Control Group

The mission of the MACG is to provide, operate, and maintain the MACCS. The MACCS consists of various air command and control agencies that provide the ACE commander with the ability to monitor, supervise, and influence the application of Marine aviation's six functions. The ACE commander uses the MACCS to plan and direct ACE operations and to employ aviation assets in a responsive, timely, and effective manner. The MACCS provides facilities to control aircraft and missiles as well as to establish links with joint, multinational, other Services, and civil air command and control systems. Another function of the MACCS is to advise the MAGTF commander and JFC on the application and employment of Marine aviation. The design of the MACCS allows the ACE commander to conduct centralized planning and optimize the use of limited resources. At the same time, the MACCS allows the subordinate commanders of the ACE to execute the plan in a decentralized manner. The MACCS provides the capability to conduct airspace command and control and deconflict aviation assets through centralized planning of airspace control procedures. It exercises air direction and decentralized execution of the airspace control plan through its subordinate agencies.

105.12.a.1. Marine Tactical Air Command Squadron (MTACS)

The MTACS provides equipment, maintenance, and operations for the TACC of the ACE as a component of the MAGTF. It equips, mans, operates, and maintains the current operations section of the TACC. It also provides and maintains a facility for the TACC future operations and future planning sections and installs and maintains associated automated systems.

Tasks

 Provide the operational command post (CP) for the ACE commander of a MEF or the forward element of a MEF.

- Assist in coordinating air operations to meet the operational requirements of the MEF.
- Assist in planning air operations.
- Maintain the capability to accomplish TACC functions while displacing.
- Conduct operations while in an NBC and/or EW environment.
- Assist in coordinating with other U.S. Services and allies for the conduct of MAGTF air operations in joint and multinational force operations.
- Perform command and staff functions associated with fulfilling the MTACS mission.
- Coordinate with the appropriate commands to plan for the deployment and employment of the squadron.
- Provide logistical and supply support for the MACG headquarters.

Concept of Organization

The MTACS is organic to the MACG of the MAW.

105.12.a.2. Marine Air Control Squadron (MACS)

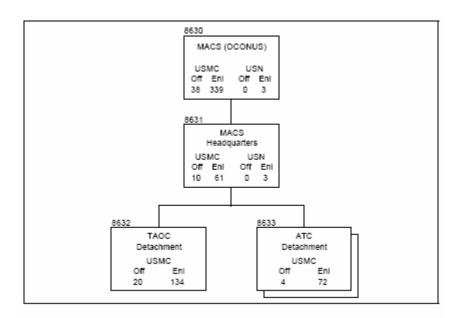


Figure 3-7a. Marine Air Control Squadron.

The MACS provides air surveillance and control of aircraft and surface-to-air weapons for AAW; continuous all-weather radar and nonradar ATC services and airspace management in support of a MAGTF.

Tasks

 Perform command and staff functions associated with fulfilling the MACS mission.

- Coordinate with appropriate commands to plan for the deployment and employment of the squadron and its separately deployable detachments.
- Provide deployable detachments that are capable of air surveillance, airspace management, and control of aircraft and SAMs for AAW in support of the MAGTF.
- Provide deployable detachments that are capable of providing ATC services at existing or expeditionary airfields and remote area landing sites.
- When reinforced with a TMD detachment, provide SAM fires in assigned zones in defense of vital areas and installations therein against theater missile attack, and be prepared to engage surviving fixed-wing aircraft and helicopter threats.
- Serve as the operational point of contact between the MACCS and national/international ATC agencies.

Concept of Organization

The MACS is comprised of a squadron headquarters, a TAOC detachment, and two ATC detachments. One MACS organization includes four TMD

105.12.a.3. Marine Wing communications Squadron (MWCS)

The MWCS provides expeditionary communications for the ACE of a MEF, including the phased deployment of task-organized elements thereof.

Tasks

- Provide for the effective command of subordinate detachments.
- Assist in the systems planning and engineering of ACE communications. Install, operate, and maintain expeditionary communications for command and control of the MEF ACE.
- Provide operational systems control centers, as required, to coordinate communication functions internally and externally to the ACE.
- Provide calibration and repair facilities for all ground-common test measurement diagnostic equipment (TMDE) in the MAW.
- Provide the digital backbone communications support for the ACE CE, FOBs, and MACCS agencies for up to two airfields per detachment.
- Provide tactical automated switching and telephone services for the ACE CE and the TACC.
- Provide electronic message distribution for the ACE CE, primary MACCS agencies, and tenant units.
- Provide external single-channel radio and radio retransmission communications support for ACE operations as required.

105 Air Combat Element (ACE)

- Provide deployed wide area network (WAN) and deployed local area network (LAN) server support for the ACE CE and primary MACCS agencies.
- Provide the support cryptographic site for all ground-common and MACCS-assigned communications security equipment within the ACE.
- Plan and coordinate individual and unit training as required to qualify subordinate detachments for tactical deployment and combat operations.
- Provide maintenance support for ground-common communications equipment in the MAW.

Concept of Organization

The MWCS consists of a headquarters element and one or two MWCS detachments.

105.12.a.4. Marine Air Support Squadron (MASS)

The MASS provides DASC capabilities for control and coordination of fixed- and rotary-wing aircraft operating in direct support of MAGTF forces.

Tasks

- Provide operational planning for MAGTF air support operations.
- Receive, coordinate, and process immediate requests for direct air support.
- Provide equipment, facilities, and personnel for the operation of air support elements.
- Conduct air support control as required to meet MAGTF operational requirements.
- Maintain the ability to provide continuous control of direct air support while displacing by echelon.
- Provide personnel and facilities for the simultaneous operation of the DASC and DASC (airborne).

Concept of Organization

The MASS is organic to the MACG. When supporting the MAGTF, the MASS is task organized as part of the ACE.

105.12.a.5. Low Altitude Air Defense (LADD) Battalion

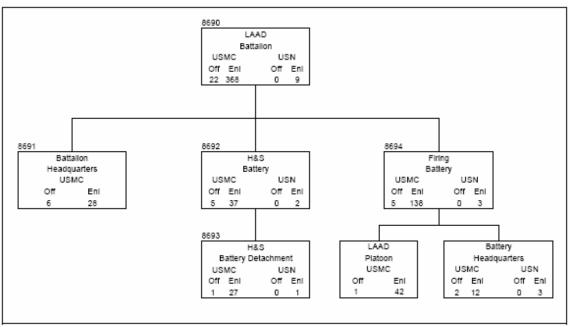


Figure 3-8. LAAD Battalion.

The LAAD battalion provides close-in, low-altitude, surface-to-air weapons fires in defense of MAGTF assets defending forward combat areas, maneuver forces, vital areas, installations, and/or units engaged in special/independent operations.

Tasks

- Provide for the effective command, administrative, communications, supply, and logistic support of subordinate batteries.
- Maintain a primary capability as a highly mobile, vehicle-mounted, and man-portable surface-to-air weapons component of the MAGTF with the ability to rapidly deploy in the assault echelon of an expeditionary operation.
- Provide surface-to-air weapons support for units engaged in special/independent operations.
- Provide for the separate deployment of subordinate batteries and platoons to accommodate special tactical situations and task organizations.
- Plan and coordinate requirements for liaison and combinations with appropriate commands to ensure the most effective integration of LAAD units within the integrated air defense system.
- Provide early warning of hostile air threats to other elements of the air defense system.

Concept of Organization

The LAAD battalion is comprised of a battalion headquarters, a headquarters and service (H&S) battery, and two firing batteries. The

105 Air Combat Element (ACE)

H&S battery has been divided into an H&S battery (-) and an H&S battery detachment. This organization facilitates the logistical support of separately deployed firing batteries.

105.12.b. Marine Aircraft Group

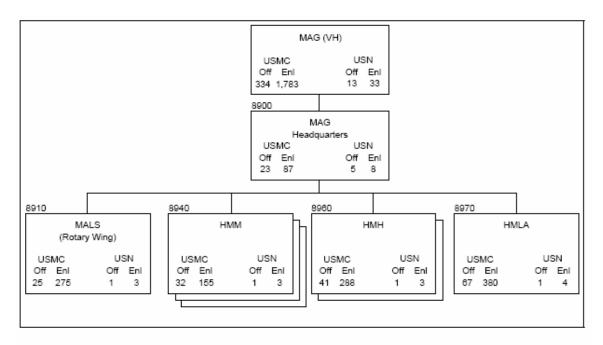


Figure 3-9. Notional MAG (Rotary Wing).

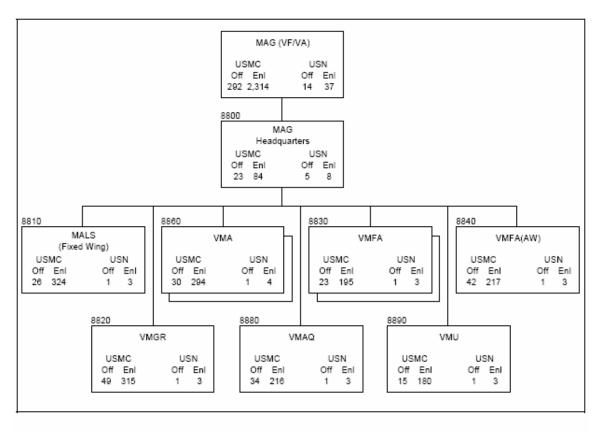


Figure 3-10. Notional MAG (Fixed Wing).

The MAG is an administrative and tactical CE. It is the smallest aviation unit that is designed for independent operations with no outside assistance except access to a source of supply. Each MAG is task organized for the assigned mission. There are two types of MAGs within the MAW: rotary-wing (MAG VH) and fixed-wing (MAG VF/VA).

The primary mission of a MAG VF/VA is to conduct AAW and OAS operations from advance bases, FOBs, and aircraft carriers. MAG VF/VAs may consist of any combination of Marine attack squadron (VMAs), Marine fighter attack squadrons (VMFAs), Marine all-weather fighter attack squadrons (VMFA(AW)s), Marine aerial refueler transport squadrons (VMGRs), Marine unmanned aerial vehicle (UAV) squad-rons (VMUs), Marine tactical EW squadrons (VMAQs), or MALS (fixed wing). The primary mission of the MAG VH is to provide assault support. Normally, the MAG VH includes one Marine light/attack helicopter squadron HMLA), three Marine medium helicopter squadrons (HMMs), and two Marine heavy helicopter squadrons (HMHs), and one MALS (rotary wing). Each fixed- and rotary-wing MAG has a MALS.

105.12.b.1. Marine Aviation Logistics Squadron (MALS)

The MALS provides aviation-logistic support, guidance, and direction to MAG squadrons on behalf of the commanding officer, as well as logistic support for Navy-funded equipment in the supporting MWSS, MACS, and Marine wing mobile calibration complex.

Tasks

- Provide intermediate-level maintenance for aircraft and aeronautical equipment of all supported units and, when authorized, perform first- degree repair on specific engines.
- Provide aviation supply support for aircraft and Navy-funded equipment to all supported units.
- Provide class V(A) ammunition logistic support to the MAG's squadrons. This support encompasses the requisitioning, storage, handling, assembly, transportation, and inventory reporting of class V(A) ammunition. Be capable of planning for and operating
- an airfield ammunition issue point at expeditionary airfields.
- Interpret, implement, audit, inspect, and provide oversight for the MAG commanding officer of all policies and procedures relating to the administration and management of operations and maintenance, Navy funds (except temporary additional duty funds), aviation supply, aircraft maintenance, aircraft ordnance, avionics, and cryogenics production for all units/squadrons within a MAG.
- Coordinate with the MWSG, the MACG, the MAW calibration complex, and other supporting Navy and Marine Corps

- activities/agencies in planning for the support required to execute the Marine aviation logistic support program (MALSP).
- Screen and inspect nonserviceable aeronautical materiel for testing and repair, shipment to another repair facility, or disposal.
- Maintain the capability to deploy and provide MALSP support packages (including personnel) as an integral unit or as tailored logistic elements assigned to another MALS to support MAG aircraft assigned to a different MAG/ ACE.
- Conduct individual and unit training to qualify organic and supported squadron personnel for performing assigned missions and tasks.
- Provide data processing support to facilitate execution of the aviation supply, aircraft maintenance, and Navy-funded (except temporary additional duty funds) financial management functions of the MAG.

Concept of Organization

This squadron is organized as a core unit that is supplemented by aircraft-specific, MWSS, and MACS augmentees. This concept allows the squadron to provide logistical support to the MAG's aircraft squadrons, MWSSs, and MACSs in garrison or as a task-organized ACE.

105.12.b.2. Marine Aerial Refueler Transport Squadron (VMGR)

The VMGR provides aerial refueling service in support of Fleet Marine Force (FMF) air operations and provides assault air transport of personnel, equipment, and supplies.

Tasks

- Provide tactical aerial refueling service to FMF units.
- Provide long-range aerial refueling service for air movement of FMF squadrons when other suitable means of aerial refueling services are not readily available.
- Provide assault air transport for air-landed and air-delivered troops, supplies, and equipment when other suitable means of assault air transport are not readily available.
- Provide an aircraft platform for the airborne DASC.
- Provide ground refueling service to aircraft when other suitable means of aircraft refueling are not available.
- Provide air transport service for the evacuation of casualties and noncombatants when other means of transportation are not available.
- Within the capability of assigned aircraft and equipment, maintain the capability to operate under day, night, and all weather flying conditions; operate to/from a logistic air head, advance base, expeditionary airfield, or tactical landing zone in the objective

 area or battle area; and operate with or without the assistance of airborne, surface, or ground controllers.

Concept of Organization

The VMGR will function either as an integral unit or as separate detachments. Two detachments within the squadron organization provide the capability to conduct dual-site operations and support simultaneous contingencies. The VMGR has 12 KC-130 aircraft. This squadron will normally be employed in general support of FMFs as directed by the MAGTF commander. The unit may be employed either as an entire squadron or as two six-plane detachments.

105.12.b.3. Marine Tactical Electronic Warfare Squadron (VMR)

The VMAQ conducts airborne EW in support of FMF operations.

Tasks

- Conduct airborne EA and EW support operations.
- Conduct EA in support of training of FMF units or other forces as assigned.
- Process and provide mission data from tape recordings obtained on EW missions for updating and maintaining an electronic order of battle.
- Maintain the capability of operating from aircraft carriers, advance bases, and expeditionary airfields.
- Maintain the capability to operate during darkness and under all weather conditions.
- Maintain the capability to deploy or conduct extended-range operations that require aerial
- refueling.
- Perform organizational maintenance on assigned aircraft.

Concept of Organization

The VMAQ is organized to function independently with its own logistic and administrative support capabilities. The squadron is structured to operate as a subordinate unit of a MAG or carrier air wing. Each squadron has five EA-6B aircraft.

105.12.b.4. Marine Unmanned Aerial Vehicle Squadron (VMU)

The VMU operates and maintains a UAV system to provide unmanned aerial reconnaissance support to the MAGTF.

Tasks

 Conduct reconnaissance, surveillance, and target acquisition (RSTA). This includes performing airborne surveillance of designated target areas, MAGTF areas of interest/influence, and other areas as directed; airborne surveillance for search and

- rescue (SAR) and TRAP; and reconnaissance of helicopter approach and retirement lanes in support of vertical assaults.
- Provide real-time target information to the DASC and fire support coordination center (FSCC) to facilitate adjusting fire missions and CAS.
- Provide information to assist adjusting indirect- fire weapons and to support and facilitate DAS and air interdiction.
- Collect battle damage assessments (BDAs).
- Support rear area security.
- Provide remote receive capability and liaison to designated units.
- Conduct individual and unit training to prepare for tactical employment and combat operations.

Concept of Organization

The VMU is organic to the MAW and is structured to operate as a subordinate unit of one of the MAGs. The VMU is organized into various sections that give it the capability to operate and maintain one UAV system and associated support equipment. Its MALS augment section is designed to provide intermediate-level aviation maintenance and supply support. The VMU has one Pioneer system with five UAVs.

105.12.b.5. Marine Fighter/Attack Squadron (VMFA)

The VMFA intercepts and destroys enemy aircraft under all weather conditions and attacks and destroys surface targets.

Tasks

- Intercept and destroy enemy aircraft in conjunction with ground or airborne fighter control under all weather conditions.
- Maintain the capability to attack and destroy surface targets by using all types of conventional weapons that are compatible with assigned aircraft.
- Provide escort of friendly aircraft under all weather conditions.
- Maintain the capability to deploy and operate from aircraft carriers and advance bases.
- Conduct day and night CAS under adverse weather conditions.
- Maintain the capability to deploy or conduct extended-range operations by using aerial re-fueling.
- Maintain the capability to conduct suppression of enemy air defense (SEAD) operations.
- Perform organizational maintenance on assigned aircraft.

Concept of Organization

This squadron will normally function as an integral unit. It is structured to operate as a subordinate unit of a MAG. Each squadron has 12 F/A-18A/C aircraft.

105-31

105.12.b.6. Marine All Weather Fighter/Attack Squadron (VMFA/AW)

The VMFA(AW) attacks and destroys surface targets, day or night, under adverse weather conditions; conducts multisensor imagery reconnaissance; provides supporting arms coordination; and intercepts and destroys enemy aircraft under all weather conditions.

Tasks

- Conduct day and night CAS, under all weather conditions.
- Conduct day and night DAS, under adverse weather conditions, including armed reconnaissance, radar search and attack, air interdiction, and strikes against enemy installations, by using all types of weapons that are compatible with assigned aircraft.
- Conduct multisensor imagery reconnaissance, including prestrike and poststrike target damage assessment and visual reconnaissance.
- Conduct day and night supporting arms coordination, including forward air control, tactical air coordination, and artillery/naval gunfire spot- ting.
- Intercept and destroy enemy aircraft in conjunction with ground and airborne fighter direction.
- Conduct battlespace illumination and target illumination.
- Conduct armed escort of friendly aircraft.
- Maintain the capability to operate from aircraft carriers, advance bases, and expeditionary air- fields.
- Maintain the capability to deploy or conduct extended-range operations by using aerial re-fueling.
- Maintain the capability to conduct SEAD operations.
- Perform organizational maintenance on assigned aircraft.

Concept of Organization

The VMFA(AW) will normally function as an integral unit. It is structured to operate as a subordinate unit of a MAG. Each squadron has 12 F/A-18D aircraft.

105.12.b.7. Marine Attack Squadron (VFA)

The VMA attacks and destroys surface targets under day and night visual meteorological conditions and provides helicopter escort.

Tasks

- Conduct CAS.
- Conduct armed reconnaissance, air interdiction, and strikes against enemy installations by using all types of conventional munitions that are compatible with assigned aircraft.
- Conduct air defense operations within the capability of assigned aircraft.

- Maintain the capability to operate during darkness and under instrument conditions.
- Maintain the capability of deployment or extended operations by employing aerial re- fueling.
- Maintain the capability to operate from aboard carriers, other suitable seagoing platforms, expeditionary airfields, and remote tactical landing sites.
- Conduct armed-escort missions in support of helicopter operations.
- Perform organizational maintenance on assigned aircraft.

Concept of Organization

This squadron will function either as an integral unit or as a squadron (-) with a deployed aircraft detachment. This concept of organization facilitates dual-site operations, provides for the support of simultaneous contingencies, and allows for the fulfillment of continuous unit deployment program requirements. Each squadron has 16 AV-8B aircraft, 10 in the squadron and 6 in the detachment.

105.12.b.8. Marine Heavy Helicopter Squadron (HMH)

The HMH provides assault helicopter transport of heavy weapons, equipment, and supplies during amphibious operations and subsequent operations ashore.

Tasks

- Provide combat assault transport of heavy weapons, equipment, and supplies as a primary function.
- Provide combat assault transport of troops (exclusive of initial assault wave infantry) as a secondary function.
- Conduct tactical retrieval and recovery operations for downed aircraft, equipment, and personnel.
- Conduct assault support for evacuation operations and other maritime special operations.
- Provide support for mobile forward arming and refueling points (FARPs).
- Augment local SAR and provide aeromedical evacuation of casualties from the field to suitable medical facilities or other aeromedical aircraft.
- Provide airborne control and coordination for assault support operations.
- Maintain a self-defense capability from ground-to-air and air-to-air threats.
- Maintain the capability to operate from amphibious shipping, other floating bases, and austere shore bases, as required.
- Maintain the capability to operate at night, in adverse weather conditions, and under instrument flight conditions at extended ranges.

 Perform organizational maintenance on assigned aircraft in all environmental conditions.

.

Concept of Organization

This squadron will function either as an integral unit or as a squadron (-) with one or two separate detachments. This concept of organization facilitates dual-site operations, provides support for simultaneous contingencies, and allows for the fulfillment of continuous unit deployment program requirements. Each squadron has eight CH-53D aircraft organized in two detachments of four aircraft each. All squadrons fall under the aviation support element based in Kanehoe Bay, HI. Squadrons are sourced out as operational needs arise.

105.12.b.9. Marine Medium Helicopter Squadron (HMM)

The HMM provides assault transport of combat troops in the initial assault waves and follow-on stages of amphibious operations and subsequent operations ashore.

Tasks

- Provide combat assault troop transport as a primary function.
- Provide combat assault transport of supplies and equipment as a secondary function.
- Conduct assault support for evacuation operations and other maritime special operations.
- Provide support for mobile FARPs.
- Provide airborne control and coordination for assault support operations.
- Maintain a self-defense capability from ground-to-air and air-to-air threats.
- Maintain the capability to operate from amphibious shipping, other floating bases, and austere shore bases.
- Maintain the capability to operate at night, in adverse weather conditions, and under instrument flight conditions at extended ranges.
- Augment local SAR assets and provide aeromedical evacuation of causalities from the field to suitable medical facilities or other aeromedical aircraft.
- Perform organizational maintenance on assigned aircraft in all environmental conditions.

Concept of Organization

This squadron will normally function as an integral unit. It is structured to operate as a subordinate unit of a MAG. Each squadron has 12 CH-46E aircraft. Tactical HMMs will begin replacing the CH-46E helicopter with the MV-22 tilt-rotor aircraft beginning in fiscal year 2002. The MV-22 is a dual-piloted, multiengine, self-deployable, medium-lift, vertical takeoff and landing (VTOL) tilt-rotor aircraft that provides combat assault

support, logistics support, and special operations support worldwide. The aircraft will operate from air-capable ships, main bases ashore, and austere forward operating locations. The MV-22 is capable of in-flight refueling, has a 2,100 nautical mile deployment range, and can carry 24 combatequipped troops or a 10,000-pound external load. The squadron may have a mission and tasks similar to those of the current unit operating with CH-46E aircraft.

105.12.b.10. Marine Light Attack Helicopter Squadron (HMLA)

The HMLA provides combat utility helicopter support, attack helicopter fire support, and fire support coordination during amphibious operations and subsequent operations ashore.

Tasks

Utility Helicopter Tasks

- Provide an airborne command and control platform for CEs.
- Provide armed escort for assault support operations.
- Provide combat assault transport of troops, supplies, and equipment.
- Provide airborne control and coordination for assault support operations.
- Augment local SAR assets and provide aeromedical evacuation of casualties from the field to suitable medical facilities or other aeromedical aircraft.
- Conduct combat assault and assault support for evacuation operations and other maritime special operations.
- Control, coordinate, and provide terminal guidance for supporting arms, including CAS, artillery, mortars, and naval gunfire (NGF).
- Provide fire support and security for forward and rear area forces.
- Maintain a self-defense capability from surface-to-air and air-to-air threats.
- Maintain the capability to operate from amphibious shipping, other floating bases, and austere shore bases, as required.
- Maintain the capability to operate at night, in adverse weather conditions, and under instrument flight conditions at extended ranges.
- Perform organizational maintenance on assigned aircraft in all environmental conditions.

Attack Helicopter Tasks

 Provide fire support and security for forward and rear area forces.

- Conduct point target/antiarmor operations.
- Conduct antihelicopter operations.
- Provide armed escort, control, and coordination for assault support operations.
- Control, coordinate, and provide terminal ordnance for supporting arms, including CAS, artillery, mortars, and NGF.
- Provide point and limited-area air defense from threat fixed-wing aircraft.
- Conduct armed and visual reconnaissance.
- Augment local SAR assets.
- Maintain the capability to operate from amphibious shipping, other floating bases, and austere shore bases as required.
- Maintain the capability to operate at night, in adverse weather conditions, and under instrument flight conditions at extended ranges.
- Perform organizational maintenance on assigned aircraft in all environmental conditions.

Concept of Organization

This squadron will function either as an integral unit or as a squadron (-) with separate aircraft composite detachments. This concept of organization facilitates dual-site operations, provides for the support of simultaneous contingencies, and allows for the fulfillment of continuous unit deployment program requirements. Each squadron has 18 AH-1W and 9 UH-1N aircraft.

105.12.c. Marine Wing Support Group (MWSG)

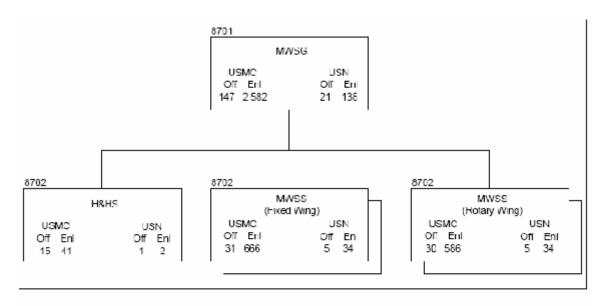


Figure 3-11. Marine Wing Support Group.

The MWSG provides all essential ground support requirements to aid designated fixed- or rotary-wing components of a Marine FOB. The MWSG typically includes a headquarters and headquarters squadron (H&HS), two MWSSs (fixed wing), and two MWSSs (rotary wing). The group is organized to provide motor transport, engineering services, and organizational maintenance (motor transport and engineering) for units of the MAW. 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 or deployed posture of the MAW.

Headquarters and Headquarters Squadron

Mission

The H&HS provides administrative support for the group and squadron headquarters.

Tasks

- Provide command, control, administrative, and ecclesiastical support for assigned units.
- Provide routine and emergency sick call functions.

Marine Wing Support Squadron: Fixed Wing/Rotary Wing *Mission*

The MWSS provides all essential aviation ground support requirements to a designated fixed-wing/ rotary-wing component of an ACE and all supporting or attached elements of the MACG.

Tasks

The MWSS conducts airfield operations, except for ATC, for supported ACE unit(s). These operations include:

- Providing internal airfield communications, including tactical telephone service in and about the airfield as well as for tenant ACE units, communications for airfield security, communications for ground transportation management, and communications between an airfield and its adjacent facilities (i.e., ammunition dump and petroleum, oils, and lubricants sites).
- Providing weather services.
- Providing expeditionary airfield services, including maintaining M-21 aircraft recovery equipment, fresnel lens, communications, airfield lighting, and other related equipment necessary to support air operations.
- Supplying crash/fire/rescue and structural firefighting equipment.
- Providing aircraft and ground refueling.
- Providing essential engineer services, including engineer reconnaissance/survey; repair, improvement, and maintenance of existing road nets within the ACE area of responsibility; construction and maintenance of expedient roads; construction

105 Air Combat Element (ACE)

(except for subsurface and surface preparation)improvement and maintenance of V/STOL facilities, not to exceed 900 feet; construction and maintenance of mission-essential base camp requirements, including tactical airfield fuel distribution systems and helicopter expeditionary refueling system installations, temporary bunkers, temporary aircraft revetments, and strongbacks; technical and equipment assistance for erection of shelters; utilities support, including essential mobile electric power, water, and hygiene support; development, improvement, and maintenance of drainage systems; supervision of camouflage requirements; equipment and personnel required for rapid runway repair; materials handling equipment to support base operations; limited mine detection capability; and limited combat engineer services.

- Providing motor transport for operations internal to the air base.
- Providing messing facilities.
- Providing routine and emergency sick call and aviation medical functions. Providing individual and unit training or organic personnel and selected personnel of support units.
- Providing organic NBC defense.
- Providing security and law enforcement services, including security of flight line and critical airfield facilities; traffic control/enforcement, convoy escort, and traffic accident investigation; straggler collection and refugee control; and criminal investigation, physical security surveys, and related activities.
- Providing air base commandant functions.

106 GROUND COMBAT ELEMENT (GCE) FUNDAMENTALS

References:

- a. MCWP 3-14.1, Light Armored Vehicle-25 Gunnery and Employment
- b. MCRP 5-12D, Organization of Marine Corps Forces
- c. MCWP 3-15.1, Machine Guns and Machine Gun Gunnery
- d. FMFM 6-9, Marine Artillery Support
- e. Marine Corps Common Skills Handbook, Book 1A, All Marines, Individual Training Standards, May 2001
- f. Marine Corps Common Skills Handbook, Book 1B, All Marines, Individual Training Standards, May 2001
- g. MCRP 3-15.2A, Mortars
- h. MCWP 3-12, Marine Corp Tank Employment
- i. NWP 3-09.11M/FMFM 1-7, Supporting Arms in Amphibious Operations
- j. FM 23/24, Dragon Medium Antitank/Assault Weapon System M47
- k. MCWP 3.16, Fire Support Coordination (FSC) in the Ground Combat Elements

MARINE CORPS WARFIGHTING PHILOSOPHY

The Marine Corps warfighting philosophy is based on rapid, flexible, and opportunistic maneuver capabilities. Maneuver warfare is a warfighting philosophy that seeks to shatter the enemy's cohesion through a series of rapid, violent, and unexpected actions which create a turbulent and rapidly deteriorating situation with which he cannot cope (MCDP 1). Fire support in maneuver warfare produces combat power and is applied through combined arms.

The MAGTF and GCE are combined arms teams by the nature of their organization. The GCE's ability to deliver fire is most effectively employed when it creates a combined arms effect. Combined arms is the full integration of arms in such a way that in order to counteract one, the enemy must make himself more vulnerable to another. It pairs firepower with mobility to produce a desired effect upon the enemy (MCDP 1). In addition to the typical example of combined arms where indirect fire suppresses an enemy, enabling either maneuver or attack by direct fire, multiple supporting arms can create a combined arms effect. Artillery raids in the Gulf War intentionally attracted enemy counterfire to enable air attack of enemy radar and artillery units. The enemy had to suffer the effects of indirect fire or risk losing its own artillery assets. The 3d Marine air wing used a similar technique when conducting attacks against the Iraqi integrated air defense system (IADS). Suppression of enemy air defenses (SEAD) packages accompanied Marine aircraft conducting strikes against Iraqi positions and equipment. When Iraqi fire control radars were activated, the aircraft from the SEAD package attacked the radars with high-speed antiradiation missiles (HARMs). Once again, the Iraqis were placed in a dilemma. To defend against the air attacks, they placed their fire control radars in jeopardy.

106 Ground Combat Element (GCE)

Combat power is the total means of destructive and/or disruptive force which a unit can apply against the enemy at a given time. Combat power consists of tangible factors such as the destructive effect of available firepower. But, just as importantly, it consists of intangible factors such as surprise, tempo, and morale.

106.1 Explain the purpose and employment of a Marine division.

The mission of the Marine division is to execute amphibious assault operations and such other operations as may be directed. The Marine division must be able to provide the ground amphibious forcible-entry capability to an amphibious task force (ATF) and conduct subsequent land operations in any operational environment. The division commander fights by using combined-arms tactics and tailors the force to the demands of each mission. The Marine division is employed as the GCE of the MEF or may provide task-organized forces for smaller MAGTFs.

106.2 Name the types of regiments and battalions in a Marine division.

3 (THREE) Infantry Regiments, Tank Battalion, Assault Amphibian Battalion, Combat Engineer Battalion, Artillery Regiment, Headquarters Battalion, Reconnaissance Battalion and a Light Armored Reconnaissance Battalion

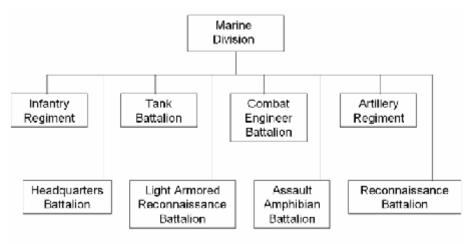
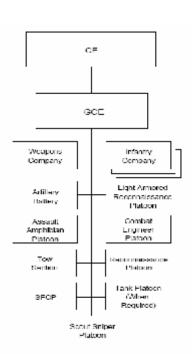


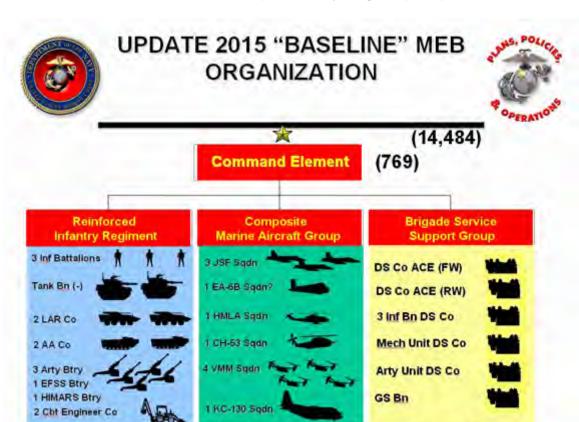
Figure 4-1 Marine Division Organization

106.3 What is the Ground Combat Element (GCE) of a Marine Expeditionary Unit (Special Operations Capable) (MEU (SOC))?

3 (three) Infantry Companies reinforced with a Weapons Company, an Artillery Battery, Reconnaissance Platoon, Combat Engineer Platoon, Light Armored Reconnaissance Platoon, Assault Amphibian Platoon, TOW Section, Tank Platoon (when required), Shore Fire Control Party (SFCP) and a Scout Sniper Platoon.



(2,470)



(5,660)

106.4 What is the GCE of a Marine Expeditionary Brigade (MEB)?

106.5 What is the GCE of a Marine Expeditionary Force (MEF)?

A Marine Division

(5,585)

106 Ground Combat Element (GCE)

106.6 State the area of responsibility of the following components:

Infantry regiment

The primary mission of the infantry regiment is to locate, close with, and destroy the enemy by fire and maneuver or to repel his assault by fire and close combat. 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.

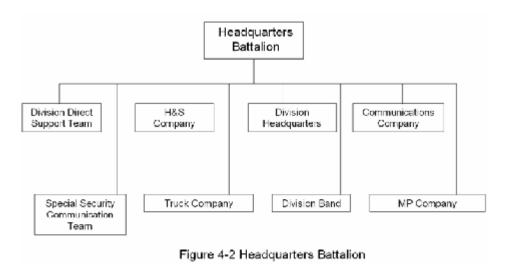
Artillery regiment

The mission of artillery in the Marine division is to furnish close and continuous fire support by neutralizing, destroying, or suppressing targets that threaten the success of the supported unit. The artillery regiment is the primary source of fire support for the Marine division. Its operations and actions are closely integrated with those of the infantry to be responsive to rapidly changing tactical situations. The artillery regiment provides a fire support coordination section to assist in establishing and operating an FSCC at the division COC.

Tank battalion

The mission of the tank battalion is to close with and destroy the enemy by using armor-protected firepower, shock effect, and maneuver and to provide antimechanized fire in support of the Marine division. The battalion is best employed as a maneuver force without detaching units. However, the division commander may task organize forces of tanks, mechanized infantry, and other division resources based on mission, enemy, terrain and weather, troops and support available-time available (METT-T) that require cross-attachment of tank battalion and infantry regiment assets. Employment of the tank battal-ion must take advantage of the speed, mobility, and firepower of the organization.

Headquarters battalion



The primary mission of the headquarters battalion is to exercise command, control, and administration of the Marine division. It contains an H&S company, a division headquarters with an H&S company, a reconnaissance company, a special security communications team, a communications company, a military police (MP) company, the division band, and a truck company.

Assault amphibian battalion

The mission of the assault amphibian battalion is 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 and to conduct mechanized operations and related combat support in subsequent operations ashore. The battalion and its subordinate units are assigned to or in support of a MAGTF to provide ship-to-shore lift capability during the amphibious assault. During operations ashore, the battalion elements provide mobility equal to that of tanks to the assaulting elements of the MAGTF. AAVs are primarily used to transport personnel in tactical operations. If assets permit, they may be used as cargo carriers forward of the forward edge of the battle area (FEBA).

Light armored reconnaissance battalion

The mission of the LAR battalion is to conduct reconnaissance, security, and economy-of-force operations and, within capabilities, conduct limited offensive or delaying operations that exploit the unit's mobility and firepower. The LAR battalion and its subordinate companies are capable of being employed separately or as part of a GCE. Speed and firepower, combined with maneuver, are used to exploit the offense in all types of combat operations. The LAR battalion assets emphasize the mobility and firepower that are characteristic of light armored vehicles (LAVs).

Combat engineer battalion

The mission of the combat engineer battalion is to enhance the mobility, countermobility, and survivability of the Marine division through close combat engineer support and to provide the limited general engineering support that is required for the functioning of the Marine division. The combat engineer battalion provides close combat support and limited general engineer support for the division through task-organized combat engineer elements for GCE units. Operation of those elements supporting forward units is generally 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 engineering equipment to the combat engineer companies.

Reconnaissance battalion

The mission of the Reconnaissance battalion is to conduct amphibious reconnaissance, ground reconnaissance, surveillance, Battlespace shaping and limited scale raid in support of the Marine Division and its subordinate elements. Task include:

- Plan, Coordinate, and conduct amphibious reconnaissance, ground reconnaissance and surveillance to observe, identify, and report enemy activity, and collect other information of military significance
- Conduct specialized terrain reconnaissance to include: Hydrograph, beaches, roads, bridges, routes, urban areas, helicopter landing zones, aircraft forward operating sites, and mounted reconnaissance missions.
- When properly task organized with other Forces, equipment or personnel, assist in specialized engineer, radio, mobile, and other unique reconnaissance missions.
- Infiltrate mission areas by necessary means to include: surface, subsurface and airborne operations.
- Conduct counter reconnaissance.
- Conduct initial terminal guidance (ITG) for helicopters, landing craft, parachutists, air-delivery, and re-supply.
- Designate and engage selected targets with organic weapons and force fires to support Battlespace shaping, this includes designated and terminal guidance of precision-guided munitions.
- Conduct Post-Strike reconnaissance to determine and report battle damage on a specified target or area.
- Conduct limited scale raids and ambushes.
- Conduct other tasks as directed by the Division or Supported Unit Commander.

106.7 State the purpose, employment, and characteristics of the following:

Amphibious Assault Vehicle (AAV)



The Amphibious Assault Vehicle (AAV)—official designation AAV-7A1 (formerly known as LVT-7) is the current amphibious troop transport of the United States Marine Corps and is also operated by other forces.

The AAV-7A1 is a fully tracked amphibious landing vehicle manufactured by FMC Corporation. Has a crew of 3 with load capacity of 21 Combat Equipped Troops (@ 285 Pounds) or 10,000 Pounds of Cargo. Cruising Speed: *Land*: 20 to 30 MPH, *Water*: 6 MPH. Armament and Ammunition: HBM2 Caliber.50 Machine Gun and MK 19 MOD3 40 MM Machine Gun

It is used by USMC Amphibious Assault Battalions 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 and to conduct mechanized operations and related combat support in subsequent mechanized operations ashore

Light Armored Vehicle (LAV)



The LAV-25 is a lightly armored, eight-wheeled, amphibious vehicle. It is equipped with a stabilized 25mm cannon, a pintle-mounted 7.62mm machine gun, and a coaxially mounted 7.62mm machine gun capable of engaging mechanized targets and personnel. The LAV-25 also uses the LAV-25 Day/Night Sight to provide enhanced night/battlefield smoke fighting and thermal imaging/target acquisition. This fire control sighting system is capable of attaining a high percentage of first round, destructive target hits. Manned and operated by a driver, a gunner, and a vehicle commander, the LAV-25 is capable of carrying four infantry scouts in the rear. A competent crew can bring accurate, high-volume firepower to bear against the enemy.

M1A1 tank



The M1A1 combat (main battle tank uses high speed, maneuverability, and a variety of weapons to attack and destroy enemy tanks, equipment, and forces. The tank provides protection from enemy weapons. The M1A1 combat tank consists of the hull and turret assemblies. The turret can rotate a full 360 degrees. The engine will burn a variety of fuels. DF-1, DF-2, JP8 and DF-A are the

recommended fuels, but in an emergency, JP4 may be used. The tank is equipped with a laser rangefinder. The laser rangefinder can range on targets located 200 to 7990 meters from the tank with an accuracy of +/- 10 meters. It is also equipped with a thermal imaging system (TIS). The TIS provides M1A1 fire control system with night vision capability by presenting a thermal scene in the gunner's primary sight (GPS) eyepiece. The TIS picture can be viewed at 3X or 10X magnification. Other relevant capabilities are listed below:

- o Main gun, M256 120mm
- o Coaxial machinegun, M240 7.62mm
- o Commander's machinegun, M2 .50 cal
- o Grenade Launcher M250
- o Ammunition quantity:
- o 120mm (for maingun) 40 rounds
- o 7.62mm (for coaxial machinegun, M240 10,000 rounds
- o 7.62mm (for loader's machinegun, M240 1,400 rounds
- o Caliber .50 (for commander's machinegun) 900 rounds
- o UKL8 series (smoke grenades for grenade launcher) 24 grenades
- o 5.56m (for rifle, M-16) 210 rounds
- o Engine: Turbine engine

106.8 State the purpose, employment, and characteristics of the following weapons:

M203 grenade launcher



The M203 grenade launcher is a lightweight, single-shot, breech-loaded, pump action (sliding barrel), shoulder-fired weapon attached to either an M16A1 or an M16A2 rifle. The technical data for the M203 grenade launcher is as follows:

Weapon.

- Length of rifle and grenade launcher (overall) 9.0 cm (39 inches)
- Length of barrel only 30.5 cm (12 inches)
- Length of rifling 25.4 cm (10 inches)
- Weight of launcher unloaded 1.4 kg (3.0 pounds)
- Weight of launcher loaded 1.6 kg (3.5 pounds)
- Weight of rifle and grenade launcher with both fully loaded 5.0 kg (11.0 pounds)
- Number of lands 6

Ammunition.

- Caliber 40 mm
- Weight 227 grams (8 ounces) (approximately)

Operational Characteristics.

- Action Single shot
- Sights:
 - Front Sight post
 - Rear Leaf
- Chamber pressure 206,325 kilopascals (35,000 psi)
- Maximum range 400 meters (1,312 feet) (approximately)
- Maximum effective range:
 - Fire-team sized area target 350 meters (1,148 feet)
 - Vehicle or weapon point target 150 meters (492 feet)
- Minimum safe firing range (HE):

- Training 165 meters (541 feet)
- Combat 31 meters (102 feet)
- Minimum arming range 14 to 38 meters (46 to 125 feet) (approximately)
- Rate of fire 5 to 7 rounds per minute
- Minimum combat load 36 HE rounds

The M203 grenade launcher uses several fixed-type, low-velocity 40-mm rounds. The M203 fires high-explosive, illuminating, signaling, CS, and training ammunition.

M240G machine gun



The M240G machine is an air-cooled, belt-fed, gas-operated automatic weapon. It is able to provide a heavy, controlled volume of accurate, long-range fire that is beyond that of small arms The weapon fires from the open-bolt position and is fed by a disintegrating belt of metal links. The gas from firing one round provides the energy for firing the next. Thus, the gun functions automatically as long as it is supplied with ammunition and the trigger is held to the rear. It can be fired utilizing either the attached bipod mount or by mounting the M240G on the tripod. The tripod provides the most stable base for the weapon, enabling the gunner to maximize its range capabilities and deliver a high degree of accurate fire on target. The traversing and elevating (T&E) mechanism permits controlled manipulation in both direction and elevation and makes it possible to engage predetermined targets during darkness or periods of reduced visibility.

- o Total system weight (gun and tripod complete) 45.6 pounds
- o Weight of machine gun 25.6 pounds
- o Weight of barrel 6.6 pounds
- o Length of machine gun 49 inches
- o Height of machine gun on tripod 17 inches
- o Ranges Maximum 3,725 meters
- o Maximum effective 1,800 meters
- o Grazing fire 600 meters
- o Caliber 7.62 millimeter

The M240G is a versatile weapon that can support both offensive and defensive operations. It can provide a heavy volume of close, accurate, and continuous fire support suppress and destroy enemy personnel in support of an attack. That same heavy volume of fire, when employed as final protective fires, forms an integral part of a unit's defensive fire plan and can effectively break up and stop an enemy

M249 machine gun



The machine gun, light, squad automatic weapon, M249 (SAW) is a gas-operated, air-cooled, belt or magazine-fed, automatic weapon that fires from the open-bolt position (see figure 2-1). It has a maximum rate of fire of 850 rounds per minute. Primarily, ammunition is fed into the weapon from a 200-round ammunition box containing a disintegrating metallic split-link belt. As an emergency means of feeding, the SAW can use a 20 or 30 round M16 rifle magazine, but this will increase the chance of stoppages. The SAW can be fired from the hip, or underarm using assault fire techniques; however, the preferred method of employment is to fire from the bipod- steadied position. The bipod gives weapon the stability needed to engage targets at its maximum effective range. The SAW has a spare barrel to allow quick barrel changes during employment; however, barrels must not be interchanged with those from other SAW's unless the headspace has been set for that weapon by ordnance personnel.

- o Weight of SAW: With bipod and tools 17 pounds
- o With 200 round drum 23.92 pounds
- o Measurements:
- o Length 40.87 inches
- o Ranges:
- o Maximum 3,600 meters
- o Maximum effective Point targets 800 meters
- o Area targets 1,000 meters
- o Grazing fire 600 meters
- o Ammunition: Caliber 5.56 millimeter
- o Weight of full 200 round drum 6.92 pounds

Although employed as an automatic rifle by the Marine Corps, the SAW is designed like a medium machinegun. As such it has design features that make it a more versatile weapon, such as; it can be belt or magazine fed thus providing more continuous fire before reloading and it has a quick change barrel feature which allows barrel changes during periods of continuous firing without taking the weapon out of action for more than a few seconds. The SAW also has greater effective range and a higher rate of fire than any other weapon in the present rifle squad. The SAW can provide a heavy volume of continuous, accurate fire in support of offensive or defensive operations. Its presence in large numbers (e.g., nine per rifle platoon) at the small unit level has significantly increased the combat power of those units. In the past, medium machine guns were often attached to platoons or squads, more out of concern over the lack of fire power in those small units than for sound tactical reasons. The introduction of the SAW into those units has changed that. The SAW provides the platoons with significant fire power against enemy personnel and light equipment. Be- cause of this, more times than not, the company's machine gun section can now be employed as a section, in a general or direct support role, rather than attached out. The SAW's presence, in any type of unit, increases the available fire power and provides additional flexibility to the unit leader in terms of weapons employment options.

MK-19 machine gun



The MK 19 supports the Marines in both the offense and defense. It gives the unit a heavy volume of close, accurate, and continuous fire. It can also be used to—

- o Protect motor movements, assembly areas, and supply trains in bivouac.
- o Defend against hovering rotary aircraft.
- o Destroy lightly armored vehicles.
- o Fire on suspected enemy positions.
- o Provide high volumes of fire into an engagement area.
- o Cover obstacles.
- o Provide indirect fires from defilade positions.

The MK-19 is an air cooled, blowback-operated, fully automatic weapon (see figure 5-1). The ammunition is fed into the gun by a disintegrating metallic link belt. The weapon features a barrel which prevents cookoff even after prolonged firing. A flash suppressor is fixed to the muzzle of the barrel. The slotted configuration suppresses vibration during firing and dissipates flash and smoke. The MK-19 is employed from a tripod or from a variety of vehicles.

Weights/measurements:

- Total system weight (gun, cradle, and tripod) 140.6 pounds
- Weight of gun 75.6 pounds
- Weight of gun cradle (MK64 MOD5) 21 pounds
- Weight of M3 tripod 44 pounds
- Length of gun 43.1 inches
- Ranges: Maximum 2,212 metes
- Ammunition: Caliber 40 millimeter

The MK-19 provides support in both the offense and defense. Its capability for a heavy volume of close, accurate, and continuous fire support makes it a highly responsive weapon with which to suppress and destroy enemy personnel, fortifications, and vehicles in support of an attack. Its capability for both long range and close defensive fires make it an ideal weapon in the defense. Its fragmentation producing effects are devastating against attacking dismounted infantry. Its ability to effectively penetrate lightly armored vehicles prevents the enemy from remaining mounted and rapidly closing with friendly defensive positions

81mm mortar



The immediate objective is to deliver a large volume of accurate and timely fire to inflict as many casualties as possible on the enemy. The number of casualties inflicted in a target area can usually be increased by surprise fire. If surprise

massed fires cannot be achieved, the time required to bring effective fires on the target should be kept to a minimum. The greatest demoralizing effect on the enemy can be achieved by delivery of a maximum number of effective rounds from all the mortars in the shortest possible time.

The 81-mm mortar, is a smooth-bore, muzzle-loaded, high-angle-of-fire weapon. The components of the mortar consist of a cannon, mount, and baseplate.

Characteristics

- Weights (pounds)
 - System (including basic issue items) 121.5 (total in three loads)
 - Barrel 12.8
 - Mount 40
 - M3 Baseplate 25.4
 - M23A1 Baseplate 48
 - M53 Sightunit 5.25
- Range
 - Minimum to maximum 70 to 4,737 meters
- Rate of Fire
 - Sustained 3 (charge 8) to 5 (charge 6) rounds per minute for 1 minute
 - Maximum for 2 minutes 12 (charge 8) rounds per minute
 - Maximum for 5 minutes 12 (charge 6) rounds per minute

The cannon assembly consists of the barrel, mount attachment ring, and base plug with a spherical projection that contains a removable firing pin. The bipod assembly consists of the elevating and traversing mechanism, and bipod legs. The baseplate is of one-piece construction, and supports and aligns the mortar for firing. During firing, the base plug on the barrel is seated and locked to the rotatable socket in the baseplate. The barrel passes through the yoke of the mount and is secured to the shock absorber by a locking pin. The following are authorized cartridges for the 81-mm mortar, M29A1:

- o High explosive--M374 series and M362 series.
- o White phosphorus--M375 series, M370 series, and M57 series.
- o Illuminating--M301 series.
- o Training practice--M68 and M880 (SRTR).

60mm mortar



60-mm MORTAR, M224. The immediate objective is to deliver a large volume of accurate and timely fire to inflict as many casualties as possible on the enemy. The number of casualties inflicted in a target area can usually be increased by surprise fire. If surprise massed fires cannot be achieved, the time required to bring effective fires on the target should be kept to a minimum. The greatest demoralizing effect on the enemy can be achieved by delivery of a maximum number of effective rounds from all the mortars in the shortest possible time. Mortar units must be prepared to accomplish multiple fire missions. They can provide an immediate, heavy volume of accurate fire for sustained periods. Mortars are suppressive indirect fire (high-angle-of-fire) weapons. They can be employed to neutralize or destroy area or point targets, screen large areas with smoke, and to provide illumination or coordinated HE/illumination. The mortar squad consists of three soldiers. Each squad member is cross-trained to perform all duties involved in firing the mortar. The positions and principal duties are as follows:

- o *The squad leader* is in position to best control the mortar squad. He is positioned to the right of the mortar, facing the barrel. He is also the FDC.
- The gunner is on the left side of the mortar where he can manipulate the sight, elevating gear handle, and traversing assembly wheel. He places firing data on the sight and lays the mortar for deflection and elevation. Assisted by the squad leader (or ammunition bearer), he makes large deflection shifts by shifting the bipod assembly.
- o *The ammunition bearer* is to the right rear of the mortar. He prepares the ammunition and assists the gunner in shifting and loading the mortar. He swabs the barrel every 10 rounds or after each end of mission. The 60-mm

mortar, M224, can be fired in the conventional mode or handheld mode. The mortar is a muzzle-loaded, smooth-bore, high-angle-of-fire weapon. It can be drop-fired or trigger-fired and has four major components. The Canon, the bi-pod assembly, the sight unit, and the base plate M8or M7.

Characteristics

- Weights
 - Complete mortar 46.5 pounds 18.0 pounds
 - Cannon, M225 18.0 pounds 14.4 pounds
 - Bipod Assembly M170 15.2 pounds
 - Sightunit, M64A1 14.4 pounds
 - Baseplate, M7 3.6 pounds
 - Baseplate, M8
- Range
 - 70 to 3,490 meters
- Ammunition:
 - High explosive (HE)--Used against personnel and light materiel targets.
 - White phosphorus (WP)--Used as a screening, signaling, casualty-producing, or incendiary agent.
 - Illumination (ILLUM)--Used in night missions requiring illumination for assistance in observation.
 - Training practice (TP)--Used for training in limited areas.

M198, 155mm howitzer



The M198 howitzer is a medium-sized, towed artillery piece. It can be dropped by parachute or transported by a CH-53E. It provides field artillery fire support for all US Marine Corps Air-Ground Task Force organizations.

General characteristics

Length:

In tow: 12.3 m (40 ft 6 in)Firing: 11 m (36 ft 2 in)

Width in tow: 2.8 m (9 ft 2 in)Height in tow: 2.9 m (9 ft 6 in)

• Weight: 7,154 kg (15,758 lb)

Bore diameter: 155 mmMaximum effective range:

conventional ammunition: 22,400 m (14 miles)
rocket-assisted projectile: 30,000 m (18.6 miles)

Rate of Fire:

Maximum: 4 round/minSustained: 2 round/min

• Crew: 9 enlisted

Unit Replacement Cost: US\$527,337

Capable Munitions

- High Explosive (HE) (M-107 Normal Cavity): Explosive Composition B material packed into a thick shell which causes a large blast and sends razor sharp shrapnel at extreme velocities (5000-6000 meters/sec). The kill zone is approximately a radius of 50 meters and casualty radius is 100 meters.
- R.A.P: A rocket assisted HE round that adds to the max range of the normal HE.
- Smoke: A base ejecting projectile used to cover troop and vehicle movements
- White Phosphorous (WP): A base ejecting projectile which can come in two versions: Felt-wedge and standard. White phosphorous smoke is used to start fires, burn a target, or to create smoke.
- <u>Illumination</u>: Illumination projectiles are a base ejecting round which pop out a bright flare approximately 600 meters above the ground and illuminate an area of approximately 1000 meters. Illumination rounds are often used in conjunction with HE rounds. Illumination rounds can also be used during the daytime to mark targets for aircraft.
- <u>DPICM</u>: A base ejecting projectile which drops 88 bomblets above a target. Each bomblet is a shape-charged munition capable of penetrating 2 inches of solid steel. The DPICM round was the U.S. answer to the Soviet Tank threat during the cold war. Each undetonated bomblet is very dangerous to civilians (like a land mine).
- <u>Copperhead</u>: An artillery launched guided munition much like a cruise missile which is used for very precise targeting with observer laser systems.

SADAR: An experimental munition which is fired in the general direction of an enemy vehicle. The shell activates at a certain point in time ejecting a parachute and then guides itself to the nearest vehicle.

5/54 MK-45 naval gun



The 5 Inch/54-caliber (Mk 45) lightweight gun is a modern naval artillery gun mount consisting of a 5 inch (127 mm) L54 Mark 19 gun on the Mark 45 mount. It is designed to be used against surface warships, for anti-aircraft use and shore bombardment to support amphibious operations.

The gun mount features an automatic loader with a capacity of 20 rounds. These can be fired under full automatic control taking a little over a minute to exhaust those rounds at maximum fire rate. For sustained use, the gun mount would be occupied (below deck) by a three man crew (gun captain, panel operator, and ammunition loader) to keep the gun supplied with ammunition. An advanced version, the Mk 45 mod 4 lighweight gun, uses a longer barrel (62 caliburs versus 54) for more complete propellant combustion, higher velocity and greater utility as a land attack weapon.

M2 .50 cal machine gun



The machine gun, caliber .50, Browning, M2HB (M2 .50 cal), is a belt-fed, recoil-operated, air- cooled, crew-served machine gun. The gun is capable of single shot as well as automatic fire. By repositioning some of the component parts, the gun is capable of alternate feed. Ammunition can be fed into the weapon from the right or the left side of the receiver; however, the infantry generally uses only left side feed. A disintegrating metallic link belt is used in feeding. The force for recoil operation is furnished by expanding powder gases which are controlled by various springs, cams, and levers. Maximum surface of the barrel and receiver is exposed to permit air cooling. Perforations in the barrel support allow air to circulate around the breach end of the barrel and help in cooling the parts. The heavy barrel is used to retard early overheating.

Weights/measurements:

- Total system weight (gun, and tripod complete) 128 pounds
 - Weight of receiver 60 pounds
 - Weight of barrel 24 pounds
 - Weight of tripod mount M3
- Length of barrel 45 inches
- Ranges:
 - Maximum (M2 ball) 7,400 meters (approximate)
 - Maximum effective 1,830 meters
 - Grazing fire 700 meters
- Ammunition: Caliber 50 caliber

This machine gun supports both the offense and defense. It provides the heavy volume of close, accurate, and continuous fire support necessary to suppress and destroy enemy fortifications, vehicles and personnel in support of an attack. The long range, close defensive, and final protective fires delivered by this gun form an integral part of the unit's defensive fires. Defend against low-flying hostile aircraft. Destroy lightly armored vehicles. Provide reconnaissance by fire on suspected enemy positions.

M9 pistol



The M9 pistol is a semiautomatic, magazine fed, recoil operated, double/single action pistol, chambered for the NATO 9mm cartridge.

Double/Single Action.

For double action, pulling the trigger will cock the hammer and immediately release it, discharging the first chambered round. To fire the first chambered round in single action, the hammer must be manually locked to the rear before pulling the trigger. All shots after the first one will be fired single action because the slide automatically recocks the hammer after each shot.

Magazine (1).

Has a 15 round capacity.

Other Characteristics:

- Caliber 9x19mm(9mm NATO)
- System of Operation short recoil, semiautomatic
- Locking system oscillating block
- Length 217 mm (8.54in.)
- Width 38mm(1.50in.)
- Height. 140 mm (5.51in)
- Weight (w/empty magazine) 960 gr(33.86 oz)
- Weight(w/15 round magazine) 1145 gr(40.89 oz)
- Barrel Length 125mm (4.92 in)
- Rifling R.H.,6 groove [pitch 250mm (about 10in.)]
- Muzzle velocity 375 meters/sec (1230.3 ft/sec)
- Muzzle energy 569.5 newton meters (420 ft.lbs)
- Maximum effective range 50 meters (54.7 yards)
- Maximum range 1800 meters (1969.2 yards)
- Front sight blade. integral with slide
- Rear sight notched bar, dovetailed to slide
- Sighting line 158mm (6.22in.)

M-16 rifle



The M16A2 5.56mm rifle

- Lightweight, Air-cooled, Gas-operated, Magazine-fed, Shoulder or hip fired
- Fully adjustable rear sight
- Automatic fire (3 round bursts)
- Semi-automatic fire (single shot)
- Length: 39.63 inches
- Weight, with 30 round magazine: 8.79 pounds
- Bore diameter: 5.56mm
- Maximum effective range:
 - Area Target 800 meters
 - Point Target 550 meters
- Rate of Fire:
 - Cyclic: 800 rounds per minute
 - Sustained: 12-15 rounds per minute
 - Semiautomatic: 45 rounds per minute
 - Burst: 90 rounds per minute
- Magazine capacity: 30 rounds
- Unit replacement cost: \$586.00

Targeted Optical Wire-guided (TOW) weapon system



The TOW is a crew portable, vehicle-mounted, heavy anitarmor weapon system consisting of a launcher and one of five versions of the TOW missile. It is designed to defeat armored vehicles and other targets such as field fortifications from ranges up to 3,750 meters. After firing the missile, the gunner must keep the cross hairs of the sight centered on the target to ensure a hit. The system will operate in all weather conditions in which the gunner can see a target throughout the missile flight by using either a day or night sight.

106.9 Discuss the principles of Fire Support Coordination (FSC).

"Tactical fire direction is the "if" and "how" to attack a target."

Fire support is fires that directly support land, maritime, amphibious, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives (JP 1-02). Fire support coordination is the planning and executing of fires so that targets are adequately covered by a suitable weapon or group of weapons (JP 1-02).

The MAGTF principally employs fire support provided by the GCE and the ACE, but may also receive external fire support from other joint, combined, and coalition forces.

FIRE SUPPORT TASKS

Fire support functions are performed in relation to -

- o Supporting forces in contact.
- o Supporting the commander's concept of operation.
- o Integrating fire support with the scheme of maneuver.
- o Sustaining fire support.

Regardless of the unit supported, these tasks give the commander and his fire support representatives a frame of reference to evaluate the overall effectiveness of fires. They serve as unifying factors for supporting arms. The four tasks do not change or replace traditional missions, roles, and operations. They provide a common point of departure for all sup-porting arms. For example, naval surface fire support (NSFS) in general support of a regiment does not consciously plan to

perform the four tasks. It accomplishes its mission by furnishing a continuous volume of naval gunfire that supports forces in contact and the commander's concept of operation. It integrates its support with the scheme of maneuver through liaison officers who plan fire support areas (FSAs) to support the scheme of maneuver.

106.10 Discuss the role of the Fire Direction Center (FDC).

The regiment FDC exercises tactical fire direction of organic artillery battalions and attached artillery units; e.g., attached multiple launch rocket system (MLRS). It exercises tactical fire direction to the degree consistent with the communications capability, positioning of units, and range capability. The regiment FDC receives fire missions from several sources, including the division FSCC and its own observers; e.g., survey, weapons-locating radars, etc. It also receives requests for reinforcing fires from artillery battalions. The regiment assigns fire missions to a battalion or attached unit. To avoid diverting DS artillery from its primary mission, artillery units in GS are normally tasked first. The regiment FDC directs the massing of artillery battalions on targets worthy of such attack.

106.11 Explain the format to call in a landing zone brief.

LANDING ZONE BRIEF

The landing zone brief is given prior to the transport helicopter landing in the LZ. LZ brief radio transmission are addressed by line number. Unknown or not applicable line numbers are referred to as negative. For example: line one-negative, line two-98632, line three-C3E, line four-negative, etc.

LANDING ZONE BRIEF				
1. MISSION NO.		_		
2. LOCATION COOR/RAD/DME				
3. UNIT CALL SIGN				
4. FREQUENCY	PRI UHF	FM		
	SEC UHF	FM		
5. LZ MARKING				
6. WIND DIRECTION/VELOCITY				
7. ELEVATION/SIZE				
8. OBSTACLES				
9. FRIENDLY POSITIONS: DIRECTION/DISTANCE				
10. LAST FIRE RECEIVED: TIME/TYPE				
11. DIRECTION OF FIRE/DISTANCE		/		
12. CLEARANCE TO FIRE: DIRECTION/DISTANCE				
 APPROACH/RETIREMENT (RECOMMENDED) 				
14. PERSONNEL/EQUIPMENT		/		
15. OTHER				

LZs are selected during planning between the HUC and the AFL in coordination with the intelligence officer (S-2). The selected LZs are approved by the MAGTF commander or mission commander. Regardless of whether the site is a LZ or PZ —

- The ground chosen must support the safe landing of helicopters.
- The selected site should be identifiable from the air.
- The enemy situation must be such that the site can be secured without undue interference from enemy fires.

Each helicopter requires a different size LZ/PZ, and each area needs to be on level ground. Lighting conditions also affect the size of the LZ for each helicopter: daylight zones should be 100 feet larger than the diameter of aircraft rotor blades and night zones should be 150 feet larger than the diameter of aircraft rotor blades.

Type Aircraft	Rotor Blade Diameter (feet)	Landing Zone Diameter Daylight (+100)/Night (+150)
UH-1	50	150/200
CH-46	85	185/235
CH-53	100	200/250

Ideally, each LZ/PZ is as level as possible, and free of major obstacles that might obstruct landings or takeoffs (e.g., tall trees, telephone/power lines). Plans must be made to mark or identify obstacles than cannot be removed in order to aid the aircrew's ability to safely land the aircraft. The ground itself must be firm enough to prevent bogging down, otherwise aircraft may have to hover during loading or unloading operations.

The site must be free of heavy dust, loose snow, logs, rocks, or dry grass. Although level ground is preferable, some areas that can support the helicopter will not be level. As a planning rule, LZs with slopes greater than 7 degrees require additional consideration by the AFL and AMC.

LZ/PZ entry and exit routes are chosen to ensure that takeoffs or landings can occur over the lowest obstacles and that the direction is into the wind with minimum crosswinds of 10 knots and tailwinds of no more than 5 knots. Wind direction must also be considered in terms of its effect on the dust created by the helicopter's landing and takeoff.

The helicopter must be able to ascend or descend vertically into the LZ/PZ when fully loaded. The landing point for each helicopter should be at a distance 10 times as far from an obstacle as the obstacle is high.

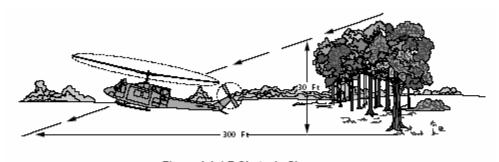


Figure 4-1. LZ Obstacle Clearance.

106.12 Discuss the main battle tank used by the Marine Corps.

The tank is designed primarily as an offensive weapon, regardless of the type of operation (defensive or offensive) conducted. Tank units, as maneuver elements, are employed throughout the full range of military operations. Therefore, the tank battalion's mission is to close with and destroy the enemy by using armor-protected firepower, shock effect, and maneuver and to provide antimechanized fire in support of the Marine division.

The tank battalion is best employed as a maneuver element without detaching units. However, the ground combat element (GCE) commander may create mechanized forces by task-organizing tank, mechanized infantry, and other combat support and logistics support units based on mission, enemy, terrain and weather, troops and support available—time available (METT-T). Employment of the tank battalion must take advantage of the speed, mobility, and firepower of the organization.

Armor-Protected Firepower

The tank is an integrated weapons system capable of defeating most targets on the battlefield. The amount and type of ammunition carried aboard the M1A1 tank allows it to engage a wide variety of targets for sustained periods of combat. The M1A1 tank's 120mm main gun is a high velocity, direct fire weapon used primarily against enemy tanks and hard targets. Along with the main gun, the M1A1 tank has one heavy machine gun (.50 cal).and two medium machine guns (7.62mm). The coaxial-mounted 7.62 machine gun is integrated into the tanks target acquisition system, which provides for extremely accurate small-arms fire. The M1A1's armor affords protection to the tank, including its crew, from the effects of small-arms fire, shell fragments, and some direct hits depending on the type and range of the enemy weapon. Its armor also allows the tank to close with the enemy and maneuver while under either enemy fire or friendly close supporting fires with a degree of survivability that other weapons systems do not possess. The M1A1 tank also provides a significant degree of protection for the crew while operating in an environment contaminated with chemical weapons.

Mobility

Tank units are capable of conducting mobile ground combat over a broad area of operations because they can remain dispersed, yet they can mass quickly for employment at a decisive time and place. Tanks, by virtue of their full track and global positioning systems, possess a high degree of cross-country mobility that allows them to deliver firepower against several enemy locations within a short period of time. Tanks can also quickly mass the effects of their weapon systems while remaining physically dispersed in order to limit effective enemy counteraction.

Shock Effect

The shock effect on the enemy that tank units can create is both physical and psychological. Shock effect, if properly executed, can also have a favorable effect on friendly morale. Additionally, shock effect increases in proportion to the

number of tanks employed. To exploit a tank's shock effect, aggressive employment of the combined-arms team is essential.

Organization

A typical tank battalion consists of four tank companies, a headquarters and service company (H&S Co), one antitank (tube-launched, optically tracked, wire-command link guided missile [TOW]) platoon, and one scout platoon (see fig. 1-1). The tank companies are the basic tactical unit with which the battalion accomplishes its mission. The antitank platoon provides anti-mechanized support to the battalion. The battalion scout platoon performs reconnaissance, provides limited security, and assists in controlling movement of the battalion. Each tank battalion has 58 M1A1 tanks, 26 TOW weapons systems, 4 armored vehicle-launched bridges (AVLBs) with 8 bridges, and 6 M88A1 tank recovery vehicles.

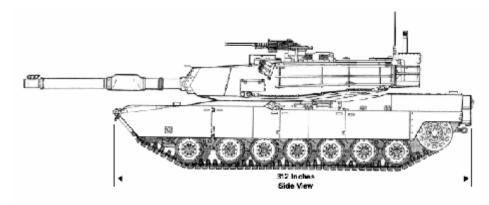
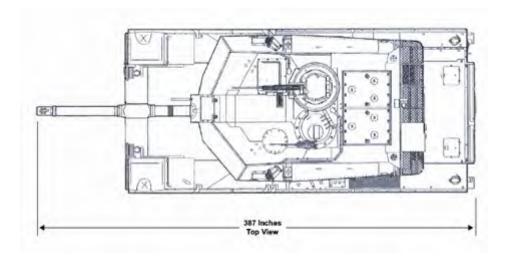
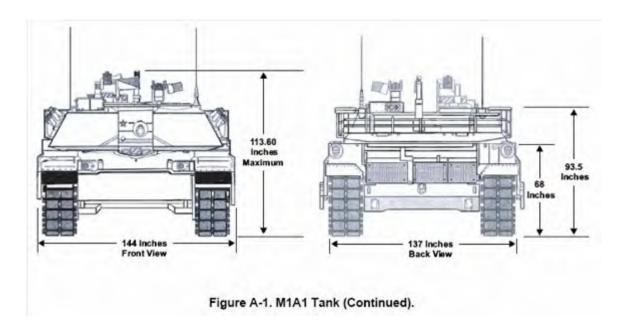
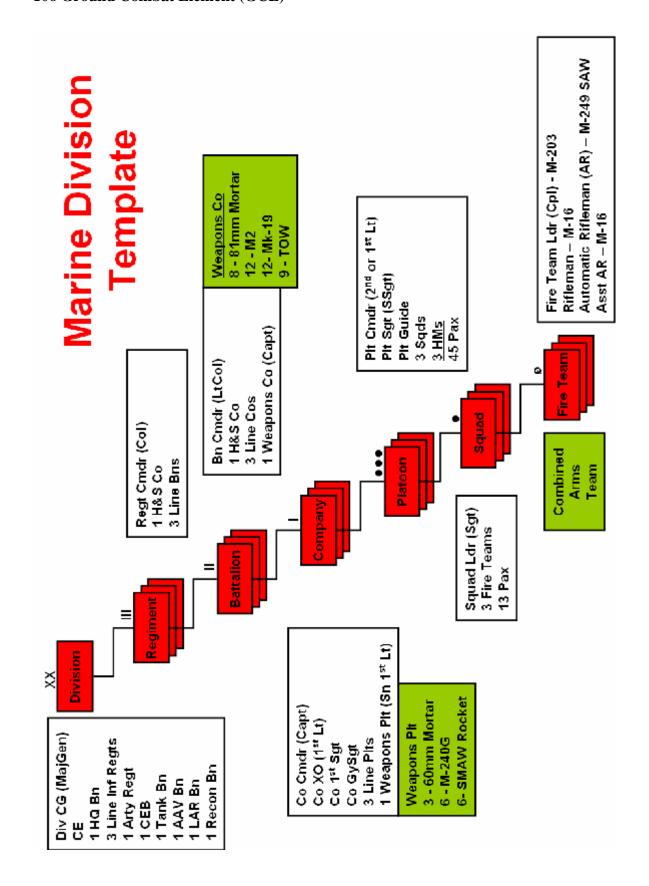


Figure A-1. M1A1 Tank.







107 LOGISTICS COMBAT ELEMENT (LCE) FUNDAMENTALS

References:

- a. MCWP 4-11, Tactical Level Logistics
- b. MCRP 5-12D, Organization of Marine Corps Forces (PCN 14400005000)
- c. TM 11240-15/4B, Motor Transportation Technical Characteristics Manual
- d. MCWP 4-12, Marine Corps Operations Level Logistics
- e. MCWP 4-1, Logistics Operations (PCN 14300005800)
- f. MCWP 4-6, MAGTF Supply Operations
- g. TM 09109A-10/1, High Speed High Mobility Crane Operators Manual
- h. TM-09276A-24/2, Truck Forklift Variable Reach Service Manual

107.1 Explain the mission of the Marine Logistics Group (MLG).

Mission

The MLG (formally known as FSSG) <u>provides general and direct support and sustained combat logistics above the organic capabilities</u> of supported elements. Sustains the MAGTF in the functional areas of combat logistics during deployment and employment of the MEF and smaller, geographically separated MAGTFs in all levels of conflict.

107.2 Explain how an MLG is employed.

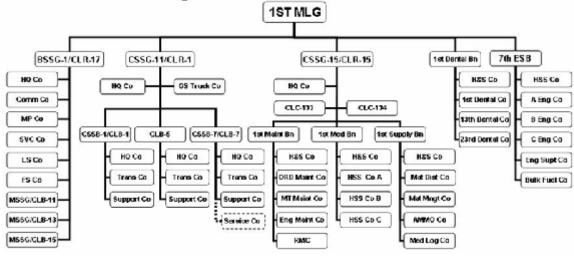
- Provide centralized ground supply support, beyond supported units' organic capabilities, for the sustainment of the MEF, including procurement, storage, care in storage, distribution, salvage, disposal, and bulk fuel and water supply support.
- Provide authorized overflow organizational (2d echelon) and intermediate (3d and 4th echelon) maintenance support, beyond supported units' organic capabilities, for Marine Corps-furnished ground equipment of the MEF, including inspection, classification, servicing, adjustment, tuning, testing, calibration, repair, modification, rebuilding overhaul, reclamation, recovery assistance, and evacuation.
- Coordinate transportation and throughput support, beyond supported units' organic capabilities, for the deployment and employment of the MEF, including embarkation, landing support, port and terminal operations, motor transport, air delivery, and freight/passenger transportation support.
- Provide general engineering support to the MEF, including engineering reconnaissance; horizontal construction of roads, combat logistics installations, and other support facilities; vertical construction and maintenance of encampment and other personnel support facilities; emplacement of standard and nonstandard bridging and rafting; demolition

107 Logistic Combat Element

- and obstacle removal; augmentation for tasks beyond the organic engineering capabilities of supported units; and explosive ordnance disposal (EOD).
- Provide health service (medical and dental) support, beyond the supported units' organic capabilities, to the MEF, including health maintenance, patient collection and treatment, temporary hospitalization, patient regulation and evacuation, disease control, hygienic services, and a comprehensive dental program.
- Coordinate services support, beyond supported units' organic capabilities for the MEF, including security support, postal, disbursing, and exchange services; legal services (including active duty nucleus capability for CA); combat logistics-related CA support; and graves registration.

107.3 Name the battalions/groups/regiments in an MLG.

MLG Organizational Structure



- Combat Logistics Regiments
- Combat Logistics Battalions
- Dental Battalion
- Engineer Support Battalion
- Medical Battalion
- Maintenance Battalion
- Supply Battalion

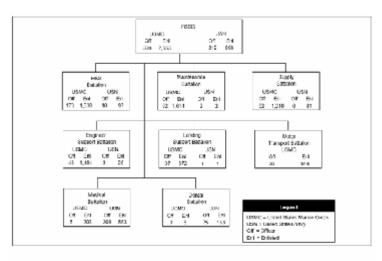


Figure 5-1a, FSSG Organization.

Concept of Organization

The MLG is a permanently structured command that constitutes the Logistics Combat Element (LCE) of the MEF. When manned and equipped at full T/O and T/E levels, the MLG can support a MEF, or three MEUs simultaneously, or a combination of various smaller LCEs, MEU Combat Logistics Battalions (CLBs) in support of MAGTF operations below MEF level. It is capable of providing the CE nucleus for three LCEs to support MAGTFs. The MLG includes three Combat Logistics Regiments (Direct and General Support), Dental Battalion, Medical Battalion, Maintenance Battalion, Supply Battalion and an Engineer Support Battalion. Each possess an H&S Company for command and control and seven permanently organized battalions that provide logistics and combat logistics along functional area lines. Similar functions are generally centralized at the battalion level to facilitate command and control, coordination of taskings and training, and maintenance of equipment. Within the limits of their capabilities, each battalion provides personnel and equipment to source task-organized CLEs that are established to support MAGTFs.

Command and Control.

The MLG commander exercises command and control of the MLG through the general/special staff and subordinate commanders by using organic communications assets. This system permits the MLG commander to structure organizations, assign appropriate missions and tasks, and establish appropriate command relationships that enhance efforts to achieve centralized control while facilitating decentralized execution of Combat Logistics tasks. When required, the MLG commander task organizes CLEs from the assets of the functional battalions. The mission and composition of supported MAGTFs dictate the type, size, and composition of the supporting CLEs.

Firepower.

Organic firepower capability is limited to individual and crew-served weapons. The MLG must rely on other MEF elements for artillery, NGF, and aviation fire support, including fire support coordination capabilities.

Mobility.

Organic medium- and heavy-lift vehicles can displace the MLG in echelons. Use of organic transportation to move the MLG degrades its ability to provide simultaneous transportation support to the MEF.

Communications.

The MLG possesses sufficient organic communications capabilities to install, operate, and maintain communications systems for internal and limited external communications requirements.

107 Logistic Combat Element

Intelligence.

The organic intelligence gathering and processing capabilities of the MLG are limited. They include limited tactical and logistical intelligence support for the MLG CE and organic battalions.

Security.

The MLG is responsible for the local security of established combat logistics installations against ground attack and employs passive defense measures against other forms of attack. When tasked by the MEF commander, it also coordinates security within the MEF rear area. Antiair and antimechanized rear area security requirements must be satisfied by other elements of the MEF. Within its capability, the MLG provides security for lines of communications in the MEF rear area used by the MLG in transporting supplies, equipment, and personnel. It coordinates security requirements with supported units for such movements within the supported units' areas of responsibility.

107.4 What is the Combat Logistics Element (CLE) of a Marine Expeditionary Unit (Special Operations Capable) (MEU (SOC))?

The Combat Logistic Battalion (CLB) is the CLE for the MEU. The MLG provides CLBs with the necessary personnel and equipment to accomplish their missions. The CLBs provide the MEU with the following combat logistics:

- Supply support.
- Maintenance support.
- Transportation support.
- Deliberate engineering support.
- Medical and dental services.
- Automated information processing support.
- Utilities support.
- Landing support (port and airfield support operations).
- Disbursing services.
- Legal services.
- Postal services.
- Accompanying supplies (classes I, II, III[B], IV, V[W], and IX) necessary to support the MEU for 15 days

Concept of Employment

The MLG provides sustained combat logistics to each element of the MEF in the functional areas of combat logistics beyond the organic capabilities of supported units. It provides LCEs to smaller MAGTFs that may be permanently organized or task organized for specific missions. When supporting a task organized force that is greater than the combined assets of one division and one aircraft wing, the MLG may require augmentation for requirements beyond its organic capabilities. To provide the necessary throughput support to the MEF, the MLG establishes, as

required, beach support areas, landing zone support areas, LCE areas (LCEAs), a force LCEA (FLCEA), and other LCE installations commensurate with the level of operations to ensure responsive, timely support for the sustainment of the MEF.

107.5 What is the LCE of a Marine Expeditionary Brigade (MEB)?

The CLR is the LCE for the MEB. The MLG provides LCEs with the necessary personnel and equipment to accomplish their missions. The LCEs provide the MEB with the following LCE:

- Supply support.
- Maintenance support.
- Transportation support.
- Deliberate engineering support.
- Medical and dental services.
- Automated information processing support.
- Utilities support.
- Landing support (port and airfield support operations).
- Disbursing services.
- Legal services.
- Postal services.
- Accompanying supplies (classes I, II, III[B], IV, V[W], and IX) necessary to support the MEB for 30 days.

107.6 What is the LCE of a Marine Expeditionary Force (MEF)?

The LCE for a MEF is a MLG

107.7 State the six functional areas of combat logistics element (LCE).

Marine Corps tactical-level logistics encompasses all of the logistic support activities performed at the tactical-level of war, to include combat service support. Tactical logistics is normally categorized in six functional areas: **supply, maintenance, transportation, general engineering, health services, and services**.

Table 1-1. Functions and Subfunctions of Tactical Logistics.

Supply	Maintenance	Transportation
Determination of requirements	Inspection and classification	Embarkation
Procurement	Service, adjustment, and tuning	Landing support
Storage	Testing and calibration	Port and terminal operations
Distribution	Repair	Motor transport
Salvage	Modification	Air delivery
Disposal	Rebuilding and overhaul	Freight/passenger transportation
	Reclamation	Materials handling equipment
	Recovery and evacuation	
General Engineering	Health Services	Services
Engineer reconnaissance	Health maintenanœ	Command services:
Horizontal/vertical construction	Casualty collection	ı Personnel administration
Facilities maintenance	Casualty treatment	ı Religious ministries support
Demolition and obstacle removal	Temporary casualty holding	ı Financial management
Explosive ordnance disposal	Casualty evacuation	ı Communications
Bridging		ı Billeting
		ı Messing
		ı Band
		ı Morale, welfare, and recreation
		CSS services:
		ı Disbursing
		ı Postal services
		ı Exchange services
		ı Security support
		ı Legal services support
		ı Civil affairs support
		ı Graves registration

107.8 Define War Reserve Material (WRM).

War Materiel Support

The MEF can deploy with sufficient equipment and supplies to support up to 60 days of contingency operations. This 60-day level of support provides reasonable assurance that the employed force can be self-sustaining until resupply channels are established, regardless of the area of operations or its logistics infrastructure. The MAGTF ACE can deploy with sufficient equipment and supplies to support up to 90 days of contingency operations. The ACE maintains various supplies and equipment to support aviation units in contingency response. This inherent sustainability of Marine Corps forces is made necessary by, and is characteristic of, naval expeditionary operations. The manner in which materiel support is planned and positioned considers both the organizational structure and

employment doctrine of the MAGTF and the availability and responsiveness of access to stocks of war reserve materiel (WRM), which is maintained in accordance with DOD policy.

War Reserve Material (WRM) is defined as mission-essential principal end items, secondary items, and munitions required to attain operational objectives in the scenarios authorized for sustainability planning and other stockage objectives approved for programming in the Defense Planning Guidance. WRM inventories are acquired during peacetime. These inventories are flexible, and they provide an expansion capability that can respond to spectrum regional contingencies, while minimizing investment in resources.

The Marine Corps attempts to satisfy the WRM requirement by first using peacetime operating stocks possessed by the Marine Corps or the DOD. To satisfy remaining requirements, the Marine Corps relies on the U.S. industrial base and host nation support. Finally, the Marine Corps stocks assets to meet WRM requirements only when other, less resource-intensive alternatives prove infeasible.

MAGTFs will deploy with sustainment drawn from WRM stocks, which are inventories that are accumulated based on the war materiel requirement. These inventories may not exactly equal the war materiel requirement because of funding constraints. Figure 2-7 depicts the sourcing of war materiel in support of a MAGTF.

Peacetime Force Materiel Stocks.

Peacetime force materiel stocks are on-hand inventories that support day-to-day operational and training requirements of the operating forces and the Marine Corps Reserve.

War Materiel Procurement Capability.

War materiel procurement capability is the quantity of an item that can be ordered on D-day or after the day an operation commences. Sources can include industry or other available sources; e.g., host nations.

War Reserve Materiel Stocks.

WRM stocks consist of two portions: field and inventory control. WRM stocks (field) is the portion of the war reserve material stocks held by the operating forces. WRM stocks (inventory control point) is the portion of the WRM stocks held at the wholesale level at Marine Corps logistics bases or in the

107.9 Discuss the differences between echelons of maintenance performed at organizational and intermediate ground equipment maintenance.

Organizational maintenance

That maintenance that is the responsibility of and performed by a using organization on its assigned equipment. Its phases normally consist of inspecting, servicing, lubricating, and adjusting, as well as the replacing of parts, minor assemblies, and subassemblies.

Intermediate maintenance (field)

Maintenance that is the responsibility of and performed by designated maintenance activities for direct support of using organizations. Its phases normally consist of:

- o a. calibration, repair, or replacement of damaged or unserviceable parts, components, or assemblies;
- o b. the emergency manufacture of non-available parts; and
- o c. providing technical assistance to using organizations

Depot maintenance

That maintenance performed on materiel requiring major overhaul or a complete rebuild of parts, assemblies, subassemblies, and end-items, including the manufacture of parts, modifications, testing, and reclamation as required. Depot maintenance serves to support lower categories of maintenance by providing technical assistance and performing that maintenance beyond their responsibility. Depot maintenance provides stocks of serviceable equipment by using more extensive facilities for repair than are available in lower level maintenance activities.

Table 1-3. Levels and Echelons of Ground Equipment

Maintenance.

Levels of Maintenance.

Echelons of Main

Levels of Maintenance	Echelons of Maintenance ¹	
Organizational —Authorized at, performed by, and the responsibility of the using unit. Consists of cleaning, servicing, inspecting, lubricating, adjusting, and minor	First—Limited action performed by crew or operator as prescribed by applicable manuals.	
repair.	Second —Limited action above the operator level performed by specialist personnel in the using unit.	
Intermediate—Performed by designated agencies in support of the using unit or, for certain items of equip- ment, by specially authorized using units. Includes	Third —Component replacement usually per- formed by specially trained personnel in owning or CSS units.	
repair of subassemblies, assemblies, and major end items for return to lower echelons or to supply channels.	Fourth —Component and end item overhaul and rebuilding performed by CSS units at semipermanent or fixed sites.	
Depot —Major overhaul and complete repuilding of parts, subassemblies, assemblies, and end items.	Fifth—End item overhaul and rebuilding per- formed by industrial-type activities using production line techniques, programs, and schedules.	

107.10 Explain the purpose and characteristics of the following support vehicles:

7-ton/Medium Tactical Vehicle Replacement (MTVR)



The MK23/MK25 Cargo variant of the MTVR family will replace the M813A1, M923A1, M923A2, M925, M925A1, M813 with ISO Bed and the M923 with ISO Bed. These trucks use state of the art commercial technology including an independent suspension system, electronically controlled engine and transmission and a central tire inflation system, which increases the off-road maneuverability and mobility of the vehicle. The difference between the MK23 and MK25 is that the MK25 has a 20,000 pound capacity self-recovery winch. The MK23/MK25 is a 7-ton, 6x6 designed for use on all types of roads, highways and cross-country terrain. It is capable of traversing a 60 percent gradient, a 30 percent side slope up to 15 mph and a 40 percent side slope at 5 mph. It is capable of fording 60 inches of water and has an on-road cruising range of 300 miles. The MK23/MK25 variants are capable of being transported by highway, rail, sea and air.

Manufacturer: OSHKOSH Truck Corporation

Varients include:

- Mk 23 (short bed ie 16 feet without winch) this is the most basic version
- Mk 25 (short bed, with winch)
- Mk 27 (extended bed ie 20 feet without winch)
- Mk 28 (extended bed, with winch)
- Mk 29 (dump truck variant without winch)
- Mk 30 (dump truck variant with winch)
- Mk 36 (wrecker variant)

TECHNICAL CHARACTERISTICS

Operating Mode Shipping Mode

Weight: 27,000 lbs.Length: 315 inWidth: 98 in

Height: 142 in 100 inSquare: 215 ft2

• Cube: 2,537 ft3 1,786 ft3

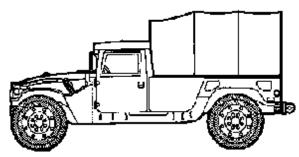
Fuel Capacity: 78 gallons Fuel consumption: 4.5 mpg

High Mobility Multipurpose Wheeled Vehicle (HMMWV)



The M998, M998A1, M1038 and M1038A1 HMMWVs are cargo/troop carrier onfigurations of the HMMWV family. The vehicles are equipped with basic armor and used to transport equipment, materials, and/or personnel.

The cargo carrier configuration is capable of transporting a payload (including crew) of 2,500 pounds and the troop carrier is capable of transporting a two man crew and eight passengers. Both use a troop seat kit for troop transport operations. The cargo/troop carrier can also be configured in a four man crew configuration. The vehicles can climb 60% slopes and traverse a side slope of up to 40% fully loaded. The vehicles can ford hard bottom water crossing up to 30 inches without a deep water fording kit and up to 60 inches with the kit. The M1038, M1038A1 are equipped with the self-recovery winch which can also be used to recover like systems. The M998A1 and M1038A1 models have the latest modifications applied to the vehicles.



The M1097 and M1097A1 HMMWVs are higher payload capacity cargo/troop carrier configurations of the HMMWV family. The vehicles are equipped with basic armor and used to transport equipment, materials, and/or personnel, like the

M998/M1038 series, except with a higher payload capacity. The cargo carrier is capable of transporting a payload (including crew) of 4,575 pounds and the troop carrier is capable of transporting a two man crew and eight passengers. Both use a troop seat kit for troop transport operations, a 200 ampere umbilical power cable to power shelter equipment, and stowage racks for ammunition and equipment. To accommodate the higher payload capacity, the vehicles are equipped with a reinforced frame, crossmembers, lifting shackles, heavy duty rear springs, shock

absorbers, reinforced control arms, heavy duty tires and rims, and a transfer case and differential with modified gear ratio. The vehicles can climb 60% slopes and traverse a side slope of up to 40% fully loaded. The vehicles can ford hard bottom water crossing up to 30 inches without a deep water fording kit and up to 60 inches with the kit. The M1097A1 is equipped with the self-recovery winch which can also be used to recover like systems and has the latest modifications applied to the vehicle.



The M1025, M1025A1, M1026 and M1026A1 HMMWVs are Armament Carrier configurations of the HMMWV family. The vehicles are equipped with basic armor and the weapon mount, located on the roof of the vehicle, is adaptable to mount either the M60, 7.62mm machine gun; M2 .50 caliber machine gun; or the MK 19 Grenade

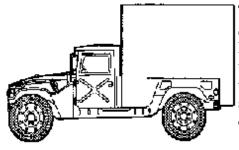
Launcher. The weapons platform can be traversed 360 degrees. The vehicles can climb 60% slopes and traverse a side slope of up to 40% fully loaded. The vehicles can ford hard bottom water crossing up to 30 inches without a deep water fording kit and up to 60 inches with the kit. The M1026/M1026A1 are equipped with the self-recovery winch which can also be used to recover like systems. The M1025A1 and M1026A1 models have the latest modifications applied to the





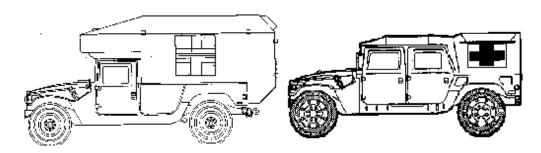
The M1043, M1043A1, M1044, and M1044A1 HMMWVs are Armament Carrier configurations of the HMMWV family. The vehicles are equipped with supplemental armor and the weapon mount, located on the roof of the vehicle, is adaptable to mount either the M60,

7.62mm machine gun; M2 .50 caliber machine gun; or the MK 19 Grenade Launcher. The weapons platform can be traversed 360 degrees. The vehicles can climb 60% slopes and traverse a side slope of up to 40% fully loaded. The vehicles can ford hard bottom water crossing up to 30 inches without a deep water fording kit and up to 60 inches with the kit. The M1044/M1044A1 are equipped with the self-recovery winch which can also be used to recover like systems. The M1043A1 and M1044A1 models have the latest modifications applied to the vehicles.

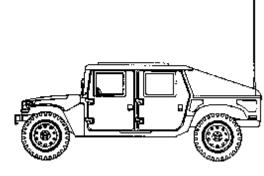


The M1037 and M1042 HMMWVs are Shelter Carrier configurations of the HMMWV family. The vehicle are equipped with basic armor and used to secure and transport the S250 electrical equipment shelter with a total payload (including crew) of 3,600 pounds. The vehicles can climb

60% slopes and traverse a side slope of up to 40% fully loaded. The vehicles can ford hard bottom water crossing up to 30 inches without a deep water fording kit and up to 60 inches with the kit. The M1042 is equipped with the self-recovery winch which can also be used to recover like systems



The M996, M996A1, M997, M997A1, M1035 and M1035A1 HMMWVs are theAmbulance configuration of the HMMWV family. The vehicles are equipped with basic armor and used to transport casualties from the battlefield to the medical aid stations. The M996/M996A1 are designated as Mini-Ambulances and can transport up to 2 litter patients, 6 ambulatory patients or a combination of litter and ambulatory patients. The M997/M997A1 are designated as Maxi-Ambulances and can transport up to 4 litter patients, 8 ambulatory patients, or a combination of litter and ambulatory patients. The M1035/M1035A1 are soft-top Ambulances and can transport up to 2 litter patients. The vehicles can climb 60% slopes and traverse a side slope of up to 40% fully loaded. The vehicles can ford hard bottom water crossing up to 30 inches without a deep water fording kit and up to 60 inches with the kit. These configurations of the HMMWV are not equipped with the self-recovery winch. The M996A1, M997A1 and M1035A1 models have the latest modifications applied to the vehicles.



The M1109 and M1114 HMMWVs are an Up-Armored Armament Carrier configuration of the HMMWV family. The vehicles are equipped with additional armor both on the sides and underneath to protect the crew from small arms ammunition and mines. The weapon mount, located on the roof of the vehicle, is adaptable to mount either the M60, 7.62mm machine gun; M2 .50 caliber

machine gun; or the MK 19 Grenade Launcher. The weapons platform can be traversed 360 degrees. This confirguration of the HMMWV is equipped with the self-recovery winch.

Manufacturer: AM General

Dimensions:

• Length: 180 to 202" depending on model and configuration

- Height: 69" 102" Depending on model and configuration
- Width: 85"
- Vehicle Curb Weight: 7,700 lbs 9,280 lbs. Depending on model and configuration
- Ground Clearance: 16" Loaded
- Performance:
 - Maximum Speed: 55 mph Governed @ Gross Weight
 - Range: 275 337 mi.Maximum Grade: 60%
 - Side Slope: 40 deg.
 - Fording: Without Kit: 30", With Kit: 60"
- Equipment Specifications:
 - Cab: Crew Seating: 2-4 Man
 - Seat Design: Fore/Aft Adjustable
 - Steering Type: Power Assist
 - Engine: Manufacturer: General Motors, Diesel, 8-cyl, 6.5 L, Naturally Aspirated
 - Rating: 150 hp @ 3600 rpm, EPA-Certified
 - Fuel: Diesel, DF-2, JP-4, JP-8, VV-F-800
 - Cooling: Water, Radiator
 - Fan: Engine-Driven, Clutch Type
 - Transmission: Manufacturer: Allison, Fully Automatic
 - Speeds: 3 Speeds Forward/ 1 Reverse
 - Transfer: Full Time All Wheel Drive, Integral Transfer Case

c. High Speed High Mobility Crane (HSHMC)



The Crane, High Speed, High Mobility w/o Pile Driver Capability is diesel-powered, ribber tired with hydraulic boom. It is capable of all general crane operations. Clamshell, Container handling and general lifting up to 50,000 lbs. It is capable of operating over rough terrain and in 60 inches of water. The Heavy Crane attachements include: Bucket, Conrete and Bucket and Clamshell

Manufacturer: Harnishfeger Corp

Weight: 69.825 Width: 102 in

Length: 499.8 in Height: 138.9 in Cube: 4.097.8 ft Sq Storage: 354 ft

Logistic Vehicle System (LVS)

Background:

The Marine Corps fielded the heavy tactical vehicle system during the mid 1980s. The Logistics Vehicle System (LVS) is a modular system consisting of a MK48 front power unit and, originally, four interchangeable rear body units (RBU). The front power unit and rear body units are joined by a hydraulically powered articulated joint that assists in steering the vehicle and allows a degree of independent movement between the front and rear units for more mobility. The articulated joint transfers automotive power to the RBU axles and hydraulic power for any hydraulically operated equipment. The completed units are 8x8 systems with two front steering axles. The LVS has an off road payload of 12.5 tons and an on road payload of 22.5 tons. There are approximately 1800 front power units and 2200 rear body units in the Marine Corps inventory.



MK48, Front Power Unit

The MK48 Front Power Unit is an enclosed cab, diesel powered, automatic transmission, 4x4 vehicle that provides all automotive and hydraulic power for the LVS combinations.

MK14, Container Transporter Rear Body Unit

The MK14 Container Transporter Rear Body Unit is a flatbed trailer for transporting bulk cargo and standardized cargo containers. It is equipped with ISO lock points for securing 20 foot standard containers, the Marine Corps Field Logistics System (FLS) bulk liquid tanks and pump units (SIXCONS), and standard Marine Corps Expeditionary Shelter System (MCESS). The MK14 can also be equipped with a tow bar adapter kit that allows it to be tandem towed as an un-powered trailer behind a MK48/MK14 combination. The tandem tow is limited to the 12.5 ton off road payload.

MK15, Recovery / Wrecker Rear Body Unit

The MK15 Recovery/Wrecker Rear Body Unit provides a lift and tow capability and to recover disabled vehicles. The MK15 is a fully equipped wrecker designed to recover, lift and tow vehicles. Lifting is accomplished by an A-frame (32,000 lbs rating) attached to the rear of the MK15. A heavy duty rear winch (60,000 lbs rating) enables the wrecker to free mired vehicles. The wrecker is equipped with a material handling crane (9,000 lbs at 15 ft rating) used for changing power packs, and loading equipment and bulky cargo. An auxiliary hydraulic circuit on the vehicle provides power for tools and can also be used to supply another trailer (MK15, MK16, MK17, or MK18) with hydraulic power.

MK16, 5th Wheel Semi-trailer Adapter Rear Body Unit

The MK16 5th Wheel Semi-trailer Adapter Rear Body Unit is designed to move semi-trailers with loads up to 70 tons. A winch (60,000 lbs rating) mounted in front of the fifth wheel is capable of pulling a load onto a semi-trailer without using the load's own power. The MK16 has a 36-inch fifth wheel and a 3.5 inch kingpin.

MK17, Dropside Cargo Rear Body Unit

The MK17 Dropside Cargo Rear Body Unit with Material Handling Crane is a dropside bulk cargo vehicle with an integral hydraulically operated crane to provide a self loading capability. The side panels of the cargo bed can be dropped down or removed for cargo loading/unloading. The side panels also provide seating for troops. A material handling crane (9,000 lbs at 15 ft rating) at the rear of the vehicle is used to load/unload equipment and cargo. The MK48/MK17 can also tow and position the M198 Howitzer.

MK18, Self-loading Container and Ribbon Bridge Transporter

Since the initial fielding, 325 MK14s have been converted to the MK18 Self-loading Container and Ribbon Bridge Transporter. The MK18 is capable of self loading and off-loading fully loaded 20 foot standard containers and the ribbon bridge interior and ramp bays and standard bridge boat. An additional 164 MK14s will be converted during 1996 and 1997 to the MK18A1 configuration. The MK18A1 differs from the MK18 in the loading and off-loading mechanism.

Vehicle Specifications

Manufacturer: Oshkosh Truck Corporation

Dimensions:

Length: 238.5 - 456"

Width: 96"Height: 102"

Curb Weight: 24,500 lb - 50,550 lb

Payload Capacity - On Road: 20,000 -46,000 lb,

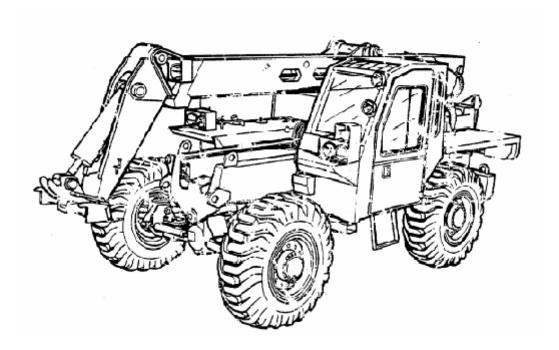
Payload Capacity - Off Road: 20,000 - 25,000 lb

• Ground Clearance: 23"

Configuration: 4x4; With Trailers 8x8

Turning Radius: 32.5 - 38.5';

Truck Forklift Variable Reach (TFVR)



Marine Truck Lift, Fork Variable Reach, Diesel engine driven, four-wheel drive, four-wheel steer, pneumatic tires, rough terrain, 10,000 pound capacity as 48" load center

Specifications

- Capacity = 10,000 pounds @ 48" load center
- Engine = John Deere 6-359T, 163 HP @ 2500 RPM
- Transmission = Funk Powershift 4 speed and reverse
- Four wheel drive
- Four wheel steer
- Width = 101"
- Width = 102"
- Wheel base = 120"
- Ground Clearance = 16.25"
- Self-leveling forks
- Frame Tilt

- Limited Slip axles
- Emergency steering
- 4 wheel disk brakes
- MAX speed 30 MPH without load
- 30" salt water fording
- 24 volt electrical system

The forklift is intended for use as a materials handling forklift with a capability of unloading, transporting, and loading boxes, containers, palletized ammunition loads, and multiple launch rocket system pods. The mobility of the forklift, with and without payload, is intended to cover working areas where high floatation and traction characteristics are required.

107.11 Explain the LCE capability of the Maritime Preposition Force (MPF).

Logistics and MPF Operations.

An MPF operation is a logistical operation because it involves deployment and preparation of the MAGTF for employment. The MAGTF mission is the focus of the MPF operation and logistics support.

Logistics capabilities are found throughout the phases of a MPF Operations as discussed in section 102.

Planning the logistics support of an MPF operation must be comprehensive, and it must thoroughly address the multifaceted character of the operation to include—

- o Marshaling and moving to ports of embarkation (deployment support operations).
- o Coordinating interrelated air and sea movements l Arriving and receiving in the arrival and assembly area.
- o Preparing and distributing maritime prepositioned equipment and supplies.
- o Supporting future tactical operations.

A critical goal in MPF logistics planning is to use existing logistics systems and infrastructure as much as possible. Use of existing host nation support and inter-Service support by all elements of the MPF is encouraged during the MPF operation. Planning must focus on providing continuous support for the duration of the MPF operation and

subsequent MAGTF operations. Plans to support an MPF operation must be consistent with plans to support subsequent operations.

Facilities for off-loading include beaches, ports, arrival and tactical airfields, and assembly areas. These facilities must be in close proximity to each other, they must be able to accommodate MPS and strategic-lift aircraft, they must have sufficient capacity to handle the MPF off-load, and they must have all-weather capability.

The sequence and flow of airlifted and flight ferry elements are key variables. The fly-in echelon includes selected supplies and equipment not prepositioned but required during the first 30 days of operations. The sequencing of the fly-in echelon should provide the planner flexibility to deploy critical supplies and equipment to the area of operation as needed.

The MPF is divided into two movement groups based on deployment mode: sea or air. The sea movement group is divided into movement elements that deploy from the same Sea Port of Embarkation (SPOE) at approximately the same time. The air movement group (collectively called FIE) is divided into elements that deploy from different Airial Port of Embarkations (APOEs) at different times (see fig. 6-1).

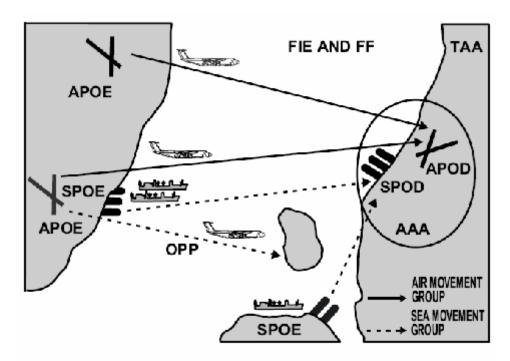


Figure 6-1. Movement Concept.

Sea Movement Group Elements

The MPSRON will move as directed by the fleet commander. Movement should accommodate the earliest possible embarkation of the OPP. The MPSRON will rendezvous with escorts (if assigned) and transit to the AAA. TAV-B and follow-up shipping will proceed as directed (see app N for MPSRON capabilities and characteristics).

OPP

The Off Load Prepration Partyt (OPP) initially deploys by air but arrives in the AAA as part of the sea movement group aboard the MPSRON (see ch. 7 for OPP functions; app. I for the OPP checklist; and app. O for a notional OPP table of organization [T/O]).

The OPP is a temporary task organization under the OPCON of the MAGTF commander. It consists of maintenance, embarkation personnel, and equipment operators from all MAGTF MSEs and the NSE. The OPP's task is to prepare MPE/S for offload at the AAA. On activation, the OPP will deploy to join the MPS before sailing, during transit or when they arrive at the AAA. Ideally, the OPP should deploy to join the MPS at least 96 hours before AAA closure. If this is not feasible, the OPP should be positioned in the AAA and board the MPS as soon as possible.

The OPP consists of personnel from the MAGTF, NSE, naval embarked advisory team (NEAT), and designated force protection units. The OPP is embarked on the MPSRON by off-load day (O-day) minus 4 (O-4).

The OPP disestablishes upon arrival of MPSs and on completion of offload preparations. Members remain aboard to form the nucleus of the debarkation team, augmented as required by MAGTF and NSE personnel who arrive with the FIE.

Follow-Up and Sustainment Shipping

Follow-up shipping provides lift for additional critical items that are not in the MPS PO and could not be lifted as part of the FIE. Depending on the length of the MPF MAGTF employment mission, sustainment shipping will be coordinated to provide all classes of supply past the 30 days aboard the MPSRON.

Air Movement Group Elements(FIE Organization)

Air movement is a continuous, progressive operation that transports successive elements of the deploying force to the objective area.

The total time required will depend on the number, type, and initial locations of forces to deploy, aircraft availability, range, and throughput considerations. Some critical low density/high demand and other sustainment items may be shipped by air.

Survey, Liaison, and Reconnaissance Party (SLRP)

A task organization formed from the MAGTF and Navy support element, which is introduced into the objective area prior to arrival of the fly-in echelon. The survey, liaison, and reconnaissance party conducts initial reconnaissance, establishes liaison with in theater authorities and initiates preparations for arrival of the main body of the FIE and the maritime prepositioning ships squadron

The SLRP normally deploys to the AAA under the OPCON of the MAGTF. Early SLRP deployment assesses conditions and reports observations as soon as possible to the MAGTF and associated

commanders. SLRP composition is taskorganized after the warning order is received and the concept for deployment is developed. The SLRP must be self-sustaining and include, as appropriate, representation from the MAGTF, CMPF, NCW, NMCB, UCT, FH, and CNSE staffs. A MAGTF officer will be designated, in coordination with CMPF (if designated), as the SLRP OIC. Criteria for selecting the SLRP OIC should be based on a knowledge of MPF requirements with consideration given to the diplomatic skills needed to interact with high level HN civilian and military representatives.

Advance Party

The advance party consists of personnel designated to deploy before the main body to form the AAOG, LFSP, the remainder of the NSE (those not deployed in the OPP or SLRP), and the AAOEs. The CMPF and the MAGTF commander task-organize the advance party. Primary tasks are to arrange for the reception of the main body, offload the MPSRON, and distribute MPE/S. It may also include the CEs of the MAGTF and CMPF.

Movement Control Organizations

A movement control organization is required to provide unity of effort and support the interface with the JOPES. Sea movements are planned and executed by the fleet in accordance with their normal movement control procedures. COMMARFOR, as the primary user of airlift, is responsible for coordinating the air movement. Consequently, the CMPF coordinates with the MAGTF commander for marshalling and movement of USN personnel by air. Coordination for air movement is made directly with Commander, USTRANSCOM and other supporting agencies. Reports of the movement are made through normal chains of command keeping all commands informed (see fig. 6-2).

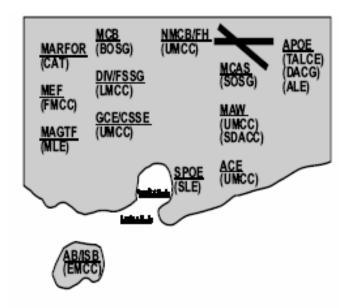


Figure 6-2. Movement Control Organizations.

FMCC

The FMCC is the MEF commander's principal movement control organization responsible for movement and marshalling support. Through coordination with AMC, the FMCC promulgates the air movement schedule with the parent commands that execute the marshalling activities of the FIE. The FMCC will coordinate directly with MSC and NCC on movement of the MPSRON.

LMCC

LMCCs are organized from the MLGs/LCEs or the supporting establishment in geographic proximity to the marshalling units. LMCCs are tasked by the FMCC to provide organic/commercial transportation, transportation scheduling, MHE, and any other logistics support required by the parent commands during marshalling. LMCCs (MLGs/ LCEs) will provide a DACG for the APOE as directed by the FMCC.

DACG

DACGs are the primary interface with the AMC TALCE at APOEs. A DACG is responsible for receiving deploying equipment and personnel from the units at the APOE, coordinating with the TALCE to ensure that the cargo and personnel are properly prepared for air shipment, and delivering cargo to the ready line.

AACG

AACGs are the primary interface with the AMC TALCE at APODs. An AACG is responsible for receiving and moving personnel, equipment, and supplies from the aircraft flight line to initial staging areas.

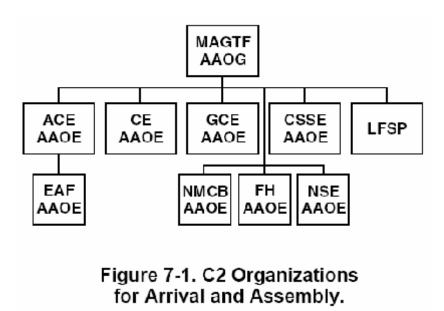
ARRIVAL AND ASSEMBLY

Arrival and Assembly Plan

Annex S of the Joint Operation Order, as applied to MPF operations, will contain the arrival and assembly plan. This annex is written by the MAGTF commander, in coordination with the CMPF, and approved by the establishing authority (see app. C for the arrival and assembly plan notional format).

Arrival and Assembly Operations Group

The AAOG's function is to coordinate and control arrival and assembly operations. It consists of personnel from all MAGTF elements plus liaison from the CNSE, FH, and NMCB (see fig. 7-1).



Responsibilities include:

- Monitor the airflow of the FIE into the AAA.
- Coordinate and monitor the throughput and distribution of MPE/S from the MPS to the UAAs, specifically the AAOEs within those areas.
- Coordinate the association of MPE/S with designated organizations.
- Provide initial C2 functions for the MAGTF in the AAA.
- Direct and coordinate AAOE operations.
- Provide direction, coordinate, and interface with the LFSP and ACO until the respective MAGTF elements assume responsibility for those functions.
- Publish the daily SITREP
- Coordinate with HN for support of offload and throughput operations.
- Prioritize resources for offload and throughput of MPE/S to AAOEs.

Arrival and Assembly Area (AAA)

An area identified by the designated commander in coordination with the unified commander and host nation for arrival, offload, and assembly of

forces and equipment and supplies, and preparations for subsequent operations. The arrival and assembly area is administrative in nature and does not denote command of a geographic area. Such an area may be inside an amphibious objective area. Within the arrival and assembly area, coordination authority for the following is implied for the designated commander: prioritization and use of airfiled(s), port, beach facilities, road networks; air traffic control; and logistics support activities.

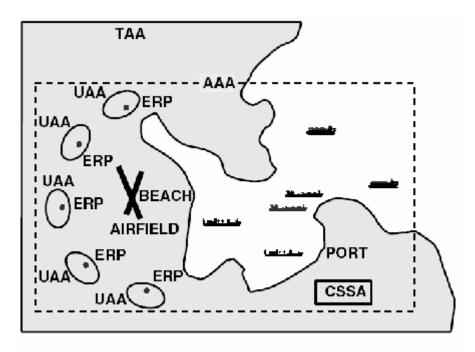


Figure 7-6. AAA.

AAOE - Arrival and Assembly Operations Element

A command and control agency in each MAGTF element and the Navy support element that coordinates the logistics functions of the offload of maritime prepositioning equipment and supplies and the arrival and assembly of forces in the unit assembly area (UAA). UAAs are geographic locations for the reception and employment preparation of MSE/NSE MPE/S.

Each element within the MAGTF and NSE establishes an AAOE to perform the following tasks:

- Provide initial C2 activities within their assembly area until arrival of the element commander.
- Obtain receipts for MPE/S and verify items with the AAOG.
- Distribute MPE/S to unit equipment reception points (ERPs) per the MAGTF commander's distribution plan.
- Provide liaison with the AAOG.
- Coordinate security in UAAs.

- Oversee preparations for combat.
- Provide throughput reports to the AAOG as directed in the arrival and assembly plan.

ACO

The airfield coordination officer (ACO) is designated by the MAGTF commander under the cognizance of the ACE, and acts as the single point of contact for host nation support and other support peculiar to aviation operations at the airfields. Non-AMC support requirements identified by the TALCE ADVON will be coordinated through the ACO. The ACO should be a member of the SLRP to facilitate early airfield operational planning. Functions coordinated by the ACO follow:

- Ramp allocation and aircraft parking.
- ATC.
- Fuel storage and dispensing.
- Aircraft rescue and fire fighting (ARFF).
- Allocation of facilities and real estate.
- Flight clearance.
- Airfield improvement.
- NAVAIDS.
- Arresting gear.
- Airfield lighting.
- Interface with the AACG.

LFSP (MPS Operations)

The LFSP is a task-organized unit composed primarily of personnel and equipment from the LCE. The headquarters is usually sourced from that MLG's CLR or CLBs and NSE augmented by other MAGTF elements. The LFSP controls throughput of personnel and MPE/S at the port, beach, and airfield. The LFSP falls under the OPCON of the AAOG OIC

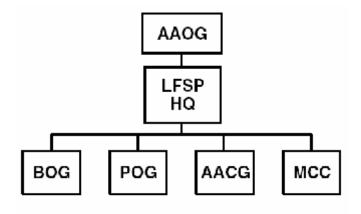


Figure 7-2. LFSP Organization.

The four principal throughput organizations of the LFSP follow:

- Port operations group (POG).
- Beach operations group (BOG).
- AACG.
- MCC.

POG

The POG is task-organized from the CLR or CLB and the Navy cargo handling force (NCHF). The POG may be retained after arrival and assembly for the offload of follow-up or sustainment shipping and for retrograde of damaged equipment. It prepares the port before the MPS arrives and the throughput of

MPE/S as they are offloaded. The POG operates under the overall direction of the LFSP and in coordination with the ship's debarkation officer (see fig. 7-3).

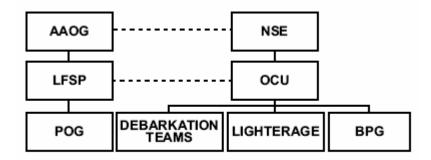


Figure 7-3. Pier Side Offload Organization.

Functions follow:

Establish overflow areas for MPE/S.

- Provide surge vehicle operators.
- Establish communications with the LFSP and ship's debarkation officer.
- Establish liaison with HN port authorities for operations and MHE, longshoreman support, and dunnage.
- Provide MHE support including shore-based cranes, forklifts, tractors, dollies or lighting.
- Assist NCHF detachments in ship offload as directed and transport cargo to overflow areas.
- Establish bulk fuel/water reception and transfer facilities as directed.
- Be prepared to continue port operations for follow-up shipping.

BOG

The BOG is task-organized from CLR or CLB and the NSE. It operates under the overall direction of the LFSP and in coordination with the Offload Control Unit (OCU) (see fig. 7-4). It may be retained after the arrival and assembly for the offload of follow-up or sustainment shipping. Functions of the BOG and associated NSE BPTs follow:

- Provide the beach area C2 for MPE/S throughput.
- Organize and develop the beach area to support the MPE/S throughput, including designating and establishing overflow areas.
- Coordinate bulk liquids' transfer.

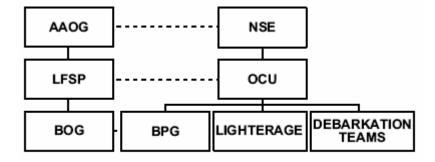


Figure 7-4. Instream Offload Organization.

- Offload lighterage at the beach.
- Provide direction for drivers to move vehicles from the lighterage off the beach.
- Provide surge vehicle operators.
- Prepare for follow-up operations.

AACG

The AACG is responsible for the control and coordination of the offload of airlifted units and equipment, and provides limited LCE to those units.

It is task-organized around a nucleus provided by the CLR or CLB, and is structured and manned to provide continuous operations support for multiple aircraft. Normally, the AACG will deploy with the advance party to initiate operations at the arrival airfield. The AACG is the interface between the LFSP and the TALCE at the arrival airfield (see ig. 7-5).

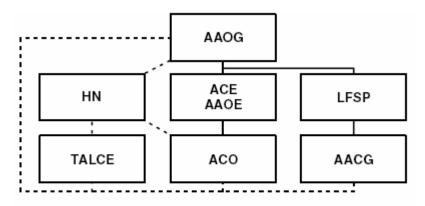


Figure 7-5. AACG Relationships.

MCC

The MCC operates under the cognizance of the LFSP and coordinates with the FMCC during unit movement, force tracking, and maneuver/convoy planning. Movement control functions consists of planning, validating, allocating, routing, managing, prioritizing, coordinating, and force tracking on all transportation issues. This may include support of reception, staging, and onward movement of forces. See JP 4-01.8, *JTTP for Joint Reception, Staging, Onward Movement, and Integration*, for more information. The MCC normally includes operations and logistics representation. Size and complexity of MPS arrival and assembly operations determine the actual structure of the MCC. MCC tasks follow:

- Plan transportation support, develop policies, provide guidance, recommend movement priorities and procedures for movement control and highway regulations guidance to the FMCC.
- Plan, coordinate, and oversee large or special movements with the FMCC.
- When delegated by the FMCC, issue convoy clearance for approved movements.
- Provide highway movement planning assistance to the FMCC to designate MSRs and establish control measures to support the MAGTF commander's CONOPS.
- Coordinate movements with the FPO to ensure appropriate security is in place.

107.12 State the responsibility of the following MLG components:

Headquarters and Service Battalion

NOTE: With the reorganization of the FSSG to the MLG, the H&S BN was broken up into Headquarters Companies under the Regiments and Battalions.

Mission

The Headquaters Companies (HQ Co's) and Headquaters and Service Companies (H&S Co's) provide command and control, administration, services, communications, and security support and coordination of services support beyond supported-unit organic capabilities to MLG.

Tasks

- Provide necessary command support functions for the MLG, including food service support to MLG organizations (except for engineering support, landing support, and medical battalions).
- Provide administrative support, including maintenance of personnel records for Navy personnel assigned to the MEF.
- Coordinate services support provided to MAGTFs, beyond organic capabilities of supported units, in the functional areas of disbursing, postal, and exchange services; legal services; and graves registration.
- Provide communications support for the CEs of the MLG, subordinate MLG organizations, and LCEs of MAGTFs.
- Provide security support to the MLG and the MEF, including battlespace circulation control, area security, EPW management, and support for the maintenance of law and order.
- Provide the nucleus staff for the coordination of marshalling and deployment support for the MEF, with necessary augmentation from supported units as required.

Maintenance Battalion

Mission

The maintenance battalion provides general support and intermediate (3d and 4th echelon) maintenance support for Marine Corps-furnished tactical ordnance, engineering, motor transport, communications electronics, and general support equipment of the MEF.

Tasks

 Provide 3d echelon maintenance on end items by means of component/subassembly replacement or repair.

- Provide intermediate (4th echelon) maintenance in support of the secondary repairable program, including repairing and rebuilding components and subassemblies of end items.
- Provide a tracked-vehicle evacuation capability.
- Provide calibration services for electronic and mechanical TMDE.
- Provide organizational (2d echelon) and intermediate (3d and 4th echelon) maintenance on end items.
- Provide technical assistance and overflow organizational (2d echelon) maintenance for supported units as directed by higher headquarters.
- Provide intermediate maintenance and modification applications on in-stock equipment.
- Provide technical inspection services, as required, in support of equipment maintenance programs of the MEF.

Supply Battalion

Mission

The supply battalion provides general support supply support, except for bulk fuel and Navy-funded stock/ programs, for sustaining MAGTF operations.

Tasks

- Provide supply support management, for the MLG and other MEF elements beyond organic capabilities of supported units, including the following stock control functions:
- Management of the MEF's special allowance training pool items and initial issue provisioning assets
- Management of the MEF's secondary repairables through the maintenance float
- Technical management, data research, customer service, and general assistance to the MEF for supply matters
- Supplying status management reports for the MEF, as required
- Interface for the MEF with financial and maintenance management systems.
- Provide contracting support and cross servicing services for supported units, as required.
- Provide a warehousing capability in support of the MEF.
- Provide accounting for classes I, II, IV, VII, VIII, and IX supplies, initial issue provisioning assets, and authorized levels of war reserve.
- Provide subsistence support to the MEF, including operation of class I subsistence dumps and storage, issue, and accounting for subsistence items.
- Provide receipt, storage, and forwarding of class III (packaged) supplies.

- Provide receipt, storage, issue, and accounting functions for class V items.
- Provide technical assistance in receipt, storage, assembly, and provision of nuclear ordnance.
- Provide for the receipt, storage, issue, and organizational (2d echelon) and intermediate (3d and 4th echelon) maintenance support for class VIII supplies and equipment.
- Provide intermediate-level shop stores issue points for the MEF.
- Provide procurement services for the MEF for items decentralized by the integrated materiel manager.
- Provide packing, preservation, and packaging (PP&P) services.

Engineer Support Battalion

Mission

The engineer support battalion provides general engineering support of an expeditionary nature to the MEF, including survivability, countermobility, and mobility enhancements; EOD; and general support supply support incident to the handling, storage, dispensing of bulk class I (water) and bulk class III and III(A) items.

Tasks

- Conduct engineering reconnaissance that is necessary to support the battalion's mission or other engineering needs of the MEF.
- Construct, improve, and maintain airfields, including expeditionary airfields.
- Construct, improve, and maintain encampments, LCEAs, and other MEF-required support facilities by using available material or preengineered structures.
- Conduct mobility enhancement operations, including the construction, improvement, and maintenance of lines of communications and main supply routes.
- Provide bulk class III and III(A) fuel support, including receipt, storage, and dispensing of bulk fuel products.
- Provide utilities support, including mobile electric power beyond supported units' capabilities and electrical power distribution within camps and LCEAs.
- Provide water purification and bulk class I (water) storage and dispensing for the MLG and other elements of the MEF when requirements exceed supported units' capabilities.
- Provide survivability enhancements, including the construction of protective structures.
- Install and/or supervise other units in the installation of standard and nonstandard, fixed-panel and floating bridging, including planning and controlling bridging operations in support of MEF mobility requirements.

- Provide bath and laundry services beyond supported units' capabilities.
- Provide EOD support, as required, to the MEF.
- Construct field-expedient deception devices.
- Conduct countermobility operations through installation of obstacles and barriers, including explosive and nonexplosive obstacles.
- Conduct mobility operations, including breaching, reducing, and removing explosive or nonexplosive obstacles.
- Provide specialized demolition operations beyond supported units' capabilities.

Medical Battalion

Mission

The medical battalion provides direct and general support medical support to the MEF.

Tasks

- Provide health care through the 2d echelon of medical care, including initial resuscitative care, resuscitative surgery, and temporary hospitalization of casualties, to the MEF.
- Provide medical regulating services for the MEF.
- Provide preventive medicine support to the MEF.
- Assist in the collection, analysis, and dissemination of medical intelligence.
- Provide the medical elements for the establishment of casualty decontamination and treatment stations.
- Provide medical support for management of mass casualties and combat stress casualties.

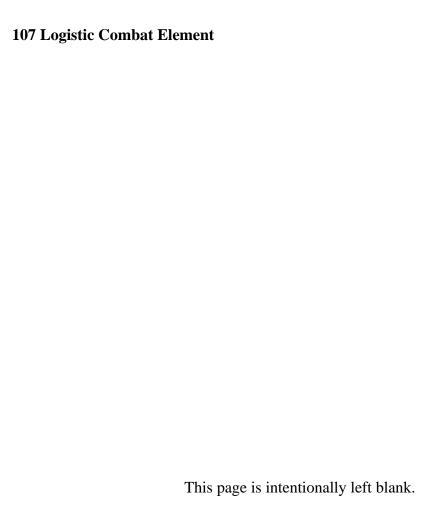
Dental Battalion

Mission

The dental battalion provides general support dental health care to the MEF.

Tasks

- Provide a comprehensive program of dental health care for the MEF
- Coordinate MEF dental health care support requirements.
- Provide dental detachments, as required, to support MAGTFs smaller than a MEF.
- Supervise implementation of dental health care delivery programs for the MEF.



Section 108 COMMAND ELEMENT (CE) FUNDAMENTALS

References

a. MCWP 6-2, MAGTF Command and Control

108.1 Discuss the function of the Command Element (CE) within the Marine Air/Ground Task Force (MAGTF).

Marine Expeditionary Force Command Element

Mission

To provide command and control of the Marine Expeditionary Force (MEF). The MEF Command Element (CE) is responsible for the command, control, direction, planning and coordination of corps-level air, ground, and logistical operations of assigned forces, normally consisting of one or more Marine divisions, Marine aircraft wings, and force service support groups, and other separate units.

Tasks

The MEF CE performs the following general functions:

- Exercises tactical direction over units assigned by the Marine component, FMF commander, naval component commander, or a joint force commander (JFC).
- Coordinate and conduct the deep, close, and rear battles throughout its designated area of operations.
- Determine the detailed composition of the force.
- Develop overall tactical plans for command and control, intelligence, maneuver, fires, logistics and force protection.
- Develop all-source intelligence and counterintelligence required.
- Plan and coordinate civil affairs, civic action matters, and militarydiplomatic operations.
- Plan, conduct, and maintain communications and information systems operations with subordinate, higher, adjacent, and joint or allied forces.
- Provide the nucleus of the Arrival Assembly Operations Group for MPF operations
- Coordinate the submission of requirements for the receipt and distribution of material resources for logistic support of assigned forces.
- Function as a joint force land, air, or maritime component headquarters when designated and when provided with appropriate augmentation from the supported unified commander and the other service components.

Organization

The MEF CE consists of:

- Command Section.
- G-1 Division (personnel and administration).
- G-2 Division (intelligence and counterintelligence).
- G-3 Division (operations and training).
- G-4 Division (logistics).
- G-5 Division (plans).
- G-6 Division (communications and information (systems).
- Surgeon
- Chaplain
- Comptroller Division.
- Communication Security Management Office.
- Special Operations Training Group.
- Staff Judge Advocate Branch.
- Public Affairs Office Branch.

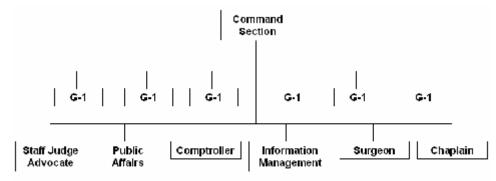


Figure 6-1 MEF Command Element

The MEF CE maintains the ability to deploy a forward warfighting CE, MEF (FWD), capable of exercising operational control of assigned and/or attached forces. The MEF (FWD) will function either as the precursor for the deployment of the entire MEF, or conduct operations of limited scope or duration, when deployment of the entire MEF is not necessary.

Concept of Employment

The size and concept of employment of a deployed MEF can vary greatly depending on the requirements of the mission. A MEF can deploy and employ not only its own units, but also units from other standing MEFs, the Marine Corps Reserve, or other Services. The MEF Command Element is capable of independent employment, but may be satellited on the headquarters of one of its major subordinate commands. It is capable of up to Corps-sized missions across the range of military operations, including amphibious assault and sustained operations ashore in any environment. In doing so, the MEF CE is capable of executing command and control of four to five Marine/joint/combined maneuver divisions

along with other major subordinate aviation, combat service support, and other commands. Normally, there is no requirement for a subordinate Marine Air-Ground Task Force CE. However, forces employed in widely separated areas may require a subordinate MAGTF CE.

Marine Expeditionary Unit, Special Operations Capable [MEU (SOC)] CE

Mission

The mission of the MEU (SOC) CE is to provide command and control to the MEU (SOC). The MEU (SOC) CE is responsible for the command and control, direction, planning, and coordination of air, ground, and logistic operations of assigned forces, consisting of a Marine battalion landing team, Marine composite squadron, MEU service support group, and other separate units.

Tasks

A MEU (SOC) CE may be tasked to conduct, and be responsible for planning and the MEU (SOC)'s execution of, the following tasks listed by four broad operational categories:

Amphibious Operations.

- Amphibious Assault
- Amphibious Raid; Amphibious Demonstration
- Amphibious Withdrawal

Direct Action Operations

- In-Extremis Hostage Recovery (IHR)
- Seizure/Recovery of Offshore Energy Facilities (GOPLAT)
- Visit, Board, Search and Seizure Operations (VBSS)
- Specialized Demolition Operations
- Tactical Recovery of Aircraft and Personnel (TRAP)
- Seizure/Recovery of Selected Personnel or Material
- Counter-Proliferation (CP) of Weapons of Mass Destruction (WMD).
- Maritime Interdiction Operation (MIO)

Military Operations Other Than War (MOOTW)

- Peace Operations (Peacekeeping and Peace Enforcement)
- Security Operations
- Non-combatant Evacuation Operations (NEO) single and multiple site
- Reinforcement Operations
- Joint/Combined Training/Instruction Team
- Humanitarian Assistance/Disaster Relief

Supporting Operations.

- Tactical Deception
- Operations; Airfield/Port Seizure
- Limited Expeditionary Airfield Operations
- Show of Force Operations
- JTF Enabling Operations
- Force Protection Operations
- Security Operations (Area and Physical Security to Embassy or Consulate-type Facility).

Organization

A MEU (SOC) CE contains the following sections:

- Command section.
- Chaplain section.
- S-1 section.
- S-2 section.
- S-3 section.
- S-4 section.
- S-6 section.
- Headquarters commandant.
- Public affairs section.

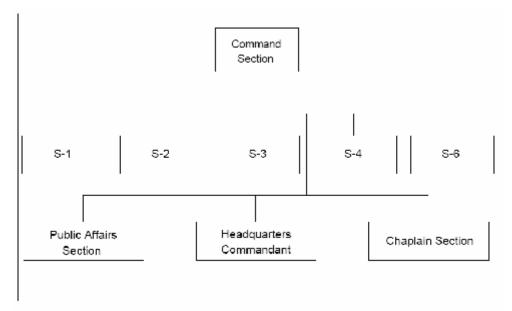


Figure 6-2. MEU (SOC) Command Element.

Concept of Employment

The MEU(SOC) CE is employed as the organic command and control element of the MEU(SOC), capable of single site or split-based operations. Additionally, the MEU(SOC) CE may be employed for a limited period as the forward/tactical C2 echelon of a joint task force headquarters or a larger MAGTF command element.

Marine Expeditionary Force (MEF) Headquarters Group (MHG)

Mission

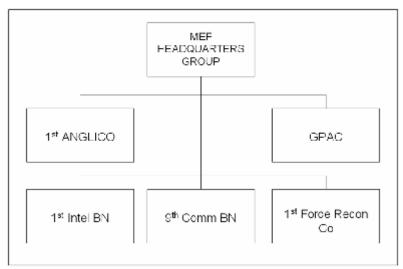
To provide administrative and service support to the MEF command element (CE) and to intelligence, counterintelligence, ground reconnaissance, communications and information systems (CIS), and liaison organizations subordinate to the MEF CE.

Tasks

- Provide administrative and service support to the MEF CE and MHG subordinate units.
- Provide headquarters commandant support to the MEF CE.

Organization

Each MEF has one MHG. MHG internal organization may vary. Each MHG will include the MEF's intelligence battalion, communication battalion, and force reconnaissance company and air/naval gunfire liaison company (ANGLICO). It is anticipated that the Marine liaison group will be subordinate to I MEF's MHG.



MEF Headquarters Group

Concept of Employment

The commander, MHG, has ADCON of MHG subordinate units. During operations the MHG or its detachments are OPCON to the supported MAGTF commander. The commander will exercise control of MHG/detachment through the respective staff section: intelligence and reconnaissance elements through the G/S-2, CIS elements through the G/S-6, and Marine liaison elements through the G/S-3. Support relationships may vary widely and will be established by the supported commander, in accordance with the situation.

Radio Battalion

The mission of the radio battalion is to provide tactical signals intelligence (SIGINT), ground-based electronic attack (EA), communications security (COMSEC) monitoring, and special intelligence (SI) communication support to the MAGTF.

Intelligence Battalion

Activated in October 1989 at Camp Pendleton, Ca, as 1st Intelligence Company, 1st Surveillance Reconnaissance Intelligence Group (SRIG), and redesigned in November 1998 as 1st Reconnaissance Battalion. The intelligence organizes, trains, and equips task organized intelligence detachments for service with MAGTFs or other commanders as directed.

Force Reconnaissance Company

The mission of the force reconnaissance company is to conduct amphibious reconnaissance, surveillance, and limited-scale raids in support of the MEF, other MAGTFs, or JTFs as directed.

Communication Battalion

The mission of the communication battalion is to provide communications and information systems support to MARFOR component headquarters and MAGTF CEs.

108.2 Discuss the concept of supporting and supported relationships.

Command relationships are not necessarily identical for all elements of the MAGTF. Although the terms OPCON and TACON are often used in joint and combined operations, they are not used to establish command relationships between Marine units within the MAGTF. Rather, relationships established within the MAGTF are framed in terms of either command or support. Elements of a MAGTF may be organic to the MAGTF, attached, or tasked to provide support. When a Marine unit is under the command of a senior Marine unit, the subordinate Marine unit is either organic or attached. Support relationships are established when one element or unit of the MAGTF provides a required capability to another element. These relationships do not imply tactical missions or techniques of employment. Although the terms "organic" and "attach" apply consistently throughout the MAGTF, support relationships can differ in meaning.

A support relationship is normally identified by the MAGTF commander when planning missions for the subordinate elements of the MAGTF. The element of the force making the main effort is designated as the supported element; other elements are designated as supporting. Each support relationship is designed by the MAGTF commander to fit the situation at hand. A supporting-supported relationship allows required support to be provided by one element of the MAGTF to another without the need to change existing

command relationships. Supported commanders do not exercise command over the supporting units. Unity of effort is achieved through mutual coordination.

The designation of supported-supporting elements may change over the course of an operation. For example, when the MAGTF is conducting long-range battlespace shaping operations, the ACE may be the main effort of the MAGTF, and thus the supported element. However, as the MAGTF closes with the enemy, the GCE may be designated the main effort, with the ACE shifting from a supported to a supporting role.

108.3 Discuss the following terms:

Administrative Control (ADCON)

Definition.

ADCON is defined as the direction or exercise of authority over subordinate or other organizations in respect to administration and support, including organization of Service forces, control of resources and equipment, personnel management, unit logistics, individual and unit training, readiness, mobilization, demobilization, discipline, and other matters not included in the operational missions of the subordinate or other organizations. (JP 1-02)

Marine Corps Applicability.

The definition for ADCON used in the Marine Corps and the Joint community is the same. Administrative control is used internally and externally to the MAGTF.

Concept.

ADCON is the authority over subordinate or other organizations in respect to administration and support. MAGTF commanders will normally have ADCON over all organic, assigned, and attached Marine Corps forces but not over assigned or attached forces from the other Services. ADCON is subject to the command authority of combatant commanders. ADCON is the authority necessary to fulfill Military Department statutory responsibilities for administration and support.

Relationship.

ADCON indicates that a unit is under conditional control of another commander with respect to administrative matters. The specific degree of administrative control is frequently specified in the order directing assignment to such status.

Example.

A tank company is attached to an infantry battalion less ADCON (personnel and logistics is retained by the tank battalion).

Operational Control (OPCON)

Definition.

OPCON is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. (JP 0-2)

Marine Corps Applicability.

Generally, OPCON only applies to larger Marine Corps units in a joint force organization. Although the term OPCON is often used in joint and combined operations, it is not used to establish command relationships between Marine units within the MAGTF.

Concept.

OPCON is command authority that may be exercised by commanders at any echelon at or below the level of combatant command (COCOM), and is transferable.

Relationship.

OPCON is inherent in COCOM and is the authority to organize and employ commands and forces—assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. OPCON includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. OPCON normally provides full authority to organize commands and forces and employ those forces as the commander in OPCON considers necessary to accomplish assigned missions. It does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training.

Example.

Generally, OPCON applies to larger units in a joint force organization, such as a MEF assigned OPCON to a Navy fleet commander. The fleet commander does not direct the separate employment of either the ground or aviation combat elements of the MEF.

Tactical Control (TACON)

Definition.

TACON is the command authority over assigned or attached forces or commands, or military capabilities or forces made available for tasking that is limited to the detailed and usually local direction and control of movements or maneuvers necessary to accomplish assigned missions or tasks. (JP 0-2)

Marine Corps Applicability.

The definition for TACON used in the Marine Corps and the Joint community is the same. Although the term TACON is often used in joint and combined operations, it is not used to establish command relationships between Marine units within the MAGTF.

Concept.

TACON may be delegated to and exercised by commanders at any echelon at or below the level of COCOM.

Relationship.

Like OPCON, TACON does not include directive authority over administrative or logistic support. TACON is inherent in, but more limited than, OPCON. TACON does not provide for organizational authority. TACON is the command authority typically exercised by functional component commanders over military capabilities or forces made available for tasking.

Example.

A MEF has TACON over an allied infantry regiment. The MEF commander further assigned the allied unit TACON to a Marine Corps division commander.

108.4 Define the following as they apply to MAGTF employment:

Joint Task Force (JTF)

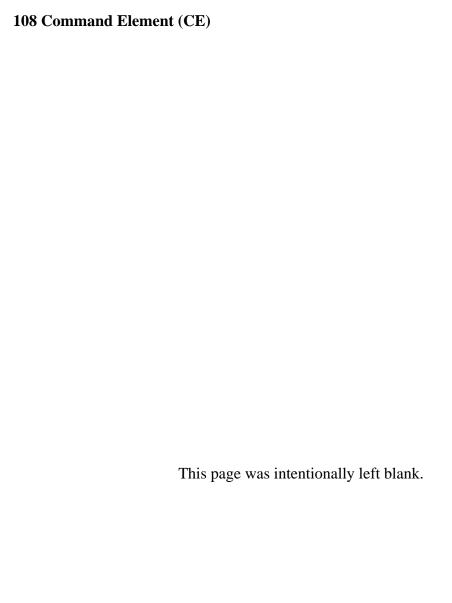
A JTF is a joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a subordinate unified command commander, or an existing JTF commander. A JTF may be established on a geographical area or functional basis when the mission has a specific limited objective and does not require overall centralized control of logistics.

Combined Joint Task Force (CJTF)

Multinational Operations. An operation conducted by forces of two or more nations is termed a "multinational" operation. An operation conducted by forces of two or more nations in a formal arrangement is termed an "allied" or "alliance" operation. Military action in a temporary or informal arrangement for common interests is termed a "coalition" operation. Though the description of "multinational" always will apply to such forces and commanders, they also can be described as "allied," "combined," "alliance," or "coalition," as appropriate.

Coalition

An ad hoc arrangement between two or more nations for common action (JP 5-0).



109 AMPHIBIOUS OPERATIONS FUNDAMENTALS

References:

- a. [a] NWP 3-09.11M/FMFM 1-7, Supporting Arms in Amphibious Operations
- b. [b] Joint Publication 3-02, Joint Doctrine for Amphibious Operations
- c. [c] NWP 3-02.1 (Rev. A), Ship-to-Shore Movement
- d. [d] MCRP 3-31B, Amphibious Ships and Landing Craft Data Book

109.1 Discuss the mission and functions of an Amphibious Task Force (ATF).

Amphibious Task Force

Success of the ship-to-shore movement of the landing force and its essential equipment, the most critical phase of an amphibious assault, requires the closest coordination of naval and landing force elements in the detailed preparatory planning for and the actual execution of the movement. The amphibious task force (ATF) commander exercises overall control of ship-to-shore movement. Figure 2-1 shows the broad organizational structure of the ATF. The movement from ship to shore involves all elements of the force, either directly or in a support function. Elements within the naval force that participate directly are the transport groups and the control organizations.

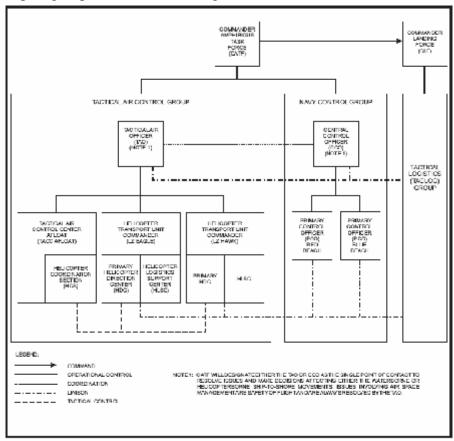


Figure 2-1. Control Organization During the Ship-to-Shore Movement

109.2 State the sequence of events for each of the following phases of Amphibious Operations:

- a. **Planning.** Planning, the planning phase begins with the receipt of the initiating directive or the issuing of the LF/MAGTF activation order
- b. **Embarkation**. Embarkation Phase, the embarkation phase is the period during which the forces, with their equipment and supplies, move to staging areas and embark in assigned shipping.
- **c. Rehearsal**. Rehearsal Phase, The rehearsal phase is the period when the CATF and CLF test the adequacy of plans, make sure that all elements are familiar with plans and test communications.
- d. **Movement.** Movement Phase, is the phase during which the elements of the ATF move from the POEs to the AOA.
- e. **Assault.** The assault phase is the period of time between the arrival of the major assault forces of the ATF in the objective area and the accomplishment of the Amphibious Task Force mission.

109.3 Discuss the special attachments of a Landing Force Support Party (LFSP).

Special attachments are made to the LFSP for defense of the Beach Support Area (BSA), to provide liaison personnel, and for specialized tasks. For example, air defense units may be attached to establish facilities to detect and counter air attacks in the BSA. During the early stages of the assault CLF may deploy tactical units to counter threats in the BSA or Landing Zone Support Area (LZSA) or the LFSP commander, in an emergency situation, may take operational control of any units operating in the BSA/LZSA to provide area defense. If U.S. Army, or allied units, are included in the LF, representatives from these organizations are attached to the LFSP for liaison and coordination. The NCR element may be attached to the LFSP. The NCR is a LF controlled unit that is used for construction tasks that are beyond the capabilities or focus of Marine Corps engineer units. The NCR, also called "sea bees" constructs or repairs air and logistics facilities for LF use and develops or improves the transportation network within the BSA/LZSA. (Also See 109.10 for further details)

109.4 Discuss the following types of amphibious operations:

Amphibious Raids

An amphibious raid is an operation involving a swift incursion into or the temporary occupation of an objective to accomplish an assigned mission followed by a planned withdrawal. Amphibious raids are conducted as independent operations or in support of other operations, such as another amphibious landing or land, air, or naval operation. Depending on the purpose of the raid, it may be

conducted using covert insertion means, relying on stealth to approach the objective, or overtly with full fire support in a manner that may resemble the early stages of an amphibious assault. Generally, amphibious raids are conducted to:

- Destroy certain targets, particularly those that do not lend themselves to destruction by other means;
- Harass the enemy by attacks on isolated posts, patrols, or headquarters;
- Capture or neutralize key personnel;
- Support forces engaged with the enemy by attacking the enemy rear or flank positions on a seacoast;
- Obtain information on hydrography, terrain, enemy dispositions, strength, movements, and weapons;
- Create a diversion in connection with strategic deception operations;
- o Evacuate individuals or materiel; and
- Establish, support, or coordinate unconventional warfare activities.

Feint

In military deception, an offensive action involving contact with the adversary conducted for the purpose of deceiving the adversary as to the location and/or time of the actual main offensive action.

Demonstration

The amphibious demonstration is intended to confuse the enemy as to time, place, or strength of the main operation. Amphibious demonstrations may be conducted in conjunction with other deception operations in order to delude or confuse the enemy. In the operational area, an amphibious demonstration may be conducted in or near the landing area in conjunction with an amphibious assault. In still other cases, a demonstration may be conducted outside the operational area by forces not attached to the main amphibious effort to divert or immobilize enemy strategic reserve forces that could threaten the amphibious assault. Likewise, the demonstration could be used to divert enemy attention from other operations.

An amphibious demonstration may be conducted by a portion of the force within the operational area when it is intended to influence enemy action within that area. The intended purpose may be to cause the enemy to employ its reserves improperly, to disclose weapon positions by inducing premature firing, to distract attention, to place an early burden on C4 systems, to precipitate a general air or naval engagement, or to harass. The decision to conduct such a demonstration is made during the planning phase, in consultation with supporting Commanders as appropriate.

An amphibious demonstration may be conducted outside the operational area to divert or immobilize enemy strategic reserves or other forces capable of affecting the amphibious operation, to distract hostile attention from such an operation, or to precipitate a general air or naval engagement. Such a demonstration may be executed as a supporting operation by a separate amphibious force. The time and

109 Amphibious Operations

place of the demonstration is decided by the Joint Force Commander (JFC) or higher authority based on the recommendations by the CATF and CLF.

Amphibious Assault.

An amphibious assault involves the establishment of an LF on a hostile or potentially hostile shore. The organic capabilities of amphibious forces, including fire support, logistics, and mobility, allow the United States to gain access to a crisis area by forcible entry. Forcible entry operations can be accomplished through amphibious operations, airborne operations, air assault operations, or a combination of any or all of these forcible entry techniques. If the Combatant Commander's/Joint Task Force Commander's decision is to use a combination of forcible entry techniques to seize a lodgment, the Commander must further decide, based on maritime factors and mission, enemy, terrain and weather, troops and support available, time available analysis, whether to conduct the forcible entries as concurrent or integrated. Concurrent forcible entry operations occur when a combination of amphibious, airborne, and/or air assault forcible entry operations are conducted simultaneously, but as distinct operations with separate operational areas and objectives. Integrated forcible entry operations result when amphibious, airborne, and/or air assault forcible entries are conducted simultaneously within the same operational area and with objectives that are mutually supporting.

109.5 Discuss the Commander Amphibious Task Force (CATF) and Commander Landing Force (CLF) relationship as it pertains to amphibious operations.

Once the LF is embarked in the ATF, CATF assumes full responsibility for the ATF and the operation. CLF, subject to CATF's command authority, is responsible for the conduct of operations ashore. To carry out these responsibilities, parallel chains of command are established by CATF and CLF with corresponding Navy and LF commanders designated at each tactical echelon which create special requirements for consultation. No significant decision by either commander that affects the plans, disposition, or intentions of the other should be made without consulting the commander concerned. Changes to the ATF landing plan will be made only after consultation between and concurrence by both commanders. The CLF may assume command of the amphibious operation only after he/she feels they have sufficient combat power ashore, and requests from the CATF to assume control of the amphibious operation.

109.6 Discuss the various classes of amphibious ships. [ref. d, p. 1-29]

LHA Amphibious Assault Ship (General Purpose)

Amphibious Assault Ship (General Purpose)
USS Tarawa (LHA-1) Class



USS Nassau (LHA-4) Pictured

Mission

The assigned mission of the amphibious assault ship (general purpose) (LHA) is to embark, deploy, and land elements of a Marine landing force in an amphibious

assault by helicopters, landing craft, amphibious vehicles, and by combinations of these methods.

General Comments

The LHA features include a full length flight deck, a landing craft docking well (well deck), large storage areas for vehicles and cargo, and troop berthing for a reinforced battalion. An Integrated Tactical Amphibious Warfare Data System (ITAWDS)

provides computerized support in control of helicopters, aircraft, shipboard weapons, sensors, navigation, landing craft, and electronic warfare. The flag spaces are designed to support the staff of the embarked Navy organization (amphibious squadron [PHIBRON] or an amphibious group [PHIBGRU] staff) and the Marine landing force staff (Marine expeditionary unit [MEU], Marine expeditionary brigade [MEB] or Marine expeditionary force [MEF]). The design of the LHA provides an optimum operational environment for ship's company, embarked staffs, troops, and support personnel prior to, during, and after an amphibious operation.

Number Ship's Name Home Port

- LHA-1 USS Tarawa San Diego, CA
- LHA-2 USS Saipan Norfolk, VA
- LHA-3 USS Belleau Wood San Diego, CA
- LHA-4 USS Nassau Norfolk, VA
- LHA-5 USS Peleliu San Diego, CA

LHD Amphibious Assault Ship (Multipurpose)

Amphibious Assault Ship (Multipurpose) USS Wasp (LHD-1) Class



USS Essex (LHD-2) Pictured

Mission

The assigned mission of the amphibious assault ship (multipurpose) (LHD) is to embark, deploy, and land elements of a Marine landing force in an amphibious assault by helicopters, landing craft, amphibious vehicles, and by combinations of these methods. The LHD is assigned a secondary mission of sea control and power projection in which additional fixed-wing vertical/short takeoff and landing (V/STOL) aircraft and helicopters are deployed.

General Comments

The LHD incorporates the original design features of the LHA. The ship can embark a large segment of a landing force with its equipment and supplies. The flag spaces are designed to support the staff of the embarked Navy organization (amphibious squadron [PHIBRON] or an amphibious group [PHIBGRU] staff) and the Marine landing force staff (Marine expeditionary unit [MEU], Marine expeditionary brigade [MEB)] or Marine expeditionary force [MEF]). An expanded and combined flag data display uses the latest in technology to enhance the commander's ability to control air, land, and sea assets. The aviation facilities are capable of supporting a composite helicopter squadron or an AV-8B V/STOL squadron or combination of the two. When in its secondary mission, the flight deck can accommodate 20 AV-8B and 4 to 6 SH-60B (LAMPS III), thus enabling the commander to control the sea while projecting power.

Number Ship's Name Home Port

- LHD-1 USS Wasp Norfolk, VA
- LHD-2 USS Essex Sasebo, Japan

- LHD-3 USS Kearsarge Norfolk, VA
- LHD-4 USS Boxer San Diego, CA
- LHD-5 USS Bataan Norfolk, VA
- LHD-6 USS Bon Homme
- Richard San Diego, CA
- LHD-7 USS Iwo Jima Norfolk, VA
- LHD-8 (Name/delivery date TBD)

LPD Amphibious Transport Dock

Amphibious Transport Dock USS San Antonio (LPD-17) Class



Mission

The assigned mission of the LPD is to transport and land troops and their essential equipment and supplies in an amphibious assault by means of embarked landing craft or amphibious vehicles augmented by helicopter lift.

General Comments

The LPD is a general purpose amphibious ship with substantial lift capacities for troops, vehicles, landing craft, cargo, and bulk fuel. The LPD is capable of ballasting to permit loading and launching of landing craft and assault amphibious vehicles. Vehicles can move about the various decks by a series of poweroperated ramps. The well deck can accommodate all types of landing craft currently in the amphibious force inventory. A limited number of helicopters may be transported on the flight deck as the LPD serves as a helicopter platform for landing embarked troops and their supplies. It also serves as a refueling station for helicopters of the landing force. Troops, vehicles, and equipment can be loaded/off-loaded by helicopter and landing craft simultaneously. Several LPDs are flag configured for MEU and PHIBRON size staffs.

109 Amphibious Operations

The San Antonio class LPD will provide greatly improved warfighting capabilities including an advanced command and control suite, a greatly increased lift capacity, including substantial increases in vehicle and cargo carrying capability, and advanced ship survivability features. These ships have been designed from the keel up to support the Marine Corps 'mobility triad'—the landing craft air cushion (LCAC) vehicle, advanced amphibious assault vehicle (AAAV), and MV-22 (Osprey tiltrotor aircraft)—making this class a key element of 21st century amphibious ready groups. It is also certified for the AV-8B aircraft. The LPD-17 class ships are scheduled to replace the older LPD-4 class. The San Antonio class design integrates the latest in command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) capability. These capabilities are further enhanced by additional, dedicated intelligence, mission planning, and command and control spaces. The shipboard wide area network (SWAN) developed for LPD-17 is a fiber optic ship wide large area computer network.

Hull Number Ship's Name Home Port Flag Configured (USS Austin Class)

- LPD-4 USS Austin Norfolk, VA No
- LPD-5 USS Ogden San Diego, CA No
- LPD-6 USS Duluth San Diego, CA No
- LPD-7 USS Cleveland San Diego, CA Yes
- LPD-8 USS Dubuque San Diego, CA Yes
- LPD-9 USS Denver San Diego, CA Yes
- LPD-10 USS Juneau Sasebo, Japan Yes
- LPD-12 USS Shreveport Norfolk, VA Yes
- LPD-13 USS Nashville Norfolk, VA Yes
- LPD-14 USS Trenton Norfolk, VA No
- LPD-15 USS Ponce Norfolk, VA No

Hull Number Ship's Name Home Port (USS San Antonio Class) Scheduled Delivery

- LPD-17 USS San Antonio Norfolk, VA 11/04
- LPD-18 USS New Orleans San Diego, CA 07/05
- LPD-19 USS Mesa Verde Norfolk, VA 10/05
- LPD-20 USS Green Bay San Diego, CA 03/06
- LPD-21 TBD San Diego, CA 11/06
- LPD-22 TBD San Diego, CA 04/07
- LPD-23 TBD Sasebo, Japan 07/07
- LPD-24 TBD San Diego, CA 03/08
- LPD-25 TBD Norfolk, VA 10/08
- LPD-26 TBD Norfolk, VA 01/09
- LPD-27 TBD Norfolk, VA 09/09
- LPD-28 TBD Norfolk, VA 08/10

LSD Docking Landing Ship

Dock Landing Ship USS Anchorage (LSD-36) Class



USS Mount Vernon (LSD-39) Pictured

Mission

The assigned mission of the LSD is to transport and launch loaded amphibious craft and vehicles with their crews and embarked personnel in amphibious assaults by landing craft and amphibious vehicles. It can render limited docking repair service to small ships and craft.

General Comments

Major spaces for carrying vehicles and/or cargo or conducting helicopter operations are the helicopter platform, the super deck, the mezzanine deck, and the well deck. The mezzanine deck, super deck, and helicopter platform are constructed so they can be removed and stored ashore should assigned operations dictate. Mezzanine decks are frequently removed, but super decks and helicopter platforms are rarely removed. Vehicles may be loaded via landing craft into the well deck or lifted aboard by crane to the super deck for transit via ramps to other decks for stowage. Vehicles stowed in the well deck should be at least 50 feet forward of any landing craft to minimize potential salt water immersion during ballasting operations.

USS Ancharge Class

- LSD-36 USS Anchorage San Diego, CA
- LSD-37 USS Portland Little Creek, VA
- LSD-39 USS Mount Vernon San Diego, CA

USS Whidbey Island Class

- LSD-41 USS Whidbey Island Little Creek, VA
- LSD-42 USS Germantown Sasebo, Japan
- LSD-43 USS Fort McHenry San Diego, CA

109 Amphibious Operations

- LSD-44 USS Gunston Hall Little Creek, VA
- LSD-45 USS Comstock San Diego, CA
- LSD-46 USS Tortuga Little Creek, VA
- LSD-47 USS Rushmore San Diego, CA
- LSD-48 USS Ashland Little Creek, VA

USS Harpers Ferry Class

- LSD-49 USS Harpers Ferry San Diego, CA
- LSD-50 USS Carter Hall Little Creek, VA
- LSD-51 USS Oak Hill Little Creek, VA
- LSD-52 USS Pearl Harbor San Diego, CA

109.7 Discuss the classes of ships that provide Naval Surface Fire Support (NSFS).

Ships suitable for gunfire support include cruisers and destroyers.

Guided Missile Cruisers (CG, CGN)

The various CG classes carry two 5-inch/54 caliber rapid fore guns and surface-to-surface missiles. Maximum effective ranges of these batteries is 23,127 meters.

Destroyers (DD, DDG)

The types of ships most frequently found in a gunfire support role are destroyers. Their normal role is in direct support of a battalion. The armament is the 5-inch/54 caliber rapid fire gun. The maximum effective range is 23,127 meters.

Amphibious Assault Ships (LHA)

This type of ship is the least likely to perform in a gunfire support role, since it cannot simultaneously conduct NGF missions, flight operations, and wet well operations. These ships have two single 5-inch/54 caliber rapid fire guns.

109.8 Discuss the following terms as they apply to ship-to-shore movement:

L-hour

L-hour (amphibious operations). In amphibious operations, the time at which the first helicopter of the helicopter-borne assault wave touches down in the landing zone.

H-hour

H-hour (amphibious operations). For amphibious operations, the time the first assault elements are scheduled to touch down on the beach, or a landing zone, and in some cases the commencement of countermine breaching operations. force."

D-day

D-day. The unnamed day on which a particular operation commences or is to commence.

Line of Departure (LOD)

In land warfare, a line designated to coordinate the departure of attack elements.

In an amphibious operations, the LOD is an offshore coordinating line to assist displacement craft and AAVs to land on designated beaches at scheduled times. It marks the seaward end of the boat lane. Each colored beach has an LOD and topographic, hydrographic, and tactical considerations determine the specific location. It may be marked by PCS/SCS, boats, or buoys. When scheduled waves are launched underway the LOD may be unmarked. Displacement craft waves are dispatched to the beach from this line. A separate LOD may be provided for AAVs to reduce waterborne transit times.

109.9 Discuss the following types of amphibious landing craft:

Landing Craft Air Cushion (LCAC)

Landing Craft Air Cushion (LCAC)



Mission

The LCAC's mission is to land heavy vehicles, equipment, personnel, and cargo in amphibious assaults.

General Information

The LCAC is the latest generation of amphibious assault landing craft. Combining the heavy lift capacity of the surface assault with high speeds of helicopter-borne assault, the LCAC adds a new dimension to the capabilities of amphibious forces. It is capable of traveling over land and water. At over-the-horizon (OTH) distances of 12 to 100 nautical miles, LCAC offers the military planner another method for attaining surprise when conducting amphibious operations. The addition of air cushion technology adds high speed and long range to surface-borne amphibious operations. Additional flexibility is provided by LCAC's ability to operate independent of tides and hydrographic constraint. In some cases, the LCAC will have a significant ability to influence operations beyond the high water mark. Weather can affect LCAC operations, but it is less of a factor than for other ship-to-shore delivery means.

Landing Craft Utility (LCU)

Landing Craft Utility (LCU)



Mission

The LCU's mission is to land heavy vehicles, equipment, personnel, and cargo in an amphibious assault.

General Information

The LCU is a highly versatile craft; like others of the landing craft family, it has been adapted for many uses including salvage operations, ferry boats for vehicles and passengers, and underwater test platforms. It is a self-sustaining craft with the typical habitability features found aboard ships. Its welded steel hull provides high durability with deck loads of 800 pounds per square foot. Arrangement of machinery and equipment has taken into account built-in redundancy in the event of battle damage. The craft features two engine rooms separated by a watertight bulkhead to

permit limited operation in the event that one engine room is disabled. An anchor system is installed on the starboard side aft to assist in retracting from the beach.

109.10 Discuss the LFSP

The Landing Force Support Party (LFSP) is a temporary landing force (LF) organization, composed of Navy and LF elements, that facilitates the ship-to-shore movement and provides initial combat support and combat logistics support to the LF. Its mission is to support the landing and movement of troops, equipment, and supplies across beaches and into landing zones (LZs). To ensure success in an amphibious operation, the LF must rapidly establish itself ashore. The LFSP is task organized to facilitate that rapid buildup of combat power ashore by ensuring an organized and uniform flow of personnel, equipment, and supplies over and into beaches and LZs in support of the LF scheme of maneuver ashore. Simply stated, the LFSP facilitates the execution of the LF landing plan. The LFSP is task organized primarily from the naval beach group (NBG) and other Navy organizations as directed by commander, amphibious task force (CATF); and the logistics combat element (LCE), aviation combat element (ACE), and ground combat element (GCE) of the LF. The concept of LFSP operations is to centralize the responsibility for combat support and combat logistics functions normally provided by the LCE, ACE, and Navy under a single organization during the initial stages of the assault for unity of effort. As the LF establishes itself ashore, the LFSP organization matures to provide an expanding range of support and services to the LF until relieved by the LCE. Figure K-1 depicts the Marine air-ground task force (MAGTF) organization for the ship-to-shore movement. Chapter 2 describes the MAGTF organization.

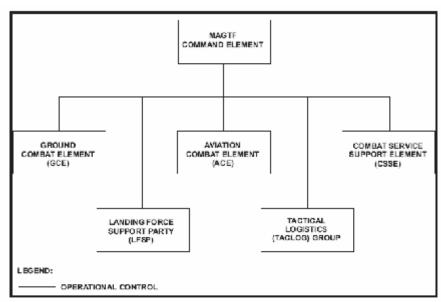


Figure K-1. MAGTF Organization for the Ship-to-Shore Movement

The primary mission of the LFSP is to provide initial combat support and combat logistics for the LF during the ship-to-shore movement. Commander, landing force (CLF)

109 Amphibious Operations

is responsible for organizing a system to accomplish this mission and other specific support functions in the landing area. The LCE commander is normally designated by the CLF to form the LFSP. Other missions of the LFSP are to:

- Facilitate the landing and movement of troops, equipment, and supplies across beaches and into LZs, ports, and airfields
- Assist in the efforts to evacuate casualties and prisoners of war during the early stages of the assault
- Assist in the beaching and retraction of landing ships, landing craft, pontoon causeway piers, and amphibious vehicles
- Direct landing craft and amphibious vehicle salvage operations inside the surf zone
- Facilitate the establishment of the LCE, ACE, and NBG ashore.

Establishing the LFSP organization is normally the responsibility of the LCE commander. To ensure unity of effort, the LFSP operates as a subordinate element of the LF under the operational control of CLF. The organization and mission of the LF dictate the specific structure of the LFSP. The LFSP is task organized to accommodate the number of landing beaches/LZs the LF will use, the size of the units landing, and the mission assigned. The LFSP provides combat support and combat logistics to waterborne and helicopterborne units. The shore party and beach party elements provide this support to waterborne assault units carried in displacement landing craft through shore party and beach party teams operating numbered colored beaches. Waterborne assault units carried in LCACs are supported by LCAC control teams (CCTs) and CSTs operating CLZs. Helicopterborne assault units are supported by helicopter support elements (HSEs) which provide attachments to the HST of the helicopterborne unit.

The nucleus of LFSP personnel are from the LCE, ACE, and naval construction regiment (NCR) with augmentation from other LF units, the NBG, special attachments such as sea-air-land (SEAL) teams, EOD units, and so forth. The composition of the LFSP is determined during the initial planning phase. The specific task organization for an LFSP may vary, but for planning purposes a basic LFSP structure is depicted in Figure K-2. The LFSP consists of:

- LFSP headquarters (HQ)
- Shore party
- Beach party
- Special attachments
- Ship's platoons.

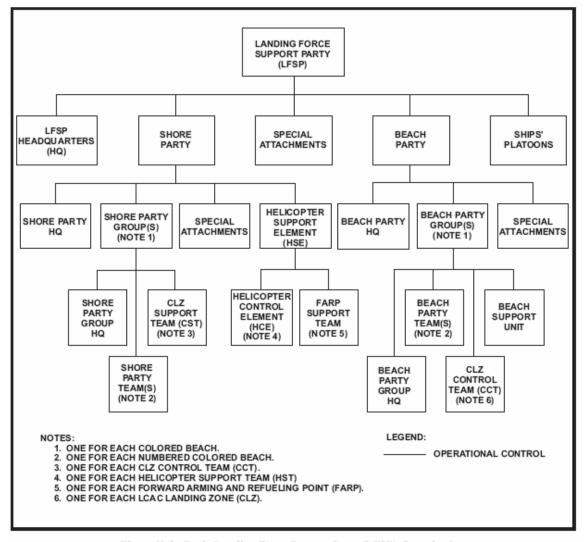


Figure K-2. Basic Landing Force Support Party (LFSP) Organization

109.11 Discuss the term shore party. [ref. c, app. K]

The shore party is the LF component of the LFSP It is task organized to facilitate the landing and movement of waterborne troops, equipment, and supplies and the evacuation of casualties and EPWs. The nucleus for shore party personnel is the landing support battalion (LSB), force service support group (FSSG) augmented with personnel and equipment from the GCE, ACE, NCR, and other LCE units. The shore party consists of the following elements:

Shore Party HQ

The shore party team HQ includes command, evacuation, MP, communications, and security sections. Command section personnel are provided from the HQ, LSP; evacuation section personnel are from the medical battalion, FSSG; MP section normally consists of a detachment from the MP company, H&S battalion, FSSG; communications section normally consists of a detachment from the communications platoon, H&S company, LSB, and other communications units

109 Amphibious Operations

as required; and security section personnel are augmented specifically for this duty.

Shore Party Group

The shore party group is responsible for supporting a colored beach over which a regimental landing team (RLT), or equivalent Army force, lands. Upon landing, the shore party group commander assumes control of landing support activities of subordinate shore party teams, and begins consolidating activities at the group level. Shore party group functions include:

- o Allocating shore party team personnel and equipment as required
- Establishing shore party group communications and consolidating shore party team communications
- o Providing liaison personnel to supported unit's HQs
- o Coordinating defensive measures
- o Coordinating with the beach party group commander
- o Submitting reports and records.

As illustrated in Figure K-2, the shore party group consists of a HQ, two or more shore party teams, one or more CSTs and special attachments. The nucleus for shore party group personnel is the landing support company, LSB, FSSG.

Helicopter Support Element (HSE).

The ACE commander is responsible for helicopter terminal guidance and arming and refueling aircraft ashore during the ship-to-shore movement. These tasks must be accomplished even though the ACE commander and ACE combat support and combat logistics units are not ashore. The ACE commander fulfills these obligations through the HSE by task organizing HCEs and FARP support teams and providing them to the LFSP. The LFSP then provides helicopter terminal guidance and arming and refueling capabilities through the HCEs and FARP support teams until the ACE is established ashore and assumes these responsibilities.

Shore Party Special Attachments.

In addition to ATF units which are provided to the LFSP as special attachments (see paragraph K.3.4), units may be attached to the shore party to facilitate throughput operations within the Beach Support Area. For example, EOD and combat engineer personnel may be attached to conduct counter mine operations.

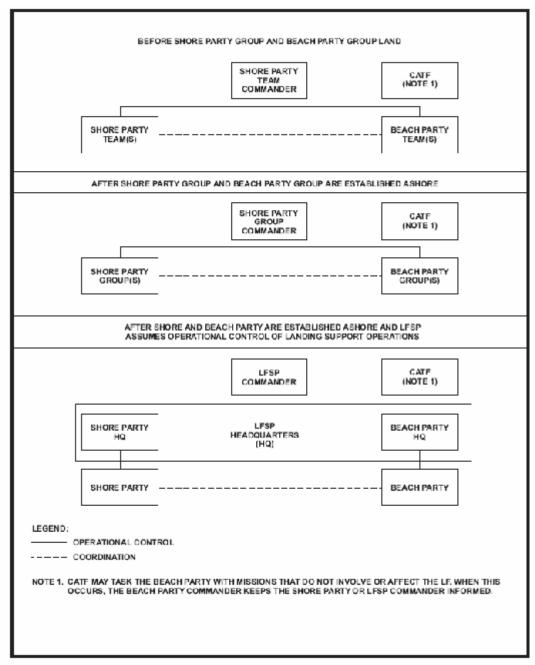


Figure K-3. LFSP, Shore Party, and Beach Party Command Relationships

109.12 Discuss the term shore party as it applies to LFSP.

Shore Party Team

Shore party team(s) support a numbered colored beach. The nucleus for shore party team personnel is the landing support platoon (LSP), LSB, FSSG with augmentation for specific missions. As shown in Figure K-4, the shore party team consists of an advance party, HQ, shore platoon, service platoon, and motor transport/heavy equipment platoon.

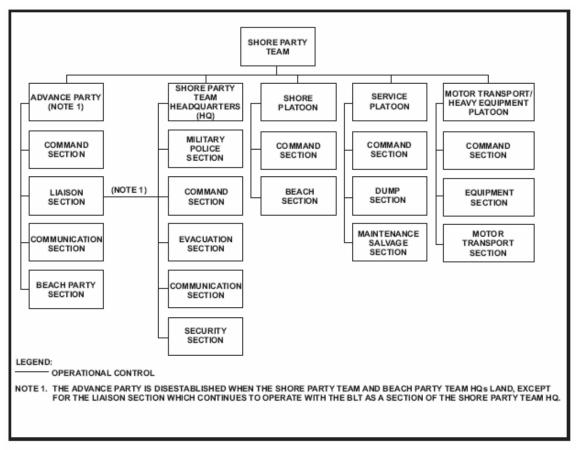


Figure K-4. Basic Shore Party Team Organization

109.13 Discuss the special attachments of an LFSP.

Refer to 109.3

110 FORCE PROTECTION FUNDAMENTALS

References:

- a. DoD O-2000.12-H, February 2004 The DoD Antiterrorism Handbook
- b. MARINE CORPS ORDER 5500.6F
- c. MCWP 3-41.1, Rear Area Operations

110.1 State the purpose of antiterrorism and force protection.

Antiterrorism (AT) is defensive measures used to reduce the vulnerability of individuals and property to terrorist acts, to include limited response and containment by local military and civilian forces. The AT program is one of several security-related programs that fall under the overarching Force Protection and Combating Terrorism programs. An AT program is a collective effort that seeks to reduce the likelihood that Department of Defense affiliated personnel, their families, facilities, and materiel will be subject to a terrorist attack, and to prepare to respond to the consequences of such attacks should they occur.

Force Protection (FP) is security programs designed to protect Service members, civilian employees, family members, facilities, information, and equipment in all locations and situations, accomplished through the planned and integrated application of combating terrorism, physical security, operations security, personal protective services, and supported by intelligence, counterintelligence, and security programs.

110.2 Discuss the following threat conditions:

Background

Force Protection Condition (FPCON).

A DoD-approved system standardizing the Department's identification, recommended preventive actions, and responses to terrorist threats against U.S. personnel and facilities. This system is the principal means for a commander to apply an operational decision on how to protect against terrorism and facilitates inter-Service coordination and support for antiterrorism activities.

The DoD FPCON system allows all military commanders and DoD civilians exercising equivalent authority the flexibility and adaptability to develop and implement AT measures that are more stringent than those mandated by higher authorities whenever FPCONs are invoked. Each set of FPCON measures is the minimum that must be implemented when a change in local threat warrants a change in FPCON or when higher authority directs an increase in FPCON. Authorities directing implementation may augment their FPCON by adding measures from higher FPCONs as necessary.

110 Force Protection

Military commanders or DoD civilians exercising equivalent authority may implement additional FPCON measures from higher FPCONs on their own authority, develop additional measures specifically tailored for site-specific security concerns, or declare a higher FPCON for their AOR/installation.

Subordinate military commanders or DoD civilians exercising equivalent authority at any level may not lower a FPCON or implement measures that are less rigorous than those appropriate for the declared FPCON.

It is essential for military commanders and DoD civilians exercising equivalent authority to implement formal analytical processes that result in a set of AOR or locality-specific terrorist threat indicators and warnings for use when transitioning from lower to higher FPCONs. Threat credibility, and if known, duration, operational environment (both H/N and DoD), asset criticality, mission impact and measures in place that contribute to mitigating the current threat are but a few of the important elements commanders should consider when calibrating FPCON postures. Such processes and measures should be harmonized to the maximum degree possible, taking fully into account differences in threat, vulnerability, criticality, and risk of resources requiring protection.

Military commanders, DoD civilians exercising equivalent authority, and their staffs shall examine the threat, physical security, terrorist attack consequences, and mission vulnerabilities in the context of specific DoD activities and the declared FPCON. When factors are combined and the collective terrorist threat exceeds the ability of the current physical security system (barriers, surveillance and detection systems, security forces, and dedicated response forces) to provide the level of asset protection required, then implementation of higher FPCONs or additional measures is appropriate. Implementation of FPCONs does not come without adverse effects on day-to-day operations; the additional costs can be measured and described both quantitatively and qualitatively. The DoD FPCON system acknowledges cost as a significant factor bearing on the selection and maintenance of FPCONs. FPCONs ALPHA and BRAVO include measures that can be sustained for extended periods, consistent with the terrorist threat.

FORCE PROTECTION CONDITIONS (FPCONs)

There are five FPCONs and supporting measures for each condition.

Once a FPCON is declared, all listed security measures are implemented immediately unless waived by competent authority. The declared FPCON should also be supplemented by a system of Random Antiterrorism Measures (RAMs) in order to complicate a terrorist group's operational planning and targeting.

The circumstances that apply and the purposes of each protective posture are as follows:

FPCON NORMAL

Applies when a general global threat of possible terrorist activity exists and warrants a routine security posture.

- Measure NORMAL 1. Secure and randomly inspect buildings, rooms, and storage areas not in regular use.
- Measure NORMAL 2. Conduct random security spot checks of vehicles and persons entering facilities under the jurisdiction of the United States.
- Measure NORMAL 3. Limit access points for vehicles and personnel commensurate with a reasonable flow of traffic.

FPCON ALPHA

Applies when there is an increased general threat of possible terrorist activity against personnel or facilities, the nature and extent are unpredictable. ALPHA measures must be capable of being maintained indefinitely.

- Measure ALPHA 1. Continue, or introduce, all measures in previous FPCON.
- Measure ALPHA 2. At regular intervals, inform personnel and family members of the general situation. Ensure personnel arriving for duty are briefed on the threat. Also, remind them to be alert for and report suspicious activities, such as the presence of unfamiliar personnel and vehicles, suspicious parcels, and possible surveillance attempts.
- Measure ALPHA 3. The duty officer or personnel with access to building plans as well as the plans for area evacuations must be available at all times. Plans should be in place to execute access control procedures. Key personnel required to implement security plans should be on-call and readily available.
- Measure ALPHA 4. Increase security spot checks of vehicles and persons entering installations under the jurisdiction of the United States.
- Measure ALPHA 5. Initiate food and water Operational Risk Management (ORM) procedures, brief personnel on food and water security procedures, and report any unusual activities.
- Measure ALPHA 6. Test mass notification system.
- Measure ALPHA 7. Review all plans, identify resource requirements, and be prepared to implement higher FPCONs.
- Measure ALPHA 8. Review and, if necessary, implement security measures for high-risk personnel.
- Measure ALPHA 9. As appropriate, consult local authorities on the threat and mutual antiterrorism measures.
- Measure ALPHA 10. Review intelligence, counter intelligence, and operations dissemination procedures.

FPCON BRAVO

Applies when an increased or more predictable threat of terrorist activity exists. Sustaining BRAVO measures for a prolonged period may affect operational capability and relations with local authorities.

- Measure BRAVO 1. Continue, or introduce, all measures in previous FPCONs.
- Measure BRAVO 2. Enforce control of entry onto U.S. infrastructure critical to mission accomplishment, lucrative targets, and high profile locations; and randomly search vehicles entering these areas. Particular scrutiny should be given to vehicles that are capable of concealing a large IED (cargo vans, delivery vehicles) sufficient to cause catastrophic damage or loss of life.
- Measure BRAVO 3. Identify critical and high occupancy buildings. Keep cars and objects (e.g., crates, trash containers) away from buildings to reduce vulnerability to bomb attacks. Apply this criterion to all inhabited structures to the greatest extent possible. Standoff distance should be determined by the following factors: asset criticality; the protection level provided by structure, IED/Vehicle Borne IED threat; and available security measures. Consider centralized parking.
- Measure BRAVO 4. Secure and inspect all buildings, rooms, and storage areas not in regular use.
- Measure BRAVO 5. At the beginning and end of each workday, as well as at random intervals, inspect the interior and exterior of buildings in regular use for suspicious packages.
- Measure BRAVO 6. Implement mail-screening procedures to identify suspicious letters and parcels.
- Measure BRAVO 7. Randomly inspect commercial deliveries.
 Advise family members to check home deliveries.
- Measure BRAVO 8. Randomly inspect food and water for evidence of tampering/contamination before use by DoD personnel. Inspections should include delivery vehicles and storage area/containers.
- Measure BRAVO 9. Increase security/guard presence or patrol/surveillance of DoD housing areas, schools, messes, on-base clubs, and similar high-occupancy targets to improve deterrence and defense, and to build confidence among staff and family members.
- Measure BRAVO 10. Implement plans to enhance off-installation security of DoD facilities. In areas with Threat Levels of Moderate, Significant, or High, coverage includes facilities (e.g., DoD schools and daycare centers) and transportation services and routes (e.g., bus routes) used by DoD employees and family members.
- Measure BRAVO 11. Inform local security committees of actions being taken.

- Measure BRAVO 12. Verify identity of visitors and randomly inspect their suitcases, parcels, and other containers. Measure BRAVO 13. Conduct random patrols to check vehicles, people, and buildings.
- Measure BRAVO 14. As necessary, implement additional security measures for high-risk personnel.
- Measure BRAVO 15. Place personnel required for implementing AT plans on call; commanders should exercise discretion in approving absences.
- Measure BRAVO 16. Identify and brief personnel who may augment guard forces. Review specific rules of engagement including the use of deadly force.
- Measure BRAVO 17. As deemed appropriate, verify identity of personnel entering buildings.
- Measure BRAVO 18. Review status and adjust as appropriate OPSEC, COMSEC, and INFOSEC procedures.
- Measure BRAVO 19. (airfield specific) As appropriate, erect barriers and man and establish checkpoints at entrances to airfields. Ensure identity of all individuals entering the airfield (flightline and support facilities) -- no exceptions. Randomly inspect vehicles, briefcases and packages entering the airfield.
- Measure BRAVO 20. (airfield specific) Coordinate plans to safeguard aircraft departure and approach flight paths with local authorities. Be prepared to activate contingency plans and issue detailed air traffic control procedures. As appropriate, take actions to mitigate threat of surface-to-air missiles or standoff weapons that can be delivered from beyond the airfield perimeter.

FPCON CHARLIE

Applies when an incident occurs or intelligence is received indicating some form of terrorist action or targeting against personnel or facilities is likely. Prolonged implementation of CHARLIE measures may create hardship and affect the activities of the unit and its personnel.

- Measure CHARLIE 1. Continue, or introduce, all measures in previous.
- Measure CHARLIE 2. Recall additional required personnel. Ensure armed augmentation security personnel are aware of current rules of engagement and SOFAs. Review types of weapons and ammunition issued to augmentation security personnel; heightened threats may require employment of different weapons capabilities.
- Measure CHARLIE 3. Be prepared to react to requests for assistance, from both local authorities and other installations in the region.
- Measure CHARLIE 4. Limit access points to strictly enforce entry. Randomly search vehicles.

- Measure CHARLIE 5. Ensure or verify identity of all individuals entering food and water storage and distribution centers, use sign in/out logs at access control/entry points, and limit and/or inspect all personal items.
- Measure CHARLIE 6. Initiate contingency monitoring for biological and chemical agents as required. Suspend contractors/off-facility users from tapping into facility water system (alternate locally developed measure should be executed when contractors are responsible for DoD water supplies or when water is provided by local (non-DoD) sources or agencies).
- Measure CHARLIE 7. Increase standoff from sensitive buildings based on threat. Implement barrier plan to hinder vehicle borne attack.
- Measure CHARLIE 8. Increase patrolling of the facility to include waterside perimeters, if appropriate. Be prepared to assist local authorities in searching for threatening actions/persons outside the facility perimeter. For airfields, patrol or provide observation of approach and departure flight corridors as appropriate to the threat (coordinate with TSA, Marine Patrol, U.S.C.G., and local law enforcement as required to cover off-facility approach and departure flight corridors).
- Measure CHARLIE 9. Protect all designated infrastructure critical to mission accomplishment. Give special attention to and coordinate with local authorities regarding infrastructure outside the military establishment.
- Measure CHARLIE 10. To reduce vulnerability to attack, consult local authorities about closing public (and military) roads and facilities and coordinate any other precautionary measures taken outside the installation perimeter.
- Measure CHARLIE 11. Consider searching suitcases, briefcases, packages, etc., being brought onto the installation through access control points and consider randomly searching suitcases, briefcases, packages, etc., leaving.
- Measure CHARLIE 12. Review personnel policy procedures to determine course of action for family members.
- Measure CHARLIE 13. Review access procedures for all non-U.S. personnel and adjust as appropriate. For airfields, consider terminating visitor access to the flightline and support facilities.
- Measure CHARLIE 14. Consider escorting children to and from DoD schools (among options to consider are escorting school buses, recommending parents escort children to/from school, etc.).
- Measure CHARLIE 15. (airfield specific) Reduce flying to essential operational flights only. Implement appropriate flying countermeasures as directed by the Flight Wing Commander (military aircraft) or TSA (civilian aircraft). Consider relief landing

ground actions to take for aircraft diversions into and out of an attacked airfield. Consider augmenting fire-fighting details.

FPCON DELTA

Applies in the immediate area where a terrorist attack has occurred or when intelligence has been received that terrorist action against a specific location or person is imminent. Normally, this FPCON is declared as a localized condition. FPCON DELTA measures are not intended to be sustained for substantial periods.

- Measure DELTA 1. Continue, or introduce, all measures in previous FPCON.
- Measure DELTA 2. Augment guards as necessary.
- Measure DELTA 3. Identify all vehicles within operational or mission support areas.
- Measure DELTA 4. Search all vehicles and their contents before allowing entrance to the installation. Selected pre-screened and constantly secured vehicles used to transport escorted very important personnel are exempted.
- Measure DELTA 5. Control facility access and implement positive identification of all personnel--no exceptions.
- Measure DELTA 6. Search all suitcases, briefcases, packages, etc., brought into the installation.
- Measure DELTA 7. Close DoD schools and/or escort children to/from DoD schools as required.
- Measure DELTA 8. Make frequent checks of the exterior of buildings and of parking areas.
- Measure DELTA 9. Restrict all non-essential movement.
- Measure DELTA 10. (airfield specific) Cease all flying except for specifically authorized operational sorties. Be prepared to deploy light aircraft and/or helicopters for surveillance tasks or to move internal security forces. Implement, if necessary, appropriate flying countermeasures.
- Measure DELTA 11. (airfield specific) As appropriate, airfields should prepare to accept aircraft diverted from other stations.
- Measure DELTA 12. If permitted, close public and military roads and facilities. If applicable, close military roads allowing access to the airfield.

110.3 Define the term deadly force.

DEADLY FORCE

The efforts of an individual used against another to cause death, substantial risk of death, or serious bodily injury.

CIRCUMSTANCES FOR USING DEADLY FORCE.

Deadly force is justified only under conditions of extreme necessity, as a last resort, when all lesser means have failed or cannot reasonably be employed, and only under one or more of the following circumstances:

- IN SELF-DEFENSE AND DEFENSE OF OTHERS. When deadly force reasonably appears necessary to protect security personnel or others who are reasonably believed to be in imminent danger of death or serious bodily harm.
- o IN DEFENSE OF PROPERTY INVOLVING NATIONAL SECURITY When deadly force reasonably appears to be necessary to prevent the actual or threatened theft of, damage to, or espionage aimed at property or information specifically designated by the commanding officer or other competent authority to be vital to the national security.
- O IN DEFENSE OF PROPERTY NOT INVOLVING NATIONAL SECURITY BUT INHERENTLY DANGEROUS TO OTHERS. When deadly force reasonably appears to be necessary to prevent the actual theft or sabotage of property which is inherently dangerous to others; i.e., property whose theft or destruction presents a substantial potential danger of death or serious bodily injury to others, such as operable weapons and ammunition.
- o TO PREVENT OR INTERRUPT SERIOUS OFFENSES AGAINST PERSONS. When deadly force reasonably appears to be necessary to prevent the commission of a serious offense involving violence and which threatens death or serious bodily injury to another (such as murder, arson, armed robbery, aggravated assault, and rape).
- O APPREHENSION OR ARREST. When deadly force reasonably appears to be necessary to apprehend or prevent the escape of a person when probable cause exists to believe that a person has committed an offense of the nature specified within the circumstances outlined above.
- o ESCAPES. When deadly force reasonably appears necessary to prevent the escape of a prisoner, provided security/LE personnel have probable cause to believe that the escaping prisoner poses a threat of serious bodily harm to security/LE personnel or others.
- o LAWFUL ORDER. The use of deadly force is authorized when directed by the lawful order of any competent authority and when the order meets the criteria of one of the circumstances above. Specifically, the person who is directed to use deadly force must have a clear description of the person against whom it is authorized, and at least a general knowledge of the circumstances that warrant deadly force.

110.4 Discuss the use of less than lethal force.

Security personnel are often armed with weapons or equipment other than firearms. Even though their intended purpose is non-lethal, when applied, they could cause death or serious bodily harm.

Less lethal methods provide alternatives to firearms and increased options for the use of minimum force.

- Handcuffs. A person who poses an immediate threat of bodily injury or death, destruction of evidence or escape should be handcuffed securely but not so tightly as to cause the individual injury or pain. Handcuffs, when in use, will be double locked and checked periodically to ensure they are not causing injuries. Suspects should never be handcuffed to objects, to include vehicles. These precautions are also applicable to the use of leg irons.
- Batons. Nightstick blows to the head can cripple or kill. Security/LE
 personnel must avoid intentionally striking combative suspects in the head or
 other bony body parts with nightsticks except when circumstances justify the
 use of deadly force.
- Military Working Dogs (MWD's).
 - o Because of the training the MWD has received, it must be considered a weapon.
 - o When releasing an MWD to attack, the handler must:
 - Be sure that the MWD will cease an attack upon command.
 - Be sure that the MWD has identified the same target that the handler is releasing it to attack.
 - Warn bystanders to cease all movement.
 - Call the MWD off the attack as soon as the suspect stops or indicates surrender.
- Show of Force
 - o Shout verbal warning to halt or Stop
 - o Show your weapon and demonstrate intent
 - o Shove or use other non-deadly means to command compliance
 - Shoot to eliminate threat

110.5 Discuss your unit's standard operating procedures to deter terrorism against yourself and your unit.

Refer to Local Operations Orders, Local Area Directives, Base Orders.

110.6 Discuss the rules of engagement as it relates to force protection.

JP 1-02 (DoD Dictionary) Rules of Engagement — Directives issued by competent military authority that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered.

110.7 Discuss the use of rear area security as it relates to force protection and rules of engagement.

Commanders have an inherent responsibility for the security of their personnel, equipment, and facilities. The component commander and the MAGTF commander are ultimately responsible for the security of their assigned rear areas. The rear area may be

110 Force Protection

divided into smaller geographic areas to enhance overall command and control. Units are responsible for their local security. In the rear area, security objectives include:

- Preventing or minimizing disruption of support operations.
- Protecting personnel, supplies, equipment, and facilities.
- Protecting Lines of Communications (LOCs).
- Preventing or minimizing disruption of command and control.
- Defeating, containing, or neutralizing any threat in the rear area. Commanders employ both active and passive measures to provide security. Active measures include organizing for defensive operations, coordinating reconnaissance and surveillance, providing security to convoys, positioning air defense units in the rear area, establishing liaison with fire support organizations, employing close air support, establishing reaction forces developing defensive plans and positioning assets in support of them, patrolling, and training in defensive skills. Passive measures include camouflage, dispersion, and cover. Security operations in the rear area require detailed planning and aggressive execution. They must be integrated with all other operations. Subordinate units are responsible for the conduct of local security operations, but must coordinate with the overall rear area coordinator or rear area commander.
- Types of security operations include:
 - o Populace and resource control operations.
 - o Enemy prisoner of war operations.
 - o Noncombatant evacuation operations.
 - o Civilian control operations.
 - o Area damage control operations.
 - Combat operations. Other operations conducted within the rear area that facilitate the conduct of security operations include deception operations; civil affairs operations; nuclear, biological, and chemical defense operations; and psychological operations.

111 GENERAL COMBAT LEADERSHIP FUNDAMENTALS

References:

- a. MCRP 5-12A/FMFM 0-25/FM 25-10, The Law of Land Warfare
- b. Marine Corps Common Skills Handbook, Book 1A, All Marines, Individual Training Standards, May 2001

111.1 Explain the Code Of Conduct.

Every Military Member is required to memorize this code during their basic training.

The current Code of Conduct was established by President Dwight D. Eisenhower on 17 August 1955 as a response to inconsistent and prejudicial action taken by U.S. Military members during the Korean War. It has been twice modified, once in 1977 by President Jimmy Carter, and again in 1988 by President Ronald Reagan, who made the code gender-neutral.

Article 1

"I am an American fighting in the armed forces, which guard my country and our way of life. I am prepared to give my life in their defense."

Interpretation:

I am a Marine. I will fight and if necessary, die for my country and our way of life.

Article 2

"I will never surrender of my own free will. If in command, I will never surrender the members of my command while they still have the means to resist."

Interpretation:

I will never surrender as long as I can fight, not will I surrender the Marines in my charge if they can fight. If they should lose the means to fight, they will take all possible steps to evade capture.

Article 3

"If I am captured, I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will accept neither parole nor special favors from the enemy."

Interpretation:

If I am captured, I will not take any favors or special treatment from the enemy, and I will resist and escape, if possible. If I can help Marines and others to escape, I will do so.

111 General Combat Leadership

Article 4

"If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information nor take part in any action, which might be very harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of senior prisoners, regardless of the branch of service (U.S. Or allied nation.)

Interpretation:

If I am a prisoner, I will help my fellow prisoners and not sell them out for favors from the enemy. If senior, I will take charge; if not, I will follow the orders of the senior prisoner, regardless of the branch of service (U.S. or allied nation).

Article 5

"When questioned, should I become a prisoner of war, I am required to give name, rank, service number and date of birth. I will evade answering further questions to the utmost of my ability. I will give no oral or written statements disloyal to my country and its allies or harmful to their cause."

Interpretation:

If taken prisoner, I will give my service number (SSN), name, rank, and date of birth, as required. I may fill out a Geneva Convention Capture Card, but I am not required to. I may also write letters home and talk with the enemy about matters of health and welfare. I will say or sign nothing that may hurt my fellow prisoners, my country, or its allies.

Article 6

"I will never forget that I am an American, fighting for freedom, responsible for my actions, and dedicated to the principles, which made my country free. I will trust in my God and in the United States of America."

Interpretation:

I am a Marine fighting to keep my country free. I will be responsible for my conduct, and I will trust in my God and my country.

111.2 Identify the four specific items of information marines and sailors are required to give to their captors.

- Name
- Rank
- Service Number (SSN)
- Date of Birth

111.3 State the rights and obligations of Enemy Prisoners of War (EPWs).

Explain the right to receive sanitary, protective housing and clothing.

Prisoners of war shall be quartered under conditions as favorable as those for the forces of the Detaining Power who are billeted in the same area. The said conditions shall make allowance for the habits and customs of the prisoners and shall in no case be prejudicial to their health. The foregoing provisions shall apply in particular to the dormitories of POWs as regards to both total surface and minimum cubic space and the general installations, bedding and blankets. The premises provided for the use of POWs individually or collectively shall be entirely protected from dampness and adequately heated and lighted, in particular between dusk and lights out. All precautions must be taken against the danger of fire. In any camp in which women and men POWs are accommodated, separate dormitories shall be provided for them.

Clothing, underwear, and footwear shall be supplied to POWs in sufficient quantities by the Detaining Power which shall make allowance for the climate of the region where the prisoners are detained. Uniforms of enemy Armed Forces captured by the Detaining Power should, if suitable for the climate, be made available to clothe POWs. The regular replacement and the Detaining Power shall assure repair of the above articles. In addition, working POWs shall receive appropriate clothing wherever the nature of the work demands.

Explain the right to receive a sufficient amount of food to sustain good health.

The basic daily food rations shall be sufficient in quantity, quality, and variety to keep POWs in good health and prevent loss of weight or the development of nutritional deficiencies. Account shall also be taken of the habitual diet of the prisoners. The Detaining Power shall supply working POWs with such additional rations necessary for the labour on which they are employed.

Sufficient drinking water shall be supplied to POWs. The use of tobacco shall be permitted. Prisoners of war shall be associated with the preparation of their meals; they may be employed for that purpose in the kitchens. Furthermore, they shall be given the means of preparing themselves the additional food in their possession. Adequate premises shall be provided for messing. Collective disciplinary measures affecting food are prohibited.

Explain the right to receive adequate medical care.

Every camp shall have an adequate infirmary where POWs may have the attention they require as well as appropriate diet. Isolation wards shall, if necessary, be set aside for cases of contagious or mental disease. Prisoners of war suffering from serious disease or whose condition necessitates special treatment, a surgical operation, or hospital care must be admitted to any military or civilian medical unit where such treatment can be given, even if their repatriation is contemplated in the near future. Special facilities shall be afforded for the care to be given to the

111 General Combat Leadership

disabled, in particular to the blind, and for their rehabilitation pending repatriation.

Prisoners of war shall have the attention, preferably, of medical personnel of the power on which they depend and, if possible, of their nationality. Prisoners of war may not be prevented from presenting themselves to the medical authorities for examination. The detaining authorities shall, upon request, issue to every prisoner who has undergone treatment, an official certificate indicating the nature of his or her illness or injury and the duration and kind of treatment received. A duplicate of this certificate shall be forwarded to the Central Prisoners of War Agency. The costs of treatment, including those of any apparatus necessary for the maintenance of POWs in good health, particularly dentures and other artificial appliances and spectacles shall be borne by the Detaining Power. Medical inspections of POWs shall be held at least once a month. They shall include the checking and the recording of the weight of each POW. Their purpose shall be, in particular, to supervise the general state of health, nutrition, and cleanliness of prisoners and detect contagious diseases, especially tuberculosis, malaria, and venereal disease. For this purpose, the most efficient methods available shall be employed, e. g., periodic mass miniature radiography for the early detection of tuberculosis.

Explain the right to receive necessary facilities for proper hygiene.

Prisoners of war may be interned only in premises located on land and affording every guarantee of hygiene and healthfulness. Except in particular cases, which are justified by the interest of the prisoners themselves, they shall not be interned in penitentiaries. Prisoners of war interned in unhealthy areas, or where the climate is injurious for them, shall be removed as soon as possible to a more favorable climate.

Explain the right to practice religious faith.

Prisoners of war shall enjoy complete latitude in the exercise of their religious duties, including attendance at the service of their faith on condition that they comply with the disciplinary routine prescribed by the military authorities. Adequate premises shall be provided where religious services may be held.

Explain the right to keep personal property except weapons, military equipment, and military documents.

All effects and articles of personal use except arms, horses, military equipment, and military documents shall remain in the possession of POWs, likewise their metal helmets and gas masks and like articles issued for personal protection. Effects and articles used for their clothing or feeding shall likewise remain in their possession, even if such effects and articles belong to their regulation military equipment. At no time should POWs be without identity documents. The Detaining Power shall supply such documents to POWs who possess none.

Badges of rank and nationality, decorations, and articles having above all a personal or sentimental value may not be taken from POWs. Sums of money

carried by POWs may not be taken away from them except by order of an officer, after the amount and particulars of the owner have been recorded in a special register, and an itemized receipt has been given legibly inscribed with the name, rank, and unit of the person issuing the said receipt. Sums in the currency of the Detaining Power of which are changed into such currency at the prisoner's request shall be placed to the prisoner's credit.

Explain the right to send and receive mail.

Prisoners of war shall be allowed to send and receive letters and cards. If the Detaining Power deems it necessary to limit the number of letters and cards sent by each POW, the said number shall not be less than two letters and four cards monthly, exclusive of the capture cards provided for in Article 70, and conforming as closely as possible to the models annexed to the present convention. Further limitations may be imposed only if the Protecting Power is satisfied that it would be in the interests of the POWs concerned to do so owing to difficulties of translation caused by the Detaining Power's inability to find sufficient qualified linguists to carry out the necessary censorship.

If limitations must be placed on the correspondence addressed to POWs, they may be ordered only by the power on which the prisoners depend, possibly at the request of the Detaining Power. Such letters and cards must be conveyed by the most rapid method at the disposal of the Detaining Power; they may not be delayed or retained for disciplinary reasons.

Prisoners of war who have been without news for a long period, are unable to receive news from their next of kin, or given news by the ordinary postal route, as well as those who are at a great distance from their homes shall be permitted to send telegrams, the fees being charged against the POW's accounts with the Detaining Power or paid in the currency at their disposal. They shall likewise benefit by this measure in cases of urgency. As a general rule, the correspondence of POW shall be written in their native language. The parties to the conflict may allow correspondence in other languages. Sacks containing POW mail must be securely sealed and labeled so as clearly to indicate their contents, and must be addressed to offices of destination. 1-10-5

Explain the right to receive packages containing non-contraband items such as food, clothing, educational, religious, and recreational materials.

Prisoners of war shall be allowed to receive, by post or by any other means, individual parcels or collective shipments containing in particular foodstuffs, clothing, medical supplies, and articles of a religious, educational, or recreational character which may meet their needs; including books, devotional articles, scientific equipment, examination papers, musical instruments, sports outfits, and materials allowing POWs to pursue their studies or their cultural activities.

Such shipments shall in no way free the Detaining Power from the obligations imposed upon it by virtue of the present convention. The only limits which may

111 General Combat Leadership

be placed on these shipments shall be those proposed by the Protecting Power in the interest of the prisoners themselves, by the International Committee of the Red Cross, or any other organization giving assistance to the prisoners, in respect of their own shipments only, on account of exceptional strain on transport or communications.

Explain the right to select a fellow POW to represent you.

In all places where there are POWs, except in those where there are officers, the prisoners shall freely elect by secret ballot every 6 months, and also in case of vacancies, prisoners' representatives entrusted with representing them before the military authorities, the Protecting Powers, the International Committee of the Red Cross, and any other organization which may assist them. These prisoners' representatives shall be eligible for reelection.

In camps for officers and persons of equivalent status or in mixed camps, the senior officer among the POWs shall be recognized as the camp prisoners' representative. In camps for officers, he or she shall be assisted by one or more advisers chosen by the officers; in mixed camps, his or her assistants shall be chosen from among the POWs who are not officers and shall be elected by them.

Officer POWs of the same nationality shall be stationed in labor camps for POWs to carry out the camp administration duties for which the POWs are responsible. These officers may be elected as prisoners' representatives under the first paragraph of this article. In such a case, the assistants to the prisoners' representatives shall be chosen from among those POWs who are not officers.

Every representative elected must be approved by the Detaining Power before he or she has the right to commence his or her duties. Where the Detaining Power refuses to approve a POW elected by his or her fellow POWs, it must inform the Protecting Power of the reason for such refusal.

In all cases, the prisoners' representative must have the same nationality, language, and customs as the POWs whom he or she represents. Thus, POWs distributed in different sections of a camp, according to their nationality, language or customs shall have for each section their own prisoners' representative in accordance with the foregoing paragraphs.

Explain the right to receive humane treatment.

Prisoners of war must at all times be humanely treated. Any unlawful act or omission by the Detaining Power causing death or seriously endangering the health of a POW in its custody is prohibited and will be regarded as a serious breach of the present convention. In particular, no POW may be subjected to physical mutilation or to medical or scientific experiments of any kind, which are not justified by the medical, dental, or hospital treatment of the prisoner concerned and carried out in his or her interest.

Explain the right to have a copy of the Geneva Convention and its annexes, including any special agreements, posted where it can be read.

The Geneva Convention and its annexes, etc., must be written in the proper language and available upon request.

Every POW camp shall be put under the immediate authority of a responsible commissioned officer belonging to the regular Armed Forces of the Detaining Power. Such officer shall have in his or her possession a copy of the present convention. He or she shall ensure that its provisions are known to the camp staff and the guard and shall be responsible, under the direction of his government, for its application.

In every camp, the text of the present convention and its annexes and the contents of any special agreement provided for in Article 6, shall be posted, in the prisoners' own language, in places where all may read them. Copies shall be supplied, on request, to the prisoners who cannot have access to the copy which has been posted.

Explain the right to have a copy of all camp regulations, notices, orders, and publications about POW conduct posted where it can be read.

Regulations, notices, etc., must be in the proper language for POWs to understand and available upon request. Regulations, orders, notices and publications of every kind relating to the conduct of POWs shall be issued to them in a language which they understand. Such regulations, orders, and publications shall be posted in the manner described above and copies shall be handed to the prisoners' representative. Every order and command addressed to POWs individually must likewise be given in a language which they understand.

Rights:

- o Receive sanitary, protective housing and clothing
- o Receive sufficient amount of food to sustain good health
- o Receive adequate medical care
- o Receive necessary facilities for proper hygiene
- o Practice religious faith
- Keep possessions and personal property except weapons, military equipment, and documents
- Send and receive mail
- o Receive packages containing non-contraband items such as food, clothing, educational, religious, and recreational materials
- o Select representations (fellow POW)
- o Receive humane treatment
- o Request a copy of rights and responsibilities (translated versions)
- Request standards of conduct, such as posted and translated camp regulations, notices, orders, and publications.

111 General Combat Leadership

Responsibilities:

State the four items of information Marines are required to give their captors.

- Name
- Rank
- Service number (social security number)
- Date of birth

Explain lawful obedience to rules and regulations.

Obey lawful rules and regulations.

Explain responsibility to perform paid labor as required

- Labor that is not military
- Not degrading
- Not dangerous
- Not unhealthy

Explain military discipline, courtesy, and rendering of honors responsibilities.

- Maintain military discipline in accordance with the rules and regulations governing the armed forces.
- Maintain courtesy and honors to all officers regardless of the branch of the service (U.S. or allied nation).

111.4 State the procedures for handling Enemy Prisoners of War (EPWs).

Responsibility for the Treatment of Prisoners

Prisoners of war are in the hands of the enemy Power, but not of the individuals or military units who have captured them. Irrespective of the individual responsibilities that may exist, the Detaining Power is responsible for the treatment given them.

Prisoners of war may only be transferred by the Detaining Power to a Power which is a party to the Convention and after the Detaining Power has satisfied itself of the willingness and ability of such transferee Power to apply the Convention. When prisoners of war are transferred under such circumstances, responsibility for the application of the Convention rests on the Power accepting them while they are in its custody.

Nevertheless, if that Power fails to carry out the provisions of the Convention in any important respect, the Power by whom the prisoners of war were transferred shall, upon being notified by the Protecting Power, take effective measures to correct the situation or shall request the return of the prisoners of war. Such requests must be complied with. (*GPW*, *art*. 12.)

Humane Treatment of Prisoners

Prisoners of war must at all times be humanely treated. Any unlawful act or omission by the Detaining Power causing death or seriously endangering the health of a prisoner of war in its custody is prohibited, and will be regarded as a serious breach of the present Convention. In particular, no prisoner of war may be subjected to physical mutilation or to medical or scientific experiments of any kind which are not justified by the medical, dental or hospital treatment of the prisoner concerned and carried out in his interest.

Likewise, prisoners of war must at all times be protected, particularly against acts of violence or intimidation and against insults and public curiosity.

Measures of reprisal against prisoners of war are prohibited. (*GPW, art.* 13.)

Respect for the Person of Prisoners

Prisoners of war are entitled in all circumstances to respect for their persons and their honor.

Women shall be treated with all the regard due to their sex and shall in all cases benefit by treatment as favorable as that granted to men.

Prisoners of war shall retain the full civil capacity which they enjoyed at the time of their capture. The Detaining Power may not restrict the exercise, either within or without its own territory, of the rights such capacity confers except in so far as the captivity requires. (*GPW*, *art.* 14.)

Maintenance of Prisoners

The Power detaining prisoners of war shall be bound to provide free of charge for their maintenance and for the medical attention required by their state of health. (*GPW*, *art.* 15.)

Equality of Treatment

Taking into consideration the provisions of the present Convention relating to rank and sex, and subject to any privileged treatment which may be accorded to them by reason of their state of health, age or professional qualifications, all prisoners of war shall be treated alike by the Detaining Power, without any adverse distinction based on race, nationality, religious belief or political opinions, or any other distinction founded on similar criteria. (*GPW*, *art.* 16.)

111 General Combat Leadership This page was intentionally left blank.

112 UNITED STATES MARINE CORPS (USMC) OPERATIONS FUNDAMENTALS

References:

- a. Operational Maneuver from the Sea
- b. FMRP 7-16, Multiservice Procedures for Humanitarian Assistance Operations
- c. (PCN 14007160000)
- d. MCWP 3-35.3, Military Operations on Urban Terrain (PCN 14300003500)
- e. MCWP 5-1, Marine Corps Planning Process
- f. Joint Pub 1-02, DoD Dictionary

112.1 Discuss the principles of the Operational Maneuver from the Sea (OMFTS)



In the White Papers ... From the Sea and Forward ... from the Sea, the Navy and Marine Corps presented a common vision for a future in which skillfully handled naval forces would enable the United States to exert its influence in the littoral regions on the world. Building upon the foundation laid by those papers, Operational Maneuver from the Sea deals explicitly with the full spectrum of challenges that we will have to face, the dangers and opportunities created by new technologies, and the very exciting prospect of adapting the tradition of maneuver warfare, not merely to amphibious operations, but to all aspects of warfare in and around, coastal waters.

112 USMC Operations

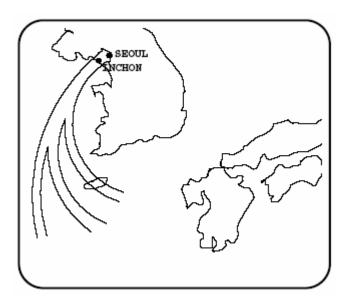
The heart of Operational Maneuver from the Sea is the maneuver of naval forces at the operational level, a bold bid for victory that aims at exploiting a significant enemy weakness in order to deal a decisive blow. Mere movement, which may lead to indecisive results or even be counterproductive, does not qualify as operational maneuver. That is to say, operational maneuver should be directed against an enemy center of gravity—something that is *essential* to the enemy's ability to effectively continue the struggle.

Principles of Operational Maneuver from the Sea

- Focus on an operational objective.
- Use the sea as maneuvering space.
- Generate overwhelming tempo and momentum.
- Pit strength against weakness.
- Emphasize intelligence, deceptions, and flexibility.
- Integrate all organic, joint, and combined assets.

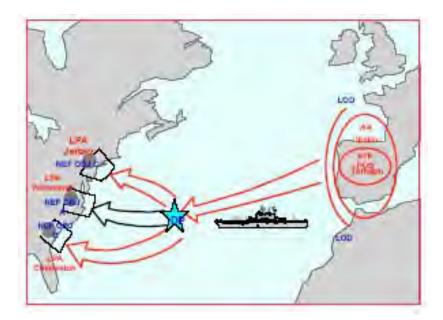
OMFTS: Example from the Past

The capture of Seoul in 1950 was a classic example of an Operational Maneuver from the Sea. It was a completely focused operation, unified under a single commander, that flowed coherently from San Diego, Sasebo, and Pusan, through an amphibious power projection at Inchon, to key objectives well inland.



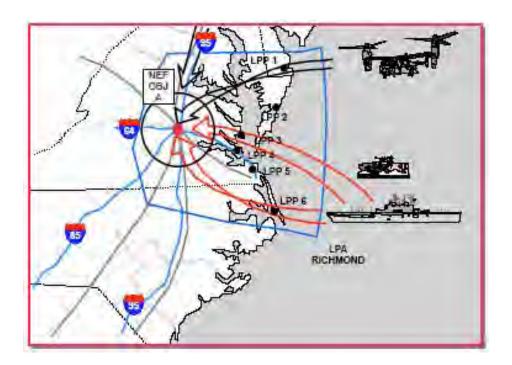
The Seoul operation was focused on a critical North Korean vulnerability, the lines of support (and withdrawal) through the Han River Valley at Seoul. It maintained that focus and with it an unmatched tempo of aggressive action. As a result, it was crushingly successful, leading to the destruction of the North Korean Army and the liberation of South Korea. If the operation had lost its focus, however, and been planned and executed as merely an amphibious lodgment at Inchon, it would have generated only an operationally insignificant tactical "victory".

OMFTS: Example



As the attack on Richmond (NEF Objective A) relentlessly continues, advance operations and real-time reconnaissance identify highly exploitable Littoral Penetration Points (LPP) through which the attacking forces swarm by air and surface means to overwhelm enemy defenses. The attack progresses from ship to objective with no large or lengthy buildup on the initial beaches. (In many cases, the assaulting Marines will simply pass through the penetration points, leaving no residual forces at all.) An MPF landing reinforces this attack, while other Marines are the seaward flank for an overland southern advance of combined Army, Air Force, and allied forces.

112 USMC Operations



112.2 Explain the main purpose of military forces conducting foreign Humanitarian Assistance (HA) operations.

A chief purpose of military forces conducting foreign HA operations is to provide a secure environment to allow humanitarian relief efforts to progress. As such, HA missions for US military may cover a broad range of taskings. In every case, the specific requirements placed on US soldiers, sailors, marines, and airmen will be situation dependent. HA means vastly different things to different people, based on their specific perspective. HA operations can encompass both *reactive* programs, such as disaster relief, and *proactive* programs, such as humanitarian and civic assistance (HCA) or civil support.

112.3 Discuss the law and regulations that govern Humanitarian and Civic Assistance Programs and explain in detail some of the elements of the law.

HUMANITARIAN AND CIVIC ASSISTANCE (HCA)

HCA is a component of the Nation Assistance Program, under purview of the foreign internal defense and development concept. HCA is normally a long-term proactive program coordinated by regional unified commands. Deployed military units conduct these activities, which include medical, dental, and veterinary care and some local infrastructure construction and repair. Nation assistance furthers the establishment of an effective local government supporting the goal of crisis prevention. Nation assistance therefore includes those actions that assist in and support legitimate governments of host nations and counter attempts by destabilizing forces from within the affected nation. HCA is governed by Title 10, US Code, Section 401, which states that HCA:

- Must be carried out in conjunction with host nation military and/or civilian personnel.
- Shall complement and may not duplicate any other form of social or economic assistance provided to the host nation by another department or agency of the US.
- o May not be provided directly or indirectly to any individual, group, or organization engaged in military or paramilitary activity.
- o May not be provided unless the Department of State (DOS) specifically approves such assistance.

112.4 Discuss two types of combat and noncombat operations that represent the term Military Operations Other Than War (MOOTW).

MILITARY OPERATIONS OTHER THAN WAR

Military operations other than war (MOOTW) represent a wide range of operations occurring in both domestic and foreign environments and include combat and non-combat operations. Specific operations include, but are not limited to—

- o Noncombatant evacuation operations (NEO).
- o Strikes and raids.
- Arms control, enforcement of exclusion zones, peacekeeping, and peace enforcement.
- o Nation assistance.
- o Protection of shipping.
- o Humanitarian assistance.

Operations Urgent Fury, Provide Comfort, Restore Hope, and Sea Angel and JTF Andrew are examples of MOOTW. As compared to war, MOOTW are more sensitive to political considerations because of the overriding objective to limit potential hostilities. When conducted in foreign environments, MOOTW support the diplomatic instrument of national power, which highlights the criticality of both the military's supporting role and interagency operations for successful mission accomplishment.

Humanitarian Assistance (HA) operations are often conducted simultaneously with other military missions. In most short-term, foreign HA operations, neutrality is an important aspect. Military forces should be aware that some nonmilitary agencies involved in HA operations, especially non-US agencies, do not see the US military as neutral. However, when they comprehend the tremendous capabilities of the US military, with its unique warfighting and humanitarian abilities, they become more receptive to increased interagency operations.

Peace operations—especially peace enforcement—goals and objectives may differ from HA goals and objectives both in scope and duration. Attitudes of host nationals or conflict belligerents may vary from helpful cooperation to forceful opposition, depending on whether the military force is or is not perceived to be an

112 USMC Operations

HA force or a peace operations force. Many peace operations include HA considerations, even when not expressed in the peace operation mandate and mission. HA-type missions that could occur in conjunction with peace operations include:

- o Providing food, potable water, shelter, transportation, and engineer support to the resident population.
- Assisting in the delivery of humanitarian aid, especially to isolated communities.
- O Providing emergency medical treatment and medical assistance programs for the prevention of disease.
- o Providing extraction and evacuation of sick, injured, or wounded civilians.

HA is an important MOOTW mission that the US military is uniquely qualified to plan and execute. Unlike any other single organization, the military has the organizational structure, educated and trained personnel, essential equipment, rapid worldwide deployability, and ability to operate in austere physical environments.

Examples of MOOTW range from domestic support to combat operations. They include JTF Andrew, Operation Desert Shield, Operation Urgent Fury, and Operation Provide Comfort. MOOTW include a wide range of operations occurring in both domestic and foreign environments, which include both combat and noncombat operations. HA employs military assets to support noncombat objectives as part of MOOTW. Since MOOTW normally occur to support the political/diplomatic instrument, the military may not be in the lead. This highlights the criticality of interagency and NGO and PVO cooperation and coordination for mission success.

112.5 Define the acronym MOUT.

Importance of Urban Areas.

Military operations on urbanized terrain (MOUT) is defined as all military actions planned and conducted on a topographical complex and its adjacent terrain where manmade construction is the dominant feature. It includes combat in cities, which is that portion of MOUT involving house-to-house and street-by-street fighting in towns and cities

Throughout history, military planners have viewed cities as centers of gravity. As such, in war, cities are something to be either protected or taken away, depending upon one's perspective (MCDP 1, *Warfighting*). Cities house the population centers, transportation hubs, seats of government, sources of wealth, centers for industry, information networks, and key nodes of communication within a nation. Recent forecasts based on population statistics and the worldwide migration trend from agrarian to industrialized societies predict that 85 percent of the world's population will reside in urbanized areas by the year 2025. As the world trend toward urbanization increases, the military significance of cities is likely to increase proportionally.

Urbanized areas, themselves, may be significant sources of future conflict. Cities historically are where radical ideas ferment, dissenters find allies, mixtures of people cause ethnic friction, and discontented groups receive media attention. Adversaries may focus on the capture of radio and television stations in an attempt to influence public opinion and attain their political goals. Our political leaders may take advantage to neutralize or stabilize some extremely volatile political situations, or to provide assistance to allies in need of support, by deploying U.S. forces into urban environments,

MOUT effects the tactical options available to a commander. A built-up area is a concentration of structures, facilities, and populations, such as villages, cities, and towns, that form the economic and cultural focus for the surrounding area.

- Cities. Cities are centers of finance, politics, transportation, communication, industry, and culture. They generally have large population concentrations ranging from tens of thousands to millions of people. Because of their psychological, political, or logistical value, control of cities have often been the scenes of pitched battles.
- Multiple Avenues of Approach. Urbanized terrain is a unique battlespace that provides both attacker and defender with numerous and varied avenues of approach and fields of fire. The urban battlespace is divided into four basic levels: building, street, subterranean, and air Operations can be conducted from above ground, on ground level, inside buildings, or below the ground. Most operations will include fighting on all levels simultaneously.
- o Categories of Built-Up Areas. Built-up areas are generally classified as:
 - Villages (populations of 3,000 or less)
 - Strip areas (industrialized zones built along roads connecting towns or cities)
 - Towns or small cities (populations of up to 100,000 and not part of a major urban complex)
 - Large cities with associated urban sprawl (populations in the millions, covering hundreds of square kilometers).
- o **Characteristics of Urbanized Areas.** A typical urban area consists of combinations of the *city core*, *commercial ribbon*, *core periphery*, *residential sprawl*, *outlying industrial areas*, and *outlying high-rise areas*. Each of the urban area's regions has distinctive characteristics that may weigh heavily in planning for MOUT. Most urbanized areas resemble the generalized model shown in Figure 1-2.

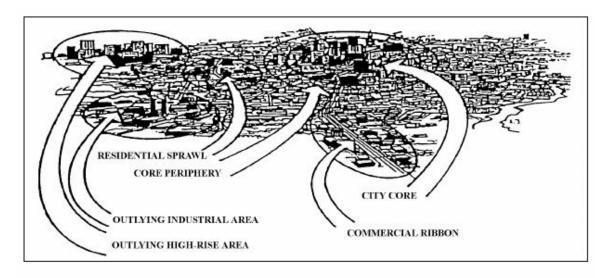


Figure 1-2. Typical Urban Area

112.6 Define and explain the acronym ROE. [ref. c, p. 7-5]

Rules of Engagement (ROE). The nature of the military operation may restrict our use of weapons:

- Minimizing civilian casualties and/or collateral destruction in order to:
 - o Avoiding alienation of the local population
 - o Reducing the risk of adverse world or domestic opinion
 - o Preserving facilities for future use
 - o Preserving cultural facilities and grounds.
- Limiting the use of specific ground or air weapons.

112.7 Discuss the Marine Corps Planning Process (MCPP).

The Marine Corps Planning Process (MCPP) complements joint deliberate and crisis action planning and the naval planning process. It is a responsive and flexible process that can adapt to the needs of any size unit and adjust to any timetable. The Marine Corps planning process embodies our maneuver warfare doctrine with its tenets of top-down planning, single-battle concept, and integrated planning in order to generate and maintain tempo.

The Marine Corps Planning Process (MCPP) supports the Marine Corps warfighting philosophy of maneuver warfare. Since planning is an essential and significant part of command and control, the Marine Corps Planning Process recognizes the commander's central role as the decision maker. It helps organize the thought processes of a commander and his staff throughout the planning and execution of military operations.

The Marine Corps Planning Process focuses on the mission and the threat. It capitalizes on the principle of unity of effort and supports the establishment and maintenance of tempo. The Marine Corps Planning Process is applicable across the range of military

operations and is designed for use at any echelon of command. The process can be as detailed or as abbreviated as time, staff resources, experience, and the situation permit. Planning is the act of envisioning and determining effective ways of achieving a desired end state. It supports the commander in making decisions in a time-constrained and uncertain environment. Whether planning is performed at the strategic, operational, or tactical level, its key functions, as identified in MCDP 5, *Planning*, are to:

- Direct and coordinate actions.
- Develop a shared situational awareness.
- Generate expectations about how actions will evolve and how they will affect the desired outcome.
- Support the exercise of initiative.
- Shape the thinking of planners.

More than anything else, the considerations of time and uncertainty dictate the approach to planning, and are its defining features. Time is most often the scarcest resource and is vital to the planning process. The commander must adjust the planning process to optimize this perishable resource.

When time is critical, the commander uses intuition, judgment, and experience to guide his staff and subordinate commanders. Since planning is future-oriented, and the future is uncertain, all planning is based on imperfect knowledge and involves assumptions. This uncertainty increases with the length of the planning horizon and the rate of change in the environment. Given the fundamental uncertainty of war, planners must recognize that planning will not eliminate uncertainty, but it allows the commander to decide and act effectively in the midst of uncertainty.

The Marine Corps Planning Process is applicable across the range of military operations and is designed for command and staff actions at any echelon of command. Commanders at higher echelons tend to use a more formal and detailed approach to the Marine Corps Planning Process. Higher echelons can consist of a component, Marine expeditionary force (MEF), and major subordinate commands (MSCs) (e.g., division, wing, or force service support group). These commands typically consist of larger staffs, have longer planning horizons, and have access to more information. Commanders at lower echelons, such as a regiment and/or group and below, may modify the planning process to meet their situation (staff resources, shorter planning horizons, information available). Whether planning occurs at the component level, the battalion level, or the squadron level, the commander and his staff must master the Marine Corps Planning Process so they can fully participate in integrated planning.

The Marine Corps Planning Process is an internal planning process used by Marine Corps operating forces. It aligns with and complements the joint deliberate and crisis action planning processes found in Joint Pub 5-0, *Doctrine for Planning Joint Operations*. Appendix A discusses the relationship between the Marine Corps Planning Process and joint planning. When designated as a joint force commander or when preparing a supporting plan in a campaign, a Marine commander and his staff will use the joint planning procedures and the Joint Operation Planning and Execution System (JOPES)

112 USMC Operations

found in the Joint Pub 5 series. If planning an amphibious operation, a Marine commander and his staff refer to Joint Pub 3-02, *Joint Doctrine for Amphibious Operations*, for guidance.

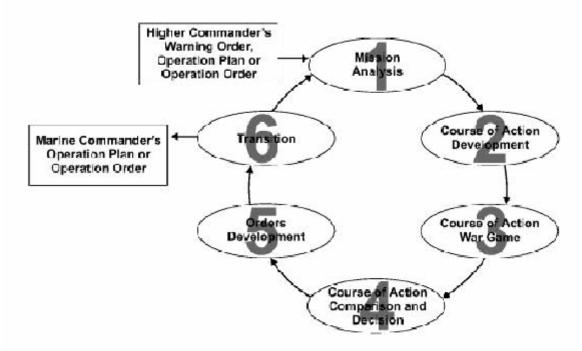


Figure 1-1. Steps in the Marine Corps Planning Process.

112.8 Define the following terms as they apply to deliberate planning:

TPFDD

Time-Phased Force and Deployment Data (TPFDD) — The Joint Operation Planning and Execution System (JOPES) database portion of an operation plan; it contains time-phased force data, non-unit related cargo and personnel data, and movement data for the operation plan, including the following:

- In-place units
- o Units to be deployed to support the operation plan with a priority indicating the desired sequence for their arrival at the port of debarkation
- Routing of forces to be deployed
- o Movement data associated with deploying forces
- Estimates of non-unit-related cargo and personnel movements to be conducted concurrently with the deployment of forces
- Estimate of transportation requirements that must be fulfilled by commonuser lift resources as well as those requirements that can be fulfilled by assigned or attached transportation resources.

TPFDD maintenance is conducted by the supported combatant commander in coordination with the supporting combatant commanders, Service components, US Transportation Command, and other agencies as required. At designated

intervals, changes to data in the TPFDD, including force structure, standard reference files, and Services' type unit characteristics files, are updated in Joint Operation Planning and Execution System (JOPES) to ensure currency of deployment data. TPFDD maintenance may also be used to update the TPFDD for Chairman of the Joint Chiefs of Staff or Joint Strategic Capabilities Plan submission in lieu of refinement during the JOPES plan development phase.

For both global and regional operation plan development, the process consists of several discrete TPFDD that may be conducted sequentially or concurrently, in whole or in part. These phases are concept, plan development, and review. The plan development phase consists of several subphases: forces, logistics, and transportation, with shortfall identification associated with each phase. The plan development phases are collectively referred to as TPFDD refinement. The normal TPFDD refinement process consists of sequentially refining force, logistic (non-unit-related personnel and sustainment), and transportation data to develop a TPFDD file that supports a feasible and adequate overlapping of several refinement phases. The decision is made by the supported commander, unless otherwise directed by the Chairman of the Joint Chiefs of Staff. For global planning, refinement conferences are conducted by the Joint Staff in conjunction with US Transportation Command. TPFDD refinement is conducted in coordination with supported and supporting commanders, Services, the Joint Staff, and other supporting agencies. Commander in Chief, US Transportation Command, will normally host refinement conferences at the request of the Joint Staff or the supported commander.

Another term related to the **Time-Phased Force and Deployment Data List** (TPFDL) is the Appendix 1 to Annex A of the operation plan. It identifies types and/or actual units required to support the operation plan and indicates origin and ports of debarkation or ocean area. It may also be generated as a computer listing from the time-phased force and deployment data.

CONPLAN

Joint Pub 1-02 defines **concept plan** — As an operation plan in concept format. Also called **CONPLAN**.

CONPLAN—An operation plan in an abbreviated format that would require considerable expansion or alteration to convert it into an OPLAN or OPORD. A CONPLAN contains the CINC's Strategic Concept and those annexes and appendixes deemed necessary by the combatant commander to complete planning. Generally, detailed support requirements are not calculated and TPFDD files are not prepared. Also called **CONPLAN**.

CONPLAN with TPFDD— A CONPLAN with TPFDD is the same as a CONPLAN except that it requires more detailed planning for phased deployment of forces.

112 USMC Operations

OPLAN

Operation plan—Any plan, except for the Single Integrated Operation Plan, for the conduct of military operations. Plans are prepared by combatant commanders in response to requirements established by the Chairman of the Joint Chiefs of Staff and by commanders of subordinate commands in response to requirements tasked by the establishing unified commander. Operation plans are prepared in either a complete format (OPLAN) or as a concept plan (CONPLAN). The CONPLAN can be published with or without a time-phased force and deployment data (TPFDD) file.

OPLAN—An operation plan for the conduct of joint operations that can be used as a basis for development of an operation order (OPORD). An OPLAN identifies the forces and supplies required to execute the CINC's Strategic Concept and a movement schedule of these resources to the theater of operations. The forces and supplies are identified in TPFDD files. OPLANs will include all phases of the tasked operation. The plan is prepared with the appropriate annexes, appendixes, and TPFDD files as described in the Joint Operation Planning and Execution System manuals containing planning policies, procedures, and formats.

FUNCPLAN

Functional Plan - Plans involving the conduct of military operations in a peacetime or permissive environment developed by combatant commanders to address requirements such as disaster relief, nation assistance, logistics, communications, surveillance, protection of US citizens, nuclear weapon recovery and evacuation, and continuity of operations or similar discrete tasks. They may be developed in response to the requirements of the Joint Strategic Capabilities Plan, at the initiative of the combatant commander, or as tasked by the supported combatant commander, Joint Staff, Service, or Defense agency. Chairman of the Joint Chiefs of Staff review of combatant commander-initiated plans is not normally required.

113 ENVIRONMENTAL AWARENESS FUNDAMENTALS

References:

- a. OPNAVINST 5100.23E, Navy Occupational Safety and Health (NAVOSH) Program Manual
- b. OPNAVINST 5100.19D, Navy Occupational Safety and Health (NAVOSH) Program Manual for Force Afloat, Vol. I
- c. Local Procedures

113.1 Define the following terms:

Hazardous Material (HAZMAT)

For the purpose of preparing the Material Safety Data Sheet, a hazardous material is defined as a material having one or more of the following characteristics:

- o has a flashpoint below 200°F (93.3oC) closed cup, or is subject to spontaneous heating or is subject to polymerization with release of large amounts of energy when handled, stored, and shipped without adequate control:
- o has a threshold limit value below 1000 ppm for gases and vapors, below 500 mg/m3 for fumes, and below 30 mppcf for dusts;
- o a single oral dose which will cause 50 percent fatalities to test animals when administered in doses of less than 500 mg per kilogram of test animal weight;
- o is a strong oxidizing or reducing agent;
- o causes first degree burns to skin in short time exposure or is systematically toxic by skin contact;
- o in the course of normal operations, may produce dusts, gases, fumes, vapors, mists, or smokes with one or more of the above characteristics;
- o produces sensitizing or irritating effects;
- o is radioactive; or
- o the item has special characteristics which in the opinion of the manufacturer could cause harm to personnel if used or stored improperly.

Hazardous Waste (HAZWASTE)

Any discarded or abandoned hazardous substance as defined in 40 CFR 261 or applicable state regulations where the state has been granted enforcement authority by EPA. It may include any discarded liquid, semisolid, solid, or containerized gaseous material. Hazardous waste does not include EHM with expired shelf-life unless determined as such by a Defense Reutilization and Marketing Office (DRMO).

Material Safety Data Sheet (MSDS)

OSHA Form 174 or an equivalent form containing the identical data elements, must be used by manufacturers of chemical products to communicate to users the chemical, physical, and hazardous properties of their product to comply with the

113 Environmental Awareness

OSHA Hazard Communication Standard, 29 CFR 1910.1200. The completed form identifies key information on the product: name, address, and emergency contact for the manufacturer; the identity of hazardous ingredients; physical/chemical characteristics; fire and explosion hazard data; reactivity data; health hazard data; precautions for safe handling and use; and control measures.

Authorized User List (AUL)

Commands are asked to develop, implement, and revise as necessary a facility level Hazardous Material (HM) Authorized Use List (AUL). For each HM listed, the AUL must include the stock number and item name for stock numbered items purchased via the stock system, or the product name and manufacturer name as they appear on the product label/material safety data sheet (MSDS) for items not purchased via the stock system. In addition, the AUL must identify the processes for which each HM is allowed to be used and maintain this AUL for all HM allowed for use in the activity.

113.2 Explain the general procedures to be followed when a HAZMAT spill is discovered.

Hazardous Material Spill Response Procedures *Introduction*.

Because of the extremely hazardous nature of many materials, only trained personnel shall respond to a hazardous material (HM) spill. Personnel shall be trained by division officers or supervisory personnel to clean up small spills of HM. Appropriate Material Safety Data Sheets (MSDSs) shall be used to conduct training. Response procedures for many specific situations are provided in other documents.

For descriptive purposes, the spill response procedures have been divided into nine phases:

- Discovery and Notification.
- Initiation of Action.
- Evaluation.
- Containment and Damage Control.
- Dispersion of Gases/Vapors.
- Cleanup and Decontamination.
- Disposal of Contaminated Materials.
- Certification for Re-entry.
- Follow-up Reports.

Each response phase is not a separate response action entirely independent of all other phases. Several phases may occur simultaneously and may involve common elements in their operation. For example, containment and damage control may also involve cleanup and disposal techniques.

Spill Discovery and Notification

Spills or potential spills of HM may be discovered by regularly scheduled inspections of storerooms and workshops, by detection devices such as fire alarms and oxygen deficiency detectors, and during routine operations. All discoveries of spills or situations that may lead to a spill must be verbally reported immediately to supervisory personnel and the officer of the deck (OOD)/command duty officer (CDO). Crewmembers are not to remain in the area to investigate the spill. Whenever possible, however, the discoverer /initial response team shall report the following information:

- Time of spill discovery.
- Location of spill.
- Identification of spilled material.
- Behavior of material (reactions observed).
- Source of spill (e.g., tank or container).
- Personnel in vicinity of spill (list by name and department).
- Volume of spill.
- Anticipated movement of spill (e.g., leakage to lower deck passage from amidships toward galley).
- Labeling or placarding information (copy data from spilled container only after exposure to spill is eliminated).

Initiation of Action.

Coordination and direction of spill response efforts at the scene of an HM spill shall be accomplished by the ship's OOD, CDO, fire chief, damage control party leader, or senior person at the scene, as appropriate, who shall initiate the following actions:

- Evacuate all personnel from areas that may be exposed to the spilled material.
- Cordon off the affected area.
- Arrange first aid for injured personnel.
- CAUTION: Do not enter the contaminated area until the necessary protective clothing and equipment have been determined.
- Establish a command post and communications network.
- Prevent spills from entering other compartments by any means that do not involve personnel exposure to the spill, such as closing drains, ventilation ducts, doors, and hatches.
- Disperse gases or vapors to weather using blow-out (forced exhaust) ventilation or by natural ventilation such as opening doors or hatches. If atmosphere is suspected to be flammable or explosive, only explosion-proof fans shall be used for blow-out ventilation.
- Eliminate any fire or explosion hazards such as electrical equipment, incompatible materials, and open flames.

Evaluation.

Proper evaluation of a spill can prevent fires, explosions, personal injury, or permit steps to lessen their impact. This evaluation consists of the following three steps:

- Obtain as much of the following information as possible from container labels and MSDS before starting response actions:
 - Type and concentration of the spilled material.
 - Hazardous characteristics of the spilled material, such as:
 - Flash Point
 - Toxicity
 - Corrosiveness
 - Potentially incompatible substances
 - Effects resulting from exposure (fainting, dizziness, skin or eye irritation, nausea)
 - First aid measures for exposure
- Determine dangerous conditions or potential consequences of the spill, including:
 - Fire or explosion.
 - Presence of oxygen-deficient atmosphere in compartment.
 - Presence of toxic or explosive gases.
 - Possibility of dangerous vapors being drawn into ship's ventilating system.
 - Other HM in the compartment that would play a role in a fire or explosion or is incompatible with the spilled material.
- Determine from the MSDS the appropriate spill response equipment and protective clothing necessary for safe and effective response.

Containment and Damage Control.

Actions taken during this phase are directed toward controlling the immediate spread of the spill and minimizing the impact to the ship and crew. Depending on the type of spill, some or all of the following procedures may be employed:

- Fight fire (if any), being careful to use fire fighting methods compatible with the material involved.
- Shut off or otherwise stem the spill at its source, whenever feasible, by:
 - Replacing leaking containers.
 - Plugging leaks in tanks.
 - Emptying tank of remaining contents.
 - Encapsulating a leaking container into a larger, liquid-tight container.

- Segregating leaking containers.
- Predict spill movement and take further action to prevent the spill from possibly entering other compartments by closing scuppers, drains, ventilation ducts, doors, or hatches.
- Contain liquid material using barriers, such as sand, upholstery, sorbents, or other equipment suitable to dam the flow.

Dispersion of Gas/Vapor.

If a flammable gas or vapor is released as a result of the spill, the gas/vapor shall be dispersed or diluted as soon as possible. The gas/vapor shall not be allowed to enter other compartments. In some cases, the explosive atmosphere shall be contained and diluted to lower its concentration below the Lower Explosive Limit (LEL). Have the gas free engineer check the spill area for LEL and toxicity. The atmosphere can then be dispersed by one of the following methods:

- Normal exhaust ventilation (explosion-proof only).
- Blow-out ventilation (powerful exhaust ventilation provided in some
- HM storerooms--explosion-proof only).
- Doors and hatches open to the weather.
- Portable fans (explosion-proof only).

Cleanup and Decontamination.

During this response phase, personnel, as directed by the person in charge, shall employ the spill cleanup methods recommended on the MSDS. All surfaces shall be thoroughly cleaned of the spilled material. After the spill cleanup, the compartment shall be thoroughly ventilated.

Reusable protective clothing shall be thoroughly decontaminated and otherwise maintained before it is returned to its proper storage location.

NOTE: Identification of specific requirements for respiratory protection and proper use of this equipment is a critical aspect of all cleanup and decontamination operations.

Disposal of Contaminated Materials.

All non-reusable cleanup materials are to be placed in impermeable containers, stored and disposed of as hazardous waste. These materials include unrecoverable protective clothing, sorbents, rags, brooms, and containers.

Certification for Safe Re-Entry.

The spaces affected by the spill shall be certified safe by the OOD/CDO before normal shipboard operations are resumed in that space. The OOD/CDO shall ascertain the following before allowing re-entry:

- All surfaces--deck, counters, bulkheads, and overheads--have been thoroughly cleaned of the spilled material.
- All compartments have been adequately ventilated as determined from analysis by the gas free engineer.
- All contaminated cleanup materials, including protective clothing, have been packaged, marked and handled as used HM.

Follow-up Reports.

The OOD/CDO shall submit to the HM coordinator a spill report for all on board spills. A copy of this report shall be filed by the safety officer and shall contain the following information:

- Date spill occurred.
- Spill location.
- Identity of spilled material.
- Cause of spill.
- Damage or injuries resulting from the spill.
- Response and cleanup measures taken.
- Any problems encountered.
- Method of disposing of contaminated material.
- Action taken to prevent the repeat of a similar spill.

113.3 State the PPE required when handling HAZMAT/HAZWASTE. Discussion and Policy

The best means of protecting personnel from hazard exposure in the workplace is to eliminate the hazard. When this is not possible, engineering controls shall be the method of choice to eliminate or minimize hazard exposure in the workplace. When neither of these methods can be employed, activities shall implement a personal protective equipment (PPE) program to reduce or eliminate personnel exposure to hazards.

It is Navy policy that activities provide, use and maintain PPE when competent authority determines that its use is necessary and that such use will lessen the likelihood of occupational injuries and/or illnesses. Activities shall provide necessary protective equipment where there is a reasonable probability that the use of the equipment will prevent or reduce the severity of injuries or illnesses. PPE procurement and enforcement of proper use and maintenance is the responsibility of the activity.

Basic Program Requirements

Each activity shall ensure that an assessment of all workplaces is conducted to determine if hazards are present that necessitate the use of PPE. If such hazards are present, or likely to be present, activities shall accomplish the following actions:

- Select, and have each affected employee use, the types of PPE that will
 protect the affected employee from the hazards identified in the hazard
 assessment.
- o Communicate selection decisions to each affected employee.
- O Document that the required workplace hazard assessment has taken place with a written certification, identifying the workplace evaluated, the person performing the evaluation and the date(s) of the hazard assessment. Activities shall retain this document as proof of hazard assessment.

Personal Protective Equipment

PPE establishes a "last line of defense" against workplace hazards, and in some cases, may be the only means of protection. Any personal protective equipment breakdown, failure, or misuse immediately exposes the wearer to the hazard. Many protective devices, through misapplication or improper maintenance, can become ineffective without the knowledge of the wearer. For this reason, proper equipment selection and maintenance, personnel training (including equipment limitations), and enforcement of protective equipment maintenance, configuration, and use are key elements to an effective personal protective effort.

Responsibilities

- The commanding officer shall ensure that there is sufficient PPE aboard to meet the needs of his/her command. He/she shall ensure that adequate funding is provided to obtain or replace missing or worn out personal protective equipment.
- The safety officer shall ensure that the use of PPE is monitored for required work or in required spaces, as well as being worn in a proper and effective manner.
- Division officers shall stock personal protective clothing and equipment and shall provide it to personnel as needed. Once equipment is acquired, division officers shall ensure that it is properly maintained. Additionally, division officers shall ensure that assigned personnel are adequately trained on the type and proper use of PPE required at their work stations and shall enforce the proper use and wear of protective equipment.
- All hands shall ensure that they wear the required PPE to perform assigned work in a proper manner. If the required equipment is not available to do the assigned work, or if instruction is needed on how to wear or use the equipment, the affected person shall notify his/her supervisor immediately.

Specific Examples of Protective Equipment

Head Protection.

Helmets or hard hats protect crew members from the impact of falling and flying objects, from impact with low overheads, and on a limited basis from electric shock and burn. Metal hard hats are not acceptable for shipboard use.

Do not wear hard hats if cracked, if the hat material has a hole other than one caused by the manufacturer or if painted. Such hard hats will be turned in and replaced. Do not drill any holes in hard hats or modify them in any way. Such action will greatly reduce the protective capability of the headwear. Affixing decals on protective headwear is permitted.

Foot Protection.

Shipboard environments such as flight decks, hangar decks, machine shops, pipe shops, heavy supply parts stowage areas, replenishment areas, and rigging sponsons expose personnel in some degree to foot hazards. Leather shoes are required for all personnel aboard ship for normal daily wear. CORFAM® (or equivalent) shoes may only be worn when immediately departing or returning to the ship or when specifically authorized by the commanding officer for ceremonial or other special occasions. Do not wear CORFAM® (or equivalent), plastic, synthetic or vinyl shoes in firerooms, main machinery spaces or in hot work areas. Several types of safety shoes are available.

Hand Protection.

Hand hazards include handling sharp objects, working with chemicals or electrical equipment and hot work.

Safety Clothing.

Special clothing may consist of flameproof coveralls, disposable coveralls, impervious chemical spill coveralls, welding leathers, and chemical aprons. These items may be specified as required by annual safety zone inspections, baseline industrial hygiene surveys, or standard work practices. Synthetic clothing, such as certified Navy twill (CNT), may only be worn when immediately departing or returning to the ship or when specifically authorized by the commanding officer for ceremonial or other special occasions.

Personal Fall Protection Equipment.

When climbing, working aloft or over the side, wear a parachutetype (full body) safety harnesses with Dyna-Brake® safety lanyard at all times.

Personal Flotation Devices.

Whenever personnel other than aircrew members and flight deck personnel are required to wear life jackets in open sea operations, the life jackets must be inherently buoyant. Those jacket type life preservers are used by personnel in exposed battle stations, when working over the side, topside in heavy weather, during replenishment at sea, and in small boats.

Respiratory Protection

Whenever respiratory protection is required, activities shall establish and maintain a respiratory protection program. Activities shall provide appropriate equipment to personnel, such as employees, inspectors and visitors who must enter an area where the use of respiratory protection is required. These personnel shall use this equipment regardless of stay time.

Activities shall fit test, issue and train personnel to wear respirators and ensure personnel are medically qualified. The only exception is for escape-only respirators. The Navy does not require medical approval for visitors and personnel not assigned to the work areas where activities provide escape-only respirators for potential emergencies. However, they shall be briefed in the use of the escape respirator and shall be escorted at all times by activity personnel who are trained in the use of the respirator and who can guide and assist them in emergencies.

The Respiratory Protection Program Manager shall maintain a listing of employees that require respiratory protection and shall authorize those employees to wear respiratory protective equipment. The activity shall provide appropriate respiratory protection equipment to these individuals.

Other PPE

In addition to the various types of PPE listed above, commands will provide specific PPE related to unique hazards and potential exposures as they arise in the field.

113 Environmental Awareness

This page was intentionally left blank.

114 COMMUNICATIONS FUNDAMENTALS

References:

- a. FMFM 3-30, Communications MCWP 6-22
- b. SECNAVINST 5510.36 DoN Information Security Program
- c. MCRP 6-2.2.2, Talk II-SINCGARS

Single-Channel Radio (SCR) Communications Equipment

Single-channel radio is the principal means of communications support for MAGTF maneuver units. SCR communications equipment is easy to operate. The networks are easily established, rapidly reconfigured, and, most importantly, easily maintained on the move. SCR provides secure voice communications and supports limited data information exchange. SCR in the VHF and UHF bands is normally limited to line of sight. In the HF band, SCR can support long-range communications. SCR satellite communications (SATCOM) provides mobility, flexibility, and ease of operation with unlimited range. Limitations of SCR include susceptibility to enemy electronic warfare (i.e., cosite, terrain, and atmospheric interference); the requirement for close coordination and detailed planning (i.e., a need for common timing, frequency, and equipment); and limited spectrum availability. The latter is particularly critical in the case of SATCOM.

MAGTF SCR equipment is fielded in many configurations and includes hand-held, manpack, vehicle-mounted, bench-mounted, and sheltered radios. These radios operate in simplex and half-duplex modes. The most widely employed tactical radios provide integrated communications security (COMSEC) and jam resistance through frequency hopping. Tactical SCRs operate in the three military radio frequency bands shown in Table 2-1. (NOTE: Not all the SCR's listed on table 2-1 are still in use by the Marine Corps)

Table 2-1, 8CR Equipment.						
Frequency Band	MAGTF SCR Equipment Used	Operating Frequency Range	Typical Application			
IIF	AN/PRC-104 AN/GRC 193 AN/MRC-138 AN/TSC-120	2-29.999 MHz	Radio line of sight and beyond/long range			
VHF	ANA/RC 12 family: AN/PRC-88 AN/PRC-77 SINCGARS family: AN/PRC-110 ANA/RC-98 (A, D) ANA/RC-99 (A, D) ANA/RC-90 (A, D) ANA/RC-91 (A, D) ANA/RC-92 (A, D) ANA/RC-113 ANA/RC-115	30 88 MHz	Radio line of sight and relay/retrans- mission			
	AN/PRC-113 AN/VRC 83	116-150 MH∠	Critical line of sight (ground to air)			
UHF	AN/PRC-113 AN/VRC 83 AN/GRC-1/1	225-400 MI Iz	Critical line of sight (ground to air)			
	AN/PSC-3 AN/PSC-5	-	SATCOM footprint			

114.1 Discuss the following frequency bands as they apply to Navy/Marine Communications.

UHF Radio

Military UHF radio equipment operates in the 116 to 150 MHz upper VHF frequency range and the 225 to 400 MHz military UHF radio spectrum. MAGTF UHF radio sets such as the AN/PRC-113 (see figure 2-7 on page 2-12) are capable of data communications at 16 kbps under optimal conditions. MAGTF ground and airborne UHF radios incorporate the HAVE QUICK Electronic Counter-Counter Measures capability and operate in single-channel and frequency hopping modes. The HAVE QUICK UHF radio is capable of remote operation by using the AN/ GRA-39B or HYX-57.

Ultrahigh Frequency Radio Employment Considerations

UHF radios are used for forward air control (FAC) ground-to-air communication. Line of sight between radios is critical for reliable communications. Significant range differences are encountered between UHF radios employed for ground-to-air and ground-to-ground communications. Greater range is achieved when employed from ground-to-air because of the increased line of sight. When UHF radios are employed in the frequency hopping mode, the following operating factors must be understood for proper operation: hopset, time of day, antenna placement, and power setting.

Ultrahigh Frequency Radio Environmental Limitations

The primary limiting factor when using UHF radios is range (i.e., critical line of sight). Critical line of sight can be described as "what you see is what you get." As long as the radio's antenna has optical line of sight to another radio's antenna, the two will be able to transmit and receive. For this reason, UHF radios are used primarily in air-to-ground communications.

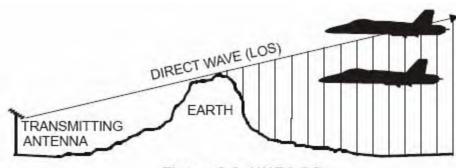


Figure 2-9. UHF LOS.

VHF Radio

The primary MAGTF VHF radio is the single-channel ground and airborne radio system (SINCGARS). SINCGARS is a family of lightweight combat radios that serves as the primary means of communications for command and control and fire support on the battlefield. SINCGARS is the standard VHF-FM tactical radio for the Marine Corps, replacing the AN/PRC-77 and the AN/VRC-12 family. The system provides high security against threat electronic warfare (EW) by using frequency hopping with integrated COMSEC. It is capable of voice and data transmission (up to 16 kbps under optimum conditions and over limited distances) over the VHF-FM frequency range of 30 to 87.975 MHz. See MCRP 6-22A, *Talk II SINCGARS Multiservice Communications Procedures for the Single-Channel Ground and Airborne Radio System*, for more details.

There are seven different SINCGARS configurations available, depending on the requirements of the user. These configurations include the manpack AN/PRC-119 (see figure 2-4 on page 2-8), typically used in infantry operations, and vehicle-mounted variants. The radio provides voice communications ranges of up to 8 km for the manpack and 35 km for vehicular configurations. SINCGARS is capable of remote operation by using the analog AN/GRA-39B radio remote control, the digital HYX-57 wire-line ADAPTER, or the digital C-11561 (C)/U remote control unit (RCU).

Hand-Held Very High Frequency Radios

Radio operators may have the opportunity to use various commercial offthe-shelf (COTS) VHF radios in the Fleet Marine Force (FMF). All of these radios have been open-purchased by the user units and are not part

114 Communications

of the official Marine Corps table of equipment. Therefore, they have not been assigned a table of authorization material control number (TAMCN).

These hand-held radios are typically small, lightweight, battery-powered equipment which provides clear (and in some cases secure) voice communications on up to 100 different channels. Some models come with headsets and microphones. Hand-held radios are mostly used at the infantry-squad level or in maritime prepositioning force (MPF) offloads.

Very High Frequency Radio Employment Considerations

Operator maintenance of the radio equipment, antennas, cable assemblies, and equipment grounding as well as proper planning and selection are essential to reliable communications. Frequency separation, radio antenna separation, remote rekeying when using COMSEC, and power output are significant employment factors. SINCGARS may be limited to the single-channel mode when operating with some Navy ships. When SINCGARS is employed in the frequency hopping mode, the following operating factors need to be taken into account: hopset (i.e., frequency segment allocation), net sych time and mission date, antenna placement (cosite interference is more of a concern than in the single-channel operating mode), and power setting. SINCGARS radios configured for different hopsets that dial into the same numbered net will not be able to communicate. MCRP 6-22A provides detailed information on the employment of SINCGARS.

Very High Frequency Radio Environmental Limitations

The primary limiting factors when using VHF radios are range and frequency availability. VHF radios can provide reliable communications for ranges of up to 10 miles, depending on the equipment operating constraints and the operating environment. Unit location must be considered when employing radios that operate in the VHF spectrum. Most circuits are limited to radio line of sight, known as four-thirds earth curvature. VHF radio signals essentially follow the curvature of the earth to a distance that is approximately one-third greater than the distance to the horizon. Foliage interferes with VHF signals and may reduce normal operating ranges to significantly less than 10 miles.

Very High Frequency Propagation

Radios in the SINCGARS family are the principal VHF transceivers used by the Marine Corps. The mode of communications used in this range is frequently referred to as frequency modulation. VHF will extend slightly beyond line of sight due to diffraction or bending of the signal by the atmosphere (see fig. 2-5). At frequencies in the 30-MHz range, VHF will often act like HF ground wave. The range of reliable communications is generally no more than 15 to 20 kilometers (9.3 to 12.4 mi) under normal field conditions for manpack equipment. Vehiclemounted equipment may

communicate farther because of higher transmitter power and better antennas.

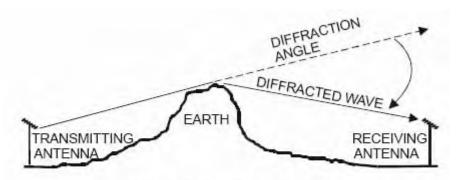


Figure 2-5. VHF Diffraction.

VHF LOS can also be plagued by multipath interference when the direct ray and a reflected ray traveling over a slightly longer path combine at the receiver antenna so that they periodically cancel or reinforce each other (see fig. 2-6). The signal fades in and out over a period of time as a result. Fading is not as great a problem with immobile equipment because corrective action can be taken, but fading can cause significant problems when one or more of the units are mobile.

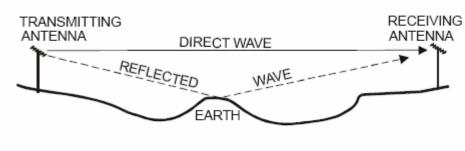


Figure 2-6. VHF LOS.

Common VHF Radio Nets

- o Tactical (TAC)
- o Combat Logistics Request
- o Convoy Control
- o Artillery Conduct of Fire (Arty COF)
- o Tactical Air Control Party (TACP) Local
- o Fire Support Coordination (FSC)
- o Landing Force Shore Party (LFSP)
- o Medical Evacuation (MEDEVAC)

HF Radio

HF radio equipment is capable of both long- and short-range secure voice and data communications. Data communications capability is typically limited to rates of 2.4 kilobits per second (kbps). Data transmission requires modems specifically designed for operation in this band of the radio spectrum. The AN/PRC-104 is capable of remote operation by using the analog AN/GRA-39B radio remote control. See fig. 2-1.

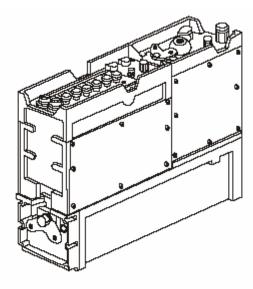


Figure 2-1. AN/PRC-104 HF Radio.

High frequency communications are capable of traveling around the world under the right conditions. This accounts for the large number of signals and noise in the receiver (e.g., thunderstorms). Conversely, the HF transmission may be intercepted and traced by the enemy who is many hundreds of miles away. VHF and UHF communications are normally limited to line of sight; therefore, their range is restricted. UHF transmissions may also be used in satellite communications, increasing ranges to thousands of miles.

High Frequency Radio Employment Considerations.

The primary advantage of using HF radio is its capability to provide long-range, over the horizon (OTH) communication. Successful data communications over the HF range depends on several factors: equipment siting, proper equipment grounding, types of antennas used, and other considerations such as tactical employment of radio equipment, path assessment and analysis, and frequency planning and assignment. When commercial data terminal equipment (DTE) is used, users employing HF radio equipment need to be aware of radio interference and potential shock hazards that can easily affect unprotected DTE. Whenever possible, HF radio equipment should be remoted from DTE.

High Frequency Radio Environmental Limitations

The primary limiting factors when using HF radios are frequency allocation and management and bandwidth availability. Frequency allocation and management is concerned with frequency, time of day, time of year, and location. The ability to reflect HF radio waves off the ionosphere to a distant location is in a constant state of flux because of activity in the ionosphere. The Sun's radiation causes disturbances in the ionosphere, with most changes taking place in what is known as the F layer. Sunrise and sunset can be the most difficult times for HF communications. The F layer splits into two separate layers around sunrise and recombines into one layer around sunset. These splits affect transmission distances as the area "skipped over" increases and decreases. At times, solar storms can eliminate all HF communications. HF transmission paths must be constantly monitored to achieve a dependable HF link. HF radio data communications capabilities are limited by the bandwidth that is imposed by legal constraints and the physics of the spectrum. The bandwidth available in the HF spectrum limits the channel bandwidth, which limits data throughput.

High Frequency Propagation

There are two modes of propagation in HF: ground wave and sky wave. See figure 2-2.

Ground Wave. Ground wave propagation involves the transmission of a signal along the surface of the ground. The maximum ground wave range for most tactical HF communications is about 20 to 30 kilometers (12 to 22 miles) for manpack equipment and 80 to 100 kilometers for high-power vehicular and van equipment. The range may be decreased by heavy vegetation (e.g., Camp Lejeune), mountainous terrain (e.g., Camp Pendleton), or dry desert soil (e.g., Twenty-nine Palms). A ground wave circuit will generally be free of fading and may last for the entire 24-hour period without the need to change frequencies.

114 Communications

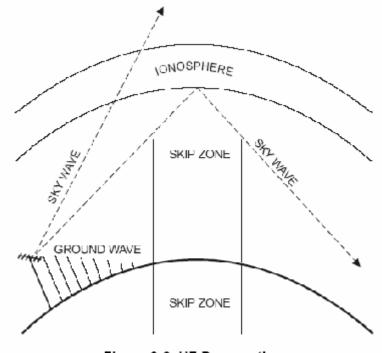


Figure 2-2. HF Propagation.

Sky Wave. Beyond this range, it is necessary to communicate by sky wave. Sky wave propagation involves the bending of the signal by the ionosphere. Frequencies are very important, as those above a certain value will not bend back to earth but will punch through the ionosphere into outer space. On the other hand, lower frequencies are noisier and become absorbed by the ionosphere. The reflective nature of the ionosphere will change when sunlight hits it each day. As a result, at least two frequencies are usually required during a 24-hour period: a low, night frequency and a higher, day frequency.

Common HF Radio Nets

- Command
- Intelligence
- Naval Gun Fire (NGF) Spot
- Helicopter Support Team (HST) Control
- Tactical Air Request/Helicopter Request (TAR/HR)
- Combat Logistic Request

114.2 Discuss the capabilities and uses of the following radios:

AN/PRC-104



Provide secure or plain text, half-duplex reception and transmission of High Frequency (HF) voice or data long range radio communication.

o Frequency Range: 2-29.9999 MHz (HF)

o Channel Spacing: 100 Hz (280,000 Channels)

o Power Output: 20 Watts (PEP)

o Planning Range

• Ground Wave: 0-20 Miles

o Power Source: 24VDC (nominal)

o Primary Battery: BA-5590 (x2)

 Mode: Single Sideband Suppressed Carrier (SSB-SC) and Continuous Wave (CW)

o Major SL-3 Components

■ RT-1209 – Transceiver

■ AM-6874 - RF Amplifier & Antenna Coupler

■ CY-7875 - Battery Case (x2)

AN/PRC-113



114 Communications

Provide secure or plain text, half-duplex reception and transmission of VHF (High Band/ Aircraft Band) or Ultra High Frequency (UHF) Line of Site (LOS) voice radio communication.

VHF Frequency Range: 116-149.975 MHzUHF Frequency Range: 225-399.975 MHz

o Planning Range: LOS Dependant

Channel Spacing: 25 kHzPower Output: 2/10 Watts

Power Source: 24VDC (nominal)Cryptographic Compatibility: KY-99A

o Primary Battery: BA-5590 (x2)

o Mode: AM

o Major SL-3 Components

■ RT-1319B – Transceiver

Battery Box

■ H-250 – Handset

Antenna(s)

AN/PRC-119



Provide secure or plain text, half-duplex, single channel or frequency hopping reception, transmission, and retransmission of Very High Frequency (VHF) voice or data short/medium range radio communication.

- o Frequency Range: 30-87.975 MHz (VHF Low)
- o Channel Spacing: 25 KHz (2,320 Channels)
- o Power Output: 4/50 Watts (Configuration Dependant)
- o Planning Range: 0 25+ Miles (Configuration Dependant)
- o Power Source: 12VDC (nominal)
- o Modulation: FM
- o Modes: Single Channel/Frequency Hopping
- o COMSEC Modes: Plain/Cipher Text
- o Transmission: Voice/Data (16 Kbps)
- o Preset Channels: (6) Auto, (1) Man, (1) Cue
- o Primary Battery: (1) BA-5590
- o Major SL-3 Components
- o AS-3683 Antenna (3' Tape)
- o AS-4266 Antenna (10' Whip)
- o H-250 Handset
- o ALICE Pack

The RT-1523 is the basic RT component for both the manpack and vehicular version of SINCGARS.

114 Communications

- There are a number of series fielded for the basic RT-1523 (I.E. A/B/C/D and E) which may be used as the RT component of the AN/PRC, AN/VRC and the AN/MRC configurations.
 - AN/PRC-119, Manpack radio.
 - AN/MRC-145, Dual long range vehicular radio system with retrans cable.



AN/MRC-138/142



Provide secure or plain text, half-duplex reception and transmission of High Frequency (HF) voice or data, mobile long range radio communication.

o Frequency Range: 2-29.9999 MHz (HF)

o Channel Spacing: 100 Hz (280,000 Channels)

o Power Output: 100/400 Watts (PEP)

Planning Range

• Ground Wave: 0-50+ Miles

o Power Source: 24VDC (nominal)

- o Mode: Single Sideband Suppressed Carrier
- o (SSB-SC) and Continuous Wave (CW)
- o Major SL-3 Components
 - RT-1209 Transceiver
 - AM-6545 RF Amplifier
 - CU-2064 Antenna Coupler
 - AM-6879 Amplifier Converter
 - AT-1011 32 Ft Whip Antenna
 - Accessory Case and Components

The manpack SINCGARS AN/PRC-119 has three power levels for transmission. The effective range is determined by terrain and the power range setting.

- o RF PWR Position Planning Range
- o LO (low) 200 m 400 m
- o MED (medium) 400 m 5 km
- o HI (high) 5 km 10 km

AN/MRC-145



- Consists of two RT-1523s, one antenna for each, and one Power Amplifier for each RT.
- o Power Amplifiers raise power output to 50 Watts, giving a range of 35 Km for each RT.

114.3 Discuss the use of the phonetic alphabet.

114 Communications

The Phonetic Alphabet is used to spell out letters in place of just saying the letter itself. By using a word for each letter there is less chance that the person listening will confuse letters. For instance, some letters that can easily be confused are "D" and "B". Using the phonetic alphabet, "Delta" and "Bravo" can be easily distinguished. The phonetic alphabet is used primarily used in two-way radio communications. The effects of noise, weak signals, distorted audio, and radio operator accent are reduced through use of the phonetic alphabet. This system of spelling letters is used around the world by maritime units, aircraft, amateur radio operators and the military.

Letter	Pronunciation	Letter	Pronunciation	Number	Pronunciation
A	Alpha (AL fah)	N	November (no VEM ber)	0	ZEE row
В	Bravo (BRAH VOH)	0	Oscar (OSS cah)	1	WUN
С	Charlie (CHAR lee)	P	Papa (pah PAH)	2	TOO
D	Delta (DELL tah)	Q	Quebec (keh BECK)	3	TREE
Е	Echo (ECK oh)	R	Romeo (ROW me oh)	4	FOW er
F	Foxtrot (FOKS trot)	S	Sierra (see AIR rah)	5	FIFE
G	Golf (GOLF)	Т	Tango (TANG go)	6	SIX
Н	Hotel (hoh TELL)	U	Uniform (YOU nee form)	7	SEVEN
I	India (IN dee ah)	V	Victor (VIK tah)	8	AIT
J	Juliet (JEW lee ETT)	W	Whiskey (WISS key)	9	NINE er
K	Kilo (KEY loh)	X	X Ray (ECKS RAY)		
L	Lima (LEE mah)	Y	Yankee (YANG key)		
M	Mike (MIKE)	Z	Zulu (ZOO loo)		

114.4 Discuss the preparation and operation of a Single Channel Ground and Airborne Radio (SINCGAR) field radio set.



The following preparation sets are provided to RT-1523 for operation.

- To load a frequency into the PRC-119
 - o Set FCTN switch to LD.
 - o Press FREQ on key pad.
 - o Press CLR on key pad to clear previous frequency.
 - o Type the FREQ as desired.
 - Press STO to save the desired FREO.
 - To load CRYPTO
- To load Crypto
 - o Set FCTN switch to LD.
 - o Set MODE switch to FH.
 - o Set COMSEC switch to CT.
 - o Connect CYZ-10 cable to the AUD/FILL port. (Where the handset goes.)
 - o On the CYZ-10 press on/off and the first selection will be APPL.
 - o After APPL is selected then select RADIO.
 - o After RADIO is selected, select SEND.
 - o After SEND is selected, select RADIO.
 - o After RADIO is selected, select ICOM.
 - o After ICOM is selected, it says "Connect to RT"- press ENTR
 - o The CYZ reminds you to set the RT to load, press ENTR

114 Communications

- o It will ask, "Do you want to include Time?" select NO
- o Press Load on the RT and your Radio will Load Crypto
- To load time into
 - o Set FCTN switch to LD.
 - o Press the TIME button on the keypad.
 - O When you press the time button, two numbers appear and they are the Julian date. After you see them, press CLR to clear the numbers and type the appropriate Julian date, then press STO, and proceed to press TIME again.
 - Once the time button has been pressed again, four other numbers appear and they are the hours and minutes.
 - O Press the time button again and the minute and seconds are displayed. At this point you should have another radio with the correct time ready to give you the time you need for your radio, unless you have loaded the time with a PSN-11; in which while on tour in Iraq, you will get your time from a reliable source because everyone's time is different here.
 - On your radio, type the current hour and then type the next minute. DO NOT PRESS STO YET.
 - On the radio with the reliable time, display the seconds until the correct time has been counted down, in which you press STO on the radio receiving the correct time.
 - o The seconds on the receiving radio shouldn't be off any more than four seconds, or you won't be able to communicate. But in reality to be safe, you shouldn't have the seconds off no more than 1 second.
- Use of the function switches.
 - o THE FCTN SWITCH:
 - o OFF cuts the power off.
 - o Z-FH zeroizes the crypto.
 - o REM is used when the radio is remoted to another radio set.
 - o RXMT is used for retrans.
 - o SQ OFF is used to make noise for the radio observer and it is used to talk to some civilian radios.
 - o SQ ON doesn't make any noise for the radio observer.
 - o LD is used to load or make changes.
 - o TST is used to test the radio
 - o STBY is used for standby so you can cut your power source off and not loose crypto. STBY runs off a battery inside the portion of the radio labeled HUB. When the HUB battery is bad then a diamond will appear in the right hand side of the display screen.
 - o THE MODE SWITCH:
 - SC is the single channel switch.
 - FH is the freq hop switch
 - FH-M is the freq hop master.
 - o THE COMSEC SWITCH:

- PT is plain text
- CT is cipher text
- Z zeroizes the channels
- The rest you won't need

114.5 State the three levels of security classification.

Information that requires protection against unauthorized disclosures in the interest of national security shall be classified at the Top Secret, Secret, or Confidential levels. Except as otherwise provided by statute, no other terms shall be used to identify U.S. classified information. Terms such as "For Official Use Only" (FOUO) or "Secret Sensitive" (SS) shall not be used for the identification of U.S. classified information.

Top Secret

Top Secret is the classification level applied to information whose unauthorized disclosure could reasonably be expected to cause exceptionally grave danger to the national security. Examples include information whose unauthorized release could result in arm hostilities against the U.S. or its allies; a disruption of foreign relations vitally affecting he national security; the compromise of vital national defense plans; the disclosure of complex cryptographic and communications intelligence systems; the disclosure of sensitive intelligence operations; the discloser of significant scientific or technological developments.

Secret

Secret is the classification level applied to information whose unauthorized disclosure could reasonably be expected to cause serious damage to the national security. Examples include information whose unauthorized release could result in the disruption of foreign relations significantly affecting the national security; the significant impairment of a program or policy directly related to national security; the discloser of significant military plans or intelligence operation; and the disclosure of scientific or technological developments relating to national security.

Confidential

Confidential is the classification level applied to information whose unauthorized disclosure could reasonably be expected to cause damage to the national security. Examples include information whose unauthorized release could result in disclosure of ground, air and naval forces (e.g., force levels and force disposition); or disclosure of performance characteristics, such as design, text, and production data of U.S. munitions and weapons systems.

114 Communications

This page was intentionally left blank.

115 WEAPONS FUNDAMENTALS

References:

a. Marine Corps Common Skills Handbook, Book 1B, All Marines, Individual Training Standards, May 2001

115.1 Discuss the characteristics of the M16A2E service rifle.



The M16A2 5.56mm rifle is a lightweight, air-cooled, gas-operated, magazine-fed, shoulder- or hip-fired weapon designed for either automatic fire (3-round bursts) or semiautomatic fire (single shot) through the use of a selector lever. The weapon has a fully adjustable rear sight. The bottom of the trigger guard opens to provide access to the trigger while wearing winter mittens. The upper receiver/barrel assembly has a fully adjustable rear sight and a compensator which helps keep the muzzle down during firing. The steel bolt group and barrel extension are designed with locking lugs which lock the bolt group to the barrel extension allowing the rifle to have a lightweight aluminum receiver.

- Primary function: Infantry weapon
- Manufacturer: Colt Manufacturing and Fabrique Nationale Manufacturing Inc.
- Length: 39.63 inches (100.66 centimeters)
- Weight, with 30 round magazine: 8.79 pounds (3.99 kilograms)
- Bore diameter: 5.56mm (.233 inches)
- Maximum range :3,600 meters
- Maximum effective range:
 - o Area target: 2,624.8 feet (800 meters)
 - o Point target: 1,804.5 feet (550 meters)
- Muzzle velocity: 2,800 feet (853 meters) per second
- Rate of fire:
 - o Cyclic: 800 rounds per minute
 - o Sustained: 12-15 rounds per minute
 - o Semiautomatic: 45 rounds per minute

115 Weapons

Burst: 90 rounds per minute
Magazine capacity: 30 rounds
Unit Replacement Cost: \$586

115.2 Discuss the safe operating procedures for the M16A2E service rifle.

- RULE #1 Treat every weapon as if it were loaded.
- RULE #2 Never point a weapon at anything you do not intend to shoot.
- RULE #3 Keep finger straight and off the trigger until you are ready to fire
- RULE #4 Keep weapon on safe until you intend to fire.

115.3 Discuss the characteristics of the M9 service pistol.



The M9 pistol is a semiautomatic, magazine fed, recoil operated, double/single action pistol, chambered for the NATO 9mm round.

The M9 pistol incorporates single and double action modes of fire. Anytime that trigger is pulled with the decocking/safety lever in the fire (up) position and a round in the chamber, the pistol will firs from the hammer down, half cock or full cock positions.

DOUBLE/SINGLE ACTION

For double action, pulling the trigger will cock the hammer and immediately release it, discharging the first chambered round. To fire the first chambered round in single action, the hammer must be manually locked to the rear before pulling the trigger. All shots after the first one will be fired single action because the slide automatically recocks the hammer after each shot.

MAGAZINE

Has a 15 round capacity.

EXTRACTOR/LOADED CHAMBER INDICATOR

When there is a cartridge in the chamber, the upper surface of the extractor protrudes from the right side of the slide. In the dark, the protrusion can be felt by

touch. The loaded chamber indicator should be used in tactical situations when visibility is limited or where visual inspection of the chamber is desirable.

- Caliber: 9x19mm(9mm NATO)
- System of Operation: short recoil, semiautomatic
- Locking System: oscillating block
- Length: 217 mm (8.54in.)
- Width: .38mm(1.50in.)
- Height: 140 mm (5.51in)
- Weight (w/empty magazine): 960 gr(33.86 oz)
- Weight (w/15 round magazine): 1145 gr(40.89 oz)
- Barrel Length: 125mm (4.92 in)
- Rifling: R.H.,6 groove [pitch 250mm (about 10in.)
- Maximum Effective Range: 50 meters (54.7 yards)
- Maximum Range: 1800 meters (1969.2 yards)
- Front Sight: blade. integral with slide
- Rear Sight: notched bar, dovetailed to slide

115.4 Discuss the safe operating procedures for the M9 service pistol.

The following safety rules apply at all times:

- RULE #1 Treat every weapon as if it were loaded.
- RULE #2 Never point a weapon at anything you do not intend to shoot.
- RULE #3 Keep finger straight and off the trigger until you are ready to fire
- RULE #4 Keep weapon on safe until you intend to fire.

Ensure that the weapon is properly assembled and functioning properly for firing.

115.5 Discuss the fieldstrip and reassemble procedures for the M9 service pistol. Disassembly of the M9 Pistol

- o Remove the magazine
- o Clear/unload the pistol
- o Allow slide to return fully forward.
- Hold pistol in the right hand with muzzle slightly elevated. With forefinger press disassembly lever release button end with thumb rotate disassembly lever downward until it stops.
- o Pull the slide end barrel assembly forward and remove.

WARNING

Use care when removing recoil spring and spring guide. Due to the amount of compression, assembly will be released under spring tension and could cause possible injury to personnel, or become damaged or lost.

- Slightly compress recoil spring end spring guide, while at the same time lifting and removing recoil spring end spring guide. Allow the recoil spring to stretch slowly.
- o Separate recoil spring from spring guide.
- Push in on locking block plunger while pushing barrel forward slightly. Lift and remove locking block and barrel assembly from slide (12)

Disassembly of the Magazine

- o Unload the magazine
- o Grasp the magazine firmly with the floorplate up and the back of the magazine tube against the palm of your hand.
- o To remove the floorplate, either use the tip of the 9mm round or use the barrel locking block plunger. By depressing the locking block, the locking block plunger will protrude and can be used to assist in removal of the floorplate.
- o Release the floorplate by pushing down on the floorplate retainer stud in the center of the floorplate. At the same time, slide the floorplate forward for a short distance using the thumb.

Caution

Magazine spring is under tension. Use care when removing magazine floorplate.

- While maintaining the magazine spring pressure with the thumb, remove the floorplate from the magazine.
- o Remove the floorplate retainer and magazine spring and follower from the magazine tube. Remove floorplate retainer from the magazine spring.

Note

Disassembly of the M9 pistol beyond field strip (operator) level is not authorized.

Inspecting the M9 Pistol

If faults are found during inspection that cannot be corrected, evacuate pistol to organizational maintenance/next authorized repair level.

SLIDE ASSEMBLY

Check for free movement of decocking/safety lever and push On firing pin block. Check for rear sight looseness. Check for cracks in locking block retaining slot.

BARREL ASSEMBLY

Inspect bore and chamber for pitting or obstructions. Check locking block plunger for free movement of locking block Inspect locking lugs and barrel lugs for cracks and burrs.

RECOIL SPRING AND RECOIL SPRING GUIDE

Check recoil spring for damage,

Check that it is not bent. Check recoil spring guide for straightness and smoothness. Check to be sure that it is free of cracks and burrs.

RECEIVER ASSEMBLY

Check for bends, chips, and cracks. Check for free movement of slide stop, and magazine catch assembly. Check guide rails for excessive wear, burrs, cracks, or chips.

MAGAZINE ASSEMBLY

Check for spring and follower damage. Ensure that the lips of the magazine are not excessively bent and are free of cracks and burrs. The magazine tube should not be bent or dirty.

115.6 Discuss the immediate action to clear a stoppage for the M9 service pistol.

Immediate Action

Definition: Immediate action is an unhesitating response to a stoppage without investigating the cause.

- o TAP: Slap the bottom of the magazine.
- o RACK: Pull the slide to the rear and release.
- o BANG: Sight and fire.

115.7 Discuss the safe handling procedures for a fighting knife (K-Bar).

Fundamentals of Knife Fighting

Marines must be trained in knife fighting techniques to defend against attacks when an opponent is either unarmed or armed with a held-held weapon. Marines experienced in offensive knife techniques can cause enough damage and massive trauma to stop an opponent. When engaged against each other, experienced knife fighters employ various maneuvers and techniques that are specific to knife fighting. Seldom, if ever, will Sailors engage an opponent in a classical knife fight.

Note: When armed with a rifle, Sailors and Marines are issued a bayonet. When armed with a pistol, they are issued a combat knife.

Angles of Attack

There are six angles from which an attack with a knife can be launched:

- Vertical strike coming straight down on an opponent.
- Forward diagonal strike coming in at a 45-degree angle to the opponent.
- Reverse diagonal strike coming in at a 45-degree angle to the opponent.
- Forward horizontal strike coming in parallel to the ground.
- Reverse horizontal strike coming in parallel to the ground.
- Forward thrust coming in a straight line to the opponent.

Target Areas of the Body

During any confrontation, the parts of the opponent's body that are exposed or readily accessible will vary. The goal in a knife fight is to attack the body's soft, vital target areas that are readily accessible (e.g, the face, the sides and front of the neck, the lower abdomen [or groin]).

Neck.

Carotid arteries, located on either side of the neck, are good target areas because they are not covered by body armor or natural protection.

Lower Abdomen (or Groin).

The lower abdomen (or groin region) is a good target area because it is not covered by body armor.

Heart.

The heart, if not covered by body armor, is an excellent target which, if struck, can prove fatal in a matter of seconds or minutes.

Secondary Targets.

There are secondary target areas that will cause substantial bleeding if an artery is severed. These target areas are not immediately fatal, but can become fatal if left unattended. Attacks to the legs can cause a great deal of trauma and prove fatal. For example, the femoral artery located on the inside of the thigh is a large artery which, if cut, will cause extensive blood loss. The brachial artery, located between the biceps and triceps on the inside of the arm, can cause extensive bleeding and damage. The arm's radial and ulnar arteries, is severed, can cause extensive bleeding and damage.

Movement

Sailors can move anywhere within a 360-degree circle around the opponent. This allows accessibility to different target areas of the opponent's body. Sailors should avoid being directly in front of an opponent because the opponent can rely on his forward momentum to seize the tactical advantage. If Sailors face an opponent, movement is made in a 45-degree angle to either side of the opponent. This angle avoids an opponent's strike and places Sailors in the best position to attack an opponent.

Wearing the Combat Knife

Sailors must wear the combat knife where it is easily accessible and where it can best be retained. It is recommended the combat knife be worn on the weak side hip, blade down, sharp edge facing forward. Sailors can place it

behind the magazine pouch where it is easily accessible to them, but not easily grabbed by an opponent.



Grip

The grip on the knife should be natural. Sailors grasp the knife's grip with the fingers wrapped around the grip naturally as it is pulled out of its sheath. This is commonly known as a hammer grip. The blade end of the knife is always facing the opponent.



Stance

Sailors use the basic warrior stance as the foundation for knife techniques. The left hand is a vertical shield that protects either the ribs or the head and neck. The right elbow is bent with the blade pointing forward toward the opponent's head. This position serves as an index point, where all techniques are initiated.



Principles of Knife Fighting

The following are key principles of knife fighting:

- Execute movements with the knife blade within a box, shoulder-width across from the neck down to the waistline.
- The opponent has a greater chance of blocking an attack if the blade is brought in a wide, sweeping movement to the opponent.
- o Close with the opponent, coming straight to the target.
- o Move with the knife in straight lines.
- o Point the knife's blade tip forward and toward the opponent.
- o Apply full body weight and power in each of the knife techniques.
- o Full body weight should be put into the attack in the direction of the blade's movement (slash or thrust).
- Apply constant forward pressure with the body and blade to keep the opponent off balance.

115.8 Discuss the safe handling procedures and use of fragmentation, riot control, and smoke grenades.

DESCRIPTION

The hand grenade is a hand-held, hand-armed, and hand-thrown weapon. U.S. forces use colored smoke, white smoke, riot-control, special purpose, fragmentation, offensive, and practice hand grenades. Each grenade has a different capability that provides the soldier with a variety of options to successfully complete any given mission. Hand grenades give the Marine or Sailor the ability to kill enemy soldiers and destroy enemy equipment. Historically, the most important hand grenade has been the fragmentation grenade, which is the Marine's or Sailor's personal indirect weapon system. Offensive grenades are much less lethal than fragmentation grenades on an enemy in the open, but they are very effective against an enemy within a confined space. Smoke and special purpose grenades can be used to signal, screen, control crowds or riots, start fires, or destroy equipment. Because the hand grenade is thrown by

hand, the range is short and the casualty radius is small. The 4- to 5-second delay on the fuse allows the Marine or Sailor to safely employ the grenade.

TYPES

The six types of hand grenades are (Figure 1-1):

- o Fragmentation. These grenades are used to produce casualties by high-velocity projection of fragments.
- Chemical. These grenades are used for incendiary, screening, signaling, training, or riot-control. Smoke grenades and CS grenades are in this group.
- o Nonlethal. This grenade is used for diversionary purposes or when lethal force is not desired. Also called a stun grenade, or "flash-bang".
- o Illuminating. This grenade is used to provide illumination of terrain and targets. Offensive. This grenade is used for concussive blast effect.
- o Incendiary. This grenade is used to ignite fires or destroy equipment.
- o Practice and Training. These grenades are for training personnel in use, care and handling of service grenades.

All of these grenades are handled similarly to the M67 Fragmentation Hand Grenade.

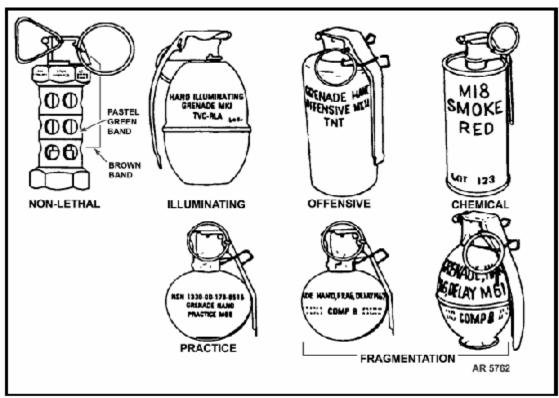


Figure 1-1. Types of hand grenades.

HAND GRENADE EMPLOYMENT RULES

The rules to remember before employing hand grenades, or when in areas where they are in use, are as follows:

- o Know where all friendly forces are located.
- o Know the sector of fire.
- o Use the buddy or team system.
- o Ensure the projected arc of the fragmentation hand grenade is clear of obstacles.

115.9 Discuss the safe handling procedures and use of flares (ground pyrotechnic signals).

Ground Pyrotechnic Signals

Ground pyrotechnic signals rise to a height of 180 to 250 meters before functioning, unlike the old smoke grenades that functioned either on impact or shortly after firing. There are two types of pyrotechnic signals:

Hand-held Signals.

These signals are issued in their own launching mechanism and are designed to reach a minimum height of 200 meters. This group of signals includes five-star clusters; single-star parachutes, and smoke parachutes. Hand-held signals have replaced all rifle-projected pyrotechnic signals and chemical grenades.

Ground Smoke Signals.

These signals are self-contained units used by ground soldiers to signal aircraft or to convey information through a prearranged signal. The signal consists of a cylindrical smoke pellet, a fuse (thermalite-type ignitacord), an igniter cap, an internal retaining ring, and a striker ring assembled in an aluminum photocan container. These signals produce a smoke cloud that lasts 13 to 30 seconds. They replace rifle-projected smoke signals.

Operation

Operation of hand-held signals should be as follows:

- Withdraw the firing cap from the upper end of the signal.
- Point the ejection end of the signal away from your body and slowly push the firing cap onto the signal until the open end of the cap is aligned with the red band.
- Grasp the center of the signal firmly with your left hand, holding your elbow tight against your body with the signal at the desired trajectory angle and the firing cap at the bottom. Turn your head down and away from the signal to avoid injury to your face and eyes from particles ejected by the small rockets.

- Strike the bottom of the cap a sharp blow with the palm of your right or left hand or strike it on a hard surface, keeping your left or right arm rigid.
- In the event of a misfire, while keeping the signal aimed, pull the cap back to the red knurled band and rotate 90 degrees. Make two more attempts to fire. If it still does not fire, wait 30 seconds keeping the arm rigid and the signal aimed overhead. Return the cap to the ejection end of the signal and turn it in to the ammunition supply point.

Warning

- o Keep away from fire.
- o Don't handle if damaged or if parts are missing.
- o Handle carefully and use basic issue leather work gloves and full helmet when possible.
- o Aim at all times away from face, body, and friendly troops.
- o Before items are launched check wind to achieve height for visibility.
- o Avoid overhead obstacles (foliage and so forth).
- o Avoid fallout (rocket parts and so forth).
- o Maintain at least a 45-degree elevation to launch.
- o Check wind to avoid fire, smoke inhalation, or irritation with all pyrotechnic items.

115 Weapons

This page was intentionally left blank.

116 TACTICAL MEASURES FUNDAMENTALS

References:

- a. Marine Common Skills Handbook, Book 1B, All Marines, Individual Training Standards
- b. MCWP 3-11.4 Helicopterborne Operations

116.1 Discuss camouflage, cover, and concealment.



CAMOUFLAGE: Anything that you can use to keep yourself, your equipment, and your position from looking like what they really are. You can also use both natural and manmade materials for camouflage.



COVER: Anything that gives protection from bullets, fragments of exploding rounds, flame, nuclear effects, and biological and chemical agents. Cover can also conceal you from enemy observation. Cover can be natural or manmade.



CONCEALMENT: Anything that hides you from enemy observation. Concealment does not protect you from enemy fire.

116.2 Discuss the components of a five paragraphs operations order: Situation, Mission, Execution, Administration, Command (SMEAC).

An Offensive Operations Order is prepared using the SMEAC format. It has five (5) paragraphs, and each address specific topic relevant to the mission. What does the acronym SMEAC stands for?

- S Situation
- M Mission
- E Execution
- A Administrative and logistics
- C Command and signals

1. Situation:

Enemy Forces

Consists of the composition, disposition, location, movement, capabilities, and recent activities of enemy forces.

Friendly Forces

A statement of the mission of the next higher unit, location and mission of adjacent units, and the commander's intent from two levels higher.

Attachments and Detachments

Units attached to or detached from the squad by higher headquarters, including the effective time of the attachment or detachment.

2. Mission:

A clear, concise statement of the task the squad must accomplish.

3. Execution:

Concept of Operations

The concept of operation is the squad leader's brief summary of the tactical plan the squad is to execute the commander's intent.

Subordinate Tasks (Missions)

In in each succeeding paragraph missions are assigned to each fire team and any attached units.

Coordinating Instructions

- Actions at the objective
- Routes to and from the objective
- Formations and order for movement
- Time of attack
- The fire support plan (naval gunfire, artillery, mortars, air support)
- Locations of tactical control measures:

Daylight Attack

Night Attack

Assembly area
Attack position
Attack position
Attack position

Line of departure (LOD) Line of departure (LOD)

Tentative assault position Release points

Final coordination line (FCL) Probable line of deployment (PLD)

Limits of advance

4. Administration and logistics:

The paragraph contains information or instructions pertaining to rations and ammunition; location of the distribution point, corpsman, and aid station; the handling of prisoners of war; and other administrative and supply matters.

5. Command and signals:

Special instruction on communications, including prearranged signals, password and countersign, radio call signs and frequencies, emergency signals, radio procedures, pyrotechnics, and restrictions on the use of communications.

Locations of the platoon commander, the platoon sergeant, and the squad leader.

116.3 Discuss the contents of a Size, Activity, Location, Unit, Time, Equipment (SALUTE) Report.

Size

Observe the size of the aggressor unit.

- o Record the number of personnel.
- o Record the number of vehicles.

Activity

Observe the activity of the aggressor unit.

o Record what the enemy is doing.

Location

Determine the location of the aggressor unit.

- o Give grid coordinates (at least 6 digits).
- o Refer to the location from known point.
- o Include distance and direction (or azimuth) from known point.

Unit

Determine the types of aggressor unit.

- o Describe patches.
- o Describe clothing.
- o Describe distinctive signs or symbols.
- o Describe identification numbers on vehicles.

116 Tactical Measures

Time

Note the time of sighting the aggressor unit.

Equipment

Determine the type of equipment that the aggressor unit has available.

- o Describe small arms.
- o Describe automatic weapons.
- o Describe indirect support weapons.
- o Describe direct support weapons.
- o Describe armored vehicles.
- o Describe personnel carriers.
- o Describe NBC equipment.

Salute Report Format

Description	Message
Size of enemy unit	"Line Alpha - Platoon Minus"
Activities of the enemy	"Line Bravo - Moving South, On Road, In Column"
Location (6 digit grid coordinates)	"Line Charlie - 947859
Unit markings (signs or symbols, uniform worn, vehicle identification).	"Line Delta - Red Patches"
Time of sighting (date-time group, local or Zulu/Greenwich Mean Time).	"Line Echo - 150930Z MAR 92"
Equipment carried by the enemy,	"Line Fox - 25 Rifles, 3 L including their weapons. Antiarmor Rockets, 2 Lt Machine Guns"
	Size of enemy unit Activities of the enemy Location (6 digit grid coordinates) Unit markings (signs or symbols, uniform worn, vehicle identification). Time of sighting (date-time group, local or Zulu/Greenwich Mean Time).

116.4 Discuss the criteria for selecting a helicopter landing zone.

Selection of Landing Zones (LZ)

LZs are selected during planning between the helicopterborne unit commander (HUC) and the assault flight leader (AFL) in coordination with the intelligence officer (S-2). The selected LZs are approved by the MAGTF commander or mission commander. Regardless of whether the site is a LZ or pick-up zone (PZ)—

- o The ground chosen must support the safe landing of helicopters.
- o The selected site should be identifiable from the air.
- o The enemy situation must be such that the site can be secured without undue interference from enemy fires.

Each helicopter requires a different size LZ/PZ, and each area needs to be on level ground. Lighting conditions also affect the size of the LZ for each helicopter: daylight zones should be 100 feet larger than the diameter of aircraft rotor blades and night zones should be 150 feet larger than the diameter of aircraft rotor

blades. Table 4-1 provides the recommend landing zone diameters for different types of helicopters.

Table 4-1. Recommended Landing Zone Diameters.

Type Aircraft	Rotor Blade Diameter (feet)	Landing Zone Diameter Daylight (+100)/Night (+150)
UH-1	50	150/200
CH-46	85	185/235
CH-53	100	200/250

Ideally, each LZ/PZ is as level as possible, and free of major obstacles that might obstruct landings or takeoffs (e.g., tall trees, telephone/power lines). Plans must be made to mark or identify obstacles than cannot be removed in order to aid the aircrew's ability to safely land the aircraft. The ground itself must be firm enough to prevent bogging down, otherwise aircraft may have to hover during loading or unloading operations.

The site must be free of heavy dust, loose snow, logs, rocks, or dry grass.

Although level ground is preferable, some areas that can support the helicopter will not be level. As a planning rule, LZs with slopes greater than 7 degrees require additional consideration by the AFL and AMC.

LZ/PZ entry and exit routes are chosen to ensure that takeoffs or landings can occur over the lowest obstacles and that the direction is into the wind with minimum crosswinds of 10 knots and tailwinds of no more than 5 knots. Wind direction must also be considered in terms of its effect on the dust created by the helicopter's landing and takeoff.

The helicopter must be able to ascend or descend vertically into the LZ/PZ when fully loaded. The landing point for each helicopter should be at a distance 10 times as far from an obstacle as the obstacle is high (see fig. 4-1).

LZs are selected using the following criteria:

- o Ground commander's concept of operations.
- o LZs can be located on, near, or away from the objective, depending on the factors of METT-T.
- The size determines how much combat power can be landed at one time.
 This also determines the need for additional LZs or separation between waves.

116 Tactical Measures

- An alternate LZ should be planned for each primary LZ selected to ensure flexibility.
- o Enemy troop concentration and air defenses and their capability to react to a nearby helicopterborne landing are considered when selecting LZs.
- o LZs deny enemy observation and acquisition of friendly ground and air elements while they are en route to, in, and departing from the LZ.
- o If possible, the helicopterborne force should land on the enemy side of obstacles when attacking and use obstacles to protect LZs from the enemy at the other times.
- o LZs must be free of obstacles.
- o LZs should be readily identifiable from the air. When possible, reconnaissance units should be used to reconnoiter and mark the LZ.
- o Requirements for logistic support.
- o Requirements for fire support.
- O Available lanes to and from LZs and any restrictive effects on the employment of supporting arms.
- Reduced visibility or strong winds may preclude or limit the use of marginal LZs.

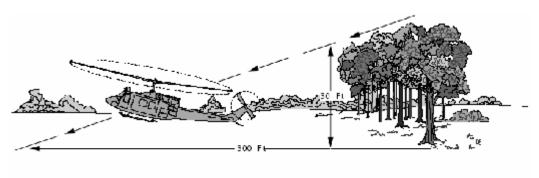


Figure 4-1. LZ Obstacle Clearance.

What are the two methods of marking an LZ?

The marking of PZs/LZs is as follows:

- During the day, a ground guide marks the PZ/LZ for the lead aircraft by holding an M-16A2 over his head, by displaying a folded VS-17 chest panel high, or by other identifiable means.
- o The code letter Y (inverted Y) is used to mark the landing point of the lead aircraft at night (see fig. A-1). Chemical light sticks may be used to maintain light discipline.

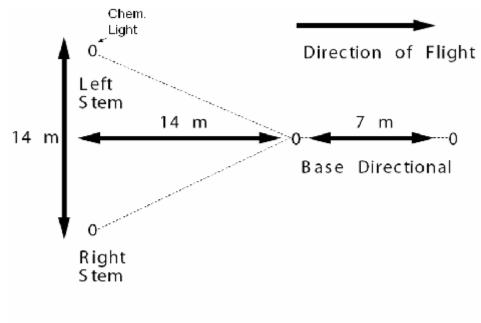


Figure A-1. Inverted Y.

If more than one aircraft is landing in the same PZ/LZ, there will be an additional light for each aircraft. For observation, utility, and attack aircraft, each additional aircraft landing point is marked with a single light placed at the exact point that each aircraft is to land. For cargo aircraft, each additional landing point is marked with two lights and the two lights are placed 10 meters apart and aligned in the aircraft direction of flight.

Obstacles include any obstruction to flight that might interfere with aircraft operation in the ground (trees, stumps, rocks) and cannot be reduced. During daylight, the aircrew is responsible for avoiding obstacles on the PZ/LZ. For night and limited visibility operations, all obstacles are marked with red lights.

The following criteria is used in marking obstacles:

- o If the obstacle is on the aircraft approach route, both the near and far sides of the obstacle are marked.
- o If the obstacle is on the aircraft departure route, the near side of the obstacle is marked.
- o If the obstacle protrudes into the PZ or LZ, but is not on the flight route of the aircraft, the near side of the obstacle is marked.
- Large obstacles on the approach route are marked by encircling the obstacle with red lights.

116 Tactical Measures

LANDING ZONE BRIEF			
1. MISSION NO.		_	
2. LOCATION COOR/RAD/DME			
3. UNIT CALL SIGN			
4. FREQUENCY	PRI UHF	FM	
	SEC UHF	FM	
5. LZ MARKING			
6. WIND DIRECTION/VELOCITY		/	
7. ELEVATION/SIZE		/	
8. OBSTACLES			
9. FRIENDLY POSITIONS: DIRECTION/DISTANCE		/	
10. LAST FIRE RECEIVED: TIME/TYPE			
11. DIRECTION OF TIRE/DISTANCE			
12. CLEARANCE TO FIRE: DIRECTION/DISTANCE		/	
13. APPROACH/RETIREMENT (RECOMMENDED)			
14. PERSONNEL/EQUIPMENT		/	
15. OTHER			

117 LAND NAVIGATION FUNDAMENTALS

References:

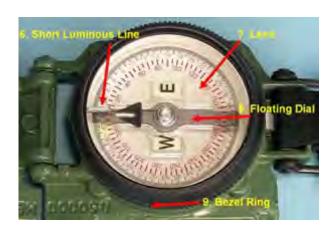
- a. Marine Corps Common Skills Handbook, Book 1B, All Marines, Individual Training Standards, May 2001
- b. FM 3-25.26, Map Reading and Land Navigation

117.1 Discuss the twelve parts of the lensatic compass.

- Luminous Sighting Dots
- Fixed Index Line
- Sighting Wire
- Graduated Straight Edge
- Luminous Magnetic Arrow
- Short Luminous Line
- Lens
- Floating Dial
- Bezel Ring
- Sighting Slot
- Lens or Rear Sight
- Thumb Loop



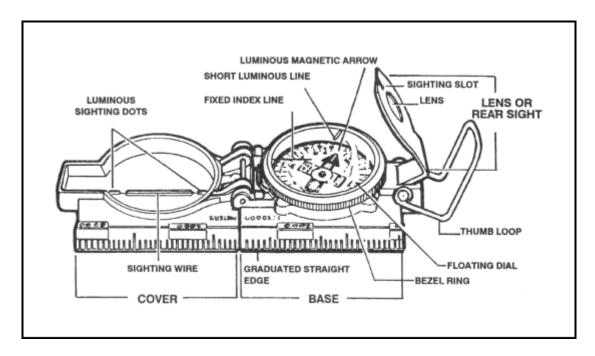
117 Land Navigation





LENSATIC COMPASS

The lensatic compass consists of three major parts: the cover, the base, and the lens.



Lensatic compass.

Cover.

The compass cover protects the floating dial. It contains the sighting wire (front sight) and two luminous sighting slots or dots used for night navigation.

Base.

The body of the compass contains the following movable parts:

- The floating dial is mounted on a pivot so it can rotate freely when the compass is held level. Printed on the dial in luminous figures are an arrow and the letters E and W. The arrow always points to magnetic north and the letters fall at east (E) 90° and west (W) 270° on the dial. There are two scales; the outer scale denotes mils and the inner scale (normally in red) denotes degrees.
- Encasing the floating dial is a glass containing a fixed black index line.
- The bezel ring is a ratchet device that clicks when turned. It contains 120 clicks when rotated fully; each click is equal to 3°. A short luminous line that is used in conjunction with the north-seeking arrow during navigation is contained in the glass face of the bezel ring.
- The thumb loop is attached to the base of the compass.

Lens.

The lens is used to read the dial, and it contains the rear-sight slot used in conjunction with the front for sighting on objects. The rear sight also serves as a lock and clamps the dial when closed for its protection. The rear sight must be opened more than 45° to allow the dial to float freely.

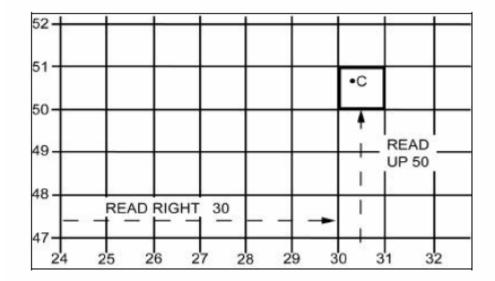
WARNING

Some older compasses will have a 1:25,000 scale. This scale can be used with a 1:50,000-scale map, but the values read must be halved. *Check the scale*.

117.2 Discuss the procedures for locating an eight -digit coordinate on a map.

Without a Coordinate Scale.

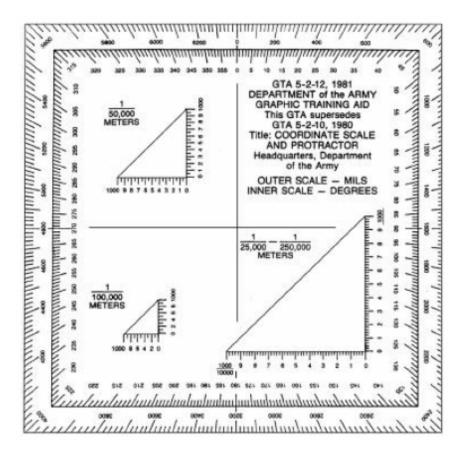
To determine grids without a coordinate scale, the reader simply refers to the north-south grid lines numbered at the bottom margin of any map. Then he or she reads RIGHT to the north-south grid line that precedes the desired point (this first set of two digits is the RIGHT reading). Then by referring to the east-west grid lines numbered at either side of the map, the map reader moves UP to the east-west grid line that precedes the desired point (these two digits are the UP reading). Coordinates 3050 locates the 1,000-meter grid square in which point C is located; the next square to the right would be 3150; the next square up would be 3051; and so forth as shown in figure below. To locate the point to the nearest 100 meters, use estimation. By mentally dividing the grid square in tenths, estimate the distance from the grid line to the point in the same order (RIGHT and UP). Give complete coordinate RIGHT, then complete coordinate UP. Point C is about two-tenths or 200 meters to the RIGHT into the grid square and about seventenths or 700 meters UP. The coordinates to the nearest 100 meters are 302507.



NOTE: Based on the military principle for reading maps (RIGHT and UP), locations on the map can be determined by grid coordinates. The number of digits represents the degree of precision to which a point has been located and measured on a map – the more digits, the more precise the measurement.

With a Coordinate Scale.

Grid coordinate scales. The primary tool for plotting grid coordinates is the grid coordinate scale. The grid coordinate scale divides the grid square more accurately than can be done by estimation and the results are more consistent. When used correctly, it presents less chance for making errors. GTA 5-2-12, 1981 contains four types of coordinate scales as shown in figure below.



The 1:25,000/1:250,000 (lower right in figure) can be used in two different scale maps, 1:25,000 or 1:250,000. The 1:25,000 scale subdivides the 1,000-meter grid block into 10 major subdivisions, each equal to 100 meters. Each 100-meter block has five graduations, each equal to 20 meters. Points falling between the two graduations can be read accurately by the use of estimation. These values are the fourth and eighth digits of the coordinates. Likewise, the 1:250,000 scale is subdivided in 10 major subdivisions, each equal to 1,000 meters. Each 1,000-meter block has five graduations, each equal to 200 meters. Points falling between two graduations can be read approximately by the use of estimation.

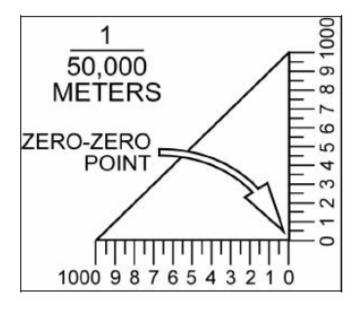
The 1:50,000 scale (upper left in above figure) subdivides the 1,000-meter block into 10 major subdivisions, each equal to 100 meters. Each 100-meter block is then divided in half. Points falling between the graduations must be estimated to the nearest 10 meters for the fourth and eighth digits of the coordinates.

The 1:100,000 scale (lower left in the above figure) subdivides the 1,000-meter grid block into five major subdivisions of 200 meters each. Each 200-meter block is then divided in half at 100-meter intervals.

To use the coordinate scale for determining grid coordinates, the map user has to make sure that the appropriate scale is being used on the corresponding map, and that the scale is right side up. To ensure the scale is correctly aligned, place it with

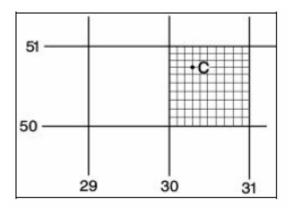
117 Land Navigation

the zero-zero point at the lower left corner of the grid square. Keeping the horizontal line of the scale directly on top of the east-west grid line, slide it to the right until the vertical line of the scale touches the point for which the coordinates are desired. When reading coordinates, examine the two sides of the coordinate scale to ensure that the horizontal line of the scale is aligned with the east-west grid line, and the vertical line of the scale is parallel with the north-south grid line. The scale is used when precision of more than 100 meters is required.



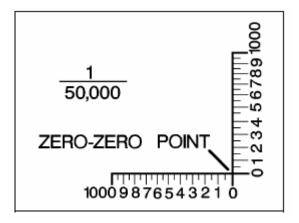
Locate points within a grid square.

Imagine dividing the grid square into 100 smaller squares. The coordinates of a point in such a grid square have six digits (numbers). Each of the grid squares in figure below is 1,000 meters wide and 1,090 meters high. One of the grid squares is divided into 100 smaller squares, each 100 meters wide and 100 meters high. Note the lines within the grid square also read "RIGHT, THEN UP." In an eight-digit grid coordinate such as 28409360, the first four numbers (2840) are the "READ RIGHT" part; whereas the last three numbers (9360) are the "THEN UP" part.

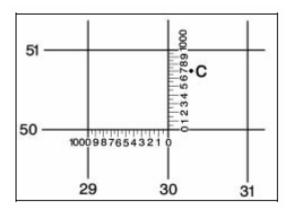


Locate point C in grid square 3050 above, using the coordinate scale on your protractor and the following procedures:

 Place the proper coordinate scale of your protractor on the map so the zero-zero point is to the BOTTOM RIGHT of the scale as shown in figure below

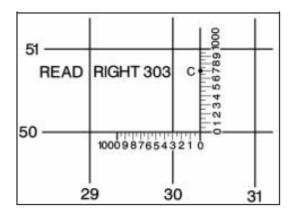


o Place the zero-zero point at the lower left-hand corner of grid square 3050 as shown in figure below.

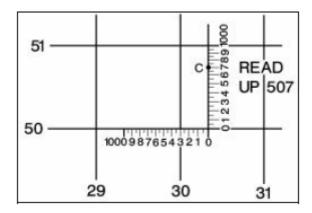


o Keep the horizontal line of the scale directly on top of the east-west grid line (in this case, grid line 50) and slide it to the right until the vertical line of the scale touches the point C for which the coordinates are desired as shown in figure below.

117 Land Navigation



- Examine the two sides of the coordinate scale to ensure the horizontal line of the scale is aligned with the east-west grid line and the vertical line of the scale is parallel with the north-south grid line.
- O Determine your RIGHT reading by first reading the value of the grid line to the left of point C (30). Add to this value the number which tells how far (in hundreds of meters) point C is into the grid square. In this case, it is 300 meters as shown in figure above. You now have the complete RIGHT reading (3030).
- Next, determine your UP reading by first reading the value of the horizontal grid line below point C (50). Add to this value the number which tells how far up (in hundreds of meters) point C is into the grid square. In the case, it is 700 meters. You now have the complete UP reading of 5070 as shown in figure below. When determining both your RIGHT and UP reading, round your value to the closest number on your coordinate scale.



By combining the RIGHT reading (3030) with the UP reading (5070), you have accurately determined the six-digit grid coordinate of point C (30305070). An eight-digit grid coordinate is accurate to within 10 meters.

NOTE: When a Sailor becomes proficient at land navigation, he or she can accurately determine six and eight-digit grid coordinates by estimation without the use of a coordinate scale.

117.3 Discuss the map features identified by the colors below:

Red

Classifies cultural (manmade) features, such as populated areas, main roads, and boundaries, on older maps.

Blue

Identifies hydrography or water features such as lakes, swamps, rivers, and drainage.

Black

Indicates cultural (man-made) features such as buildings and roads, surveyed spot elevations, and all labels.

Brown

Identifies all relief features and elevation, such as contours on older edition maps, and cultivated land on red-light readable maps.

Green

Identifies vegetation with military significance such as woods, orchards, and vineyards.

Red Brown

The colors red and brown are combined on red-light readable maps to identify cultural features, all relief features, non-surveyed spot elevations, and elevations such as contour lines.

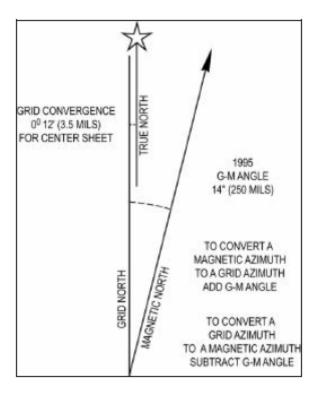
117.4 Discuss the map features below using a standard 1:50,000 military map:

MARGINAL INFORMATION

Declination diagram.

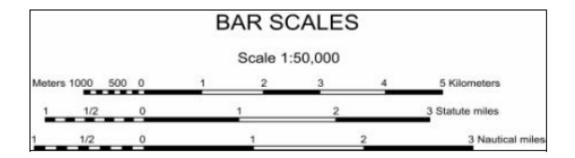
This is located in the lower margin of large scale maps and indicates the angular relationships of true north, grid north, and magnetic north. On maps at 1:250,000 scale, this information is expressed as a note in the lower margin. In recent edition maps, there is a note indicating the conversion of azimuths from grid to magnetic and from magnetic to grid next to the declination diagram as shown in figure below.

117 Land Navigation



Bar scale.

These are located in the center of the lower margin. They are rulers used to convert map distance to ground distance as shown in figure below. Maps have three or more bar scales, each in a different unit of measure. Care should be exercised when using the scales, especially in the selection of the unit of measure that is needed.



Contour interval note.

This note is found in the center of the lower margin normally below the bar scales. It states the vertical distance between adjacent contour lines of the map. When supplementary contours are used, the interval is indicated. In recent edition maps, the contour interval is given in meters instead of feet.

Legend.

The legend is located in the lower left margin. It illustrates and identifies the topographic symbols used to depict some of the more prominent features on the map. The symbols are not always the same on every map. Always refer to the legend to avoid errors when reading a map.

TERRAIN FEATURES

All terrain features are derived from a complex landmass known as a mountain or ridgeline (Figure 10-16). The term ridgeline is not interchangeable with the term ridge. A ridgeline is a line of high ground, usually with changes in elevation along its top and low ground on all sides from which a total of 10 natural or man-made terrain features are classified.

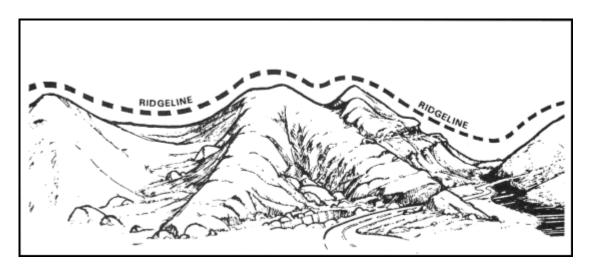


Figure 10-16. Ridgeline

Hill

A hill is an area of high ground. From a hilltop, the ground slopes down in all directions. A hill is shown on a map by contour lines forming concentric circles. The inside of the smallest closed circle is the hilltop (Figure 10-17).

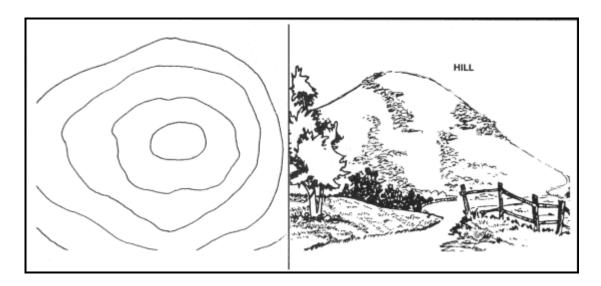


Figure 10-17. Hill.

Saddle

A saddle is a dip or low point between two areas of higher ground. A saddle is not necessarily the lower ground between two hilltops; it may be simply a dip or break along a level ridge crest. If you are in a saddle, there is high ground in two opposite directions and lower ground in the other two directions. A saddle is normally represented as an hourglass (Figure 10-18).

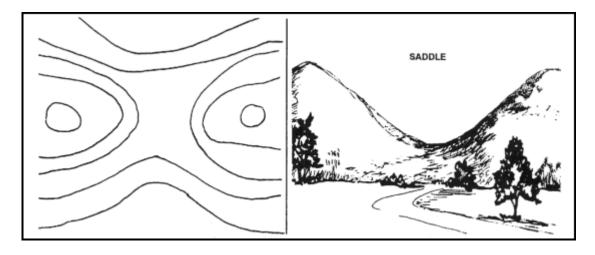


Figure 10-18. Saddle.

Valley

A valley is a stretched-out groove in the land, usually formed by streams or rivers. A valley begins with high ground on three sides, and usually has a course of running water through it. If standing in a valley, three directions offer high ground, while the fourth direction offers low ground. Depending on its size and where a person is standing, it may not be

obvious that there is high ground in the third direction, but water flows from higher to lower ground. Contour lines forming a valley are either U-shaped or V-shaped. To determine the direction water is flowing, look at the contour lines. The closed end of the contour line (U or V) always points upstream or toward high ground (Figure 10-19).



Figure 10-19. Valley

Ridge

A ridge is a sloping line of high ground. If you are standing on the centerline of a ridge, you will normally have low ground in three directions and high ground in one direction with varying degrees of slope. If you cross a ridge at right angles, you will climb steeply to the crest and then descend steeply to the base. When you move along the path of the ridge, depending on the geographic location, there may be either an almost unnoticeable slope or a very obvious incline. Contour lines forming a ridge tend to be U-shaped or V-shaped. The closed end of the contour line points away from high ground (Figure 10-20).

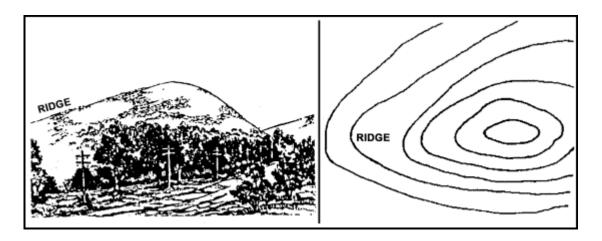


Figure 10-20. Ridge.

Depression

A depression is a low point in the ground or a sinkhole. It could be described as an area of low ground surrounded by higher ground in all directions, or simply a hole in the ground. Usually only depressions that are equal to or greater than the contour interval will be shown. On maps, depressions are represented by closed contour lines that have tick marks pointing toward low ground (Figure 10-21).

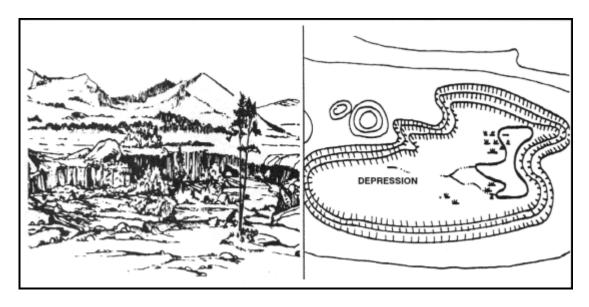


Figure 10-21. Depression.

Minor Terrain Features

Draw

A draw is a less developed stream course than a valley. In a draw, there is essentially no level ground and, therefore, little or no maneuver room within its confines. If you are standing in a draw, the ground slopes upward in three directions and downward in the other direction. A draw

could be considered as the initial formation of a valley. The contour lines depicting a draw are U-shaped or V-shaped, pointing toward high ground (Figure 10-22).

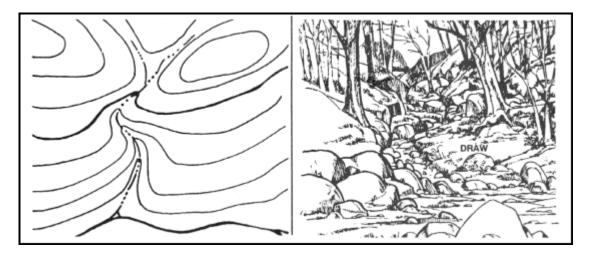


Figure 10-22. Draw.

Spur (Finger)

A spur, or finger, is a short, continuous sloping line of higher ground, normally jutting out from the side of a ridge. A spur is often formed by two rough parallel streams, which cut draws down the side of a ridge. The ground sloped down in three directions and up in one direction. Contour lines on a map depict a spur with the U or V pointing away from high ground (Figure 10-23).

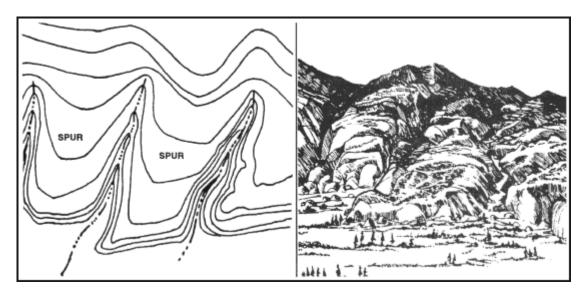


Figure 10-23. Spur.

Cliff

A cliff is a vertical or near vertical feature; it is an abrupt change of the land. When a slope is so steep that the contour lines converge into one "carrying" contour of contours, this last contour line has tick marks pointing toward low ground (Figure 10-24A). Cliffs are also shown by contour lines very close together and, in some instances, touching each other (Figure 10-24B).

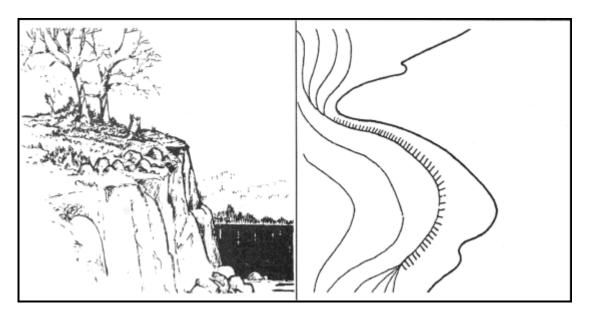


Figure 10-24A. Cliff.



Figure 10-24B. Cliff.

Supplementary Terrain Features.

Cut

A cut is a man-made feature resulting from cutting through raised ground, usually to form a level bed for a road or railroad track. Cuts are shown on a map when they are at least 10 feet high, and they are drawn with a contour line along the cut line. This contour line extends the length of the cut and has tick marks that extend from the cut line to the roadbed, if the map scale permits this level of detail (Figure 10-25).

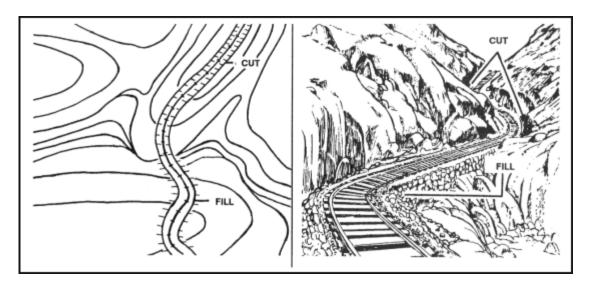


Figure 10-25. Cut and fill.

Fill

A fill is a man-made feature resulting from filling a low area, usually to form a level bed for a road or railroad track. Fills are shown on a map when they are at least 10 feet high, and they are drawn with a contour line along the fill line. This contour line extends the length of the filled area and has tick marks that point toward lower ground. If the map scale permits, the length of the fill tick marks are drawn to scale and extend from the base line of the fill symbol (Figure 10-25).

117.5 Explain the difference between a grid azimuth, a magnetic azimuth, and a back azimuth.

BASE LINES

In order to measure something, there must always be a starting point or zero measurement. To express direction as a unit of angular measure, there must be a starting point or zero measure and a point of reference. These two points designate the base or reference line. There are three base lines—true north, magnetic north, and grid north. The most commonly used are magnetic and grid.

True North.

A line from any point on the earth's surface to the North Pole. All lines of longitude are true north lines. True north is usually represented by a star (Figure 6-1).

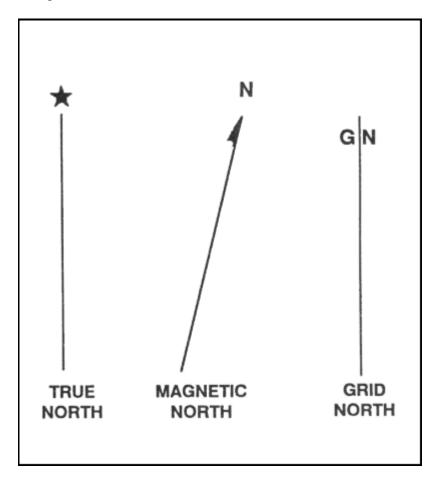


Figure 6-1. Three norths.

Magnetic North.

The direction to the north magnetic pole, as indicated by the north-seeking needle of a magnetic instrument. The magnetic north is usually symbolized by a line ending with half of an arrowhead (Figure 6-1). Magnetic readings are obtained with magnetic instruments, such as lensatic and M2 compasses.

Grid North.

The north that is established by using the vertical grid lines on the map. Grid north may be symbolized by the letters GN or the letter "y" (Figure 6-1). It is often parallel to true north.

AZIMUTHS

An azimuth is defined as a horizontal angle measured clockwise from a north base line. This north base line could be true north, magnetic north, or grid north. The azimuth is the most common military method to express direction. When using an azimuth, the point from which the azimuth originates is the center of an imaginary circle (Figure 6-2). This circle is divided into 360 degrees or 6400 mils.

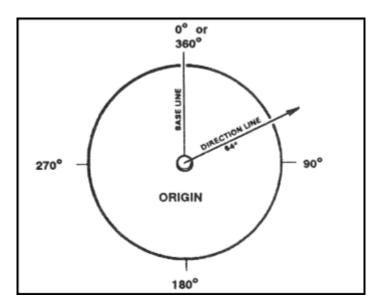


Figure 6-2. Origin of azimuth circle.

Back Azimuth.

A back azimuth is the opposite direction of an azimuth. It is comparable to doing "about face." To obtain a back azimuth from an azimuth, add 180 degrees if the azimuth is 180 degrees or less, or subtract 180 degrees if the azimuth is 180 degrees or more (Figure 6-3). The back azimuth of 180 degrees may be stated as 0 degrees or 360 degrees. For mils, if the azimuth is less than 3200 mils, add 3200 mils, if the azimuth is more than 3200 mils, subtract 3200 miles.

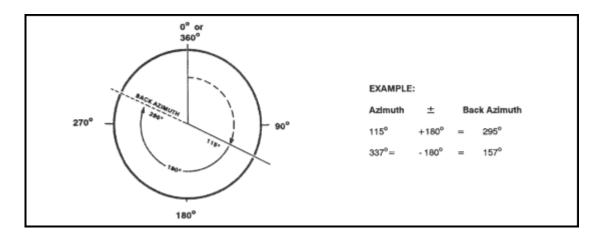


Figure 6-3. Back azimuth.

WARNING

When converting azimuths into back azimuths, extreme care should be exercised when adding or subtracting the 180 degrees. A simple mathematical mistake could cause disastrous consequences.

Grid Azimuths

When an azimuth is plotted on a map between point A (starting point) and point B (ending point), the points are joined together by a straight line. A protractor is used to measure the angle between grid north and the drawn line, and this measured azimuth is the grid azimuth (Figure 6-4).

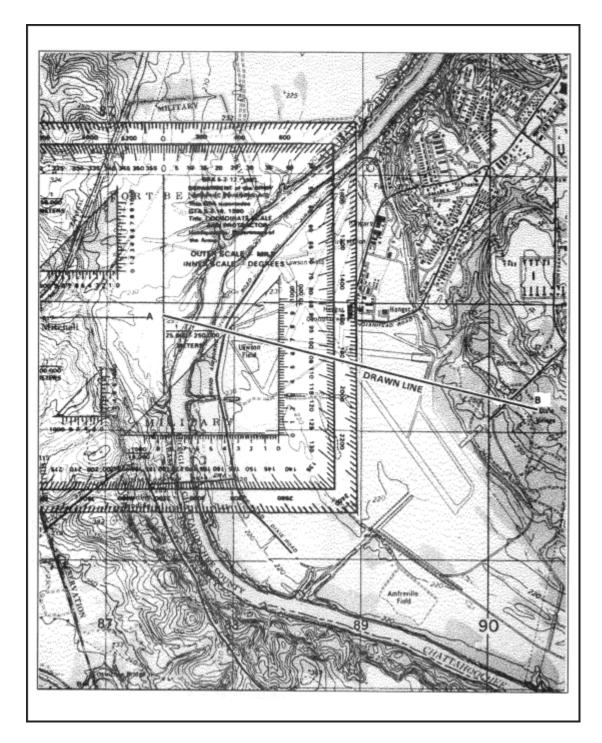


Figure 6-4. Measuring an azimuth.

WARNING

When measuring azimuths on a map, remember that you are measuring from a starting point to an ending point. If a mistake is made and the reading is taken

from the ending point, the grid azimuth will be opposite, thus causing the user to go in the wrong direction.

117.6 Discuss the procedure for converting a grid azimuth to a magnetic azimuth.

DECLINATION DIAGRAM

Declination is the angular difference between any two norths. If you have a map and a compass, the one of most interest to you will be between magnetic and grid north. The declination diagram (Figure 6-8) shows the angular relationship, represented by prongs, among grid, magnetic, and true norths. While the relative positions of the prongs are correct, they are seldom plotted to scale. Do not use the diagram to measure a numerical value. This value will be written in the map margin (in both degrees and mils) beside the diagram.

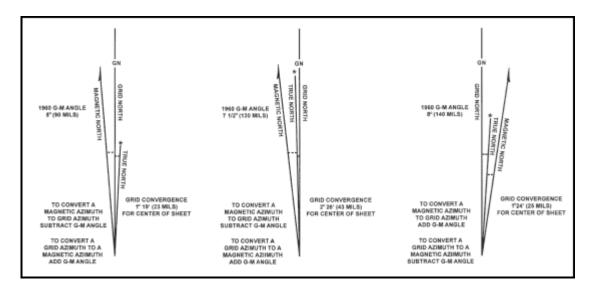


Figure 6-8. Declination diagrams.

Location.

A declination diagram is a part of the information in the lower margin on most larger maps. On medium-scale maps, the declination information is shown by a note in the map margin.

Grid-Magnetic Angle.

The G-M angle value is the angular size that exists between grid north and magnetic north. It is an arc, indicated by a dashed line that connects the grid-north and magnetic-north prongs. This value is expressed to the nearest 1/2 degree, with mil equivalents shown to the nearest 10 mils. The G-M angle is important to the map reader/land navigator because azimuths translated between map and ground will be in error by the size of the declination angle if not adjusted for it.

Grid Convergence.

An arc indicated by a dashed line connects the prongs for true north and grid north. The value of the angle for the center of the sheet is given to the nearest full minute with its equivalent to the nearest mil. These data are shown in the form of a grid-convergence note.

Conversion.

There is an angular difference between the grid north and the magnetic north. Since the location of magnetic north does not correspond exactly with the grid-north lines on the maps, a conversion from magnetic to grid or vice versa is needed.

With Notes.

Simply refer to the conversion notes that appear in conjunction with the diagram explaining the use of the G-M angle (Figure 6-8). One note provides instructions for converting magnetic azimuth to grid azimuth; the other, for converting grid azimuth to magnetic azimuth. The conversion (add or subtract) is governed by the direction of the magnetic-north prong relative to that of the north-grid prong.

Without Notes.

In some cases, there are no declination conversion notes on the margin of the map; it is necessary to convert from one type of declination to another. A magnetic compass gives a magnetic azimuth; but in order to plot this line on a gridded map, the magnetic azimuth value must be changed to grid azimuth. The declination diagram is used for these conversions. A rule to remember when solving such problems is this: No matter where the azimuth line points, the angle to it is always measured clockwise from the reference direction (base line). With this in mind, the problem is solved by the following steps:

• Draw a vertical or grid-north line (prong). Always align this line with the vertical lines on a map (Figure 6-9).

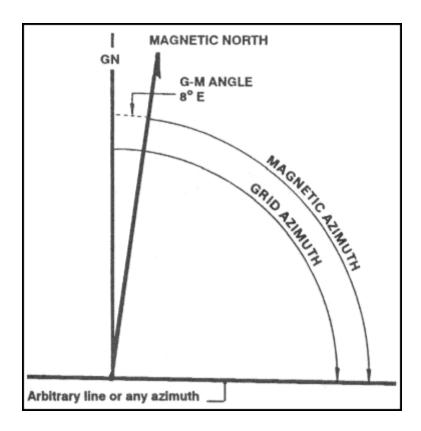


Figure 6-9. Declination diagram with arbitrary line.

- From the base of the grid-north line (prong), draw an arbitrary line (or any azimuth line) at a roughly right angle to north, regardless of the actual value of the azimuth in degrees (Figure 6-9).
- Examine the declination diagram on the map and determine the direction of the magnetic north (right-left or east-west) relative to that of the grid-north prong. Draw a magnetic prong from the apex of the grid-north line in the desired direction (Figure 6-9).
- Determine the value of the G-M angle. Draw an arc from the grid prong to the magnetic prong and place the value of the G-M angle (Figure 6-9).
- Complete the diagram by drawing an arc from each reference line to the arbitrary line. A glance at the completed diagram shows whether the given azimuth or the desired azimuth is greater, and thus whether the known difference between the two must be added or subtracted.
- The inclusion of the true-north prong in relationship to the conversion is of little importance.

Applications.

Remember, there are no negative azimuths on the azimuth circle. Since 0 degree is the same as 360 degrees, then 2 degrees is the same as 362 degrees. This is because 2 degrees and 362 degrees are located at the same point on the azimuth circle. The grid azimuth can now be converted into a magnetic azimuth because the grid azimuth is now larger than the G-M angle.

When working with a map having an east G-M angle:

• To plot a magnetic azimuth on a map, first change it to a grid azimuth (Figure 6-10).

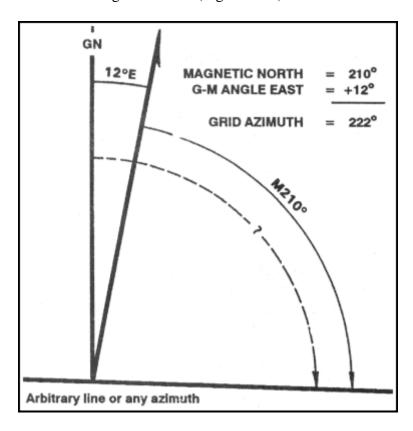


Figure 6-10. Converting to grid azimuth.

• To use a magnetic azimuth in the field with a compass, first change the grid azimuth plotted on a map to a magnetic azimuth (Figure 6-11).

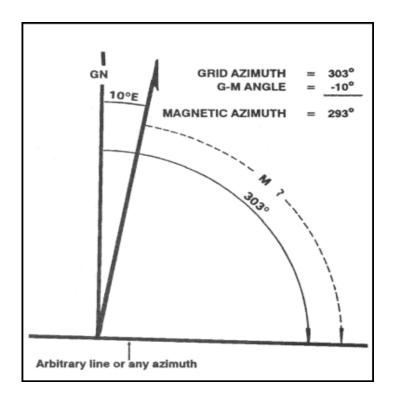


Figure 6-11. Converting to magnetic azimuth.

• Convert a grid azimuth to a magnetic azimuth when the G-M angle is greater than a grid azimuth (Figure 6-12)

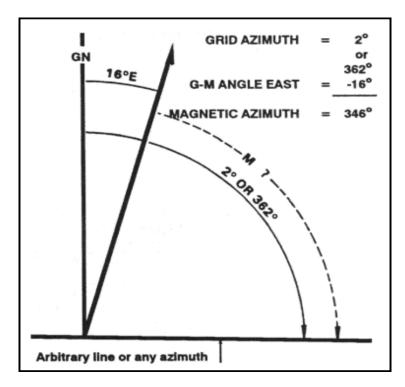


Figure 6-12. Converting to a magnetic azimuth when the G-M angle is greater.

When working with a map having a west G-M angle:

• To plot a magnetic azimuth on a map, first convert it to a grid azimuth (Figure 6-13).

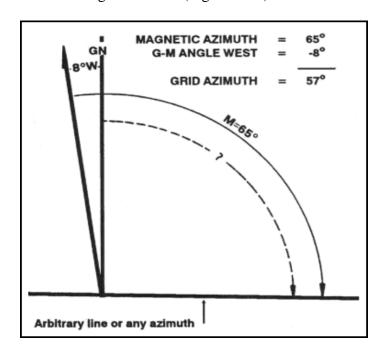


Figure 6-13. Converting to a grid azimuth on a map.

 To use a magnetic azimuth in the field with a compass, change the grid azimuth plotted on a map to a magnetic azimuth (Figure 6-14).

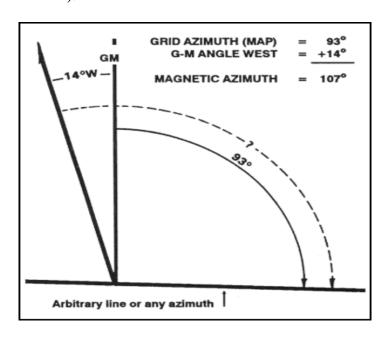


Figure 6-14. Converting to a magnetic azimuth on a map.

• Convert a magnetic azimuth when the G-M angle is greater than the magnetic azimuth (Figure 6-15).

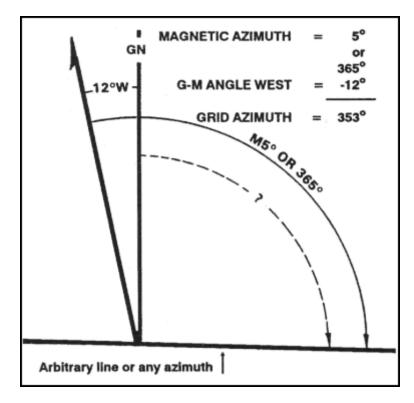


Figure 6-15. Converting to a grid azimuth when the G-M angle is greater.

The G-M angle diagram should be constructed and used each time the conversion of azimuth is required. Such procedure is important when working with a map for the first time. It also may be convenient to construct a G-M angle conversion table on the margin of the map.

NOTE: When converting azimuths, exercise extreme care when adding and subtracting the G-M angle. A simple mistake of 1° could be significant in the field.

117.7 Discuss the technique used to orient a map using a compass.

ORIENTING THE MAP

The first step for a navigator in the field is orienting the map. A map is oriented when it is in a horizontal (flat) position with its north and south corresponding to the north and south on the ground. Some orienting techniques follow:

Using a Compass.

When orienting a map with a compass, remember that the compass measures magnetic azimuths. Since the magnetic arrow points to magnetic north, pay special attention to the declination diagram. There are two techniques used.

First Technique.

Determine the direction of the declination and its value from the declination diagram.

- With the map in a horizontal position, take the straightedge
 on the left side of the compass and place it alongside the
 north-south grid line with the cover of the compass
 pointing toward the top of the map. This procedure places
 the fixed black index line of the compass parallel to northsouth grid lines of the map.
- Keeping the compass aligned as directed above, rotate the map and compass together until the magnetic arrow is below the fixed black index line on the compass. At this time, the map is close to being oriented.
- Rotate the map and compass in the direction of the declination diagram.
- If the magnetic north arrow on the map is to the left of the grid north, check the compass reading to see if it equals the G-M angle given in the declination diagram. The map is then oriented (Figure 11-1).

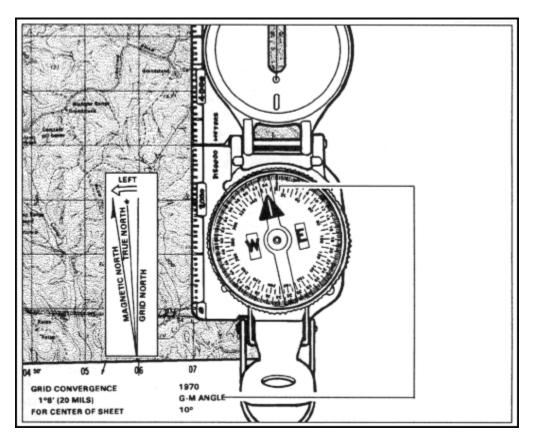


Figure 11-1. Map oriented with 10 degrees west declination.

• If the magnetic north is to the right of grid north, check the compass reading to see if it equals 360 degrees minus the G-M angle (Figure 11-2).

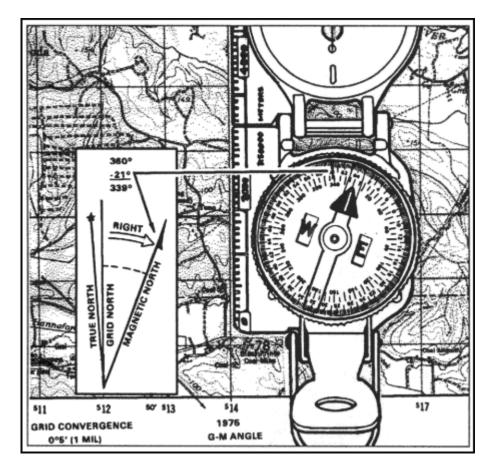


Figure 11-2. Map oriented with 21 degrees east declination.

Second Technique.

Determine the direction of the declination and its value from the declination diagram.

- Using any north-south grid line on the map as a base, draw a magnetic azimuth equal to the G-M angle given in the declination diagram with the protractor.
- If the declination is easterly (right), the drawn line is equal to the value of the G-M angle. Then align the straightedge, which is on the left side of the compass, alongside the drawn line on the map. Rotate the map and compass until the magnetic arrow of the compass is below the fixed black index line. The map is now oriented (Figure 11-3).

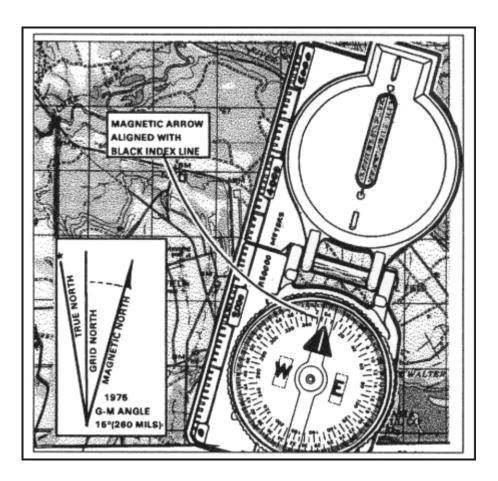


Figure 11-3. Map oriented with 15 degrees east declination.

equal 360 degrees minus the value of the G-M angle. Then align the straightedge, which is on the left side of the compass, alongside the drawn line on the map. Rotate the map and compass until the magnetic arrow of the compass is below the fixed black index line. The map is now oriented (Figure 11-4).

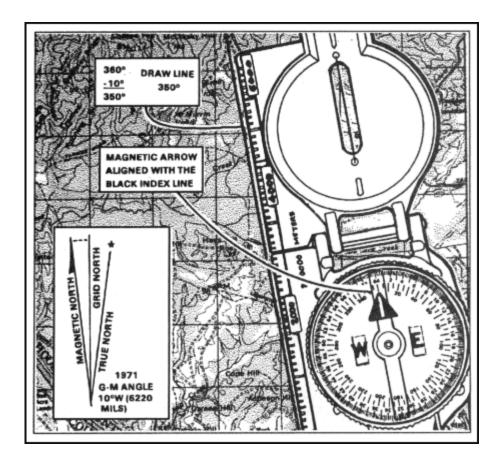


Figure 11-4. Map oriented with 10 degrees west declination.

- **NOTE:** 1. Once the map is oriented, magnetic azimuths are determined using the compass. Do not move the map from its oriented position since any change in its position moves it out of line with the magnetic north.
 - 2. Special care should be taken whenever orienting your map with a compass. A small mistake can cause you to navigate in the wrong direction.

Using Terrain Association.

A map can be oriented by terrain association when a compass is not available or when the user has to make many quick references as he moves across country. Using this method requires careful examination of the map and the ground, and the user must know his approximate location (Figure 11-5).

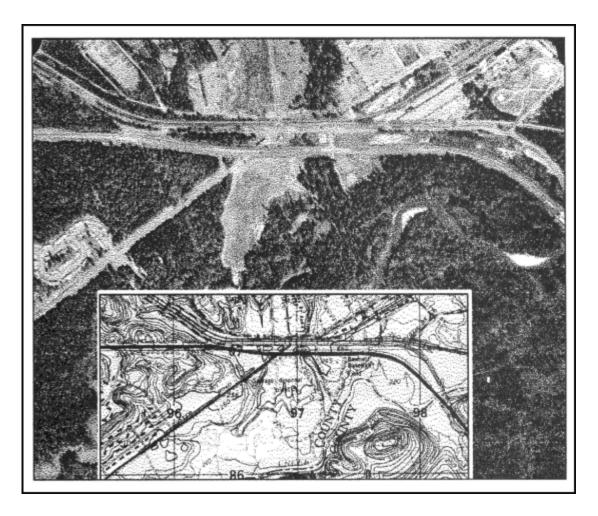


Figure 11-5. Terrain association.

Using Field-Expedient Methods.

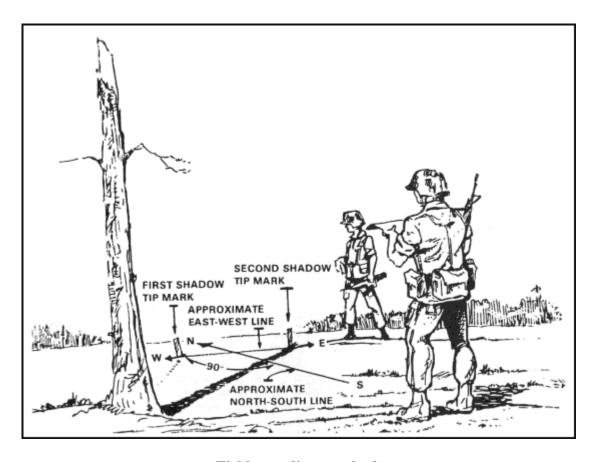
When a compass is not available, different techniques may be used to determine the four cardinal directions.

Shadow-Tip Method.

This simple and accurate method of finding direction by the sun consists of four basic steps.

- Step 1. Place a stick or branch into the ground at a level spot where a distinctive shadow will be cast. Mark the shadow tip with a stone, twig, or other means. This shadow mark is always the west direction
- Step 2. Wait 10 to 15 minutes until the shadow tip moves a few inches. Mark the new position of the shadow tip in the way as the first.
- Step 3. Draw a straight line through the two marks to obtain an approximate east-west line.

- Step 4. Standing with the first mark (west) to your left, other directions are simple; north is to the front, east is to the right, and south is behind you.
 - A line drawn perpendicular to the east-west line at any point is the approximate north-south line. If you are uncertain which direction is east and which is west, observe this simple rule—the first shadow-tip mark is always in the west direction, everywhere on earth.
 - The shadow-tip method can also be used as a shadow clock to find the approximate time of day (Figure 9-7).
 - o To find the time of day, move the stick to the intersection of the east-west line and the north-south line, and set it vertically in the ground. The west part of the east-west line indicates 0600 hours, and the east part is 1800 hours, anywhere on earth, because the basic rule always applies.
 - O The north-south line now becomes the noon line. The shadow of the stick is an hour hand in the shadow clock, and with it you can estimate the time using the noon line and the 6 o'clock line as your guides. Depending on your location and the season, the shadow may move either clockwise or counterclockwise, but this does not alter your manner of reading the shadow clock.
 - o The shadow clock is not a timepiece in the ordinary sense. It makes every day 12 unequal hours long, and always reads 0600 hours at sunrise and 1800 hours at sunset. The shadow clock time is closest to conventional clock time at midday, but the spacing of the other hours compared to conventional time varies somewhat with the locality and the date. However, it does provide a satisfactory means of telling time in the absence of properly set watches.
 - o The shadow-tip system is not intended for use in polar regions, which the Department of Defense defines as being above 60 degrees latitude in either hemisphere. Distressed persons in these areas are advised to stay in one place so that search/rescue teams can easily find them. The presence and location of all aircraft and ground parties in polar regions are reported to and checked regularly by governmental or other agencies, and any need for help becomes quickly known.



Field-expedient method.

117.8 Discuss the procedure for determining the location of an unknown point by intersection.

Intersection is the location of an unknown point by successively occupying at least two (preferably three) known positions on the ground and then map sighting on the unknown location. It is used to locate distant or inaccessible points or objects such as enemy targets and danger areas. There are two methods of intersection: the map and compass method and the straightedge method (Figures 6-16 and 6-17).

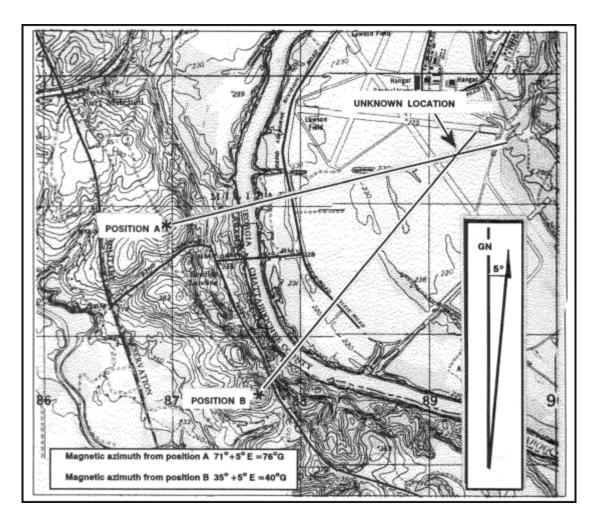


Figure 6-16. Intersection, using map and compass.

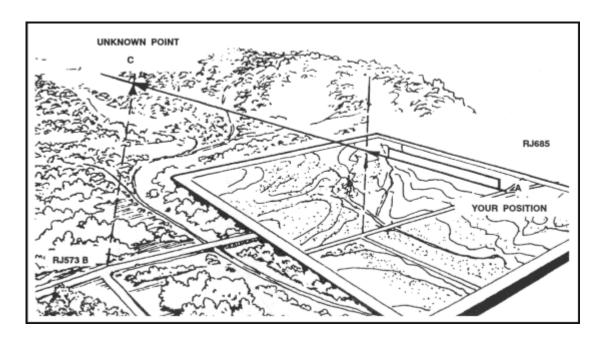


Figure 6-17. Intersection, using a straightedge.

- o When using the map and compass method:
 - Orient the map using the compass.
 - Locate and mark your position on the map,
 - Determine the magnetic azimuth to the unknown position using the compass.
 - Convert the magnetic azimuth to grid azimuth.
 - Draw a line on the map from your position on this grid azimuth.
 - Move to a second known point and repeat steps 1, 2, 3, 4, and 5.
 - The location of the unknown position is where the lines cross on the map. Determine the grid coordinates to the desired accuracy.
- The straight edge method is used when a compass is not available. When using it:
 - Orient the map on a flat surface by the terrain association method.
 - Locate and mark your position on the map.
 - Lay a straight edge on the map with one end at the user's position

 (A) as a pivot point; then, rotate the straightedge until the unkown point is sighted along the edge.
 - Draw a line along the straight edge
 - Repeat the above steps at position (B) and check for accuracy.
 - The intersection of the lines on the map is the location of the unknown point (C). Determine the grid coordinates to the desired accuracy (Figure 6-17).

117.9 Discuss the procedures for determining a location by resection.

Resection is the method of locating one's position on a map by determining the grid azimuth to at least two well-defined locations that can be pinpointed on the

map. For greater accuracy, the desired method of resection would be to use three or more well-defined locations.

- When using the map and compass method (Figure 6-18).
 - Orient the map using the compass.
 - Identify two or three known distant locations on the ground and mark them on the map.
 - Measure the magnetic azimuth to one of the known positions from your location using a compass.
 - Convert the magnetic azimuth to a grid azimuth.
 - Convert the grid azimuth to a back azimuth. Using a protractor, draw a line for the back azimuth on the map from the known position back toward your unknown position.
 - Repeat 3, 4, and 5 for a second position and a third position, if desired.
 - The intersection of the lines is your location. Determine the grid coordinates to the desired accuracy.

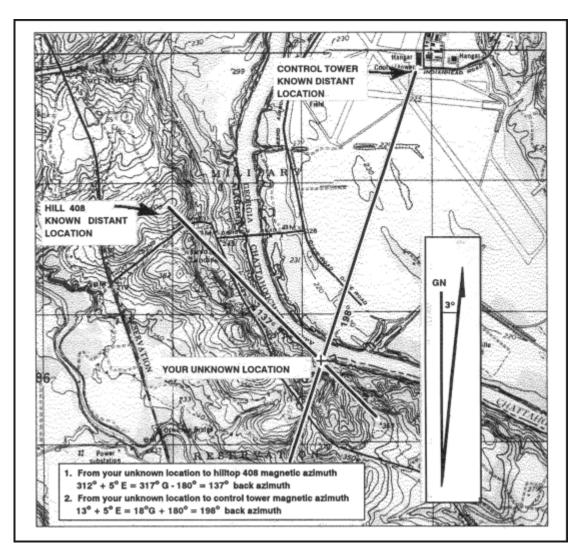


Figure 6-18. Resection with map and compass.

- o When using the straightedge method (Figure 6-19).
 - Orient the map on a flat surface by the terrain association method.
 - Locate at least two known distant locations or prominent features on the ground and mark them on the map.
 - Lay a straightedge on the map using a known position as a pivot point. Rotate the straightedge until the known position on the map is aligned with the known position on the ground.
 - Draw a line along the straightedge away from the known position on the ground toward your position.
 - Repeat 3 and 4 using a second known position.
 - The intersection of the lines on the map is your location. Determine the grid coordinates to the desired accuracy.

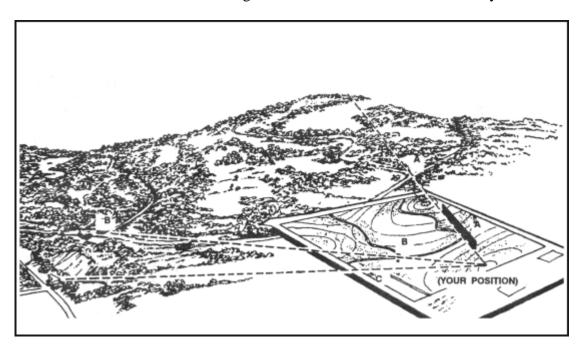


Figure 6-19. Resection with straightedge.

MODIFIED RESECTION

Modified resection is the method of locating one's position on the map when the person is located on a linear feature on the ground, such as a road, canal, or stream (Figure 6-20). Proceed as follows:

- o Orient the map using a compass or by terrain association.
- o Find a distant point that can be identified on the ground and on the map.
- Determine the magnetic azimuth from your location to the distant known point.
- o Convert the magnetic azimuth to a grid azimuth.

- O Convert the grid azimuth to a back azimuth. Using a protractor, draw a line for the back azimuth on the map from the known position back toward your unknown position.
- The location of the user is where the line crosses the linear feature. Determine the grid coordinates to the desired accuracy.

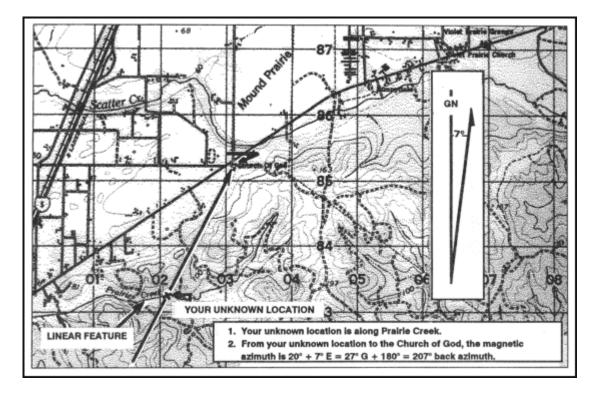
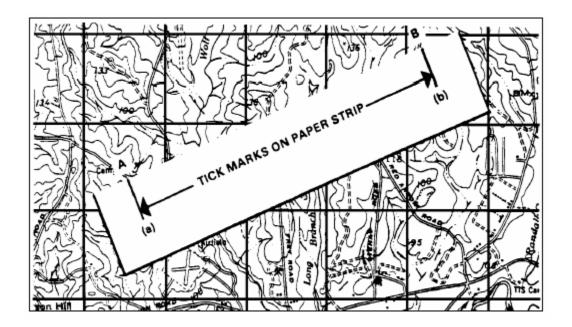


Figure 6-20. Modified resection.

117. 10 Discuss the procedures for determining distance between two points on a map.

Straight Line Distance.

To determine straight-line distance between two points on a map, lay a straight-edged piece of paper on the map so the edge of the paper touches both points and extends past them. Make a tick mark on the edge of the paper at each point as shown in figure below. When you have completed measuring the distance, move the paper to the graphic scale to determine the ground distance



Curved Line Distance.

To measure distance along a winding road, stream, or other curved line, the straightedge of a piece of paper is used. In order to avoid confusion concerning the point to begin measuring from and the ending point, an eight-digit coordinate should be given for both the starting and ending points.

- O Place a tick mark on the paper and map at the beginning point from which the curved line is to be measured. Align the edge of the paper along a straight portion and make a tick mark on both map and paper when the edge of the paper leaves the straight portion of the line being measured as shown in figure below.
- O Keeping both tick marks together (on paper and map), place the point of the pencil close to the edge of the paper on the tick mark to hold it in place and pivot the paper until another straight portion of the curved line is aligned with the edge of the paper.
- o Continue in this manner until the measurement is completed.
- O When you have completed measuring the distance, move the paper to the graphic scale to determine the ground distance. The only tick marks you will be measuring the distance between are tick marks (a) and (b). The tick marks in between are not used.

