



FIELD MEDICAL SERVICE OFFICER

STUDENT HANDBOOK

**"THE BEST FORM OF TROOP WELFARE
IS TOUGH, REALISTIC TRAINING"**

REVISED JUN 2013

Command Philosophy



My philosophy is basic...provide the highest quality service possible to every person you encounter. We are an institution of higher learning; we need to be the best with everything we do.

We are preparing the next generation of heroes for the greatest fighting force on the planet - the 8404 Hospital Corpsman assigned to the United States Marine Corps. They operate at the tip-of-the-spear providing combat medicine to our operational forces; they are critical to the success of the Navy & Marine Corps Medicine Team.

What each one of us does on a daily basis matters, regardless of our job. We all contribute to the mission. No one job is more important than the other. If just one link (team member) in this chain fails to perform a portion of the mission to standard, we all fail. You have the ability to make a positive difference in peoples' lives every day. Every member of this team should ask themselves, "Am I living by our core values and making decisions that are consistent with these values when I interact with students, staff and the American public."

Key points:

- Know your chain of command and how to use it. You have not exhausted your chain of command at FMTB-West until the issue reaches me.
- If you are lacking something to perform your mission, bring it to the attention of leadership so we can promptly address it.
- Any safety issue should immediately be brought to leadership.
- Continually strive to improve processes; ask for help before it's too late (in all aspects of your life and career).
- If you see a problem, fix it or bring it to the attention of someone who can. Don't ignore it.
- Supporting each other is just as important as supporting the mission.
- Continue the relentless pursuit of customer satisfaction; feedback is a valuable tool in life and career.
- Basic military courtesy should be a part of everyday life.
- Always strive to do the right thing, even when no one is looking or when tempted to take the "easy" wrong.

As a leader, I believe all members of the team are important. Our civilian shipmates are essential to the success of our mission. As a military leader, I believe, as the Sailor creed says, "I proudly serve my country's Navy combat team with Honor, Courage and Commitment. I am committed to excellence and the fair treatment of all".

I cannot over emphasize the importance of leadership from E-1 to O-6, everyone has a part; I expect officers to lead from the front by setting the example. Be sure that regularly scheduled performance counseling sessions are conducted for military and civilian employees. Cover the good which should be sustained as well as the areas which need improvement. Although I like to be informed, I believe in allowing leaders to lead, managers to manage. A big part of my job is to provide you the support systems necessary for you to accomplish your mission. Tell me what you need and don't worry how it will be resourced. Let me worry about that.

Expectations of leaders at all levels:

- Take care of your people.
- Set the example of how the team should think and act because all will be watching you to model your behavior.
- Know your people - keep them informed, be sensitive to their needs, make their lives as predictable as possible.
- Develop your subordinates, military and civilian, so that they will be ready to lead others with high quality, effective leadership skills.
- Don't ask your staff to do anything you aren't willing to do yourself.
- Set the example in military bearing: weight, uniform, physical fitness or civilian professional appearance.
- Live the Navy Core Values: honor, courage, commitment.
- Reward individuals for going above and beyond; we do not thank our people enough.
- Work hard, but don't forget to have fun, too.

I have my "pet peeves" like anyone else. These are the things that will cause an emotional response on my part. In fairness, I'll share those with you now. My trigger points include:

- Inconsistent and/or unfair treatment of others.
- Rudeness/Disrespect/Inconsiderate/Taking Advantage
- Not giving the chain of command the opportunity to fix a problem before you take it outside the facility.
- Answering with, "Because we've always done it that way," when there is no understanding as to the rationale for a process/action. This usually indicates lack of motivation or no consideration of potential improvements.
- Trying to cover up an honest mistake rather than admit to it and learn from it.
- Blaming others for your mistakes or errors.
- Having no initiative to improve your work area. You should strive to leave an area better than you found it.

Take pride in your profession. We are all here as volunteers; let's strive to do our very best. I am honored to be here, to lead you, to serve with you; I promise to give you my best.

DAN CORNWELL
CAPT/MSC/USN
COMMANDING OFFICER

Vision

To be the best training command within the United States Marine Corps; producing the best trained, best prepared, and battle ready Fleet Marine Force Hospital Corpsman. He will be prepared to meet the challenges of present and future operational environments.

Mission

Develop, coordinate, resource, execute and evaluate training and education concepts, policies, plans and programs to ensure the Fleet Marine Force Hospital Corpsman is prepared for assignment with the operational forces.

BLOCK 1



BLOCK 1

Identify Rank Structure of the Armed Forces FMSO 1101	1-1
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**UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243**

FMSO 1101

Identify the Ranks and Roles of Members of the Marine Corps

TERMINAL LEARNING OBJECTIVE

1. In a military environment, identify the organizational rank structure of armed forces personnel, per the reference. (FMSO-HSS-1101)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, describe the basic organizational structure of the USMC enlisted ranks, within 80 percent accuracy, per the Marine Officer's Guide. (FMSO-HSS-1101A)
2. Without the aid of reference, given a description or list, describe the basic organizational structure of the USMC officer ranks, within 80 percent accuracy, per the Marine Officer's Guide. (FMSO-HSS-1101B)





1. ORGANIZATIONAL STRUCTURE OF USMC ENLISTED RANKS

There are many customs and courtesies involved in being a Naval Officer. Identification of military rank and seniority is an important part of rendering those courtesies. Each branch of the armed forces uses their own set of rank insignias to identify each rank within its organization. Special attention should be paid to the identification of the Naval and Marine Corps ranks, as these are the primary insignias you will be seeing in your daily tasks. The Marine Corps and Navy have similar rank structures for enlisted members. The Marine Corps uses Junior Enlisted, Non-Commissioned Officer (NCO), and Staff Non-Commissioned Officer (SNCO). The Navy uses Non-Petty Officer, Petty Officer, and Chief Petty Officer. Likewise, the officer ranks have similar structures: Company grade, Field grade, and General grade officers. Their commonalities and differences will be discussed in detail.

Enlisted Ranks

Enlisted personnel are separated into three broad categories: Junior Enlisted, NCO and SNCO.

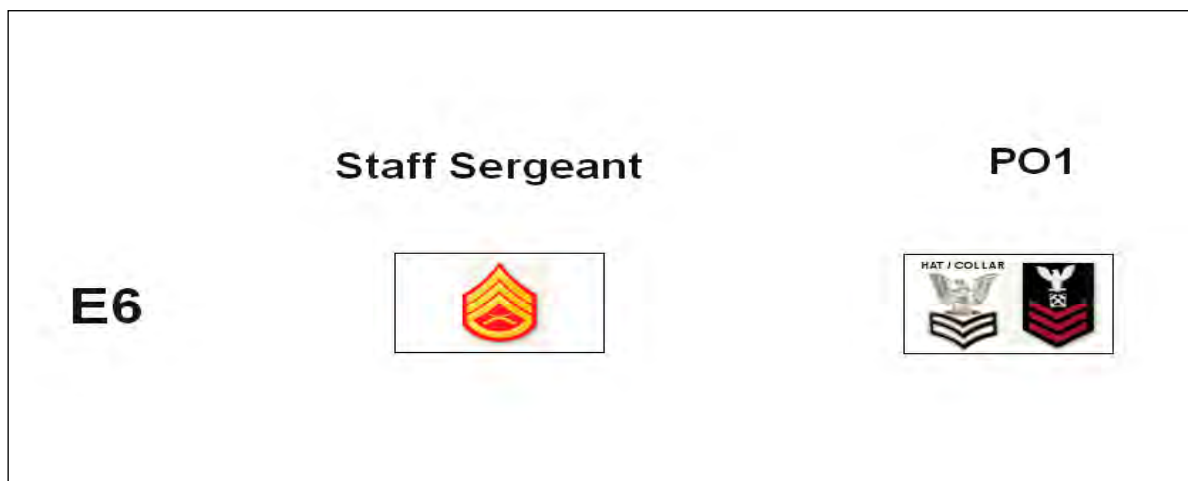
Junior Enlisted (E1 to E3): New personnel to the armed forces who need direct supervision, mentoring, and training.

E 1	E 2	E 3
No Device		
Seaman	Seaman Apprentice	Seaman
No Device		
Private	Private First Class	Lance Corporal

NCO (E4 to E5): Personnel who have received formal leadership training and have direct supervision authority over Junior Enlisted personnel. Members in these pay grades have more rights and responsibilities than Junior Enlisted personnel. However, with more responsibility comes more accountability.



SNCO (E6 to E9): Senior enlisted personnel who have direct supervision authority over Junior Enlisted and NCOs. This is the rank where a Marine passes a significant career milestone. Becoming a SNCO is equivalent to obtaining the status of a Navy chief Petty Officer. When assigned to the Marine Corps operating forces, Navy E6's are considered a SNCO.



There are many different names you may hear when referring to certain people in the Marine Corps Operating Forces. It should be stated that calling a person by one of these nicknames requires a working relationship with that person. If you were addressing a person for the first time, one would call that person by their rank and last name.

Gunny: nickname for a Gunnery Sergeant in the USMC

Top: nickname for a Master Sergeant in the USMC

	Gunnery Sergeant	CPO
E7		

	Technical Master Sergeant	Senior Chief
E8		
	Administrative	
		
	1st Sergeant	

A First Sergeant or Sergeant Major will command all of the enlisted, hold formations, instruct platoon sergeants, advise the commander, and assist in the training of all enlisted members.

**E9
Technical**

Master Chief

Master Gunnery Sergeant



Administrative

Command Master Chief

Sergeant Major




2. ORGANIZATIONAL STRUCTURE OF USMC OFFICER RANKS

Company grade: All officers WO to O3.





The Warrant Officer community has a distinct difference when it comes to Warrant Officer and Chief Warrant Officer.





Gunner: Nickname for the Battalion S3 Chief Warrant Officer. This person is considered the weapons and range expert of the battalion.

A Warrant Officer is a W1.





PAYGRADE	MARINE	NAVY
W-1	Background is GOLD and markings are SCARLET . <hr style="width: 20%; margin: 0 auto;"/> 	There are no W-1 Warrant Officers in the Navy.



A Chief Warrant Officer is W2 to W5.

PAYGRADE	MARINE	NAVY
W-2	Background is GOLD and markings are SCARLET <hr style="width: 20%; margin: 0 auto;"/> 	Background is GOLD and markings are BLUE <hr style="width: 20%; margin: 0 auto;"/> 
W-3	Background is SILVER and markings are SCARLET <hr style="width: 20%; margin: 0 auto;"/> 	Background is SILVER and markings are BLUE <hr style="width: 20%; margin: 0 auto;"/> 







<p style="text-align: center;">W-4</p>	<p style="text-align: center;">Background is SILVER and markings are SCARLET</p> <hr style="width: 20%; margin: auto;"/> 	<p style="text-align: center;">Background is SILVER and markings are BLUE</p> <hr style="width: 20%; margin: auto;"/> 
<p style="text-align: center;">W-5</p>	<p style="text-align: center;">Background is SILVER and markings are SCARLET</p> <hr style="width: 20%; margin: auto;"/> 	<p style="text-align: center;">Background is SILVER and markings are BLUE</p> <hr style="width: 20%; margin: auto;"/> 

Lieutenant (Lt): Nickname for both a 1st Lieutenant and a 2nd Lieutenant. Notice the abbreviation for Lieutenant in the Marine Corps is upper case “L” and lower case “t.” There are many differences between the correct abbreviations of Navy and Marine Corps personnel. See the end of this lesson for a list of correct abbreviations for each service.




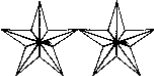




<p style="text-align: center;">PAYGRADE</p>	<p style="text-align: center;">MARINE</p>	<p style="text-align: center;">NAVY</p>
<p style="text-align: center;">O-1 (Bar is Gold)</p>	<p style="text-align: center;">2nd Lieutenant</p> <hr style="width: 20%; margin: auto;"/> 	<p style="text-align: center;">Ensign</p> <hr style="width: 20%; margin: auto;"/> 
<p style="text-align: center;">O-2 (Bar is Silver)</p>	<p style="text-align: center;">1st Lieutenant</p> <hr style="width: 20%; margin: auto;"/> 	<p style="text-align: center;">Lieutenant Junior Grade</p> <hr style="width: 20%; margin: auto;"/> 

PAYGRADE	MARINE	NAVY
O-3 (Bars are Silver)	Captain	Lieutenant
		

Field grade: All officers O4 to O6.

PAYGRADE	MARINE	NAVY
O-4 (Leaf is Gold)	Major	Lieutenant Commander
		
O-5 (Leaf is Silver)	Lieutenant Colonel	Commander
		
O-6 (Eagle is Silver)	Colonel	Captain
		

General grade: All officers O7 to O10.









PAYGRADE	MARINE	NAVY
O-7	<p style="text-align: center;">Brigadier General</p> 	<p style="text-align: center;">Rear Admiral (lower half)</p> 
O-8	<p style="text-align: center;">Major General</p> 	<p style="text-align: center;">Rear Admiral (upper half)</p> 
O-9	<p style="text-align: center;">Lieutenant General</p> 	<p style="text-align: center;">Vice Admiral</p> 
O-10	<p style="text-align: center;">General</p> 	<p style="text-align: center;">Admiral</p> 

References:










Blue Jacket's Manual
Marine Officer's Guide

ARMED FORCES RANK INSIGNIAS

















Junior Enlisted












PAYGRADE	MARINE CORPS	NAVY	ARMY	AIR FORCE
E-1	Private NONE	Seaman Recruit NONE	Private NONE	Airman Basic NONE
E-2	Private First Class 	Seaman Apprentice 	Private 	Airman 
E-3	Lance Corporal 	Seaman 	Private First Class 	Airman First Class 

Non-Commissioned Officer (NCO)















PAYGRADE	MARINE CORPS	NAVY	ARMY	AIR FORCE
E-4	Corporal 	Petty Officer Third Class HAT / COLLAR 	Corporal  Specialist 	Senior Airman 
E-5	Sergeant 	Petty Officer Second Class HAT / COLLAR 	Sergeant 	Staff Sergeant 

Staff Non-Commissioned Officer (SNCO)













PAYGRADE	MARINE CORPS	NAVY	ARMY	AIR FORCE
E-6	<p>Staff Sergeant</p> 	<p>Petty Officer First Class</p> <p>HAT / COLLAR</p> 	<p>Staff Sergeant</p> 	<p>Technical Sergeant</p> 
E-7	<p>Gunnery Sergeant</p> 	<p>Chief Petty Officer</p> <p>HAT / COLLAR</p> 	<p>Sergeant First Class</p> 	<p>Master Sergeant</p>  <p>First Sergeant</p> 
E-8	<p>Master Sergeant (Technical)</p>  <p>First Sergeant (Administrative)</p> 	<p>Senior Chief Petty Officer</p> <p>HAT / COLLAR</p> 	<p>Master Sergeant (Technical)</p>  <p>First Sergeant (Administrative)</p> 	<p>Senior Master Sergeant (Technical)</p>  <p>First Sergeant (Administrative)</p> 

PAYGRADE	MARINE CORPS	NAVY	ARMY	AIR FORCE
E-9	<p>Master Gunnery Sergeant (Technical)</p>  <p>Sergeant Major (Administrative)</p> 	<p>Master Chief (Technical)</p> <p>HAT / COLLAR</p>  <p>Command Master Chief (Administrative)</p> 	<p>Sergeant Major (Technical)</p>  <p>Command Sergeant Major (Administrative)</p> 	<p>Command Chief Master Sergeant (Technical)</p>  <p>First Sergeant (Administrative)</p> 
	E-9	<p>Sergeant Major of the Marine Corps</p> 	<p>Master Chief Petty Officer of the Navy (MCPON)</p> 	<p>Sergeant Major of the Army</p> 













Company Grade Officer

PAYGRADE	MARINE	NAVY	ARMY	AIR FORCE
W-1		There are no W-1 Warrant Officers in the Navy		There are no Warrant Officers in the Air Force
W-2				There are no Warrant Officers in the Air Force
W-3				There are no Warrant Officers in the Air Force
W-4				There are no Warrant Officers in the Air Force
W-5				There are no Warrant Officers in the Air Force

















Company Grade Officers

PAYGRADE	MARINE	NAVY	ARMY	AIR FORCE
O-1	2 nd Lieutenant 	Ensign 	2 nd Lieutenant 	2 nd Lieutenant 
O-2	1 st Lieutenant 	Lieutenant Junior Grade 	1 st Lieutenant 	1 st Lieutenant 
O-3	Captain 	Lieutenant 	Captain 	Captain 

Field Grade Officers

PAYGRADE	MARINE	NAVY	ARMY	AIR FORCE
O-4	Major 	Lieutenant Commander 	Major 	Major 
O-5	Lieutenant Colonel 	Commander 	Lieutenant Colonel 	Lieutenant Colonel 
O-6	Colonel 	Captain 	Colonel 	Colonel 

General Grade Officers

PAYGRADE	MARINE	NAVY	ARMY	AIR FORCE
O-7	Brigadier General 	Rear Admiral (Lower half) 	Brigadier General 	Brigadier General 
O-8	Major General 	Rear Admiral (Upper half) 	Major General 	Major General 
O-9	Lieutenant General 	Vice Admiral 	Lieutenant General 	Lieutenant General 
O-10	General 	Admiral 	General 	General 

Note: A memory aid to remember the seniority of general officers is: Be My Little General for Brigadier, Major, Lieutenant, and General.

Each branch of the Armed Forces has a senior officer for their respective service:

- Marines: Commandant of the Marine Corps
- Navy: Chief of Naval Operations
- Army: Chief of Staff of the Army
- Air Force: Chief of Staff of the Air Force

ABBREVIATIONS FOR ARMED FORCES PERSONNEL

NAVY OFFICERS

<u>Rank</u>	<u>Abbreviation</u>
Admiral	ADM
Vice Admiral	VADM
Rear Admiral (Upper and Lower)	RADM
Captain	CAPT
Commander	CDR
Lieutenant Commander	LCDR
Lieutenant	LT
Lieutenant Junior Grade	LTJG
Ensign	ENS
Chief Warrant Officer	CWO5
	CWO4
	CWO3
	CWO2

MARINE CORPS, AIR FORCE, AND ARMY OFFICERS

<u>Rank</u>	<u>Marines</u>	<u>Air Force</u>	<u>Army</u>
General	Gen	Gen	GEN
Lieutenant General	LtGen	LtGen	LTG
Major General	MajGen	Maj Gen	MG
Brigadier General	BGen	Brig Gen	BG
Colonel	Col	Col	COL
Lieutenant Colonel	LtCol	Lt Col	LTC
Major	Maj	Maj	MAJ
Captain	Capt	Capt	CPT
First Lieutenant	1stLt	1 st Lt	1LT
Second Lieutenant	2ndLt	2 nd Lt	2LT
Chief Warrant Officer 5	CWO5		CW5
Chief Warrant Officer 4	CWO4		CW4
Chief Warrant Officer 3	CWO3		CW3
Chief Warrant Officer 2	CWO2		CW2
Warrant Officer	WO		WO1

NAVY ENLISTED

<u>Rank</u>	<u>Abbreviation</u>
Master Chief Petty Officer of the Navy	MCPON
Command Master Chief	CMDCM
Master Chief Petty Officer	MCPO
Senior Chief Petty Officer	SCPO
Chief Petty Officer	CPO
Petty Officer First Class	PO1
Petty Officer Second Class	PO2
Petty Officer Third Class	PO3
Airman (includes Apprentice and Recruit)	AN, AA, or AR
Constructionman (includes Apprentice and Recruit)	CN, CA, or CR
Fireman (includes Apprentice and Recruit)	FN, FA, or SR
Hospitalman (includes Apprentice and Recruit)	HN, HA, or HR
Seaman (includes Apprentice and Recruit)	SN, SA, or SR

MARINE ENLISTED

<u>Rank</u>	<u>Abbreviation</u>
Sergeant Major of the Marine Corps	SgtMaj
Sergeant Major	SgtMaj
Master Gunnery Sergeant	MGySgt
First Sergeant	1stSgt
Master Sergeant	MSgt
Gunnery Sergeant	GySgt
Staff Sergeant	SSgt
Sergeant	Sgt
Corporal	Cpl
Lance Corporal	LCpl
Private First Class	PFC
Private	Pvt

ARMY ENLISTED

<u>Rank</u>	<u>Abbreviation</u>
Sergeant Major of the Army	SMA
Command Sergeant Major	CSM
Sergeant Major	SGM
First Sergeant	1SG
Master Sergeant	MSG
Sergeant First Class	SFC
Staff Sergeant	SSG
Sergeant	SGT
Specialists	SPC
Corporal	CPL
Private First Class	PFC
Private	PVT

AIR FORCE ENLISTED

<u>Paygrade</u>	<u>Abbreviation</u>
Chief Master Sergeant of the Air Force	CMSAF
Chief Master Sergeant	CMSgt
Senior Master Sergeant	SMSgt
Master Sergeant	MSgt
Technical Sergeant	TSgt
Staff Sergeant	SSgt
Senior Airman	SrA
Airman First Class	A1C
Airman	Amn
Airman Basic	AB

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FMSO 1102

Identify USMC Organizational Structure/Chain of Command

TERMINAL LEARNING OBJECTIVES

1. In a military environment, identify USMC Organizational Structure and Chain of Command to meet mission requirements with 80 percent accuracy per the references. (FMSO-HSS 1102)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, identify the two parallel chains of command within the Marine Corps, within 80 percent accuracy, per MCRP 5-12D. (FMSO-HSS-1102a)
2. Without the aid of reference, given a description or list, identify the four broad categories of the Marine Corps, within 80 percent accuracy, per MCRP 5-12D. (FMSO-HSS-1102b)
3. Without the aid of reference, given a description or title, identify the four core elements of a Marine Air/Ground Task Force (MAGTF), within 80 percent accuracy, per MCRP 5-12D. (FMSO-HSS-1102c)
4. Without the aid of reference, given a description or title, identify the types of MAGTFs, within 80 percent accuracy, per MCRP 5-12D. (FMSO-HSS-1102d)
5. Without the aid of reference, given a description or list, identify the roles of the different functional areas of operation within MAGTF elements, within 80 percent accuracy, per MCRP 5-12D. (FMSO-HSS-1102e)

INTRODUCTION

The Marine Corps is organized as a general purpose “force in readiness” to support national needs. Deploying for combat as a combined-arms MAGTF, the Marine Corps provides the National Command Authority (NCA) with a responsive force that can conduct operations across the spectrum of conflict. The Marine Corps’ most important responsibility is to win the nation’s battles.

1. **TWO PARALLEL CHAINS OF COMMAND WITHIN THE MARINE CORPS**

There are two parallel chains of command within the Marine Corps. Depending on the issue or task, they will either fall under the Service Chain or the Operational Chain of Command.

Service Chain of Command - used for things that are specifically inherent to the Marine Corps. Examples would include anything from purchasing new tanks to establishing rules for the use of tuition assistance. These topics, whether large or small, only affect the Marine Corps. The top level of the service chain is listed below:

1. President
2. Secretary of Defense
3. Secretary of the Navy
4. Commandant of the Marine Corps

Operational Chain of Command - used to direct forces in conjunction with operational or functional missions. Often times this involves other services outside the Marine Corps. The Operational Chain of command break down is listed below:

1. President
2. Secretary of Defense
3. Commanders of combatant commands

2. **FOUR BROAD CATEGORIES OF THE MARINE CORPS**

Headquarters, US Marine Corps - Headquarters, US Marine Corps (HQMC) consists of the Commandant of the Marine Corps and those staff agencies that advise and assist him in discharging his responsibilities prescribed by law and higher authority. The Commandant is directly responsible to the Secretary of the Navy for the total performance of the Marine Corps. This includes the administration, discipline, internal organization, training requirements, efficiency, and readiness of the service.

Operating Forces - “The heart of the Marine Corps.” It comprises the forward presence, crisis response, and fighting power that the Corps makes available to US unified combatant commanders. The Marine Corps has permanently established two combatant command-level service components in support of unified commands with significant Marine forces assigned: US Marine Corps Forces Atlantic (MARFORLANT) and US Marine Corps Forces, Pacific (MARFORPAC).

MARFORLANT:

Headquarters at Norfolk, VA. The war fighting arm of MARFORLANT is the II Marine Expeditionary Force (II - MEF). Dual hatted commanding all Marine

forces in US European Command (CINCUSEUCOM), and US Southern Command (CINCUSOCOM).

Marine Corps Security Forces (MCSF) - at Naval installations.

Marine Security Guard (MSG) - detachments at Embassies and Consulates around the globe.

MARFORPAC:

Headquarters at Camp H.M. Smith, HI. The war fighting arm of MARFORLANT is the I Marine Expeditionary Force (I – MEF) and the III Marine Expeditionary Force (III – MEF). MARFORPAC commands all Marine Corps operational and shore based commands in the Pacific theater and dual hatted commanding all Marine forces in the central theater (MARFORCENT)

Marine Corps Reserve - the United States Marine Corps Reserve (MARFORRES) is responsible for providing trained units and qualified individuals to be mobilized for active duty in time of war, national emergency, or contingency operations, and provide personnel and operational tempo relief for active component forces in peacetime. MARFORRES, like the active forces, consists of a combined arms force with balanced ground, aviation, and combat service support units. MARFORRES is organized under the Commander, MARFORRES. Their headquarters is located in New Orleans, LA.

Supporting Establishments - the Marine Corps supporting establishments consists of those personnel, bases, and activities that support the Marine Corps Operating Forces. The supporting establishment also includes:

- Marine Corps Recruiting Command
- Marine Corps Combat Development Command
- Marine Corps Systems Command
- Training activities and formal schools

3. **FOUR CORE ELEMENTS OF A MAGTF**

Definition and Purpose - the MAGTF is a balanced, air-ground combined arms task organization of Marine Corps forces under a single commander, structured to accomplish a specific mission (see figure 1). It is the Marine Corps' organization for missions across the range of military operations. It is designed to fight while having the ability to prevent conflicts and control crisis. MAGTFs are flexible, task-organized forces that are capable of responding rapidly to a broad range of crisis and conflict situations.

Capability - all MAGTFs are task organized and vary in size and capability according to the assigned mission, threat, and battle space environment. The MAGTF is primarily organized and equipped to conduct amphibious operations as part of naval expeditionary forces. MAGTFs are also capable of sustained combat operations ashore.

Structure - each MAGTF, regardless of size or mission, has the same basic structure. A MAGTF consists of four core elements: command, aviation, ground, and logistics combat element. As the Ground Combat Element grows in size, the Aviation, Logistics, and Command elements must also become larger.

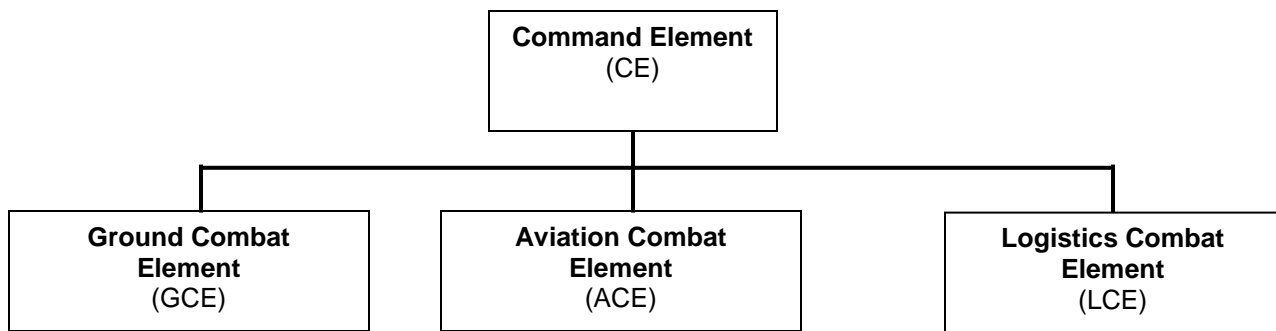


Figure 1. Four Core Elements of all MAGTF's

Four Core Elements of a MAGTF

1. Command Element (CE) - the CE contains the MAGTF headquarters and other units that provide intelligence, communication, and administrative support. The CE is scalable and task-organized to provide the command, control, communications, computers, intelligence, and joint interoperability necessary for effective planning and execution of operations.
2. Ground Combat Element (GCE) - the GCE is task organized to conduct ground operations to support the MAGTF mission. This element includes infantry, artillery, reconnaissance, armor, light armor, assault amphibian, engineer, and other forces, as needed. The GCE can vary in size and composition.
3. Aviation Combat Element (ACE) - the ACE conducts offensive and defensive air operations and is task-organized to perform the functions of Marine aviation required to support the MAGTF mission.
4. Logistics Combat Element (LCE) - the LCE is task-organized to provide the full range of combat service support functions and capabilities necessary to maintain the continued readiness and sustainability of the MAGTF as a whole. The LCE may vary in size and composition.

4. **TYPES OF MAGTFs AND LOCATIONS**

There are four basic MAGTF organizations: Marine Expeditionary Force, Marine Expeditionary Brigade, Marine Expeditionary Unit, and Special Purpose MAGTFs.

Marine Expeditionary Force (MEF) (see figure 2)

Definition of Capabilities - the largest standing MAGTF, the MEF, is the principal Marine Corps war fighting organization. It is capable of missions across the range of military operations, through amphibious assault and sustained operations ashore in any environment.

Each MEF is comprised of a Command Element (CE), Ground Combat Element (GCE), Marine Aircraft Wing (ACE), and a Marine Logistics Group (LCE). The three standing MEFs provide a reservoir of capabilities and combat power from which all smaller MAGTFs are formed. There are three standing MEFs:

I Marine Expeditionary Force (I MEF)

1st Marine Division (1st MARDIV) - Camp Pendleton, CA
3rd Marine Aircraft Wing (3rd MAW) – Miramar, San Diego, CA
1st Marine Logistics Group (1st MLG) - Camp Pendleton, CA

(I MEF elements are primarily located in California and Arizona)

II Marine Expeditionary Force (II MEF) -

2nd Marine Division (2nd MARDIV) - Camp Lejeune, NC
2nd Marine Aircraft Wing (2nd MAW) - Cherry Point, NC
2nd Marine Logistics Group (2nd MLG) - Camp Lejeune, NC

(II MEF elements are primarily located in North and South Carolina)

III Marine Expeditionary Force (III MEF) -

3rd Marine Division (3rd MARDIV) - Okinawa, Japan
1st Marine Aircraft Wing (1st MAW) - Okinawa, Japan
3rd Marine Logistics Group (3rd MLG) - Okinawa, Japan

(III MEF elements are primarily located in Hawaii and Japan)

Each MEF is commanded by either a Lieutenant General or Major General and consists of anywhere from 20,000 to 90,000 personnel. A MEF generally deploys on Amphibious Assault Ships with support from Military Sealift Command (MSC) and Maritime Pre-positioned Force (MPF) vessels and takes with it 60 days worth of supplies.

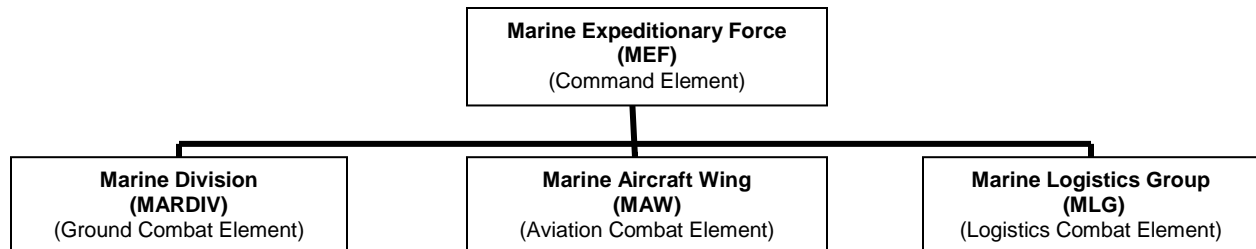


Figure 2. MEF

Marine Expeditionary Brigade (MEB) (see figure 3)

Definition of Capabilities - this is a medium sized non-standing MAGTF that is task-organized to respond to a full range of crises from forcible entry to humanitarian assistance. MEBs are not standing forces and are formed only in times of need. An example is post 9/11; the 4th MEB and 2nd MEB were formed to respond to combat and peacekeeping contingencies in Afghanistan and Iraq.

A MEB is commanded by a Brigadier General or Major General and consists of anywhere from 3,000 to 20,000 personnel. It also generally deploys on Amphibious Assault Ships with support from Military Sealift Command (MSC) and Maritime Pre-positioned Force (MPF) vessels and takes with it 30 days worth of supplies.

Elements consist of:

Command Element (CE)
 Ground Combat Element (GCE) = Marine Regiment (MARREG)
 Aviation Combat Element (ACE) = Marine Aircraft Group (MAG)
 Logistics Combat Element (LCE) = Combat Logistics Regiment (CLR)

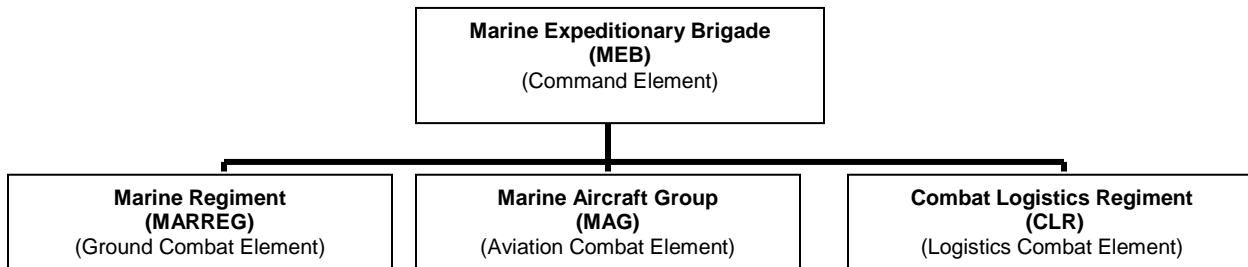


Figure 3. MEB

Marine Expeditionary Unit, Special Operations Capable (MEU (SOC)) (see figure 4)

Definition of Capabilities - the standard forward deployed Marine expeditionary organization. A MEU is task organized to be a forward-deployed presence and designed to be the “first on the scene” force. A MEU is capable of a wide range of small scale contingencies, to include:

- Noncombatant evacuation
- Maritime interdictions
- Tactical recovery of aircraft and/or personnel
- Humanitarian/civic actions
- Military operations other than war

Prior to deployment, a MEU undergoes an intensive six month training program, focusing on its conventional and selected maritime special operations missions. The training culminates with a thorough evaluation and certification as “Special Operations Capable (SOC).” In addition to possessing conventional capabilities, MEU SOCs are augmented with selected detachments to provide enhanced capabilities.

A MEU is commanded by a colonel and consists of anywhere from 1,500 to 3,000 personnel. It generally deploys on naval vessels and takes with it 15 days worth of supplies.

Elements consist of:

- Command Element (CE)
- Ground Combat Element (GCE) = Marine Infantry Battalion Landing Team (BLT)
- Aviation Combat Element (ACE) = Composite Marine Squadrons (rotary wing with a complement of fixed wing aircraft, depending on mission)
- Logistics Combat Element (LCE) = Combat Logistics Battalion (CLB)

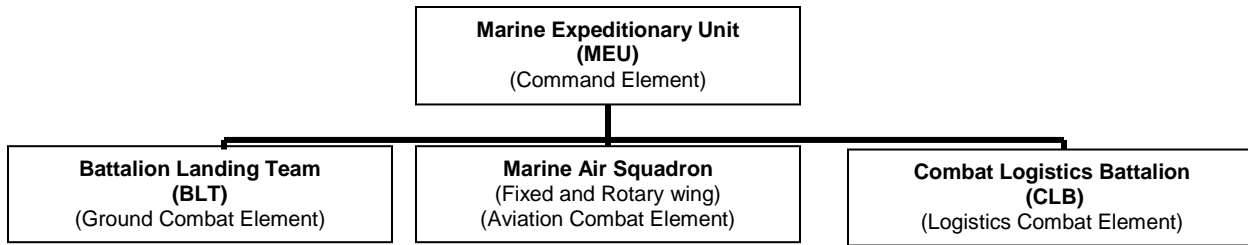


Figure 4. MEU

MEU Locations:

- 11th, 13th and 15th MEU's – (Camp Pendleton)
- 22nd, 24th and 26th MEU's – (Camp Lejeune, NC)
- 31st MEU – (Camp Hansen, Okinawa, Japan)

Special Purpose Marine Air-Ground Task Force (SPMAGTF)

Definition of Capabilities - the SPMAGTF is a non-standing MAGTF temporarily formed to conduct a specific mission. It is normally formed when a standing MAGTF is unavailable or inappropriate. Their designation derives from the mission they are assigned, the location in which they will operate, or the name of the operation in which they will participate. (i.e., SPMAGTF Somalia, SPMAGTF Katrina etc.). These MAGTFs vary in size and composition based on the individual mission (see figure 5).

MAGTF SIZE (Largest to Smallest)	ELEMENT		
	GCE	ACE	LCE
Marine Expeditionary Force (MEF)	Marine Division (MARDIV)	Marine Aircraft Wing (MAW)	Marine Logistics Group (MLG)
Marine Expeditionary Brigade (MEB)	Marine Regiment (MARREG)	Marine Aircraft Group (MAG)	Combat Logistics Regiment (CLR)
Marine Expeditionary Unit (MEU)	Battalion Landing Team (BLT)	Reinforced Helicopter/Fixed Wing Squadron	Combat Logistics Battalion (CLB)
Special Purpose MAGTF (SPMAGTF)	Elements of a MARDIV	Elements of a MAW	Elements of a MLG

Figure 5. MAGTF Organization

5. **FUNCTIONAL AREAS OF OPERATION WITHIN MAGTF ELEMENTS**

The functional areas within MAGTF elements are balanced and structured to accomplish a specific mission. The functional areas provide support via administrative, intelligence, operational, logistical and communicative. Functional areas fall under Headquarters and Service organizations of these prospective elements.

G-1/S-1 (Administration) - the G-1/S-1 is the principal staff officer for all matters on personnel management, personnel administration, and headquarters management.

G-2/S-2 (Intelligence) - the 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.

G-3/S-3 (Operations) - the G-3/S-3 is the principal staff officer for all matters on training, plans, operations, and organization.

G-4/S-4 (Logistics) - the G-4/S-4 is the principal staff assistant for all logistic matters. The G-4/S-4 plans, coordinates, and supervises the provision of combat service support 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.

G-5 (Planning) - the 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.

G-6/S-6 (Communications) - the G-6/S-6 is the principal staff assistant for all communication and information support (CIS) matters.

The “G” designator is typically used to identify functional areas at Division or higher and the “S” designator is typically used at the Battalion and Regimental levels of command.

References:

Organization of Marine Corps Forces, MCRP 5-12D, Chapter 1-5

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1104

Identify Principles Of Ethical Leadership

TERMINAL LEARNING OBJECTIVES

1. In a military environment, identify the leadership traits and principles of the Marine Corps, per the references. (FMSO-HSS-1104)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or title, identify the Marine Corps Leadership Traits, within 80 percent accuracy, per MCWP 6-11, Leading Marines. (FMSO-HSS-1104a)
2. Without the aid of reference, given a description or title, identify the Marine Corps Leadership Principles, within 80 percent accuracy, per Ethics for the Junior Officer, Third Edition. (FMSO-HSS-1104b)
3. Without the aid of reference, given a description or list, identify the Marine Corps Core Values, within 80 percent accuracy, per MCWP 6-11, Leading Marines. (FMSO-HSS-1104c)
4. Without the aid of reference, given a description or list, discuss the definition of ethics, per Ethics for the Junior Officer. (FMSO-HSS-1104d)
5. Without the aid of reference, given a description or list, identify ethical behavior, within 80 percent accuracy, per Ethics for the Junior Officer, Third Edition. (FMSO-HSS-1104e)
6. Without the aid or reference, identify the basic concepts of the Geneva Convention, per The Geneva Convention. (FMSO-HSS-1104f)
7. Without the aid of reference, identify the basic concepts of the Law of Armed Conflict, per The Law of Armed Conflict. (FMSO-HSS-1104g)
8. Without the aid of reference, identify the basic concept of Rules of Engagement, per The Rules of Engagement. (FMSO-HSS-1104h)
9. Without the aid of reference, given a description or list, identify the basic concept of the Code of Conduct, per the Code of Conduct. (FMSO-HSS-1104i)
10. With the aid of reference, given a case study/scenario, participate in a classroom discussion applying the principles of ethical leadership, per Ethics for the Junior Officer. (FMSO-HSS-1104j)

INTRODUCTION

“ Being a Marine is a state of mind. It is an experience some have likened more to a calling than a profession. Being a Marine is not a job—not a pay check; it is not an occupational specialty. It is not male or female, majority or minority; nor is it a rank insignia. Stars, bars, or chevrons are only indicators of the responsibility or authority we hold at a given time. Rather, being a Marine comes from the eagle, globe, and anchor that is tattooed on the soul of every one of us who wear the Marine Corps uniform. It is a searing mark in our innermost being which comes after the rite of passage through boot camp or Officer Candidates School when a young man or woman is allowed for the first time to say, "I'm a United States Marine." And unlike physical or psychological scars, which, over time, tend to heal and fade in intensity, the eagle, globe, and anchor only grow more defined—more intense—the longer you are a Marine. "Once a Marine, always a Marine." Among Marines there is a fierce loyalty to the Corps that persists long after the uniform is in mothballs. . . . Woven through that sense of belonging, like a steel thread, is an elitist spirit. Marines are convinced that, being few in number, they are selective, better, and, above all, different. This matter of being different lies at the heart of our leadership philosophy and has been nourished over the years by combining the characteristics of soldiers, sailors, and airmen.” (MCWP 6-11)

1. **LEADERSHIP TRAITS**

The traits and principles of leadership are the basic fundamentals that Marines use to develop their own leadership abilities and that of their subordinates. The 14 leadership traits are:

- **Justice**
- **Judgment**
- **Dependability**
- **Initiative**
- **Decisiveness**
- **Tact**
- **Integrity**
- **Enthusiasm**
- **Bearing**
- **Unselfishness**
- **Courage**
- **Knowledge**
- **Loyalty**
- **Endurance**

Justice - Justice is defined as the practice of being fair and consistent. A just person gives consideration to each side of a situation and bases rewards or punishments on merit. The quality of displaying fairness and impartiality is critical in order to gain the trust and respect of subordinates and maintains discipline and unit cohesion.

Judgment - The ability to weigh facts and possible courses of action in order to make sound decisions. Sound judgment allows a leader to make appropriate decisions in the guidance and training of his/her Marines and the employment of his/her unit. Approach problems with a common sense attitude and avoid making rash decisions.

Dependability - Dependability is the certainty of proper performance of duty. It is the willing and voluntary support of the policies and orders of the chain of command. Dependability also means consistently putting forth your best effort in an attempt to achieve the highest standards of performance.

Initiative - Initiative is taking action in the absence of orders. It means meeting new and unexpected situations with prompt action and using resourcefulness to get tasks completed. Initiative is a founding principle of Marine Corps Warfighting philosophy.

Decisiveness - Decisiveness is the ability to make decisions promptly and to announce them in a clear, firm, professional manner. It is the quality of character which guides a person to accumulate all available facts in a circumstance, weigh the facts, and choose and announce an alternative which seems best. It is often better that a decision be made promptly than a potentially better one be made at the expense of more time.

Tact - Tact allows commands, guidance and opinions to be expressed in a constructive and beneficial manner. It is the ability to deal with others in a manner that will maintain good relations and avoid offense by consistently treating peers, seniors and subordinates with respect and courtesy. This deference must be extended under all conditions regardless of true feelings.

Integrity - The ability to put honesty, sense of duty and sound moral principles above all else. Nothing less than complete honesty in all of your dealings with subordinates, peers and superiors is acceptable.

Enthusiasm - The display of sincere interest and exuberance in the performance of duty. Displaying interest and optimism in a task greatly enhances the likelihood that the task will be successfully completed.

Bearing - Bearing is the way you conduct and carry yourself. Your manner should reflect alertness, competence, confidence and control. To develop bearing, you should hold yourself to the highest standards of personal conduct. Never be content with meeting only the minimum requirements.

Unselfishness - Avoidance of providing for one's own comfort and personal advancement at the expense of others. The quality of looking out for the needs of your subordinates before your own is the essence of leadership. This quality is not to be confused with putting these matters ahead of the accomplishment of the mission.

Courage - Courage is what allows you to remain calm while recognizing fear. Moral courage means having the inner strength to stand up for what is right and to accept blame when something is your fault. Physical courage means that you can continue to function effectively when there is physical danger present.

Knowledge - Knowledge is the understanding of a science or art. Knowledge means that you have acquired information and that you understand people. Your knowledge should be broad, and in addition to knowing your job, you should know your unit's policies and keep up with current events.

Loyalty - Loyalty means that you are devoted to your country, the Corps, and to your seniors, peers, and subordinates. The motto of our Corps is Semper Fidelis! (Always Faithful) You owe unwavering loyalty up and down the chain of command. Never talk about seniors unfavorably in front of your subordinates. Once a decision is made and the order is given to execute it, carry out that order willingly as if it were your own.

Endurance - Endurance is the mental and physical stamina that is measured by your ability to withstand pain, fatigue, stress, and hardship. Leaders are responsible for leading their units in physical endeavors and for motivating them as well. Finish every task to the best of your ability by forcing yourself to continue when you are physically tired and your mind is sluggish.

While these may be simple words to define, they are at times difficult to live up to and enforce. Rank does not confer privileges, it entails responsibilities. Subordinates under your direction will place you on a special pedestal of trust and confidence, as will most of the American public. As military leaders, you need to consistently display the match between your behaviors and the above traits. There can be no compromising on this issue in a profession where the most you can demand of people is that they lay their life on the line in the execution of your orders.

When all is said and done, leadership must have a moral base, a set of ethical values, to keep us true to the high ideals of our forebears who provided us with the cherished inheritance of freedom. The integrity of an Officer's word, signature, commitment to truth, and what is right must be natural, involved, and rise to the forefront of any decision or issue. There is sometimes a misconception by a few that to win in combat requires throwing all the rules away; a sort of "anything goes" philosophy. This false belief leads some to believe their work is outside the norms and rules of society. Nothing could be further from the truth. Adherence to rules is extremely important to military good order and discipline as well as the execution of tactics in the heat of battle. Some rules are deviated from and even broken that involve ethics or actions that are wrong under the rules of international warfare; accountability is held based on what was expected and right under the circumstances.

2. **THE PRINCIPLES OF LEADERSHIP**

The Ethics for the Junior Officer, Third Edition, gives some general points regarding ethical leadership obligations of military officers:

1. There are seldom, if ever, any "victimless unethical acts" when it comes to serving in the armed forces as a commissioned officer.
2. Officers who follow an unethical course of action are frequently aware that they are doing something wrong, but they allow themselves to rationalize or make excuses, often persuading themselves that they are acting as their superior would wish or that no

one will be hurt by their actions, or that their actions will produce some benefit which outweighs other considerations.

3. Rules are not written lightly and should never be broken lightly.
4. When an Officer fails to act ethically, negative consequences spread both up and down the chain of command. On the other hand, when officers do the right thing, they establish a command climate that encourages all members of the command to be ethical.
5. An officer's ethical or unethical actions reflect on the officer corps and the integrity of the armed services they represent.
6. Some military professionals are ready to give up their lives for service to their country; but, are reluctant to risk losing their career. Having true moral courage, however, means always being prepared to do the ethical thing even if it means damaging or losing one's military career.
7. An officer's accountability can never be delegated or diminished. Although those who serve under you are also individually responsible for their own actions, it does not lessen your responsibility to or for them.
8. Not every difference of opinion should be viewed as a moral crisis. If your commanding officer chooses a course of action different from what you judge to be correct, you should not *automatically* conclude that his or her decision was *necessarily* morally wrong.
9. An officer's professional reputation begins the day of commission and may be affected by every ethical decision made in or out of uniform.
10. An officer who is not a member of the Judge Advocate General's Corps cannot be expected to know all laws; but, that individual should also bear in mind that what the law requires may be less than what ethics demands. The Standards of Conduct encourage military personnel to avoid any action that might create an appearance of impropriety whether it is specifically prohibited or not.
11. Officers must operate within the chain of command; however, they must never hide behind nor use that strict observance as an excuse for moral negligence or rationalization for failure to prevent unethical behavior.
12. Religious, racial, gender, and ethnic biases have no place in the American military. Upholding and defending the Constitution requires respect for the dignity of all persons.

Our ethical decisions help shape who we are and what we become. We should never make excuses to ourselves for doing the right thing – in that sense; ethical behavior is its own reward.

3. **CORE VALUES**

Honor - the bedrock of Marine Corps character. The quality that guides Marines to exemplify the ultimate in ethical and moral behavior; never to lie, cheat, or steal; to abide by an uncompromising code of integrity; to respect human dignity; to have respect and concern for each other. The quality of maturity, dedication, trust, and dependability that commits Marines to act responsibly; to be accountable for actions; to fulfill obligations; and to hold others accountable for their actions.

Courage - the heart of Marine Corps core values. Courage is the mental, moral, and physical strength ingrained in Marines to carry them through the challenges of combat and the mastery of fear; to do what is right; to adhere to a higher standard of personal conduct; to lead by example, and to make tough decisions under stress and pressure. It is the inner strength that enables a Marine to take that extra step.

Commitment - the spirit of determination and dedication within members of a force of arms that leads to professionalism and mastery of the art of war. It leads to the highest order of discipline for unit and self. It is the ingredient that enables 24-hour-a-day dedication to Corps and Country. It is an unrelenting determination to achieve a standard of excellence in every endeavor and concern for others. Commitment is the value that establishes the Marine as the warrior and citizen others strive to emulate.

Reaffirm these core values and ensure they guide your performance, behavior, and conduct every minute of every day.

4. **DEFINITION OF ETHICS**

The decisions we make must pass the test of ethical behavior. Ethical behavior is the action taken specifically in observance of a defined standard of conduct. Ethics are the standards of the Marine Corps. They set forth general guidelines about what we ought to do. As a result, the individual is obligated to apply judgment to a given set of circumstances. Judgment, and therefore choice, is at the center of ethical conduct. Ethical choices often involve a moral dilemma: the necessity to choose between competing obligations in circumstances that prevent one from doing both. Action is at the heart of ethical behavior. An academic understanding of what is right and wrong is irrelevant unless it is coupled to appropriate action. Even then, the answer is not always clear. Ethical decision-making occurs every time a Marine/Sailor is faced with a need to decide what to do. It may be a cut-and-dry decision in garrison or it may be one on the battlefield that is far more ambiguous. At the heart of the leader's ability to choose correctly is a firm grounding in both institutional and individual values that will point to the correct direction.

It is neither possible to hand down a set of rules that will answer every question, nor is it possible to publish a code that will satisfy every demand. What is possible is the establishment of a simple test: "If you are prepared to talk about your actions, or lack thereof, in front of a national audience, made up of all your seniors, peers, subordinates, and friends who share the same professional values, and whose opinions you value, then your behavior

was, or is, probably ethical in nature.” While the test itself is straightforward, the answers are not. Giving the right answers, and more importantly, doing the right thing, requires courage.

5. **ETHICAL BEHAVIOR**

Every member of the Armed Services is expected to keep his or her moral compass well aligned, accept strict personal accountability, and display moral courage. The actions of military personnel are constantly reviewed and evaluated. Due to the oaths they take and the enormous responsibility they assume, members of the military are generally held to a higher ethical standard than the rest of the community. As ranks and duties increase, the bar is raised even further. Society expects more from those who are trusted to lead others. Greek philosopher Aristotle once explained, *the ideal student of ethics is not an unethical person but someone who already has a strong commitment to doing the right thing at all times yet acknowledges, as we all must, that it is not always a simple matter to figure out what the right thing is.*

6. **BASIC CONCEPTS OF THE GENEVA CONVENTIONS**

History of the Geneva Conventions

There have been attempts to put limits on wartime behavior since the beginning of recorded history, for instance:

- In the sixth century, Before the Christian Era (BCE), Chinese warrior Sun Tzu suggested putting limits on the way wars were conducted.
- Around 200 BCE, the notion of war crimes appeared in the Hindu code of Manu.
- In 1305, the Scottish national hero, Sir William Wallace, was tried for the wartime murder of civilians.
- Hugo Grotius wrote "On the Law of War and Peace" in 1625, focusing on the humanitarian treatment of civilians.
- In 1865, Confederate Officer Henry Wirz was executed for murdering Federal Prisoners of War at the Andersonville Prisoner of War (POW) Camp. He was only one of several people who were tried for similar offenses.

The past century and a half has seen a substantial jump in the degree to which constraints have been placed on warring parties; only in this century has an international body been formed to police the nations of the world.

When one speaks of the Geneva Conventions, they are usually referring to the Fourth Geneva Convention of 1949, which was ratified in the aftermath of World War II. There are actually four Geneva Conventions.

The First Geneva Convention was agreed to in 1864. The agreement provided for the protection of all medical facilities, their personnel, and any civilians aiding the wounded. It also gives the Red Cross International recognition as a neutral medical

group. The First Convention was originally signed by 12 nations (The United States was not one of these). The United States signed the Second Convention, which occurred in 1882.

The Second Convention extended the protection of the first convention to wounded combatants at sea and shipwrecked Sailors.

The Third Geneva Convention was convened in 1929 and resulted in specific protections for prisoners of war.

The Fourth Geneva Convention was signed in 1949. This convention reaffirmed the requirements of the first three conventions and provided protections for civilians during wartime.

In 1977 two additional protocols were added to protect civilians from becoming objects of attack, extend protection to guerrilla combatants, and to establish commissions to investigate violations of international law. Over 150 nations approved the 1949 conventions. Approximately half that number approved those of 1977. The United States has not approved the latter.

Purpose of the Conventions

The overall aim of the four Conventions is to prevent as much suffering as possible during war. The Geneva Conventions represent a major effort to record the basic concepts of the laws of war. They do not replace, instead they add to, the customary (or unwritten) laws of war. Where the Conventions are not specific, the customary laws of war govern actions.

Many people believe the Conventions apply only to a formally declared war. This is not true. All four Conventions state that "the present Convention shall apply to all cases of declared war or of any other armed conflict which may arise between two or more parties, even if the state of war is not recognized by one of them." As a result, the Conventions apply to military operations despite absence of a formal declaration of war.

Many people also believe that prisoners of war cannot be transferred to the custody of an ally. However, the Conventions expressly authorize such action provided the ally agrees to adhere to the Conventions. POW transfers took place during both World Wars, the Korean War, and the Vietnam Conflict.

7. LAW OF ARMED CONFLICT (ALSO KNOWN AS THE LAW OF WAR)

MCO 3300.4 defines the Law of War as follows: The "Law of War" is that part of international law that regulates the conduct of armed hostilities. Frequently, it is referred to as the "Law of Armed Conflict (LOAC)." The law of war encompasses all international law for the conduct of hostilities binding on the United States or its individual citizens, including treaties and international agreements to which the United States is a party, and applicable customary international law.

The LOAC encompasses numerous international treaties, conventions, or protocols. The United States recognizes most of these agreements; however, certain agreements and their applicability to any military operation can be subject to disagreement.



The US position (as well as the North Atlantic Treaty Organization (NATO) and the United Nations (UN)) is such that their forces will apply the principles and spirit of the LOAC to any military operation.

The LOAC encompasses a number of general principles which must be considered by those commanding in evaluating all uses of force. Four of the most important are:

Discrimination - distinguishing between combatants who may be attacked and noncombatants, who may not be attacked. (All persons in uniform, carrying a weapon or participating in any way in military operations or activities are known as combatants.)

Military Necessity - justifying those measures not forbidden which are necessary for quickly securing an objective, unless forbidden by international or domestic law.

Unnecessary Suffering - prohibits the use of weapons and/or other materials which, by their nature or manner of use, cause superfluous injuries or unnecessary suffering.

Proportionality - damage to persons and property caused by military action, must not be excessive in relation to the anticipated outcome.

LAW OF ARMED CONFLICT WEAPONS PROHIBITIONS
<p>•The Chemical Weapons Convention prohibits the use of all chemical weapons, including riot control agents. However, the United States hold the position that use of riot control agents to control prisoners of war or civil disturbances is not a method of warfare and therefore not covered by the convention. In war, President and Secretary of Defense approval is required for the use of riot control agents; in peacetime, the supported combatant commander has approval authority.</p> <p>•The conventional Weapons Convention prohibits the international targeting of civilian with landmines and also forbids their indiscriminate use. It also applies restrictions to the use of remotely delivered and non-remotely delivered mines. Other restrictions apply to the design and use of booby traps.</p> <p>•Incendiary weapons are lawful so long as they are not employed so as to cause unnecessary suffering. Weapons with incidental incendiary effects are exempted, as are munitions with a combined effect.</p> <p>•Laser weapons are prohibited if their use is specifically designed to cause permanent blindness. No prohibition exists concerning laser systems designed to defeat or otherwise counter optical or electro-optical equipment, or laser systems for range finding, target designation, or similar purposes.</p>

8. RULES OF ENGAGEMENT (ROE)

US Forces and allies operate with restrictive ROE, reflecting the morals and values considered proper for a civilized society. Unfortunately, the tactical advantage will often go to the belligerent, who disregards or actively endangers the safety of civilians. Therefore, it is important to remember that every action has consequences. ROE may change from day to day or from situation to situation. ROE are designed to:

- Avoid alienation of the local population.
- Reduce the risk of adverse world opinion.
- Preserve structures and facilities for future use.
- Preserve vital cultural facilities and grounds.

9. CODE OF CONDUCT (CoC)

The Code of Conduct for members of the Armed Forces of the United States was first promulgated by President Dwight D. Eisenhower on August 17, 1955. The Code, including its basic philosophy, was reaffirmed on July 8, 1964 in DoD Directive 1300.7. In March 1988, President Ronald Reagan issued Executive Order 12633, amending the code with language that is gender-neutral. The code, although first expressed in written form in 1955, is based on time honored concepts and traditions that date back to the days of the American Revolution.

The Code of Conduct as related to Medical Personnel and/or Chaplains

Article I - I am an American, fighting in the forces which guard my country and our way of life. I am prepared to give my life in their defense.

Medical personnel who are exclusively engaged in the medical service and chaplains who fall into the hands of the enemy are considered “retained personnel,” **not** POWs. This allows flexibility to perform their job; but, does not relieve their obligation to abide by the CoC. They are still held accountable for their actions.

Article II - 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.

No additional flexibility for medical personnel or chaplains; however, still are subject to lawful capture. They may only resort to arms in self-defense or in defense of their charges attacked in violation of the Geneva Convention. They must refrain from aggressive action and may not use force to prevent their capture or that of their unit. On the other hand, it is perfectly legitimate for a medical unit to withdraw in the face of the enemy.

Article III - If I am captured I will continue to resist by all means available. I will make every effort to escape and to aid others to escape. I will accept neither parole nor special favors from the enemy.

Since medical personnel and chaplains are “retained personnel” and not considered POWs, the terms of the Geneva Conventions require the enemy to allow them to continue to perform their medical and religious duties for the benefit of the POWs and must take every opportunity to do so.

If the captor permits the performance of these professional functions for the POW community, then special latitude is authorized under the CoC in regards to escape. As individuals, medical personnel and chaplains do not have a duty to escape or to actively aid others in escaping as long as they are being treated as “retained personnel” (although history shows that this is rarely the case and medical personnel and chaplains must be prepared to be treated as other POWs).

Article IV - If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information or take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of those appointed over me and will back them up in every way.

Medical personnel shall **not** assume command over nonmedical personnel and chaplains will **not** assume command over military personnel of **any** branch.

Article V - 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 make no oral or written statements disloyal to my country and its allies or harmful to their cause.

The requirement for medical and chaplain personnel to communicate with a captor in connection with their professional responsibilities is subject to certain restraints. For example, when questioned, a POW is only to provide name, rank, service number, and date of birth. Also, a POW must resist, avoid, or evade, even when physically and mentally coerced, all enemy efforts to secure statements or actions that may further the enemy's cause.

Article VI - 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.

All members of the Armed Forces, including medical personnel and chaplains, are responsible for their action at all times and they must fulfill their responsibilities and survive captivity with honor. Failure to abide by these requirements could possibly subject a service member to disposition under the UCMJ.

10. ETHICAL LEADERSHIP DISCUSSIONS

CASE #1 – This case focuses on what can happen when a young pilot is too eager for a dangerous mission and a CO fails to recognize his inexperience.

A squadron in desperate need of a pilot for a special mission assigned Lieutenant Erickson, one of its newest members, to the task. He had come to the squadron with an excellent reputation and had shown great willingness to participate in all evolutions. The training officer's records on the new pilot were incomplete, but Erickson assured everyone that he could handle the mission without difficulty, and he was eager to help meet the squadron's operational needs.

After considering other pilots who were qualified to fly the mission, the Training Officer, under the pressure of chronic manpower shortages and a high operational tempo, approved the flight. Erickson again assured him that he had all the necessary training and experience for the mission, and the Training Officer asked the CO for the authority to send Erickson on the mission. Based on Erickson's affirmations and the Training Officer's recommendation, the CO okays the flight.

WHAT HAPPENED

While performing vertical maneuvers, Lieutenant Erickson stalled the aircraft (experiencing negative and near zero G flight conditions) and failed to use proper recovery techniques. Erickson was seriously injured, and the aircraft was lost.

Who is responsible for this accident?

Does the Training Officer have any culpability? Why?

Does the LT Erickson have any culpability? Why?

Does the CO have any responsibility? Why?

What should have happened?

CASE #2 – How should an officer react to complaints of harassment against a well-respected colleague?

A junior enlisted member approached an officer who was not within the enlisted's chain of command and complained of harassment from another officer of the same rank who was held in high esteem at the command. Concerned by the complaint, the officer considered the various options for dealing with the situation: (1) forward it up the chain of command, (2) report it to the officer in question, or (3) do nothing.

The officer reasoned that forwarding the complaint up the chain of command could hurt the accused officer's career and family. The officer also thought that doing nothing might be appropriate because the matter was outside that officer's particular chain of command and, honestly, what officer could be expected to know everything that goes on in the military? The accused officer was well respected in the command, and reporting the complaint could possibly alienate the other officers. For the officer who received the complaint, doing nothing began to look like the most attractive option because it would help maintain a greater degree of harmony in the unit.

The last option was to bring the complaint to the accused officer's attention. This course of action would likely avoid alienating the other officers, but it would fail the chain of command by not allowing seniors to know of a potentially serious problem.

What should the officer do?

Could the enlisted person have done anything different/better?

What would you do? Why?

WHAT HAPPENED

The officer receiving the complaint decided that though the enlisted was not an immediate subordinate, there was a call for help. The officer reported the incident up the chain of command and an investigation began. The enlisted, as well as others who knew about the incident, felt the command was concerned about its people. As General Order 21 states, "When the Navy shows an interest in its people, its people will show an interest in the Navy."

The accused officer was found to have taken some ill-considered actions and the CO determined that a warning was in order. This actions stopped harassment across the board and may have (assuming that no other instances of harassment take place) saved the accused officer from committing an act that would result in a more intensive investigation in the future.

References

Ethics for the Junior Officer, 3d Edition
Geneva Convention
Law of Armed Conflict
Leading Marines, MCWP 6-11
Rules of Engagement ROE

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1105

USMC Utility Uniform and Individual Combat Equipment

TERMINAL LEARNING OBJECTIVES

1. Given the required clothing and equipment, wear and maintain USMC Utility Uniform and individual Combat Equipment to support mission requirements.

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, identify the proper wear of the Marine Corps Combat Utility Uniform (MCCUU), within 80 percent accuracy, per MCO P1020.34 (Marine Corps Uniform Regulations). (FMSO-FP-1105a)
2. Without the aid of reference, given a description or list, identify the proper care of the Marine Corps Combat Utility Uniform (MCCUU), within 80 percent accuracy, per MCO P1020.34 (Marine Corps Uniform Regulations). (FMSO-FP-1105b)
3. Without the aid of reference, given a description or list, identify the proper grooming standards for members of the Marine Corps, within 80 percent accuracy, per MCO P1020.34 (Marine Corps Uniform Regulations). (FMSO-FP-1105c)
4. Without the aid of reference, given a description or list, identify the components of the Individual Combat Equipment, within 80 percent accuracy, per FM-21-15, Care and Use of Individual Clothing and Equipment. (FMSO-HSS-1105d)
5. Without the aid of reference, given a description or list, identify the proper care and maintenance of the Individual Combat Equipment, within 80 percent accuracy, per FM-21-15, Care and Use of Individual Clothing and Equipment. (FMSO-FP-1105e)

INTRODUCTION

Navy enlisted personnel assigned to Marine Corps units are issued the Marine Corps Combat Utility Uniform (MCCUU). They are also given a yearly uniform allowance for general upkeep and maintenance which is their responsibility. Officers, on the other hand, are expected to purchase their own uniforms.

The Marine Corps prides itself with exceptional adherence to uniform standards. Marines are expected to always present a sharp, well maintained, and squared away image. That being said, all Navy personnel assigned to Marine units are expected to present the same image. Wearing of the utility uniform requires complete compliance with Marine Corps uniform regulations.

Items issued- Standard issue to Navy enlisted personnel serving with Marine Corps units include:

Infantry combat boots	1 pair
Hot weather boots	1 pair
Utility cover (without Marine emblem)	1 Woodland 1 Desert
Booney/field cover	1 Woodland 1 Desert
Combat utility blouse	2 Woodland 2 Desert
Combat utility trousers	2 Woodland 2 Desert
Cushion sole socks	6 pairs
HM/RP collar insignia	2
Name tapes	4 sets each
Sweat shirt	1
Sweat pants	1
Web belt	1
Belt buckle	1
Glowbelt	1
Shorts (green)	1
Sweater	1
Green undershirt	6 (3 cotton and 3 synthetic)

1. **PROPER WEAR OF THE MCCUU**

Design - the utility uniform is designed for field wear and should be loose-fitting and comfortable. The size selected should fit loosely to allow for some shrinkage without rendering the garment unusable.

Blouse - the utility blouse will not be tucked into the trousers. Per ALMAR 007/08, the Marine Corps seasonal uniform change will occur world-wide in synchronization with the change to, and from, Day Light Savings Time (DST) in the United States. Per MARADMIN 621/11, sleeves will be worn sleeves down year round. If sleeves are worn “up” they will have a three inch fold terminating about two inches above the elbow. The utility blouse should always be kept buttoned. Large or heavy objects should not be carried in the pockets.

Trousers - when combat boots are worn, the trousers will be bloused in a neat and uniform manner. In garrison, the cargo pockets on the trousers will not be used.

Cover - enlisted personnel, E-4 to E-9, will wear a subdued (black) cover device. Officers will wear a subdued officer's crest on their cover. Navy personnel are to use the cover without the embroidered Marine Corps emblem. If unable to obtain a cover without the eagle, globe, and anchor, nothing will be placed over it.

Belt - all personnel will wear the tan khaki web belt or a Marine Corps Martial Arts Belt. The Marine Corps Martial Arts Program (MCMAP) has a designated belt ranking system. Only those individuals who attend the MCMAP course and qualify are authorized to wear the appropriate belt.

Sweater - Navy officer and enlisted personnel may wear the green (Wooley Pully) service sweater with the combat utility uniform. The sweater will be worn underneath the utility blouse with sleeves down.

Raingear - Navy personnel will wear Gortex organizational rainwear as issued by the Marine Corps with the combat utility uniform.

Collar Devices

The corps device is worn on the left collar parallel to the deck (not the collar) for paygrades O1 – O6 and 1 inch from the bottom edge of the collar (see figure 1), equally spaced from left to right.



Figure 1. Corps device on left collar

The rank device is worn on the right collar, for officers in paygrade O1-O5, it is worn parallel to the deck (not the collar) and 1 inch from the bottom edge of the collar (see figure 2), equally spaced from left to right. Officers in paygrade O6 and above will wear their collar device perpendicular to the deck (see figure 3). Officers will wear subdued collar devices while deployed and shiny devices while in garrison.



Figure 2. Rank device placement for O1-O5



Figure 3. Rank device placement for O6 and above

The bottom edge of the warfare device will be centered over the left pocket on a horizontal line (parallel to the ground), even with the highest point of the service tape. If a second device is authorized, it will be worn 1/8 inch above the first device. (see figure 4)



Figure 4. Warfare device

Flight Clothing- Aviation clothing and equipment will be as supplied by the U.S. Navy and by the U.S. Marine Corps. Such clothing and equipment will be worn only when and as prescribed by commanders. When authorized for wear, desert flight suits will be worn in the summer season and green flight suits will be worn in the winter season.

The flight suit will be worn with flight boots, green/black cushion-sole socks, green crew-neck undershirt, garrison cap, black leather nametags, and no more than two CNO-/CMC-approved unit/squadron patches. The flight suit is authorized for aircrew members outside the working/squadron areas subject to the same regulations that apply to the utility uniform. (see figure 5)



Figure 5. Flight Suit

Nametapes will be worn on flight suits and flight jackets and will be 2 inches wide by 4 inches long, made of black leather or synthetic leather material only, with hook and pile (Velcro) backing. The following information will be embossed in gold on the name tape:

- Line 1. Aviation breast insignia (or Marine Corps emblem if aviation breast insignia is not rated).
- Line 2. Initials and last name.
- Line 3. Grade and component (USMC, USMCR). (see figure 6)

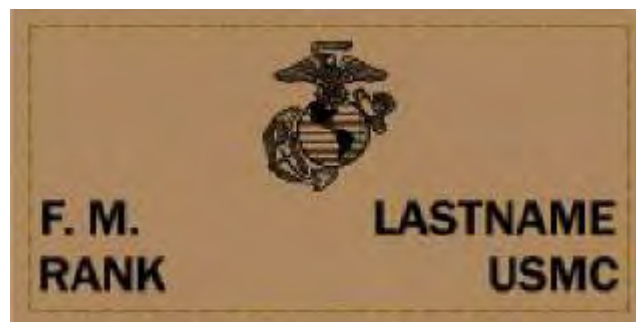


Figure 6. Flight Suit Nametape

Unauthorized Wear of the MCCUU

The wearing of the MCCUU and its policies are different than the Navy's utility uniform. Members are *prohibited* from wearing the Marine utility uniform off base with the following exceptions:

- To and from work while in a vehicle
- During medical emergencies
- Circumstances that are beyond their control (vehicle breakdown)
- While visiting a drive-thru that does not require them to exit the vehicle

2. **CARE OF THE MCCUU**

The MCCUU is designed for easy care. These uniforms are designed as a wash-and-wear uniform. If needed, a hand iron on a low heat setting may be used. The use of starch, sizing and any process that involves dry cleaning or a steam press will adversely affect the treatments and durability of the uniform and is NOT recommended.

Marking of the MCCUU

The uniform will be plainly and indelibly marked with the owner's name (except for organizational clothing). The Marine Corps has designated specific locations for the marking of uniform items. The exact size, color of ink, and specific location of each uniform article can be found in Chapter 10 of the Marine Corps Uniform Regulations, MCO P1020.34.

3. **GROOMING STANDARDS/PERSONAL APPEARANCE**

Members will present the best possible image at all times and continue to set the example while in and out of uniform. Members are prohibited from:

1. Mutilation of the body or any body parts in any manner.
2. Attaching, affixing or displaying objects, articles, jewelry, or ornamentation to, through or under skin, tongue, or any other body part. Female members may NOT wear earrings in combat utility uniform.
3. Tattoos or brands on the neck and head - on other areas of the body, tattoos or brands that are prejudicial to good order, discipline and morale or are of a nature to bring discredit upon the Marine Corps are also prohibited. Sleeve tattoos are likewise prohibited. A sleeve tattoo is a very large tattoo, or a collection of smaller tattoos, that covers or almost covers a person's entire arm or leg. Half-sleeve or quarter-sleeve tattoos that are visible to the eye when wearing standard PT gear (t-shirt and shorts) are likewise prohibited. A half-sleeve or quarter-sleeve tattoo is defined as a very large tattoo, or a collection of smaller tattoos that covers, or almost covers, the entire portion of an arm or leg above or below the elbow or knee. Tattoos or brands that are prejudicial to good order, discipline and morale, or are of a nature to bring discredit upon the Marine Corps are also prohibited. Prejudicial to good order, discipline and morale, or are of a nature to bring discredit upon the Marine Corps may include, but are not limited to, any tattoo that is sexist, racist, vulgar, anti-American, anti-social, gang related, or extremist group or organization related.
4. Having eccentric or faddish styles of hair, jewelry, or eyeglasses.

5. Chewing gum, chewing tobacco, cigarettes, or the consumption of food while in formation or walking in uniform.
6. Articles that are not authorized for wear as a part of a regulation uniform will not be worn with the uniform such as: pens, watch chains, backpacks/bags (over the shoulder), CD/MP3 players or other similar items.
7. Barrettes, combs, rubber bands, etc., ARE authorized IF concealed by the hair (females only).
8. Cellular phones (personally owned and/or organizationally issued) and other electronic equipment will not be worn exposed on Marine Corps uniforms.
9. Sunglasses will be conservative in nature and will not be worn indoors or in formations unless authorized by a medical representative.
10. The wearing of clothing articles not specifically designed to be normally worn as headgear (e.g., bandanas, doo rags) is strictly prohibited in civilian attire AND while in uniform.
11. No part of a prescribed uniform, except those items not exclusively military in character, will be worn with civilian clothing.
12. The good judgment of all members at all levels is key to the enforcement of Marine Corps standards.

4. **INDIVIDUAL COMBAT EQUIPMENT**

Improved Load Bearing Equipment (ILBE) (see figure 7) The ILBE is a load carrying system designed to provide a durable and lightweight means for the deployed Marine/Sailor to transport their individual combat clothing and equipment. It is an integrated load bearing system that is light, durable and can easily be configured for the mission at hand and to maximize the mobility, survivability and lethality of the Marine/Sailor in combat environments.



Figure 7. ILBE Sideview

Fighting Load Vest (to include belt) - the vest is designed to reduce heat build up on the back with minimum area of coverage with the H-Harness design. The wide shoulder straps of the vest help distribute the load without the need for excessive padding that can hinder mobility and sighting a weapon.

Corpsman Configuration - will receive four zippered medical pockets, the vest and two double 30 round magazine pockets. In addition to the configuration worn, the individual will also receive two single 30 round magazine pockets and two fragmentation grenade pockets.

Sleep System Carrier - designed to carry the sleeping system.

Patrol Pack - utilized to sustain an individual for 24-48 hour period. It is also known as the day pack.

Sustainment Pockets - attached to outside of the pack as needed for additional load capability.

Butt Pack - holds extra gear such as socks, one MRE, foot powder, and note taking gear; may be worn separately.

Hydration Bladder - used to drink on the move.

Repair Kit - utilized to repair the equipment as needed.

Additional Pockets - pockets can be added and removed as mission requires.

Additional Equipment

Small Arms Ammunition Cases

M16/M4 Rifle Ammo Pouch- holds two magazines of 30 rounds.

M9 Service Pistol Ammo Pouch - holds one magazine of 15 rounds.

Canteen Cover - used to carry the plastic water canteens and metal cup. The covers have two small pockets attached for carrying water purification tablets.

Flak Jacket - designed to be worn as a vest to stop shrapnel, it is NOT bullet proof.

Helmet with Cover - it is designed to be worn on the head by the individual to stop shrapnel; it is not bullet proof.

ISO Mat - a foam padding used to support the sleeping system.

5. **CLEANING AND MAINTENANCE OF INDIVIDUAL COMBAT EQUIPMENT**

-Scrape dirt and dust from the item using a brush that will not cut the fabric.

-Hose or wash the item in a pail of water. Rinse thoroughly with clean water.

-Do not use chlorine bleach, yellow soap, cleaning fluids, or solvents that will discolor or deteriorate the item.

-Dry item in the shade or indoors; do not dry in direct sunlight, direct heat, or open flame.

-Do not launder or dry item in home or commercial washers or dryers. Do not attempt to dye or repair. Turn in for repair or replacement.

-Remember, extremely dirty or damaged equipment can eventually fail to perform its intended function. Clean it or turn it in for repair or replacement.

References:

Care and Use of Individual Clothing and Equipment: FM 21-15, CH. 1-4

Marine Corps Uniform Regulations: MCO P1020.34G W/CH 1-4, CH. 1-4, 8, & 10

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
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FMSO 1303

Provide Health Service Support (HSS) For Marine Corps Missions

TERMINAL LEARNING OBJECTIVE

1. Given an operational plan, Commanding Officer's guidance, necessary equipment and supplies, describe Health Service Support (HSS) for Marine Corps missions to support mission requirements per the references. (FMSO-HSS-1303)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given an operational plan, identify the definition of amphibious operations, within 80 percent accuracy, per MCWP 3-1, Ground Combat Operations. (FMSO-HSS-1303a)
2. Without the aid of reference, given a description or list, identify the five phases of amphibious operations, within 80 percent accuracy, per JP 3-02, Joint Doctrine for Amphibious Operations. (FMSO-HSS-1303b)
3. Without the aid of reference, given a description or list, identify the definition of Ship-To-Objective Maneuver (STOM), within 80 percent accuracy, per MCDP 1-0, Marine Corps Operations. (FMSO-HSS-1303c)
4. Without the aid of reference, given a description or list, identify health threats in a MOUT environment, to meet mission requirements, within 80 percent accuracy, per the PHTLS and MCWP 3-35.3, Military Operations on Urbanized Terrain. (FMSO-HSS-1303d)

1. AMPHIBIOUS OPERATIONS

Naval Expeditionary Force (NEF) power projection options range from the use of precision guided munitions, aviation, special operations forces, and C2W (command and control warfare) to the employment of ground forces. Amphibious operations are part of OMFTS (operational maneuvers from the sea) and integral to naval power projection. Amphibious operations are conducted within OMFTS to enable the introduction of larger forces and to support a main effort elsewhere or as the main effort in a campaign. The threat of amphibious operations may serve as a deterrent to hostile action; shield intent and objectives; and disperse and fix in place enemy forces over an extended area. Such complex and risky operations demand an integrated, seamless Health Service Support (HSS) system that extends from the initial evaluation and care given in the forward areas of the combat zone, and reaches to the treatment and patient disposition provided by continental United States (CONUS) facilities.

The Marine Corps is capable of carrying out many different types of missions from the amphibious platforms of the Navy, such as:

- Direct assault (from landing craft or helicopter)
- Raids (from landing craft or helicopter)
- Special reconnaissance
- Non-combatant evacuation
- Rescue (downed aircrew or hostage)
- Feints (amphibious operations used to divert enemy strength)
- Show of force

2. PHASES OF AMPHIBIOUS OPERATIONS

There are five phases of Amphibious Operations; the operations generally follow distinct phases, though the sequence may vary. The phases are - Planning, Embarkation, Rehearsal, Movement, and Action.

Planning - the planning phase normally denotes the period extending from the issuance of an initiating directive that triggers planning for a specific operation and ends with the embarkation of landing forces. However, planning is continuous throughout the operation. Although planning never ends, it is useful to distinguish between the planning phase and subsequent phases because of the change that may occur in the relationship between amphibious force commanders at the time the planning phase terminates and the next phase begins.

Embarkation - the embarkation phase is the period during which the landing force with its equipment and supplies embark in assigned shipping. The landing plan and the scheme of maneuver ashore will influence which staffs and units are embarked on which ships, the number and type of landing craft that will be embarked, and how the units will be phased ashore. The organization for the embarkation needs to provide for flexibility to support changes to the original plan. The extent to which changes in the landing plan can be accomplished may depend on the ability to reconfigure embarked forces.

Rehearsal - may consist of an actual landing or may be conducted as a command post exercise. The rehearsal phase is when the prospective operation is rehearsed to:

- Test the adequacy of plans, timing of detailed operations, and combat readiness of participating forces.
- Ensure that all echelons are familiar with plans.
- Testing communications and information systems.

Movement - The movement phase is the period during which various elements of the amphibious force move from points of embarkation or from a forward-deployed position to the operational area. This move may be via rehearsal, staging, or rendezvous areas. The movement phase is completed when the various elements of the amphibious force arrive at their assigned positions in the operational area.

Action - the decisive action phase is the period from the arrival of the amphibious force in the operational area, through the accomplishment of the mission and the termination of the amphibious operation.

3. SHIP-TO-OBJECTIVE MANEUVERS (STOM)

STOM is the tactical implementation of Operational Maneuvers from the Sea (OMFTS) by the Marine Air Ground Task Force (MAGTF) to achieve the joint force commander's operational objectives. It is the application of maneuver warfare to amphibious operations at the tactical level of war. STOM treats the sea as maneuver space, using the sea as both a protective barrier and an unrestricted avenue of approach. While the aim of ship-to-shore movement was to secure a beachhead, STOM thrusts Marine Corps forces ashore at multiple points to concentrate at the decisive place and time in sufficient strength to enable success.

This creates multiple dilemmas too numerous for the enemy commander to respond to, disrupting his cohesiveness and diminishing his will or capacity to resist. This concept focuses the force on the operational objective, providing increased flexibility to strike the enemy's critical vulnerabilities. Sea-basing of some of the fire support and much of the logistics support reduces the footprint of forces ashore while maintaining the tempo of operations. Emerging command and control capabilities will allow commanders to control the maneuver of their units the moment they cross the line of departure at sea, to include changing the axis of advance or points where they cross the beach during the assault.

In STOM, rather than an amphibious assault to establish a force on a hostile or potentially hostile shore, an amphibious attack may occur. An amphibious attack may be defined as an attack launched from the sea by amphibious forces directly against an enemy operational or tactical center of gravity or critical vulnerability.

4. MILITARY OPERATIONS ON URBANIZED TERRAIN (MOUT) ENVIRONMENT

Background - throughout history, battles have been fought on urbanized terrain. Recent examples are Beirut, Panama City, Mogadishu, Iraq and Afghanistan. It is impossible to develop one set of tactics, techniques and procedures (TTPs) that can be applied to every

scenario. Combatants and medical providers are required to adapt quickly to each mission, terrain, and situation.

Definition - all military actions that are planned and conducted on a topographical complex and its adjacent natural 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. This type of terrain with man-made structures influences the tactical options available. Terrain is characterized as a four-dimensional (air, buildings, streets, and subterranean) battlefield with the following features:

- Considerable rubble
- Ready-made fortified fighting positions
- An isolating effect on all combatants
- Fighting can and will occur on all levels simultaneously

Considerations of MOUT

The military commander must consider many factors when planning MOUT operations. Two of which, terrain and rules of engagement are discussed here:

Terrain - four-dimensional battlefield.

- Enemy observation positions are likely in high, isolated structures such as steeples or lone high-rise buildings.
- Assaulting forces can become quickly isolated, confused and cut-off by a tangle of unfamiliar structures.
- Small assaulting units are at a great disadvantage due to multiple floors, rooms, stairways, and doors. The enemy may make great use of these obstacles to inflict serious losses.

Rules of Engagement - “US Forces and allies operate with restrictive Rules of Engagement (ROE), reflecting the morals and values considered proper for a civilized society. Unfortunately, the tactical advantage will often go to the belligerent, who disregards or actively endangers the safety of civilians.” Therefore, it is important to remember that every action has consequences. ROE may change from day to day, or from situation to situation. ROE are designed to:

- Avoid alienation of the local population.
- Reduce the risk of adverse world opinion.
- Preserve structures and facilities for future use.
- Preserve vital cultural facilities and grounds.



FALLUJAH, Iraq - A vehicle gunner with 1st Battalion, 6th Marine Regiment, looks out on the city as his unit patrols the back alleyways of Fallujah. The unit typically patrols the city streets several times a day, maintaining a strong military presence here and searching for insurgents and illegal arms.

5. MEDICAL CONSIDERATIONS OF MOUT

Casualty rates in mid to high intensity urban operations are higher than in most conventional operations. When troops operate in dismounted formations, gunshot wounds from machine gun and assault rifles produce the most serious casualties. During OIF and OEF, enemy forces used IEDs to initiate ambushes resulting in a mix of mutilating blast injuries and penetrating trauma. Explosions may be generated from tanks, mortars, or improvised explosive devices (IEDs). Small units may be spread out across a large area. Unit training in the practice of “self-aid” and “buddy-aid” is essential. Each combatant should quickly be able to apply a tourniquet with effectiveness. In addition, effectively apply a field dressing and hemostatic agent.

Potential health threats of MOUT include:

Blunt Trauma - Although penetrating wounds from small arms and blasts will produce the greatest number and severity of injuries, severe blunt trauma injury must be anticipated in urban combat. Explosive munitions will create numerous unstable structures that will crush and trap victims.

Psychological Casualties - In addition to blast injuries, units are likely to experience an increase in psychological injuries. This is due to intense, sustained and close quarter combat associated with urban warfare. Prolonged fear of sniper fire and hidden IED’s along with the repeated sight of the dead and dying are predominant factors leading to combat stress casualties, along with the extreme fatigue of fighting in an urban environment. Medical units should be prepared to treat these individuals.

Civilian Casualties - medical units must be prepared for the influx of large numbers of civilian casualties. Units should prepare for the possibility of geriatric and pediatric patients. Large numbers of civilians could overwhelm the capabilities of military medical units. Units should establish a plan for this possibility prior to engaging.



AL TAQADDUM, Iraq– Servicemembers help triage injured Iraqi civilians outside of Taqaddum’s medical facility after a suicide truck bomb exploded in northern Habbiniyah.



Twentynine Palms, CA - Marines from 3rd Battalion, 5th Marine Regiment, carry a “casualty” to safety in the urban assault lane of the training at Range 215. The MOUT facilities were built to replicate the actual environment that Marines will face when deployed.

Infectious Disease - areas experiencing urban combat are likely to have many infectious diseases in the area. The problem will be worse due to poor general sanitation measures and limited amount of public health services.

Animals - many animals in the area (rats, mice, dogs, etc.) can also carry diseases.

People - interacting with the civilian populace or enemy prisoners of war can expose you or your Marines to such endemic diseases as malaria, tuberculosis, or leishmaniasis. Sexually transmitted diseases such as gonorrhea, syphilis, hepatitis, and HIV may also be prevalent.

Water - potable water will be limited. Troops in urban conflict can consume up to 5-7 quarts per day on a normal occasion and 7-9 quarts per day in extreme heat environments. Supplying front line troops with enough water will be difficult. If the demand for water is greater than the ability to re-supply, they may be tempted to drink water from local sources. This exposes them to hepatitis, intestinal parasites, and industrial toxins.

Casualty Evacuation (CASEVAC)

Moving casualties in an urban environment can be difficult and time consuming. Moving a litter patient only a few hundred yards could take an hour or more. Ground evacuation vehicles will require heavy armor that can withstand small arms fire as well as rocket propelled grenades (RPGs) and IEDs. Helicopter evacuation is difficult due to the tight operating environment. They too are susceptible to small arms fire and RPGs.

Special Equipment Requirements of CASEVAC

Simply finding casualties in an urban environment can be difficult. Explosions can cause buildings to crumble (see picture below), trapping patients inside. Vehicles can crash due to explosions, hostile fire, or operator error. Events such as these may lead to complicated rescue efforts that require special equipment such as axes, crowbars, jacks, ropes, collapsible litters, and cutting tools.



REFERENCES:

Ground Combat Operations, MCWP 3-1

Joint Doctrine for Amphibious Operations, JOINT PUB 3-02

Marine Corps Operations, MCDP 1.0

Military Operations on Urbanized Terrain (MOUT), MCWP 3-35.3

Prehospital Trauma Life Support (PHTLS), current edition

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1415

Introduction To Tactical Combat Casualty Care

1. PRINCIPLES OF TACTICAL COMBAT CASUALTY CARE (TCCC)

The principles of Tactical Combat Casualty Care (TCCC) are fundamentally different from those of traditional civilian trauma care, where most medical providers and medics train. These differences are based on both the unique patterns and types of wounds that are suffered in combat and the tactical conditions medical personnel face in combat. Unique combat wounds and tactical conditions make it difficult to determine which intervention to perform at what time. Besides addressing a casualty's medical condition, responding medical personnel must also address the tactical problems faced while providing care in combat. A medically correct intervention at the wrong time may lead to further casualties. Put another way, "good medicine may be a bad tactical decision" which can get the rescuer and the casualty killed. To successfully navigate these issues, medical providers must have skills and training oriented to combat trauma care, as opposed to civilian trauma care.

The specifics of casualty care in the tactical setting will depend on the tactical situation, the injuries sustained by the casualty, the knowledge and skills of the first responder, and the medical equipment at hand. In contrast to a hospital Emergency Department setting where the patient IS the mission, on the battlefield, care of casualties sustained is only PART of the mission. TCCC recognizes this fact and structures its guidelines to accomplish three primary goals:

- 1. Treat the casualty**
- 2. Prevent additional casualties**
- 3. Complete the mission**

The need for a standing committee to ensure that the TCCC guidelines are updated as necessary to reflect both new advances in prehospital medicine and battlefield experience with TCCC was identified in the original 1996 TCCC paper. The Committee on Tactical Combat Casualty Care (CoTCCC) was established in 2001 and is now part of the Defense Health Board.

CoTCCC is a standing multi-service committee charged with monitoring medical developments in regards to practice, technology, pharmacology and doctrine. New concepts in hemorrhage control, airway management, fluid resuscitation, analgesia, antibiotics and other lifesaving techniques are important steps in providing the best possible care for our Marines and Sailors in combat. TCCC was developed to emphasize the need for continued improvement in combat pre-hospital care.

The TCCC guidelines are published every 4 years in the Prehospital Trauma Life Support manual. It has been recognized that TCCC guidelines and curriculum will need to change

more often than the 4-year cycle of the PHTLS textbook publication. NAEMT will include the updated TCCC guidelines and curriculum on its website as they are approved as a way to help get this new information out to the combat medical personnel in the military who need it.

2. **PHASES OF TCCC**

In thinking about the management of combat casualties, it is helpful to divide care into three distinct phases, each with its own characteristics and limitations:

Care Under Fire - care rendered at the scene while both the Corpsman and the casualty are still under effective hostile fire. The risk of additional injuries from hostile fire at any moment is extremely high for both the casualty and the Corpsman. Available medical equipment is limited to that carried by the Corpsman and casualty. The only medical condition treated during this phase is life-threatening hemorrhage. Research has shown if a casualty has an airway problem during this phase they will, more than likely, die of their wounds with or without treatment, so the risk in exposing the care giver to injury is not worth taking. The only medical equipment needed during this phase is a CoTCCC recommended tourniquet.

Tactical Field Care - care rendered once the Corpsman and casualties are no longer under effective hostile fire. This also applies to situations in which an injury has occurred on a mission, but there has been no hostile fire. Available medical equipment is still limited to that carried into the field by mission personnel but now there is more time to fully assess the casualty and reassess any treatment provided in the Care Under Fire Phase. Time to evacuation may vary from minutes to hours.

Tactical Evacuation (TACEVAC) - casualties are transported to a higher taxonomy of care. Tactical evacuation care encompasses both medical evacuation (MEDEVAC) and casualty evacuation (CASEVAC). Additional personnel and equipment may be available depending on the type of vehicle being used (helicopter, ground ambulance, boat, etc.).

REFERENCES:

Prehospital Trauma Life Support (PHTLS), Current Edition

**UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243**

FMSO 1406

Utilize Individual First Aid Kit (IFAK)

TERMINAL LEARNING OBJECTIVE

1. Given an injury in a tactical environment, identify and know how to correctly use the components of the IFAK to minimize/prevent the risk of further injury or death per the reference. (FMSO-HSS-1406)

ENABLING LEARNING OBJECTIVE

1. Without the aid of references, given an Individual First Aid Kit (IFAK), identify the components and describe the use of each component of the IFAK, within 80 percent accuracy, per the MCRP 3-02G and the User's Instructions for the IFAK. (FMSO-HSS-1406a)

1. **COMPONENTS OF THE INDIVIDUAL FIRST AID KIT (IFAK)**

The IFAK is designed to be more compact and have greater life saving capability than its predecessors. The IFAK is issued to every Marine and Sailor. The Corpsmen Assault Pack each Corpsman carries will have more medical gear than the IFAK but this section is designed to introduce its contents and characteristics to you. It is essential that all Marines are properly trained in their use.

Minor Injury Kit Components

The Minor Injury Kit is used for minor injuries, cuts, burns, and bruises. The components of the kit and their use are as follows:

First Aid Ointment - Bacitracin antibiotic ointment is used to prevent infection of minor cuts, abrasions and scrapes. There are eight packets contained in the kit.

Adhesive Bandages - The adhesive bandages come in both large and small sizes. There are 10 small and 5 large adhesive bandages in the kit.

Triangular Bandage “Non-sterile” - The triangular bandage is a 37” x 37” x 52” section of material. It is a versatile bandage that comes in a small package with two safety pins. It can be used to hold dressings in place. It may also be used as a tie, strap, sling or swathe for supporting strains or sprains and/or splinting fractures. There are two triangular bandages in the kit.

Combat Reinforcement Tape - Versatile tape that serves multiple purposes. There is one combat reinforcement tape roll that measures 2”x100” in the kit.

Burn Dressing “Water Jel” - The burn dressing is a 4” x 16” woven material saturated with gel. It is Food and Drug Administration (FDA) approved and has been proven to extinguish white phosphorous burns. It is the first response for burn injuries. When applied to a burn, it cools the burn area, reduces the chance of hypothermia, and prevents the burn from further progression. It also protects the burn from further contamination or infection and eases the pain of the burn victim.

Water Purification Tablets - Purifies water that may not be drinkable. The Micropur MP1 tablets are effective against viruses, bacteria, giardia and cryptosporidium.

- The Tetraglycine Hydroperiodide (Titratable Iodine) tablets come in a small opaque bottle and are used to purify water from 1 quart to 1 liter.

OR

- The 10 pack, Micropur MP1 Water Purification Tablets come in a foil packet and are used to purify water from 1 quart to 1 liter.

TCCC Casualty Card - Each kit comes with one casualty card. The card is used to document care under fire and has treatments on the card that the provider can circle. The

card also includes a MIST (Mechanism of injury, Injury, Signs and Treatment given) report on the back and an elastic strap to attach it to the patient.

Trauma Kit Components

The trauma kit is used for major bleeding injuries to include life threatening hemorrhage. The components of the trauma kit and their use are as follows:

Primed Compressed Gauze Rolls - There are two cotton gauze rolls in the trauma kit. The gauze rolls are used for the protection of minor wounds, can be loosely wrapped around the burn dressing to secure it over the burn area, or used to apply direct pressure to medium and severe bleeding from wounds. The gauze can also be used to wipe away excess blood prior to the application of the hemostatic agent.

Pressure Dressing "H" Bandage - There are two pressure dressing bandages in the trauma kit. These pressure dressing bandages are 4" wide elastic wraps with 8" x 10" absorbent cotton pad attached close to the end of one side of the elastic wrap. On the other side of the absorbent pad, in the middle on the elastic wrap side, is a hard plastic H-anchor that allows for application by an individual. At both ends of the elastic wrap are Velcro strips that provide adhesion. In the older cinch tight version of the bandage, there is a metal hook to reinforce pressure. The hook proved to be of little use; therefore the newer version is without the hook. Pressure dressings can be applied to chest, abdominal, head, neck, and extremity wounds.

Combat Application Tourniquet (CAT) - Is the one best suited for battlefield use and is the Committee on Tactical Combat Casualty Care (CoTCCC) recommended tourniquet. This tourniquet can be rapidly applied with one hand to one's own or another's extremities. This tourniquet is issued throughout all U.S. combatant forces. The goal is to stop arterial bleeding in an extremity to prevent loss of life.

Dry Sterile Burn Dressing and Super Combat Cravat - A dry sterile burn dressing in the shape of a large cravat that works as a burn dressing, tourniquet, sling, and other capabilities. Super Combat Cravat is made from two layers of spunbond polypropylene and is 45" X 45" x 63". The dressing material meets TCCC November 2009 guidelines for burns. The dressing is sterile, non-adherent and is vacuum packaged. It is 33% larger than the available cravats and, after vacuum sealing is 50% smaller in cube than the present products. The package contains two (2) #3 closed safety pins and a rubber band separately packaged in a 2 mil nylon poly bag.

Chest Wound Kit - Provides emergency care for general, sucking, and exit chest wounds. The Chest Wound Kit combines two products in a sterile 3.5 mil vacuum sealed nylon bag for easy storage and use. The Chest Wound Kit contains:

- One Bolin Chest Seal, providing a flexible, creaseless solution for sucking chest wounds with its triple valve design, thick super-adhesive layer and heavy duty application disk.

- One Wound Seal Kit for penetrating chest injuries and exit wounds with a sterile 6" x 8" polyurethane rectangle coated with a thick super-adhesive hydrogel layer along with a sterile sponge.

QuikClot Combat Gauze - Recommended as the number one hemostatic agent by the CoTCCC, to control life-threatening hemorrhage. QuikClot Combat Gauze Z-Fold is a soft, white, sterile, nonwoven gauze impregnated with kaolin, an inert mineral that does not contain animal or human proteins or botanicals. It is z-folded, vacuum packed, and with an x-ray detectable strip. The QuikClot Combat Gauze Z-Fold is even easier to apply since the gauze is in a z-fold format, which makes packing wounds easier and eliminates the risk of the roll falling away and getting contaminated. Finally, the x-ray detectable strip that is incorporated in the QuikClot Combat Gauze Z-Fold ensures that the gauze will be found if the patient is taken to the operating room.

References

First Aid, MCRP 3-02G, Chapter 2
Prehospital Trauma Life Support, Military Edition, Current Edition
IFAK User's Manual (UM)

**UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243**

FMSO 1407

Conduct Casualty Triage

TERMINAL LEARNING OBJECTIVES

1. Given multiple casualties in a tactical environment and standard field medical equipment and supplies, appropriately identify casualties in triage categories for medical treatment, per the references. (FMSO-HSS-1407)

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given a description or list, identify the tactical principles of triage, within 80 percent accuracy, per the Pre-hospital Trauma Life Support (current edition). (FMSO-HSS-1407a)
2. Without the aid of references, given a descriptive list of injuries, identify the appropriate triage categories for specific injuries, within 80 percent accuracy, per the Pre-hospital Trauma Life Support (current edition). (FMSO-HSS-1407b)

INTRODUCTION TO TACTICAL TRIAGE

Triage is a French word meaning “to sort.” Casualties are sorted into groups based on their immediate medical needs. Using a standardized approach to triage casualties helps combat medics correctly segregate, treat, and prioritize evacuation in the shortest time possible. The realities of combat dictate that battlefield triage must take place in an environment limited in resources for treatment and transport. Triage merely establishes order of treatment and movement. Although all casualties require treatment, triage aids in deciding which casualties have the greatest probability of survival and helps weigh the casualties need for lifesaving interventions (LSIs), thus determining priority and urgency for treatment and evacuation.

Triage establishes the patients’ category. Although the type and extent of the wound may offer clues as to the triage category a patient may fall into, it is their physiological state (how well their body is working) that is the critical factor. For instance, a patient with a weak radial pulse indicates an estimated systolic blood pressure of 80 mm/Hg. Studies of combat related injuries indicate that 32% of these individuals will die. The absence of a radial pulse indicates a systolic blood pressure of less than 50 mm/Hg. The same study reported that 92% of these individuals will die. On the other hand, a separate trauma study indicated that no casualty died if they presented during the first stages of triage with a palpable radial pulse and the ability to follow simple commands.

Triage ensures the greatest care for the greatest number and the maximal utilization of medical personnel, equipment, and facilities, especially in a mass-casualty incident (MCI).
-PHTLS 7th Edition p. 673

1. **PRINCIPLES OF TACTICAL TRIAGE**

Accomplish the greatest good for the greatest number of casualties.

Employ the most efficient use of available resources.

Return personnel to duty as soon as possible.

2. **THE FOUR CATEGORIES OF TACTICAL TRIAGE**

Categories are color-coded and are recognized as follows:

Minimal (Green Tag)

Casualties in this category are often referred to as the “walking wounded.” These casualties have minor injuries and can usually care for themselves with self-aid or buddy aid. These casualties should still be employed for mission requirements (e.g., scene security) or to help treat the more seriously wounded.

Examples include, but are not limited to: small burns, lacerations, abrasions, and small fractures.

Delayed (Yellow Tag)

The delayed category includes wounded casualties who may need surgery, but whose general condition permits a delay in surgical treatment without unduly endangering life or limb. Sustaining treatment will be required (e.g. oral or IV fluids, splinting, antibiotics or pain control).

Examples include, but are not limited to those with no evidence of shock; who have large soft tissue wounds, fractures of major bones, intra-abdominal and/or thoracic wounds, or burns to less than 20% of total body surface area.

Immediate (Red Tag)

This category includes casualties who require immediate LSI and/or surgery. The key to successful triage is to locate these individuals as quickly as possible. Casualties do not remain in this category for an extended period of time. They are either found, triaged and treated, or they will die!

Examples include but are not limited to – hemodynamically unstable casualties with airway obstruction, chest or abdominal injuries, massive external bleeding, or shock.

Expectant (Black Tag)

Casualties in this category have wounds that are so extensive that even if they were the sole casualty and had the benefit of optimal medical resources, their survival would be highly unlikely. Even so, expectant casualties should not be neglected. They should receive comfort measures, pain medications, if possible, and they deserve re-triage as appropriate.

Examples include but are not limited to - casualties that are unresponsive with injuries such as penetrating head trauma with obvious massive damage to the brain.

Triage in Tactical Combat Casualty Care

Because the tactical environment precludes an extensive array of monitoring equipment, optimal battlefield treatment and evacuation rely on simple triage tools. Based on research by the Committee on Tactical Combat Casualty Care, a triage decision algorithm has been developed (see figure 1). Use of this algorithm begins with a cursory evaluation.

Patients who can ambulate and follow instructions usually will fall into the minimal category. Statements such as “If you can hear my voice get up and move behind the building” (or any other place tactically correct) can triage a large portion of the casualties in a short time.

Patients with obvious signs of death can be initially placed in the expectant category.

Casualties who do not fit either of the above categories will need further evaluation. All casualties requiring an LSI are placed initially in the immediate category.

Patients are placed in the delayed category if they can obey simple commands, possess a normal radial pulse, and are not in respiratory distress.

Once the LSI has been performed, the patient must be re-triaged. Triage is a continuous process and frequent re-assessment is required.

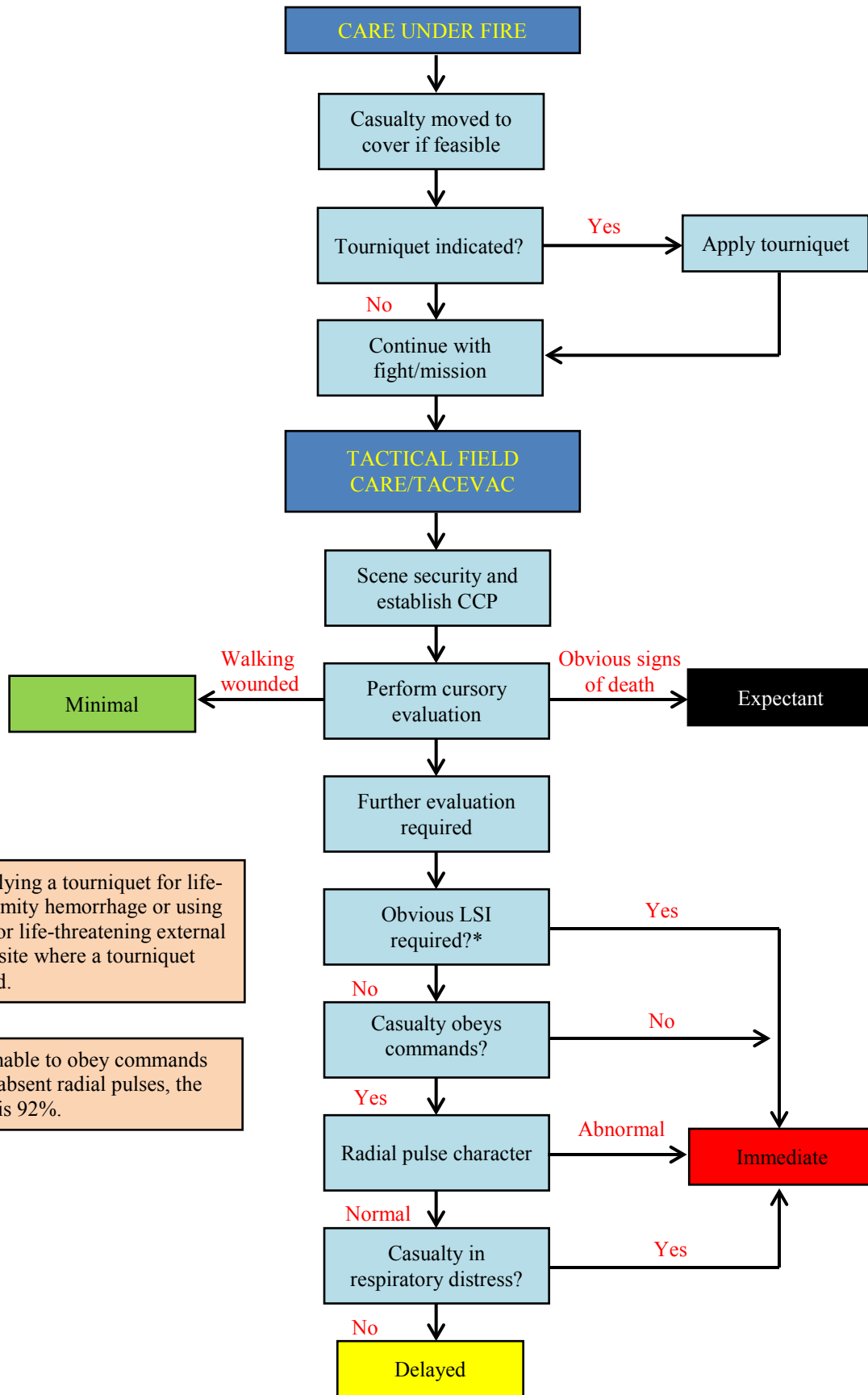


Figure 1. Triage Algorithm for Tactical Combat Casualty Care

3. **MASS-CASUALTY TRIAGE**

Operating in a tactical environment must always be prepared to deal with a mass casualty incident. Units must establish and rehearse plans for dealing with such a situation. In a mass casualty situation those responsible for triage must remember that triage is not treatment and constant reassessment is needed to identify casualties who may have deteriorated or improved.

Triage Tags - are designed to communicate the triage category, treatment rendered, and other medical information. By necessity, the information on the tag is brief. Triage tags are usually placed on the casualty by the triage officer although other members of the team may place or add information to the tags.

Medical Emergency Triage Tag (METTAG) (see figure 2)

Purpose

To furnish the attending care provider during the evacuation of a casualty with essential information about the injury or disease and the treatment provided.

The sole or initial medical record for the troops injured in combat.

Each triage tag is coded with a unique sequential seven-character serial number used for identification and tracking of the casualty. The serial number is located on the top right and left diagonal tear-offs.

Routing

The card stays with the patient at all times.

The yellow corner with the ambulance picture and a serial number stays with the evacuating vehicle.

The yellow corner with the first aid sign and serial number stays at the BAS.

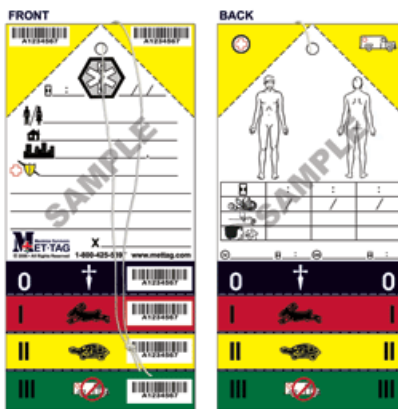


Figure 2: METTAG (MT-137)

References:

Prehospital Trauma Life Support (PHTLS), Military Edition, Current Edition

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FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1411

Perform Patient Movement

TERMINAL LEARNING OBJECTIVES

1. Given multiple casualties in a tactical environment, communication equipment, NATO nine-line casualty evacuation format, and the standard field medical equipment and supplies, coordinate casualty evacuation and patient movement, per the references. (FMSO-EVAC-1411)

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given a description or list of capabilities, identify the capabilities of the taxonomy of care, within 80 percent accuracy, per JP 4-02 (Health Service Support). (FMSO-EVAC-1411a)
2. Without the aid of references, given a description or list, identify ground vehicles utilized as CASEVAC platforms, within 80 percent accuracy, per MCRP 4.11.1G. (FMSO-EVAC-1411b)
3. Without the aid of references, given a description or list, identify aircraft utilized as CASEVAC platforms, within 80 percent accuracy, per MCRP 4.11.1G. (FMSO-EVAC-1411c)
4. Without the aid of references, given a list of characteristics, identify the casualty receiving treatment ships, within 80 percent accuracy, per MCRP 4.11.1G. (FMSO-EVAC-1411d)
5. Without the aid of references, given a list, identify the casualty evacuation priorities, within 80 percent accuracy, per MCRP 4.11.1G. (FMSO-EVAC-1411e)
6. Without the aid of references, given a description or list, identify the purpose of a nine-line casualty evacuation communication, within 80 percent accuracy, per MCRP 4.11.1G. (FMSO-EVAC-1411f)
7. Without the aid of reference and given a tactical vehicle, load and off load litter patients without any injuries, per MCRP 4.11.1G. (FMSO-EVAC-1411g)

OVERVIEW

Tactical Evacuation (TACEVAC) is the third phase in the Tactical Combat Casualty Care process. The care delivered in the TACEVAC phase can more closely resemble advanced trauma life support guidelines than that in the first two phases. With either ground or air evacuation of wounded casualties from the battlefield, there is an opportunity for access to additional medical equipment not available to the Corpsman during the first two phases. This lesson will describe the taxonomy of care, methods of casualty evacuation, and how to call for an evacuation.

1. TAXONOMY OF CARE

The taxonomy of care outlines distinctive and overlapping care capabilities that enhance performance in a military force. The level of care commences at the scene of the injury and continues until the member receives definitive care and is discharged or returned to full duty. While this course teaches you the skills needed to operate using the first responder, forward resuscitative, and en route care capabilities, there are five capabilities in the taxonomy continuum of healthcare capabilities which are used when evacuating the wounded from the battlefield (see figure 1).

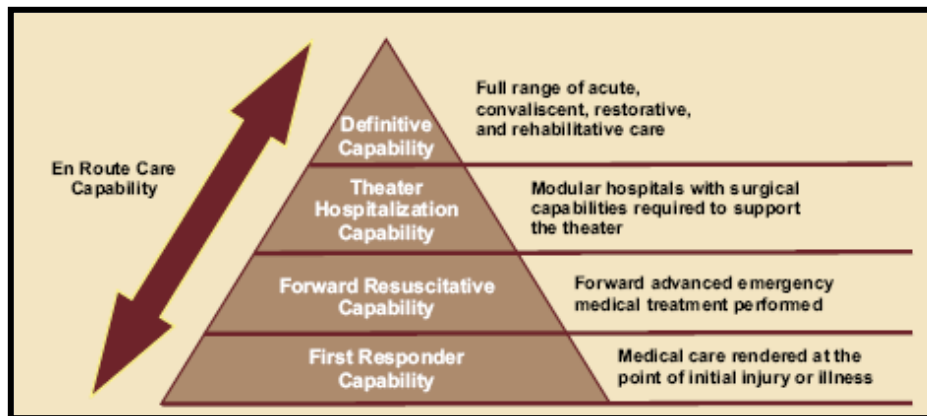


Figure 1. Taxonomy of Care

First Responder Capability - first aid and emergency care rendered at the point of initial injury are the primary objectives of care at this level. Defined by its time requirements, first responder care provides immediate medical care and stabilization to the patient in preparation for evacuation to the next capability in the continuum of care. Examples of First Responder Capabilities include:

- Self-aid/Buddy aid
- Battalion Aid Station (BAS)

Forward Resuscitative Capability - builds on the First Responder Capabilities. Characteristics include performing advance emergency medical treatment as close to the point of injury as possible, stabilizing the patient, and saving life and limb. Stabilization ensures the patient can tolerate evacuation. Examples of Forward Resuscitative Capabilities include:

- Medical Battalion
- Casualty Receiving & Treatment Ships (CRTS)
- Shock Trauma Platoon (STP)
- Forward Resuscitation Surgical Suite (FRSS)

Theater Hospitalization Capability - services are delivered via modular hospital configurations and/or hospital ships required to sustain forces in theater. These capabilities deploy as modules or multiple individual capabilities that provide increasing medical services in a more robust theater. The care offered either returns the patient to duty or stabilizes the patient to ensure they can tolerate evacuation to a definitive care facility. Services encompass primary inpatient and outpatient care, emergent care, and enhanced medical, surgical, and ancillary capabilities, including:

- Fleet hospitals
- Hospital ships

Definitive Capability - rendered to conclusively manage a patient's condition and is usually delivered from, or at, facilities in the homeland, but may be delivered in facilities outside the homeland. This capability generally leads to rehabilitation, return to duty, or discharge from the armed forces. Because this care is usually given outside the operational area, the most advanced health care can be made available and accessible to the patient. It includes:

- CONUS Military, Veteran's and selected civilian hospitals
- Overseas Medical Treatment Facilities

En Route Care Capability – en route care is the continuation of care during evacuation within the continuum without clinically compromising the patient's condition. This capability can take one of three forms – CASEVAC, MEDEVAC, or aeromedical evacuation.

2. **GROUND EVACUATION PLATFORMS**

The level of urgency and the tactical situation dictates the method of evacuation. The level of care you are in, Care Under Fire, Tactical Field Care, or CASEVAC Care, will dictate how the casualty is transported. The most common forms of evacuation platforms are ground evacuation, air evacuation, or sea evacuation. Regardless, the casualty should be made as comfortable as possible and kept warm and dry. A patient with minimal injuries should be encouraged to stay in the fight if possible, and to ambulate to an area where care can be provided. Ground evacuation platforms include:

M997 Ambulance - HMMWV frame with armor protection for crew and patients. It is capable of transporting up to four litter or eight ambulatory patients (see figure 8).



Figure 8. M997 Ambulance

M1035 Ambulance - HMMWV frame with removable soft-top. It is capable of transporting two litter and three ambulatory patients (see figure 9).



Figure 9. M1035 Ambulance

MK-23 7 Ton - non-medical vehicle that may be utilized for casualty transportation when available. It is capable of transporting 10 litter or 20 ambulatory patients (see figure 10).



Figure 10. MK-23 7 Ton Truck

3. AIR EVACUATION PLATFORMS

CH-46 Sea Knight - Medium lift helicopter used to transport personnel and cargo (being phased out by the MV-22 Osprey Tilt Rotor Aircraft). When configured for litter racks, able to carry 15 litters or 22 ambulatory patients (see figure 11).



Figure 11. CH-46 Sea Knight

CH-53 Super Sea Stallion - Medium/Heavy lift helicopter used to transport personnel and cargo. When configured for litter racks, able to carry 24 litters or up to 37 ambulatory patients. When the centerline seating is added, up to 55 ambulatory patients can be carried (see figure 12).



Figure 12. CH-53 Super Sea Stallion

UH-1 Huey - Light lift helicopter used to transport personnel and cargo. When configured for litter racks, able to carry 6 litters or up to 10 ambulatory patients (see figure 13).



Figure 13. UH-1 Huey

MV-22 Osprey - Tilt-rotor aircraft that takes off and lands vertically but flies like a plane. This aircraft is designed to eventually replace the CH-46. When configured for litter racks, able to carry 12 litters or 24 ambulatory casualties (see figure 14).



Figure 14. MV-22 Osprey

CH-47 Chinook - Dual rotor medium lift helicopter used to transport personnel and cargo for the US Army. When configured for litter racks can carry 24 litter patients or 31 ambulatory patients. (see figure 15).



Figure 15. CH-47 Chinook

UH-60 Blackhawk - Single rotor helicopter with multiple uses by not only the Army but the Navy as well. Can carry up to 6 litter patients if litter modification kit is installed. Can carry up to 7 ambulatory patients if litter modification kit is not installed. Patients can be loaded from either side.



Figure 16. UH-60 Blackhawk

NOTE: The Marine Corps does not have dedicated TACEVAC aircraft. Any of its aircraft can be utilized as a “lift of opportunity” upon completion of its primary mission. The use of helicopter evacuation provides a major advantage because they greatly decrease the time between initial care and definitive treatment thereby increasing the casualty’s chances of survival. Figure 17 below reflects USMC assets, as well as those available through the Army and Air Force.

AIRCRAFT				
TYPE	SERVICE	LITTER	AMBULATORY	ATTENDANTS
UH-60 Blackhawk	USA	7	7	1 Medic
CH-47 Chinook	USA	24	33	2 Medics
UH-1 Huey	USMC	6	10	1 Corpsman
CH-46 Sea Knight	USMC	15	22	2 Corpsmen
CH-53 Super Sea Stallion	USMC	24	37	2 Corpsmen
MV-22 Osprey	USMC	12	24	2 Corpsmen
MEDICAL GROUND VEHICLES				
TYPE	SERVICE	LITTER	AMBULATORY	ATTENDANTS
M997 HMMWV	USA/ USMC/ USAF	4	8	1 Corpsman
M1035 HMMWV	USA/ USMC/ USAF	2	3	1 Corpsman
VEHICLES OF OPPORTUNITY (GROUND)				
TYPE	SERVICE	LITTER	AMBULATORY	ATTENDANTS
MK 23 (7-Ton Truck)	USMC	10	20	None

Figure 17. Ground/Air CASEVAC Platform Data Description

4. **CASUALTY RECEIVING TREATMENT SHIPS**

Specific ships within an Amphibious Task Force or Expeditionary Strike Group (ESG) are designated as Casualty Receiving Treatment Ships (CRTS).

LHA/LHD - Amphibious Assault Ships whose primary differences, for our purposes, are their medical capabilities (see figures 18 and 19).

Mission - Assault via helo, landing craft, and amphibious vehicle. Primary amphibious landing ships for MEF's, MEB's, and MEU's. Primary CRTS.

Transport Capabilities

- Flight deck with large internal hangar deck and well deck.
- May receive casualties via helicopter or waterborne craft.

Medical Capabilities

- Operating Rooms (4)
- ICU Beds (15)
- Ward Beds (45)
- Ancillary capabilities of lab, x-ray, pharmacy, preventive medicine, biomed repair, and aviation physical examination.



Figure 18. LHD Wasp Class



Figure 19. LHA Tarawa Class

Hospital Ships (T-AH) - the COMFORT and the MERCY are operated by the Military Sealift Command and are designed to provide emergency, onsite care for US combatant forces deployed in war and other operations. The T-AHs provide a mobile, flexible, rapidly responsive afloat medical capability to acute medical and surgical care in support of ATF; Marine Corps, Army, and Air Force elements; forward-deployed Navy elements of the fleet; and fleet activities located in areas where hostilities may be imminent. The T-AHs also provide a full-service hospital asset for use by other government agencies involved in the support of disaster relief and humanitarian operations worldwide.

Transport Capabilities

- Flight deck capable of receiving rotary wing aircraft.

Medical Capabilities

- Operating Rooms (12)
- ICU Beds (100)
- Intermediate Care Beds (400)
- Ward Beds (500)
- Ancillary capabilities of lab, x-ray, pharmacy, computerized tomography scanner, and blood storage.

5. **CASEVAC PRIORITIES**

Once a patient has been triaged and stabilized at the BAS, should that patient require further or additional medical treatment, he/she will be prioritized for evacuation from the BAS to the next higher echelon of medical care. While evacuating patients, ensure that they are kept warm to prevent hypothermia! The priority levels are as follows (see figure 20):

Urgent Evacuation - Evacuation to next higher echelon of medical care is needed to save life or limb. Evacuation must occur within two hours.

Urgent Surgical Evacuation - Same criteria as urgent evacuation, however, these patients need to be taken to a facility with surgical capabilities.

Priority Evacuation - Evacuation to next higher echelon of medical care is needed or the patient will deteriorate into the Urgent category. Evacuation must occur within four hours.

Routine Evacuation - Evacuation to the next higher echelon of medical care is needed to complete full treatment. Evacuation may occur within 24 hours.

Convenience - Used for administrative patient movement.

<u>PRIORITY</u>	<u>PRECEDENCE</u>	<u>CRITERIA</u>
I	Urgent	Patients that require emergency, short-notice evacuation within a maximum of two hours to save life, limb, and/or eyesight or to prevent serious complications of the injury, serious illness, or permanent disability.
IA	Urgent-Surgical	Patients that require far forward surgical intervention to save life or to stabilize for further evacuation.
II	Priority	Patients that require prompt medical care within a maximum of four hours to prevent the medical condition from deteriorating to an urgent precedence, prevent unnecessary pain or disability, or provide required treatment not available locally.
III	Routine	Patients who do not require immediate medical attention and whose condition is not expected to deteriorate significantly. Evacuation should be made within 24 hours.
IV	Convenience	Patients for whom evacuation by a medical vehicle is a matter of medical convenience rather than necessity.

Figure 20. Priority Levels and Criteria for Evacuation Precedence

6. **NINE-LINE CASEVAC**

A nine-line CASEVAC request is a standard format used by the armed forces for coordinating the evacuation of casualties. CASEVAC request transmissions should be made by the most direct communication means available to the medical unit controlling evacuation assets. The means and frequencies used will depend on the organization, availability, and location in the area of operations as well as the distance between units.

The information must be clear, concise, and easily transmitted (see figure 21). This is done by use of the authorized brevity code. The authorized brevity code is a series of phonetic letters, numbers, and basic descriptive terminology used to transmit CASEVAC information. These codes indicate the standard information required for a CASEVAC commonly known as the "Nine-Line." This message is verbally transmitted in numerical "line" sequence utilizing the following brevity codes:

Line 1 - Location - location of the Landing Zone (LZ) where the casualties are to be picked up. This information will be transmitted in the form of an eight digit grid coordinate.

Line 2 - Radio Frequency, Call Sign - radio frequency and call sign that will be used by the ground unit at the LZ. You should know this information before every operation.

Line 3 - Precedence - number of casualties by precedence. Use the following codes:

- Alpha - Urgent
- Bravo - Urgent Surgical
- Charlie - Priority
- Delta - Routine
- Echo - Convenience

Line 4 - Special Equipment - identifies any special equipment that will be needed, such as a hoist in the case where a helo cannot land. Use the following codes:

- Alpha - None
- Bravo - Hoist
- Charlie - Extraction equipment
- Delta - Ventilator

Line 5 - Number of Patients by Type - number of patients who are ambulatory and the number of litter patients. This determines whether or not the helo should be configured to carry litters. Use the following codes:

- Lima - Litter patients
- Alpha - Ambulatory patients

Line 6 - Security of Pickup Site - whether or not the enemy is near the LZ. If all of your casualties are routine and the LZ is not secured, then your requested CASEVAC may not be approved. Use the following codes:

- November - No enemy troops in area
- Papa - Possible enemy troops (approach with caution)
- Echo - Enemy troops in area (approach with caution)
- X-Ray - Enemy troops in area (armed escort required)

Line 7 - Method of Marking Pickup Site - methods you will use to mark your LZ and then ask the pilot to identify. Use the following codes:

- Alpha - Panels
- Bravo - Pyrotechnic signal
- Charlie - Smoke signal
- Delta - None
- Echo - Other

Line 8 - Patients' Nationality and Status - patients' nationality and status. Use the following codes:

- Alpha - US military
- Bravo - US civilian
- Charlie - non US military
- Delta - non US civilian
- Echo - enemy prisoner of war

Line 9 - NBC Contamination - whether the LZ has been contaminated with NBC agents.

Use the following codes:

- November - Nuclear
- Bravo - Biological
- Charlie - Chemical

Example: During a routine patrol your platoon takes two casualties. One receives a gunshot wound to his right arm. The other receives a gunshot wound to his abdomen and has signs and symptoms of shock associated with internal hemorrhage. While you perform initial treatment, members of your platoon determine that the closest potential landing zone for a helicopter is 300 feet to the West. Its grid location on the map is DH 1234 5678. Your call sign is Blue Thunder and your unit is operating on the frequency 99.65. Your unit commander informs you that the site is secure and will be marked with green smoke. The following would be your nine line radio CASEVAC Request transmission:

Line 1: DH 12345678

Line 2: 99.65 Blue Thunder

Line 3: 1 Bravo, 1 Charlie

Line 4: Alpha

Line 5: 1 Lima, 1 Alpha

Line 6: November

Line 7: Charlie

Line 8: 2 Alpha

Line 9: None

Figure 21. Nine-Line Casualty Evacuation Request Example

References:

Doctrine for Health Service Support in Joint Operations, JP 4-02 ,Chapter 2
Patient Movement, MCRP 4-11.1G Chapter 1 & 5, Appendix B & C

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1501

Direct Unit Level Support

TERMINAL LEARNING OBJECTIVE

1. Given the requirement, identify the health services support elements within the Marine Corps Operating Forces to support mission requirements, per the MCWP 4-11.1. (FMSO-HSS-1501)
2. Given the requirement, direct Aid Station procedures to ensure optimum health services support is available, per the MCWP 4-11.1. (FMSO-HSS-1502)

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given a description or title, identify the organic medical support of the subordinate units within a Ground Combat Element, to an accuracy of 80 percent, per the MCWP 4-11.1. (FMSO-HSS-1501a)
2. Without the aid of references, given a description or title, identify the medical support of the subordinate units of an Air Combat Element Group provided to the MAGTF, to an accuracy of 80 percent, per the MCWP 4-11.1. (FMSO-HSS-1501b)
3. Without the aid of references, given a description or title, identify the organizational medical support of the subordinate units within a Logistics Combat Element, to an accuracy of 80 percent, per the MCWP 4-11.1. (FMSO-HSS-1501c)
4. Without the aid of references, given a description or title, identify the mission of the aid station, to an accuracy of 80 percent, per the MCWP 4-11.1. (FMSO-HSS-1502a)
5. Without the aid of references, given a description or title, identify aid station logistics, to an accuracy of 80 percent, per the JT PUB 4-02.1 (FMSO-HSS-1502b)

INTRODUCTION

The primary mission of medical and dental units supporting the Marine Corps Operating Forces is the conservation of the combat power of the troops. This is accomplished through measures designed to safeguard the health of the Force through early effective care of the sick and injured, prompt and appropriate evacuation of casualties, and through diligent health/risk surveillance and preventive medicine strategies. There are health service support personnel and equipment organic to each of these MAGTF components. Each health service support element is sized and equipped appropriately to support the personnel and mission requirements, when assigned to a MAGTF.

1. **HEALTH SERVICES SUPPORT-GROUND COMBAT ELEMENT (GCE)**

The Ground Combat Element of a MAGTF is comprised of Marine Division units sized to the mission:

The Division Command Element Medical Staff

Consists of the Division Surgeon, a Psychiatrist, a Medical Administrative Officer, an Environmental Health Officer, and enlisted staff to provide administrative support, training, and Senior Enlisted Leadership to all subordinate medical personnel within the Division.

The Division Surgeon functions as a special staff officer, advising the Division Commander on all matters relating to the health of the Division, including the health service support requirements and allocation of medical resources.

The Regimental Command Element Medical Staff

Consists of the Regimental Surgeon, and a number of Hospital Corpsmen. This section makes up the Regimental Aid Station and provides medical support to Regimental Headquarters personnel.

The Regimental Surgeon is a special staff officer who reports to and advises the Regimental Commander in matters concerning health services of the Regiment.

The Medical Staff of an Infantry Battalion

Consists of two Medical Officers and 65 Hospital Corpsmen. They make up the Battalion Medical Platoon.

One of the two Medical Officers in an Infantry Battalion is designated as the Battalion Surgeon. The Battalion Surgeon is a special staff officer who advises the Battalion Commander on matters pertaining to the health of the Battalion. The duties of the Battalion Surgeon include supervising patient treatment, planning, organizing, training the Battalion Medical Staff, and performing such other duties as the Battalion Commander may direct.

The other Medical Officer in an Infantry Battalion is designated as the Assistant Battalion Surgeon. The primary job of the Assistant Battalion Surgeon is to direct, manage, and supervise the operation of the Battalion Aid Station (BAS), and to perform such additional duties as may be assigned by the Battalion Surgeon.

21 of the 65 Hospital Corpsmen in an Infantry Battalion are assigned to the Battalion Aid Station (BAS), under the supervision of the Assistant Battalion Surgeon. This group of 21 Hospital Corpsmen is called the Aid Station Group. The Aid Station Group is capable of splitting into two sections to operate two separate Battalion Aid Stations when necessary. The Battalion Surgeon will normally head the second aid station.

The remaining 44 Hospital Corpsmen assigned to the Battalion Medical Platoon are divided into four groups of 11 Corpsmen called Company Medical Teams. One Medical Team is assigned to the Weapons Company and one is assigned to each of the three Rifle Companies of an Infantry Battalion.

The Senior Hospital Corpsman from each Medical Team is designated as the Company Corpsman and is assigned to the Company Headquarters. The remaining Corpsmen assigned to a company are designated Platoon Corpsmen.

A Litter Bearer Group also operates under the supervision of the Battalion Surgeon. Litter Bearers are not part of the Battalion Medical Section, they are Marine Corps personnel assigned by the Battalion or Regimental Commander. Litter bearers should be designated well in advance of operations so that they may be trained in the proper techniques of casualty handling.

2. **HEALTH SERVICE SUPPORT-AVIATION COMBAT ELEMENT (ACE)**

The Aviation Combat Element of a MAGTF is comprised of Marine Aircraft Wing units (Fixed Wing and/or Rotary Wing) to support the appropriate mission.

The Wing Command Element Medical Staff

Consists of the Wing Medical Officer or Wing Surgeon, a Medical Administrative Officer, an Environmental Health Officer, an Industrial Hygienist, Optometrist and enlisted personnel as assigned.

The Wing Medical Officer or Wing Surgeon functions as a special staff officer, advising the Wing Commander on all matters relating to the health of the Wing, including the development of medical policies for the Wing, training of medical and non-medical personnel, health service support requirements, and allocation of medical resources.

The remainder of the Wing Surgeon's Staff is responsible for medical planning, logistics, coordination of administrative functions, maintenance of records, and personnel administration.

A Group Medical Section for each Marine Air Group (MAG)

Consists of a Medical Officer and Hospital Corpsmen. The MAG Medical Officer carries out the Wing Surgeon's policies, performs his duties in support of the MAG personnel and is a special advisor to the Marine Air Group Commander.

The Marine Wing Support Group

Includes four Marine Wing Support Squadrons (MWSS), with organic (from the unit), medical assets consisting of Medical Officers, Hospital Corpsmen, and the equipment and supplies to establish a Squadron Aid Station. The MWSS Aid Station is capable of providing routine sick call, aviation medicine, preventive medicine, laboratory, radiology, and pharmacy services.

Each flying squadron within a Marine Aircraft Group has a medical section consisting of a Flight Surgeon and a number of Hospital Corpsmen depending on squadron type. The Squadron Medical Section conducts routine sick call and other aviation medical functions.

In order to centralize organization and support, squadron medical personnel normally work in conjunction with the Marine Wing Support Squadron (MWSS) Aid Station.

3. **HEALTH SERVICES SUPPORT-LOGISTIC COMBAT ELEMENT (LCE)**

The Logistic Combat Element of a MAGTF is developed around units from a Marine Logistics Group (MLG).

The Marine Logistics Group (MLG) Command Element Medical Staff

Consists of the Group Surgeon and a number of personnel making up the Group Aid Station (GAS) and the Health Service Support Element (HSSE).

The Group Surgeon functions as a special staff officer advising the MLG Commander on all matters relating to the health of the MLG. The Group Surgeon also supervises the operations of the Group Aid Station.

The Group Aid Station (GAS)

Provides internal health service support to the MLG units.

The Health Service Support Element (HSSE)

Coordinates the requirements for health service support and Class VIII supplies required above the organic capabilities of the Ground Combat Element (GCE) and the Aviation Combat Element (ACE).

The Medical Battalion of the Marine Logistics Group

Is the primary source of health service support above the Battalion Aid Station, which is provided by and organic to the Ground Combat Element. It provides initial resuscitative care and temporary holding of casualties. The Medical Battalion is made up of a Headquarters and Service (H&S) Company, three Surgical Companies 8 Shock Trauma Platoons (STP) and 8 Forward Resuscitative Surgery Systems (FRSS).

The Headquarters and Service Company includes an administration and personnel section, intelligence, and operations section, a logistics section, a communications section, a chaplain's section, a preventive medicine section, 8 Shock Trauma Platoons (STP) and 8 Forward Resuscitative Surgery Systems (FRSS)

The Shock Trauma Platoon provides comprehensive, mobile health service support to a Ground Combat Element (GCE) Battalion Aid Station BAS. Each platoon consists of a Stabilization Section and a Collecting and Evacuation Section.

The Stabilization Section of an STP consists of two Medical Officers, a Physician Assistant, and seven HM 8404's. The Stabilization Section is highly mobile and is capable of providing advanced trauma life support.

The Collecting and Evacuation Section of an STP consists of a Nurse Corps officer, one IDC HM, six HM 8404's and seven Marine Corps motor vehicle and radio operators. The mission of the Collecting and Evacuation Section is to collect and transfer casualties as well as provide advanced trauma life support.

The Forward Resuscitative Surgery System (FRSS) is a highly mobile, rapidly deployable, Trauma Surgical Unit that will provide emergency surgical interventions required to stabilize casualties who might otherwise die or lose limbs before reaching treatment.

The Forward Resuscitative Surgery System (FRSS) can be up & ready within 60 min by eight FRSS members. Care for 1 - 18 casualties for 48 hours without re-supply or relief. Care for two pre-op, one intra-op & two post-op patients at any time. Pack-up & prepare to relocate within 60 min.

The Forward Resuscitative Surgery System (FRSS) consist of two General Surgeons, one Anesthesiologist, one Critical Care Nurse, one IDC(8425), two OR techs (HM 8483) and one HM (8404).

The Surgical Companies provide general health service support including medical and surgical care and temporary holding of casualties. Each Surgical Company consists of a Headquarters Platoon, a Triage/Evacuation Platoon, a Surgical Platoon, Holding Platoon, Combat Stress Platoon, and Ancillary Service Platoon.

- The Surgical Platoon consists of three Surgical Sections (Total of three OR's).
- The Holding Platoon contains three ward sections (20 beds each).
- The Ancillary Platoon contains two laboratory sections, two pharmacy sections, and two x-ray sections.

The Supply Battalion of the Marine Logistics Group

Includes a Medical Logistics (MEDLOG) Company, which is responsible for the day-to-day management and maintenance of Class VIII supplies.

MEDLOG Company provides intermediate maintenance of medical and dental equipment for health service support elements of the MAGTF.

The Medical Logistics Company consists of a company Headquarters an Equipment Repair Platoon, and three Supply Platoons.

The Company Headquarters consists of a Company Commander, Executive Officer, Supply Officer and 11 Navy and Marine Corps enlisted assistants.

The Equipment Repair Platoon consists of nine Hospital Corpsmen, two Biomedical Repair Technicians and two Dental Technician Repairmen. The Equipment Repair Platoon is capable of operating in a centralized repair site and/or providing contact team maintenance in the field.

Each of the three Supply Platoons consists of 19 Hospital Corpsmen and four Marine supply personnel. The Supply Platoon provides for the receipt, storage and issue of all Class VIII supplies. The Supply Platoons can operate as a unit or separate into three balanced units in support of a MAGTF.

The Dental Battalion of the Marine Logistics Group

Provides for maintenance and emergency dental care, and specialized care of casualties with maxillofacial injuries. The battalion is composed of approximately 73 Dental Corps Officers, two Medical Service Corps Officers, 153 Hospital Corpsman and six enlisted Marine Corps personnel. The Dental Battalion includes a Headquarters and Service Company and three Dental Companies.

The Headquarters and Service Company provides command, administrative and supply services for the battalion.

Each Dental Company consists of a Headquarters Section, which includes the Company Commander, the Executive Officer, enlisted assistants and a Clinical Section consisting of an Oral Surgeon, a Prosthetics Officer, an Endodontics Officer, Assistant Dental Officers and a number of Hospital Corpsman.

The organization and equipment of a Dental Company is designed to permit a large degree of flexibility and mobility. Detachments of varying sizes may be formed for assignment to separate or independent units.

A Dental Detachment may be attached to each Surgical Company of the MLG. This detachment is equipped and staffed to provide for routine dental care but may be used to assist medical personnel in the event of mass casualties

4. **MISSION OF THE AID STATION**

To provide direct medical support to company and platoon corpsmen, and to provide an advanced level of care in the overall effort to sustain the combat force.

Areas of Responsibility - all medical personnel assigned to the BAS are responsible for performing the following duties:

- (1) Conduct sick call
- (2) Administration
- (3) Supply
- (4) Medical readiness – physicals and exams
- (5) Pre-deployment Preventive Medicine Programs
- (6) Triage, treat and casevac trauma patients as indicated
- (7) Provide medical coverage as needed to requesting units
- (8) Provide for patient privacy and confidentiality
- (9) Provide training to non-medical personnel to enhance Combat Lifesaver (self-aid) and litter team responsibilities.

5. **AID STATION LOGISTICS**

Logistics is that military specialty dealing with the procurement, storage, distribution, inventory, and maintenance of material. Supplies and equipment are divided into ten classes for management purposes. Class VIII is assigned to medically related items. Careful consideration should be given to stock levels of Class VIII materials (consumable and equipment) so as not to overstock.

Supply Terminology

Table of Equipment (T/E) - The MAGTF Surgeon will advise on all matters regarding medical and dental support. Allocations of materials are documented in the table of equipment (T/E). The total HSS T/E is designed to support a Marine Expeditionary Force (MEF) in an estimated worst-case scenario for a 60-day period of combat. A unit's T/E includes items necessary for basic support of the organization and includes:

- Tentage (in an urban environment hardened facilities will be used in place of tentage)
- Vehicles
- Tools
- Communication equipment
- Nuclear, biological and chemical (NBC) gear
- Office equipment and supplies

Authorized Medical Allowance List (AMAL) - A list of authorized allowances of equipment and consumable supplies required to perform operational HSS. There are two types:

Equipment - These are non-consumable materials, such as litter supports, stretchers, oxygen regulators, etc., that are required to perform a specific medical function.

Supplies - These consist of consumable line items that are provided in quantities required to support a predetermined patient load associated with a specific echelon of medical treatment.

Authorized Dental Allowance List (ADAL) - A list of authorized allowances of equipment and consumable supplies required to perform a dental function. As with the AMAL, there are two types and they are the same as previously mentioned.

DD-1348 - A form used to requisition materials. It is used primarily by the Battalion Corpsman in ordering supplies by line item only, e.g., IV fluids, bandages, splints, etc., to re-stock the equipment and consumable AMAL/ADAL.

Line items - An item having a National Stock Number (NSN)

Naval Medical and Dental Material Bulletin (NMDMB) - A monthly publication which provides information on drugs, supplies, equipment and authorizes additions or deletions to the AMALs and ADALs. It also provides information on expiration dates, defective materials, and disposition instructions.

References:

Health Service Support Operations, MCWP 4-11.1, CH. 1 & 3
Joint Tactics, Techniques, and Procedures for Health Service Logistics Support in Joint Operations, JT PUB 4-02.1, CH. 1 & Glossary
Organization of Marine Corps Forces, MCRP 5-12D

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FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1605

Manage Force Health Protection For Military Operations

TERMINAL LEARNING OBJECTIVE

1. Given the requirement in a tactical environment, access to automated systems and applicable software, equipment, and supplies, manage force health protection for military operations, within 80 percent accuracy, per the references. (FMSO-FP-1605)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, describe the procedure on prevention of common foot disorders, within 80 percent accuracy, per Foot Marches, FM 21-18. (FMSO-FP-1605a)
2. Without the aid of reference, given a description or list, identify deployment health risks, within 80 percent accuracy, per Navy and Marine Corps Public Health Center website. (FMSO-FP-1605b)
3. Without the aid of reference, given a description or list, identify the force health protection requirement for military personnel, within 80 percent accuracy, per BUMEDINST 6230.15. (FMSO-FP-1605c)
4. Without the aid of reference, given a description or list, describe the deployment health assessment procedures, within 80 percent accuracy, per Department of Defense Instruction 6490.03 and MCWP 4-11.1, Health Service Support Operations. (FMSO-FP-1605d)

1. **PREVENTION OF COMMON FOOT DISORDERS**

Improperly fitting boots and socks are common causes of foot problems such as blisters, corns and calluses.

1. Carefully fit new boots.
2. Bring a pair of socks/orthotics you intend to wear with the boots to the store.
3. The toe box should be roomy enough so you can wiggle your toes.
4. The ball of your foot should rest on the widest part of the sole.
5. The forefoot should not be wider than the boot.
6. Determine the boot length; there should be a ½ inch between the end of the longest toe and the end of the boot.
7. Socks should fit snugly on the foot without excess material over toes and the heel.
8. If a person wants to wear two pairs of socks, the outer pair should be ½ a size larger to comfortably fit over the inner sock.

Use the following preventive measures to educate and supervise personnel on proper foot care and wear. Improper foot hygiene will also lead to foot disorders such as ingrown toenail and athlete's foot.

1. Before marches trim toenails short and straight across.
2. Keep feet clean and dry and use foot powder.
3. Wear clean, dry, unmended, good-fitting socks.
4. During marches, lie with feet elevated at rest points, if time permits, massage the feet, apply foot powder, change socks and take care of blisters.
5. Relieve swelling feet by slightly loosening the bootlaces where they cross the arch.
6. After the march, treat blisters, abrasions, corns, and calluses.
7. If red, swollen, tender skin develops along the edges of the foot, the foot requires aeration, elevation, rest and wider foot wear.

2. **DEPLOYMENT HEALTH RISKS**

National Center for Medical Intelligence (<https://www.intelink.gov/ncmi/>) Mission is to prepare and coordinate integrated, all-source intelligence for the U.S. Department of Defense (DoD) and other government and international organizations on foreign health threats and other medical intelligence issues to protect U.S. interests worldwide. Before troops are deployed to foreign areas for combat, peacekeeping, or humanitarian operations, NCMI's assessment of potential health risks and foreign health care capabilities allows the medical community to plan for the proper medical countermeasures, health care support, and medical personnel support.

Medical Capabilities

Assess foreign military and civilian medical capabilities, including treatment facilities, medical personnel, emergency and disaster response, logistics, and medical/pharmaceutical industries.

Maintain and update an integrated data base on all medical treatment, training, pharmaceutical, and research and production facilities.

Environmental Health

Identify and assess environmental risks that can degrade force health or effectiveness including: chemical and microbial contamination of the environment, toxic industrial, chemical, and radiation accidents, and environmental terrorism.

Assess the impact of foreign environmental health issues and trends on environmental security and national policy.

Infectious Disease

Identify, assess, and report on infectious disease risks that can degrade mission effectiveness of deployed forces.

Alert operational and policy customers to foreign disease outbreaks that have implications for national security and policy formulation, including homeland defense and deliberately introduced versus naturally occurring disease outbreaks.

Life Sciences and Biotechnology

Assess foreign basic and applied biomedical and biotechnological developments of military medical importance.

Assess foreign civilian and military pharmaceutical industry capabilities.

Assess foreign scientific and technological medical advances for defense against nuclear, biological, and chemical warfare.

NCMI Intelligence Reports NCMI produces a wide variety of medical intelligence assessments based on customer requirements. Our major product groups include the following:

Medical, Environmental, Disease Intelligence and Countermeasures (MEDIC) - provides worldwide infectious disease and environmental health risks hyperlinked to the Joint Service-approved countermeasure recommendations, military and civilian health care delivery capabilities, operational information, disease vector ecology information, and reference data.

Health Services Assessment (HSA) - provides consumers the bottom-line assessment of a country's health services capability.

Infectious Disease Risk Assessment (IDRA) - pre-deployment force protection planning guidance that assesses the baseline risk from infectious diseases of operational military significance on a country-by-country basis worldwide.

Environmental Health Risk Assessment (EHRA) - assesses environmental health risks of operational military significance on a country-by-country basis worldwide.

Infectious Disease Alert formerly known as the Disease Occurrence Worldwide (DOWW) - short, timely alerts that assess risk to US forces from foreign disease outbreaks that may impact military operations and forecast disease risks associated with recent environmental disasters.

Common Preventive Measures

Water-borne Disease Preventive Measures

Consume food, water, and ice only from US-approved sources.

Test and decontaminate water supply prior to use.

Wash your hands after using latrines and before eating (hand washing stations should be near latrines and dining facilities).

Avoid unnecessary contact with lakes, rivers, streams and other surface water.

Vector-Borne Diseases Preventive Measures

Use DEET-based insect repellent.

Treat field uniforms with permethrin. Always wear sleeves down in a field environment.

Use bed nets (treated with permethrin) in field conditions.

Take Malaria chemoprophylaxis as directed.

Animal-Contact Diseases Preventive Measures

Avoid animal contact, especially if the animal exhibits strange behavior.

No mascots.

Report all animal bites and scratches.

Sexually Transmitted Diseases Preventive Measures

Refrain from any sexual activity while on deployment (adhere to the General Order 1 regarding this issue).

Respiratory Diseases Preventive Measures

Tuberculin Skin Test before and after deployment.

72 sq ft/person and head to toe sleeping arrangement.

Cough and sneeze into upper sleeve instead of your hands.

Wash hands at every opportunity.

Avoid close contact with local population.

Hazardous Plants and Animals Preventive Measures

Do not handle or feed animals.

Shake out boots, clothing and bedding prior to use and never walk barefoot.

Avoid sleeping on the ground.

Do not touch, chew, eat, or burn unfamiliar plants.

Decontaminate clothing by washing with soap and water after contact with harmful plants.

3. **FORCE HEALTH PROTECTION**

Unit Immunization Program - Inadequate Force Health Protection (FHP) measures will place service members at risk and seriously jeopardize mission effectiveness. All new recruits (both officers and enlisted) are vaccinated against various diseases during enlisted basic training or during officer accession training. Sailors and Marines should have immunization status reviewed as part of a routine sick call visit, on their birth month, as well as for pre-deployment preparation.

Vaccine	Dosing Schedule	Route, Dose
Anthrax	0,4w,6,12,18m + annual booster	IM (in deltoid), 0.5ml
Hepatitis A	0, 6m (2 dose)	IM, 1ml, or Twinrix IM, 1ml
Hepatitis B	0,1,6m (3 dose)	IM, 1ml, or Twinrix IM, 1ml
Influenza - Seasonal	1 dose annually	Injectable: IM, 0.5ml, Intranasal: 0.2ml
MMR	2 lifetime doses or + serologic testing	SC, 0.5ml
Polio	1 dose as adult	SC or IM, 0.5ml
Rabies	Pre-Exposure: 0,7,(21 or 28d) Booster: 2-5 yr (when titer drops >1:5)	IM, 1 ml
Smallpox	1 dose, every 10 yr	15 percutaneous jabs for primary and re-vaccinees
Tetanus	1 dose, every 10 yrs. For adults who have not received a dose of Tdap, 1 dose is given regardless of interval since last tetanus vaccine.	Tdap: IM, 0.5ml Td: IM, 0.5ml
Typhoid	Injectable: every 2 yr; Oral: every 5 yr	Injectable: IM, 0.5ml, Oral: 4 capsules (day 1,3,5,7)
Yellow Fever	1 dose, every 10 yr.	SC, 0.5ml

Pre-Deployment Phase - Pre-deployment health activities are based on DOD and Service policies and the health risk assessments for the joint operations area or area of operations and for the specific deployment location. An overall health risk assessment for the joint operations area or area of operations must be accomplished before each deployment to identify the deployment-specific health threats and appropriate protective measures, and determine the content of health risk communication messages and materials, including pre-deployment health threat briefings. Specific health risk countermeasures (immunizations, prophylactic medications, or personal protective equipment) will be based on the health threats or potential health threats. The following pre-deployment health activities are required for all deployments:

Administer deployment-specific immunizations, prophylaxis, and other medical countermeasures. Health care providers shall record serious adverse events in medical records and shall report serious adverse events to the Adverse Events Reporting System of the Department of Health and Human Services using the Food and Drug Administration MEDWATCH or Vaccine Adverse Event Reporting System procedures and forms.

Tuberculosis screening shall be based on the potential of a high-risk exposure to tuberculosis or per Combatant Commander or Service Component policy.

Pre-deployment serum specimens must be collected within one year of deployment. The most recent serum sample, including a post-deployment serum sample or Human Immunodeficiency Virus (HIV) sample collected within the previous 365 days may serve as a pre-deployment serum sample. Individuals must be informed if their pre-deployment serum sample will be tested for HIV.

Prescription medications, minimum 90-day supply of prescription medications, other than Force Health Protection Prescription Products, required for all deployments.

The current deployment health record (DD Form 2766 or equivalent) for each deploying individual must reflect Blood type/Rh factor; prescribed medications and/or allergies, corrective lens prescription, all immunizations recorded in the services' electronic immunization tracking database and the patient deployment health record (this may be accomplished using a computer-generated record). The following information must be included: type of immunization, date administered, dose, and vaccine administrator identifying information such as their initials.

Prescribe any necessary Force Health Protection Prescription Product (FHPPP). Certain drugs, vaccines, and other medical products are useful for protecting the health of deployed personnel that may be used only under a physician's prescription.

Issue personal protective equipment as required by occupational specialty or threat to deploying personnel.

Conduct health threat briefings whenever health threats are identified and/or protective measures are required. The briefing addresses topics such as endemic diseases, hazardous plants and animals, entomological hazards, CBRN agents, toxic industrial chemicals and materials (agricultural and industrial), deployment-related stress, and climatic or environmental extremes (e.g., heat, cold, high altitude, wind-blown sand and/or other particulates).

Post Deployment Phase - Exposure to environmental health threats may have acute, chronic, or latent effects, and, when indicated, long-term medical surveillance should be conducted to detect latent diseases. Health surveillance data are used to document any occurrence of disease or health outcomes due to exposures, conduct epidemiological investigations, determine new prevention strategies and countermeasures for current or future deployments, and develop health risk communication materials. The following post-deployment health activities are required for all deployments:

Tuberculosis screening shall be based on the potential of a high-risk exposure to tuberculosis.

As part of the re-deployment process, when required, a serum sample shall be obtained from each individual no later than 30 days after arrival at the demobilization site, home station, or in-patient medical treatment facility (preferably during the face-to-face health assessment) and forwarded to the DOD Serum Repository using the existing trans-shipment centers. Serum samples for personnel separating from active duty, including Reserve Component members who are demobilizing, should be obtained during demobilization. Individuals must be informed if the post-deployment serum sample will be tested for HIV.

A health threat de-briefing must be provided to re-deploying or re-deployed DOD personnel during in-theater medical out-processing or following a deployment. Post-deployment health debriefings inform personnel of any health-related medical, occupational, environmental, or CBRN exposures that they may have experienced, address individual concerns and information about required medical follow-up, and help personnel reintegrate and adjust back to routine activities following a deployment.

4. **DEPLOYMENT HEALTH ASSESSMENTS**

Deployment Health Assessments (DHAs) are DoD mandated instruments used to screen service members prior to deployment; to identify health concerns after deployments; and to facilitate appropriate care. The DHA process supports the DoD health protection strategy to deploy healthy, fit, and medically-ready forces; minimize illnesses and injuries during deployments; and evaluate and treat physical and psychological problems following deployment.

DHAs consist of three components that are to be completed in the in required timeframe and be reviewed in a face-to-face interview with a health care provider (i.e. physician, physician assistant, nurse practitioner, advanced practice nurse, or independent duty corpsman).

DD 2795, Pre-Deployment Health Assessment (Pre-DHA), shall be administered at the home station no earlier than 60 days prior to the deployment date.

DD 2796, Post Deployment Health Assessment (PDHA), shall be completed as close to the redeployment date as possible, but no earlier than 30 days before the expected redeployment date and not later than 30 days after redeployment.

DD 2900, Post Deployment Health Re-Assessment (PDHRA), shall be administered and completed 90-180 days after returning from deployment.

All DHAs must be completed and submitted electronically at <https://data.nmcphc.med.navy.mil/edha/>. A printed copy of the completed DHA form that has been electronically signed by a health care provider shall be filed on the left side in Part 3, Physical Qualifications section of the medical record.

Mental Health Assessment (MHA) NAVMED 6100/8, is to be completed by specified deployers in four time frames. The first and second screening will be done in conjunction with the DD 2795 and DD 2900, which have been reconfigured to facilitate completion of the deployment health and mental health assessment in one single process. The third and fourth MHAs will be completed in conjunction with the two ensuing PHAs. All MHAs must be conducted at least 90 days apart.

References:

Foot Marches, FM 21-18, Appendix C

Health Service Support Operations, MCWP 4-11.1

Immunizations and Chemoprophylaxis BUMEDINST 6230.15

Navy and Marine Corps Public Health Center Website

National Center for Medical Intelligence Website

OPNAVINST 6100.3 Deployment Health Assessment Process

BUMEDNOTE 6100 Mental Health Assessment for Members of the Armed Forces Deployed in Support of Contingency Operations

BLOCK 2



BLOCK 2

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Individual Preparedness for Improvised Explosive Device Defeat FMSO 1001	2-134

**UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243**

FMSO 1301

Provide Support For Marine Corps Operational Planning

TERMINAL LEARNING OBJECTIVE

1. Given the requirement, commanding officer's intent, and the reference, identify principles of the Marine Corps operational planning, to support mission requirements per the references. (FMSO-PLAN-1301)

ENABLING LEARNING OBJECTIVES

1. With the aid of references, given a description, list, or scenario, identify components of the Marine Corps Planning Process (MCP), per MCWP 5-1. (FMSO-PLAN-1301a)
2. With the aid of references, given a description, list, or scenario, apply components of the Annex Q, per JP 4-02. (FMSO-PLAN-1301b)

1. **THE MARINE CORPS PLANNING PROCESS**

The Marine Corps Planning Process (MCP) supports the Marine Corps war fighting philosophy of maneuver warfare. Since planning is an essential and significant part of command and control (C2), the MCP 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 MCP 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 MCP 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.

Key Functions of Planning 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 5-1, 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

Since planning is future-oriented, and the future is uncertain, all planning is based on imperfect knowledge and involves assumptions. To understand how planning applies to the medical services of an operation, the process needs to be explained.

The MCP establishes procedures for analyzing a mission, developing and war gaming courses of action (COAs) against the threat, comparing friendly COAs against the Commander's criteria and each other, selecting a COA, preparing an operation order or operation plan (OPLAN) for execution, and transitioning the order or plan to those tasked with its execution. The MCP organizes these procedures into six manageable, logical steps. These steps provide the Commander and his staff, at all levels, a means to organize their planning activities, to transmit plans to subordinates and subordinate commands, and to share a common understanding of the mission and Commander's intent.

Mission Analysis is the first step in planning, and it drives the MCP. Its purpose is to review and analyze orders, guidance, and other information provided by higher headquarters and to produce a unit mission statement.

Course of Action Development During COA development, planners use the mission statement (which includes the higher headquarters Commander's tasking and intent), Commander's intent, and Commander's planning guidance to develop COAs. Each prospective COA is examined to ensure that it is suitable, feasible, acceptable, distinguishable, and complete with respect to the current and anticipated situation, the mission, and the Commander's intent.

Course of Action War Gaming involves a detailed assessment of each COA as it pertains to the enemy and the battle space. Each friendly COA is war gamed against selected threat COAs. COA war gaming assists planners in identifying strengths and weaknesses, associated risks, and asset shortfalls for each friendly COA. COA war gaming also identifies branches and potential sequels that may require additional planning. Short of actually executing the COA, COA war gaming provides the most reliable basis for understanding and improving each COA.

Course of Action Comparison and Decision The Commander evaluates all friendly COAs against established criteria, and then evaluates them against each other. The Commander then selects the COA that will best accomplish the mission.

Orders Development During orders development, the staff uses the Commander's COA decision, mission statement, and Commander's intent and guidance to develop orders that direct unit actions. Orders serve as the principal means by which the Commander expresses his decision, intent, and guidance.

Transition is an orderly handover of a plan or order as it is passed to those tasked with execution of the operation. It provides those who will execute the plan or order with the situational awareness and rationale for key decisions necessary to ensure there is a coherent shift from planning to execution.

2. **PRINCIPLES OF HEALTH SERVICE SUPPORT**

The Marine Corps organization for combat is based on its unique assigned force structure. HSS is a mission area common to every Marine Air Ground Task Force (MAGTF), regardless of the mission. Definitive operational planning for HSS is always an integral part of all MAGTF operations.

Conformity with the tactical plan is the most fundamental element for effectively providing Health Service Support (HSS). Only by participating in the development of the OPLAN can the HSS planner ensure adequate HSS on the battlefield at the right time and place.

Continuity HSS must be continuous since the interruption of treatment may cause an increase in morbidity and mortality. Procedures are standardized at each organizational level to ensure that all required medical treatment at that echelon is accomplished. No patient is evacuated any further to the rear than his physical condition or the operational situation requires.

Control of HSS resources must rest with the Medical Commander. Combat health support staff officers must be proactive and keep their Commanders apprised of the impact of future operations on HSS assets. The HSS system must be responsive to a rapidly changing battlefield and must support the tactical plan in an effective manner. The Medical Commander must be able to tailor medical organizations and direct them to focal points of demand throughout his area of operation (AO). For this reason, HSS units normally maintain unit integrity for C2. Treatment performed at each echelon of the HSS system must be

commensurate with available HSS resources. Since these resources are limited, it is essential that their control be retained at the highest HSS echelon consistent with the tactical situation.

Proximity The location of HSS assets in support of combat operations is dictated by the tactical situation (mission, enemy, terrain, troops, time available and civilian considerations) factors, the time and distance factor, and the availability of evacuation resources. The speed with which medical treatment is initiated is extremely important in reducing morbidity and mortality. Medical evacuation time must be minimized by the efficient allocation of resources and the judicious location of a Medical Treatment Facility (MTF). The MTF cannot be located so far forward that it interferes with the conduct of combat operations or is subjected to enemy interference. Conversely, it must not be located so far to the rear that medical treatment is delayed due to the lengthened evacuation time.

Flexibility Since a change in tactical plans or operations may require redistribution or relocation of medical resources, the HSS plan must be flexible. The Medical Commander must be able to shift HSS resources to meet the changing requirements. No more medical resources should be committed nor MTFs established than are required to support expected patient densities. When the patient load exceeds the means available for treatment, it may be necessary to give priority to those patients who can return to duty (RTD) the soonest rather than those who are more seriously injured. This ensures the manning of the tactical Commander's weapons systems.

Mobility Since contact with supported units must be maintained, HSS elements must have mobility comparable to that of the units they support. Mobility is measured by the extent to which a unit can move its personnel and equipment with organic transportation. When totally committed to patient care, a HSS unit can regain its mobility only by immediate patient evacuation. When the mobility of the unit is jeopardized by the accumulation of patients, it may be necessary to leave a small holding element with the patient.

3. **TAXONOMY OF CARE**

Formerly known as "echelons" of care, the five capabilities of care are the fundamental levels a casualty will flow through as they move through the health care system. Notice how the enroute care capability extends throughout all the different capabilities.

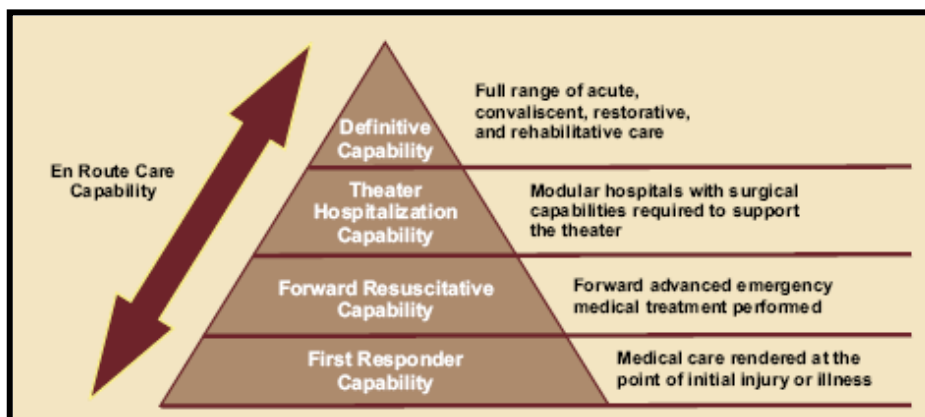


Figure 1. Taxonomy of Care

4. **ORDERS DEVELOPMENT**

The orders development step in the Marine Corps Planning Process communicates the commander's intent, guidance, and decisions in a clear, useful form that is easily understood by those executing the operation. The order is a written or oral communication that directs actions and focuses a subordinate's tasks and activities toward accomplishing the mission. Various portions of the order, such as the mission statement and staff estimates, have been prepared during previous steps of the Marine Corps Planning Process. The chief of staff or executive officer, as appropriate, directs orders development. The order contains only critical or new information, not routine matters normally found in standing operating procedures. A good order is judged on its usefulness, not its weight.

5. **LOGISTICS FOR HSS PLANNING**

The size, type, and configuration of HSS capabilities needed to effectively support a MAGTF will be determined by mission, enemy, terrain and weather, troop support and time availability. The following paragraphs provide an organizational framework for command and staff cognizance that all HSS operations are executed. Marine Corps Forces (MARFOR) Commanders are responsible for coordinating and integrating HSS within their area of operations. The MARFOR Surgeon, Dental Officer, Medical Planner, and Medical Administrative Officer advises the MARFOR Commander on matters relating to the health of the command, medical logistics, patient movement, sanitation, disease surveillance, medical intelligence, and medical personnel issues, as well as current and future HSS planning at the MARFOR level. Additional duties include serving as the liaison for the combatant commander and other component surgeons and monitoring HSS aspects of the time-phased force and deployment data flow.

Logistics encompasses the procurement, initial issue, management, re-supply, and disposition of material required to support medical and dental elements organic to the MARFOR. Requisitions for Class VIIIA (consumable and equipment) material follow the same channels as other classes of supply. Guidance for planning and procuring Class VIIIB (blood products) is found in DOD Instruction 6480.4, Armed Services Blood Program Operational Procedures. As with all classes of supply, careful consideration should be given to stockage levels of Class VIIIA material. Commanders should not be burdened with moving and maintaining excess material, nor should the need for support ever be delayed because of inadequate access or lack of responsiveness. When the medical planner is developing and planning for appropriate levels of Class VIIIA support, the following information is crucial to ensuring that the entire HSS system is responsive to the Commander:

- Concept of operation/scheme of maneuver
- Combat intensity
- Duration of the operation
- Casualty estimates

6. **ANNEX Q**

The Annex Q is part of the overall operational order. An operation order is a directive issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation; also called OPORD. Each Annex is given a letter, A, B, C, etc.,

providing more in depth information than the basic operational plan. For example, the Annex A would be for task organization, Annex B would be for intelligence, and Annex C would be for operations. For more information on each annex, see Joint Publication 4-02. For the purpose of this lesson, we will focus on the Annex Q, the medical services annex. Medical plans must include the following functions into the HSS concept of operations.

Health maintenance Routine sick call, physical examination, preventive medicine, dental maintenance, record maintenance, and reports submission.

Casualty collection Selection of and manning of locations where casualties are assembled, triaged, treated, protected from further injury, and evacuated.

Casualty treatment Triage and treatment (self-aid, buddy aid, and initial resuscitative care).

Temporary casualty holding facilities and services to hold sick, wounded, and injured personnel for a limited time, usually not to exceed 72 hours. The Medical Battalion, Marine Logistics Group, is the only HSS unit staffed and equipped to provide temporary casualty holding.

Casualty evacuation Movement and ongoing treatment of the sick, wounded, or injured while in transit to MTFs. All Marine units have an evacuation capability by ground, air, or sea.

Components of the Annex Q - Annex Q: Medical Services

- Appendix 1. Joint Medical Regulating System
- Appendix 2. Joint Blood Program
- Appendix 3. Hospitalization
- Appendix 4. Patient Evacuation
- Appendix 5. Returns to Duty
- Appendix 6. Medical Logistics (Class VIIIA) System
- Appendix 7. Preventive Medicine
- Appendix 8. Medical Communications and Information Systems
- Appendix 9. Host-Nation Medical Support
- Appendix 10. Medical Sustainability Assessment
- Appendix 11. Medical Intelligence Support to Military Operations

- Appendix 12. Veterinary Medicine

- Appendix 13. Medical Planning Responsibilities and Task Identifications

7. ORGANIZATION OF THE OPERATION ORDER

Paragraphing, Titling, and Numbering: Paragraph titles are upper and lower case and underlined (e.g., Situation). All subparagraphs and subtitles are upper and lower case and underlined (e.g., Concept of Operations), except forces, commands, or agencies. Forces, commands, and agencies are capitalized and underlined only in titles (e.g., SPECIAL PURPOSE MAGTF). When paragraphs are subdivided, they will be numbered and lettered as follows:

```
1.**Arrange paragraphs following the formats below.
%
2.**If subparagraphs are needed, use at least two; e.g., a (1)
must have a (2).
%
***a.**Indent each new subdivision four spaces and start
typing at the fifth space.
%
***b.**Text
%
***** (1)*Documents rarely require subdividing to the extent
shown below.
%
***** (2)*Text
%
***** (a)*Do not subparagraph past this level until you
have exhausted all re-paragraphing alternatives.
%
***** (b)*Text
%
*****1.**Text
%
*****a.**Text
%
***** (1)*Text
%
***** (a)*Never subparagraph beyond this
level.
```

Subsequent lines of text for each paragraph may be flush left or equally indented at the option of the chief of staff or executive officer as long as consistency is maintained.

Flush Left:

a. (U) Situation. Text text.

Equally indented:

a. (U) Situation. Text text text text text text text text text text text text text text text text.

Classification Markings Mark front and back covers with the overall classification of the plan. Mark the first page of plan elements (e.g., plan summary, basic plan, and each annex, appendix, tab, and exhibit) with the overall classification of the element. Unclassified plan elements are marked as such. Mark each interior page of the classified plan element with the highest classification and sensitive classified information code word of the material contained on the page. If the page does not contain classified material, mark it as unclassified. Center classification markings between the left and right margins at both the top and bottom of the page. The classification marking is written in all caps (e.g., UNCLASSIFIED). All paragraphs will have a security classification level. Use parenthetical symbols (TS), (S), (C), and (U) to indicate the security classification level of titles, paragraphs, and subparagraphs.

Page Numbering Page numbers are located at the bottom of the page and centered. For example, page C-1-A-3 denotes page 3 of Tab A to Appendix 1 to Annex C. There is a single space between the page number and the classification marking.

Formatting Instructions The formatting instructions are for the operation order itself. The line numbers correspond to the line on the page of the order.

- Line 1. Classification

- Line 2. Changes from Oral Orders Used when oral orders regarding this operation were previously issued. Enclosed in parentheses. Example: “(No change from oral orders except paragraphs 3b and 3f).” Omitted in plans and in orders when no oral orders were issued.

-Lines 3-7. Heading Data

Copy no. ____ of ____ copies
OFFICIAL DESIGNATION OF COMMAND
PLACE OF ISSUE
Date/time group
Message reference number

The first line of the heading is the copy number assigned by the issuing headquarters. A copy number is given to each copy. It is not shown on attached annexes. A log will be maintained of specific copies issued to addressees. The second line is the official designation of the command. It is always capitalized. Use a code name if required for security. The third line is the place of issue. It may be a code name, postal designator, or geographic location (including coordinates). The place of issue is always capitalized. The fourth line is the date or date/time group the plan or order is signed, issued, and

becomes effective unless specified otherwise in coordinating instructions. The fifth line is the message reference number. It is assigned by the originator and contains letters, numbers, or a combination of the two. The message reference number has no connection with the message center numbering system. Annexes issued separately are assigned different message reference numbers. It allows acknowledgement in the clear.

- **Line 8. Title** Orders are numbered consecutively for a calendar year. Two or more orders issued on the same day are given consecutive numbers. A joint operation plan or order is so designated. The code name if any is shown.

- **Line 9. Type of Document**

- **Lines 10-13. References** Documents (maps, charts, photomaps, standing operating procedures, etc.) necessary for understanding must be available to recipients. This entry is always included (use “References: None” when applicable). Map entries include series number, country, sheet names or numbers, edition, and scale.

- **Line 14. Time Zone** If the time zone is the same for the place of issue and execution and will be the same throughout execution, this entry may be omitted. If the time zone is different in the area of execution (frequently occurs in amphibious or air-transported operations), state when the indicated time zone becomes effective.

- **Line 15. Task Organization** Task organization may be shown in the following ways:

- As an unnumbered entry before paragraph 1, Situation. Used when entire command of issuing headquarters is organized into task organizations for a particular operation and task organizations are too complicated to be shown using other methods.

- If there is no change to previous task organization, show as “No change.”

- Under the proper subparagraph of paragraph 3. This is the simplest, and therefore preferred, method in continuing ground combat situation. Show as “No change except paragraph 3b”

- As an annex when lengthy; e.g., division or higher. Used in amphibious operations (permits early dissemination and assists concurrent planning). Also used where planning precedes operation by a considerable period of time.

- **Lines 17-18. General** For plans only, describe the general politico-military environment that would establish the probable preconditions for execution of the plan.

- **Line 19. Battlespace** includes the higher commander’s area of operation and the command’s areas of interest, influence, and operations described by physical area and forces of concern.

- **Line 20. Adversary Forces** include information vital to the entire command or information likely to affect accomplishment of mission. It may refer to the intelligence annex, operation overlay (if enemy information is shown), intelligence summaries, etc. It contains disposition, intent, objectives, vulnerabilities, centers of gravity, and courses of action.

- **Line 21. Friendly Forces** include information on own forces having a bearing on the operation (higher, adjacent, and supporting). Artillery is listed as the first supporting unit and then others are listed alphabetically. It may reference an annex or the operation overlay.

- **Line 22. Attachments and Detachments** Nonorganic units attached and/or organic units detached from the unit temporarily.

- **Lines 23-25. Paragraph 2** is a clear concise statement of the tasks and purpose of the operation. State the who, what, when, where, why, and as much of the how as necessary. There are no subparagraphs. The mission is always stated here even if shown on an operation overlay or map.

- **Line 26. Paragraph 3** addresses execution.

- **Line 27. Commander's Intent** is the commander's personal expression of the purpose of the operation. It must be clear and concise. The purpose of providing intent is to allow subordinates to exercise judgment and initiative—to depart from the plan when the unforeseen occurs—in a way that is consistent with the higher commander's aims.

- **Line 28. Concept of Operations** is a summary statement of how the operation will be accomplished. It amplifies paragraph 2. It may be shown graphically or published, as an appendix to annex C. Specific unit designations are not used.

- **Lines 29-35. Tasks** This subparagraph identifies tasks to subordinate elements. Each task assigned to a unit will include the purpose of the task (e.g., in order to . . .). Each unit, organic or attached, or tactical grouping that is executing a tactical task is assigned a separate, numbered subparagraph. All tactical tasks must be listed in the body of the basic order. List tasks for major subordinate elements as follows:

- **Offensive order**: Ground combat units (infantry first followed by artillery and combat support units numerically or alphabetically), aviation combat units or elements (aircraft units, combat support, combat service support), combat service support units or elements.

- **Defensive order**: Units or elements closest to the enemy are listed first. Ground and aviation combat units in the forward defense area are then listed in numerical order followed by other units alphabetically.

- Each tactical task assignment may show the assets (attached or in support) available to the unit or element for the operation first, then tasks are enumerated. Priority must be stated if missions are multiple and priority of accomplishment is desired. If all instructions to a unit are shown on the operations overlay, list the unit after proper subparagraph number and reference the operation overlay appendix.

- **Line 36. Reserve** is tasked separately from the remainder of the units. It is usually designated the main effort when committed. If there is no reserve designated, then so state.

- **Line 37. Commander's Critical Information Requirements**(CCIRs) identify information the commander has deemed critical to maintaining his situational awareness, planning future activities, and assisting in timely and informed decision-making.

- **Line 38. Coordinating Instructions** This paragraph is the final subparagraph in paragraph 3. It contains instructions common to two or more units, coordinating details and control measures applicable to the command as a whole, and time or conditions when plan is to be executed. It refers to annexes or references for coordinating details when appropriate. Communications instructions are shown in paragraph 5 only.

- **Line 39. Paragraph 4** contains logistic and personnel information and instructions for the operation. It usually refers to appropriate annexes.

- **Line 40. Page number**

- **Line 41. Classification**

8. **ADDITIONAL PAGES IN ANNEX Q**

Additional pages may be required in the Annex Q, if so, start each page as follows:

Line 1. Classification

Lines 2-6. Paragraph 5 contains instructions that establish and maintain command and signal procedures.

- **Command Relationships** Used in a large operation, or when relationships are unusual. Otherwise omitted.

- **Command Posts and Headquarters** May reference operations overlay for locations.

- **Succession to Command** Designates the succession to command for the operation.

- **Signal** Usually references annex K and other communication publications such as standing operating procedures or communications-electronics operating instructions. Includes instructions or restrictions about communications-electronic such as radio

restrictions or pyrotechnic signals. Use additional subparagraphs to show location and time of opening communications centers, recognition and identification instructions, code words and names, and liaison.

Line 7. Acknowledgement Instructions are included in every order and in separately issued portions. It ensures that recipients receive and understand the order.

Lines 8-10. Signature and Authentication The basic operation order or plan and each annex are signed or authenticated by the commanding officer. Full signature blocks are used. Appropriate officers may be given authority to sign portions of the order. The commander is the only person authorized to sign (authorize) any portion of the order unless by direction authority has been granted to another individual.

- Appendixes, tabs, exhibits, and maps do not require signature or authentication except when distributed separately from the basic operation order or plan.

- Original signed by commander:

Name
Rank and Service
Title

- Original signed by chief of staff/executive officer:

By Command of Colonel Name
Name
Rank and Service
Title

Lines 11-31. Annexes form a portion of the completed plan or order. They pertain to a particular concept, subject, or coordination aspect that is too voluminous, of insufficient general interest, or in an irregular form (overlays, graphs, or tables) for the body of the plan or order. They contribute to the brevity and clarity of the basic operation plan or order. Sequence and lettering must not be changed. Annexes may be omitted when not required. Annexes are amplified where necessary by appendices to annexes, tabs to appendices, and exhibits to tabs.

The annex formats and designations shown in this appendix are mandatory unless otherwise indicated. The annex title is upper and lower case. Within the body of the basic operation order or plan, the annex title is also enclosed in parentheses. When any of these annexes are not required, the annex is noted as “not used” or “not applicable” in the table of contents. Elements that will be developed later may be noted as “to be issued.” The annex format is preferred for other attachments (appendixes, tabs, etc.), but it may be altered when information or instructions must be included for which no provision is made in the standard format.

Additional annexes may be added when necessary to permit distribution separate from the basic operation order or plan or when information must be included where no provision is

made in standard annexes. When included, letter additional annexes consecutively, beginning with the letter “R, V, W and Y.” Do not use the letters “I” and “O” as an annex designation.

Usually annexes A through D, J, and K will be provided as part of the basic operation order or plan. Develop additional annexes and their associated appendices in an abbreviated format for those areas significantly affecting mission accomplishment.

Line 32-36. Authentication by G/S-3 when commander’s or executive officer’s signature is on the original only; G/S-3 authentication appears on all other copies.

Line 37. Page number

Line 38. Classification

9. **SPECIAL STAFF OFFICERS UNDER STAFF COGNIZANCE OF THE G-4 OFFICER**

Dental Officer is responsible for dental matters and coordinating dental activities within the command. The following functions are performed:

- Exercises staff supervision and provides professional and technical assistance with respect to all dental matters affecting the command.
- Coordinates with the medical officer in the development and implementation of plans to ensure the command’s oral health and readiness.
- Develops and implements the command’s preventive dentistry program.
- Ensures the maintenance of professional standards and adequate levels of dental care and treatment.
- Recommends employment of dental personnel and equipment for effective and efficient use of dental services.
- Establishes priorities for dental care and treatment.
- Plans and supervises the professional training of dental personnel.
- Coordinates with the medical officer (MO) and the civil affairs officer in developing dental support programs for humanitarian and civic action operations.
- Coordinates with the MO for the temporary use of dental personnel to assist in the care, treatment, and evacuation of mass casualties.

Medical Officer has responsibility for medical matters and coordinating medical service support for the command. Most unit staffs include a medical officer. The following functions are performed:

- Advises on the health services requirements of the command and, when relevant, the indigenous population within the Commander's area of responsibility.
- Advises on the medical threat in the AO, considering the following:
 - Environmental factors.
 - Endemic and epidemic diseases.
 - Weapons of mass destruction.
 - Directed-energy devices.
- Plans for treatment of casualties resulting from enemy employment of weapons of mass destruction; identifies biological agents used against friendly troops; advises on preventive medicine measures to protect friendly troops from the effects of potential enemy biological and chemical agents; and furnishes assessments of the impact of potential and actual use of weapons of mass destruction on friendly troops.
- Determines requirements for and supervises the requisitioning, procurement, storage, maintenance, distribution, and documentation of medical equipment and supplies.
- Determines requirements for medical personnel to support operations and requests augmentation when necessary.
- Exercises staff supervision over medical training in the command.
- Exercises staff supervision and technical direction over medical activities throughout the command, including personal hygiene, environmental sanitation, first aid, sanitary aspects of food service and food procurement, and other preventive medicine activities affecting the health of the command.
- Plans and supervises health service operations, including the following:
 - Treatment and evacuation.
 - Preventive medicine in the command and, as required, for indigenous populations.
 - Professional health service in subordinate units.
 - Preparation of reports.
 - Medical supply and maintenance.
 - Medical laboratory service.
 - Whole blood control, including planning, acquisition, storage, and distribution.
 - Professional health services for EPWs and civilian internees/detainees.
- Coordination of medical requirements for facilities and transportation.

- Coordination with the civil affairs officer of the development of programs for medical support of humanitarian and civic action operations.

References:

Doctrine for Health Service Support in Joint Operations, JP 4-02
Marine Corps Planning Process, MCWP 5-1

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
TRAINING COMMAND
BOX 21010
CAMP PENDLETON, CA 92055-5243

FMSO 1201

Perform Basic Map Reading

TERMINAL LEARNING OBJECTIVES

1. Given the requirements, 1:50,000 military map, military protractor, and map pens, identify the fundamentals of a military map to meet mission requirements. (FMSO-FP-1201)

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given a description or list, describe the purpose of a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201a)
2. Without the aid of references, given a description or list, identify the five basic colors on a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201b)
3. Without the aid of references, given a description or list, identify the marginal information on a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201c)
4. Without the aid of references, given a description or list, describe the purpose of contour lines on a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201d)
5. Without the aid of references, given a description or list, identify the terrain features on a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201e)
6. Without the aid of references, given a description or list, identify the distance between two locations on a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201f)
7. Without the aid of references, given a 1:50,000 military map, military protractor, map pens and a set of eight-digit grid coordinates, locate a position on a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201g)
8. Without the aid of references, given a description or list, identify the grid azimuth between two points on a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201h)
9. Without the aid of references, given a description or list, describe the method used to orient a military map, within 80 percent accuracy, per FM 21-26. (FMSO-FP-1201i)
10. Without the aid of references, given a description or list, identify the unit symbols used on a military map, within 80 percent accuracy, per Guidebook for Marines. (FMSO-FP-1201j)

1. **PURPOSE OF A MAP**

The purpose of a map is to provide information on the existence, location, and distance between ground features. It is a geographic representation of the earth's surface drawn to scale as seen from above. It is a clear and handy reference tool to have.

Characteristics of a Map

Designed to show us common information

Location of ground objects

Populated areas

Routes of travel

Communication Lines

Extent of vegetation cover

Relief and elevation of the earth's surface

Care and Importance

Military maps are printed on paper and require protection from water, mud and tearing. When you mark on your map, use lighter lines which are easily erased without smearing. If trimming the map, be careful not to cut any of the marginal information.

Maps must be protected because they can hold tactical information, such as:

- Friendly positions
- Friendly supply points

2. **MAP ILLUSTRATIONS**

Symbols

The mapmaker uses standard symbols.

They represent natural and manmade features.

Resemble as closely as possible, the actual features but as viewed from above.

Map Colors- are designed to ease the identification of features on the map. The topographic symbols are usually printed in different colors with each color identifying a class of features. The colors vary with different types of maps; but, on a standard large scale topographic map, there are five basic colors.

Black - used to identify the majority of cultural or man-made features, such as buildings, bridges, and roads not shown in red.

Red - main roads, built up areas, and special features such as dangerous or restricted areas.

Blue - is for water features such as lakes, rivers, swamps, and streams.

Green - identifies vegetation such as woods and orchards.

Red Brown - all landforms such as contours, fills, and cuts

NOTE: Occasionally other colors may be used to show special information. These colors will be indicated in the marginal information.

3. MARGINAL INFORMATION

Margin of Information- Instructions that are placed around the outer edges of the map are known as margin of information. All maps are not the same, so every time a different map is used, one must examine the margin of information carefully.

Elevation Guide - This guide is a miniature characterization of the terrain shown. This guide helps you rapidly identify major land forms

Contour Interval - appears in the center lower margin and states the vertical distance between adjacent contour lines on the map.

Grid Squares - intersect at right angles of the horizontal and vertical grid lines. Most military maps contain grid squares that are 1000 meters by 1000 meters.

Declination Diagram - is located in the lower margin and indicates the angular relationship of true north, grid north and magnetic north (see figure 1).

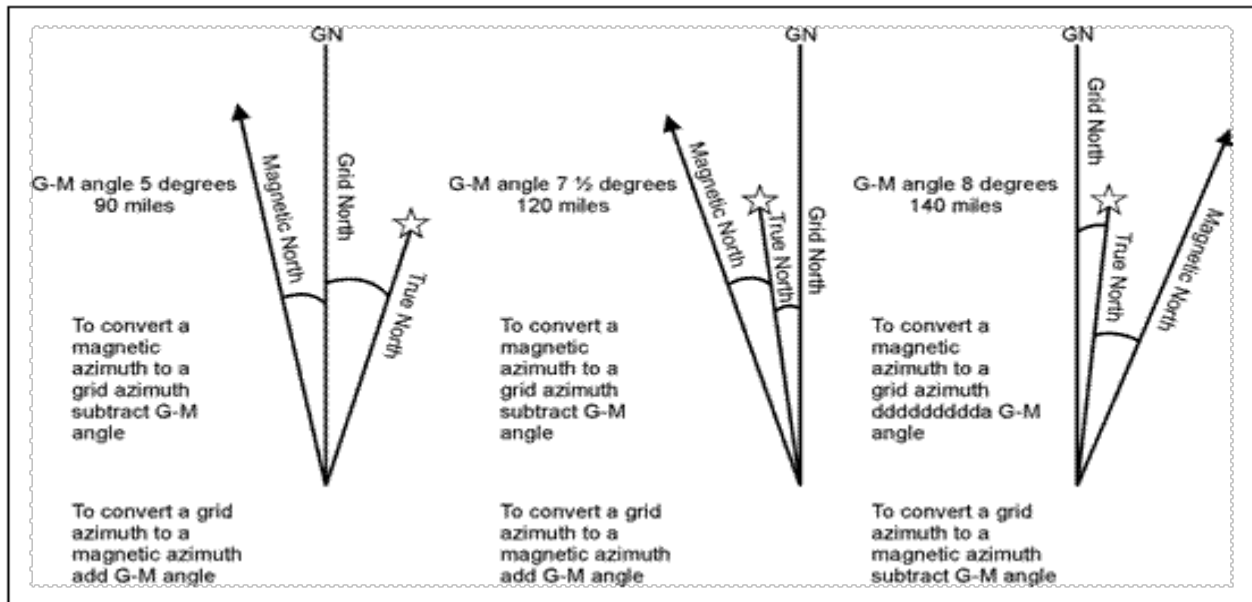


Figure 1. Declination Diagram

True North- is a line from any position on the earth's surface connects at the North Pole. Unlike grid lines, all lines of longitude are true north lines.

Magnetic North- is the direction to the North Magnetic Pole, as indicated by the north-seeking arrow in a magnetic compass. The North Magnetic Pole is located in Canada west of Baffin Island which is gradually moving at a pace of 50 kilometers a year in a North-Westerly direction.

Grid North- This base line is established by using the vertical grid lines on the map. Using a protractor in conjunction with vertical grid lines one can determine or plot a grid azimuth on a map. The variation between grid north and true north is due to the curvature of the earth.

Grid Magnetic (GM) Angle - is an important factor in map reading. The GM angle is used to convert magnetic azimuth to grid azimuth and vice versa.

Grid azimuth - When a line is drawn between two locations on a map, the protractor is used to determine the angle of the line between grid north and the drawn line in a clockwise direction.

Magnetic azimuth - is an angle measured in a clockwise direction from magnetic north that is taken from a magnetic compass.

Legend - located in the lower left margin. Illustrates and identifies some of the symbols on the map. Every time a map is used, refer to the legend to prevent errors in symbol identification (see figure 2).

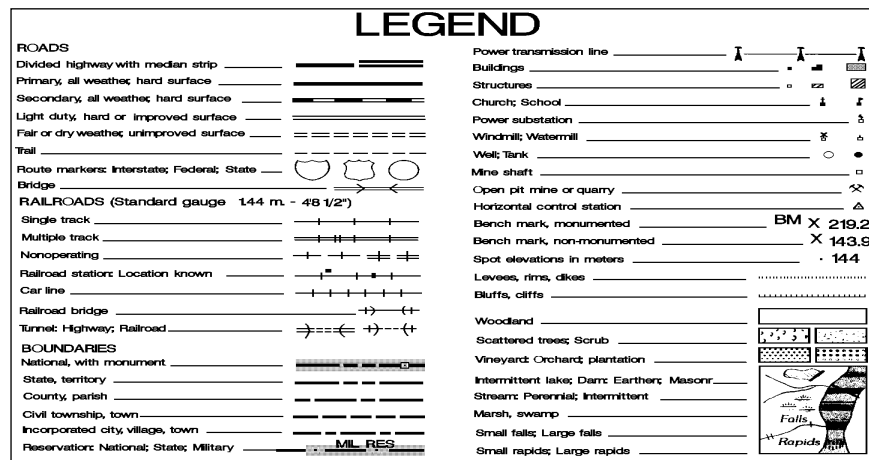


Figure 2. Legend

Bar Scales- are used to convert map distance to ground distance. Maps may have three or more bar scales, each in a different unit of measure. Exercise care when using the scales, especially in selection of the unit of measure. The bar scales are located in the center of the lower margin. (See figure 3).

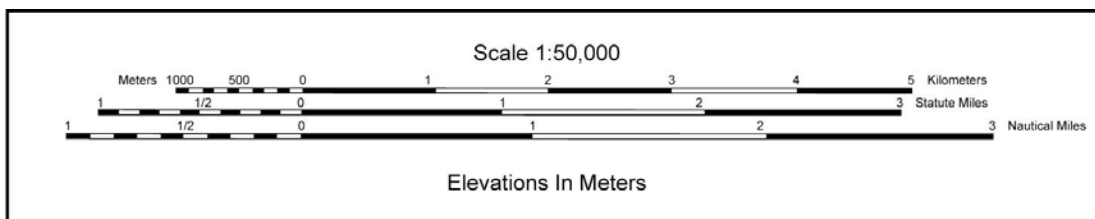


Figure 3. Bar Scale

Sheet Name - A map is named after the most prominent cultural or geographical feature. Usually the name of the largest city is used.

Sheet Number - is used as a reference number or that map sheet.

Series Name - It usually includes a group of similar maps at the same scale and/or the same sheet lines designed to cover a particular geographical area.

Series Number - is a sequence reference expressed either as a four-digit number (1125) or as a letter, followed by a three or four-digit number (M556: N3341).

Edition Number - represents the age of the map in relation to other editions of the same map and the agency responsible for its production. For example, EDITION 5-DMATC indicates the fifth edition prepared by the Defense Mapping Agency Topographic Center. Higher map editions, contain newer data.

Index to Boundaries - This shows the boundaries that occur within the map area such as county lines and state boundaries.

Adjoining Sheets Diagram - This usually contains nine rectangles, but the number may vary depending on the locations of the adjoining sheets. All represented sheets are identified by their sheet numbers.

Extension Scale - The scale note is a representative fraction that gives you the ratio of a distance on the map to the corresponding distance on the earth's surface. (See figure 4).

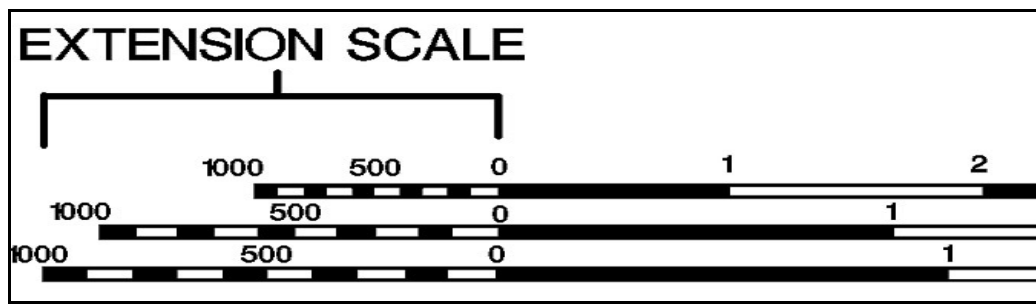


Figure 4. Extension Scale

4. **RELIEF AND ELEVATION**

Contour Lines - the purpose of contour lines is to indicate elevation and relief on maps. A line representing an imaginary line on the ground, along which all points are at the same elevation. Each contour line represents an elevation above sea level and the amount of the contour interval is given in the marginal information. On most maps, the contour lines are printed red-brown, starting at zero elevation. Every fifth contour line is a heavier brown line. These heavy lines are known as *index* contour lines. Also, some place along this heavy brown line, the elevation is given (see figures 5, 6, 7). The spacing of the lines indicates the

nature of the slope. This has important military significance; the closer the contour lines the steeper the terrain.

Intermediate Contour Lines – The contour lines falling between index contour lines are called intermediate contour lines. They are drawn with the finer line than the index contours and do not have their elevation given

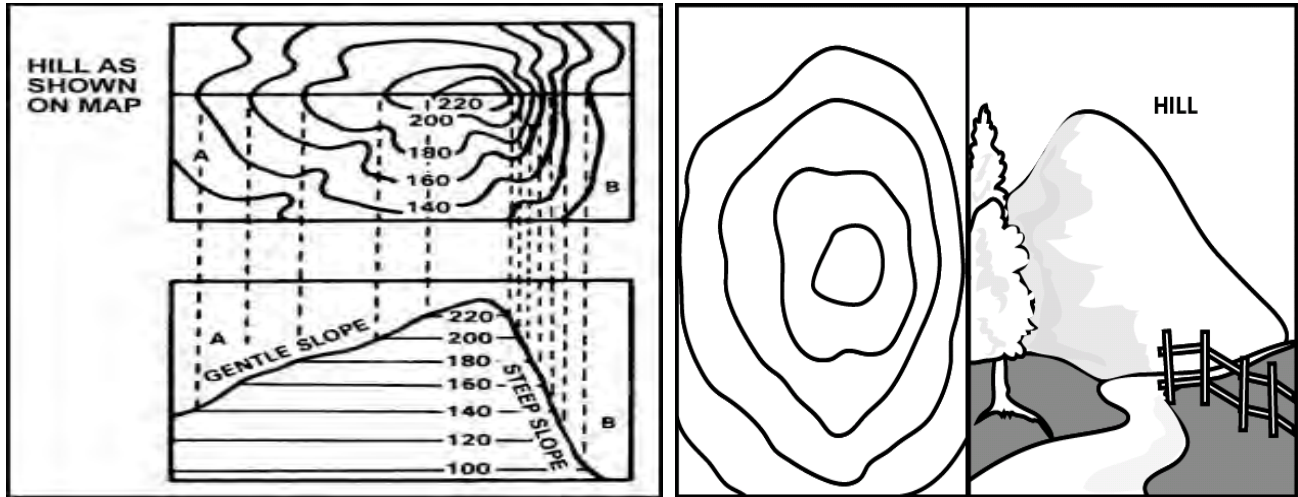


Figure 5. Hills

5. **TERRAIN FEATURES**

Hill - a point or small area of high ground (see figure 5).

Valley - a stream course which has at least a limited extent of level ground bordered on the sides by higher ground. Contours indicate a valley that is a "U" shaped and the curve of the contour crossing always points up (see figure 6).

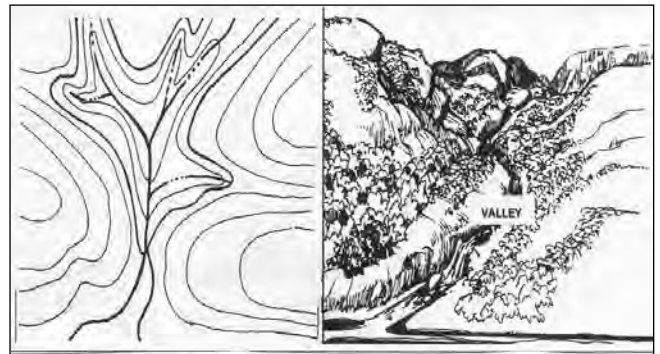


Figure 6. Valley

Draw - a less developed stream course in which there is essentially no level ground and therefore, has little or no maneuver room within its confines. The ground slopes upward on each side and towards the head of the draw, contours indicating a draw are "V" shaped, with the point of the "V" toward the head of the draw (see figure 7).

Ridge - a line of high ground, with normally minor variations along its crest. The ridge is not simply a line of hills, all points of the ridge crest are higher than the ground on both sides of the ridge (see figure 8).



Figure 7. Draw

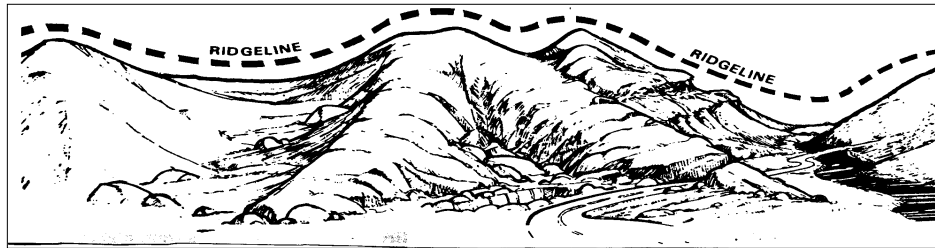


Figure 8. Ridge

Saddle - a dip or low point along the crest of a ridge. A saddle is not necessarily the lower ground between two hilltops; it may simply be a dip or break along an otherwise level ridge crest (see figure 9).



Figure 9. Saddle

Depression - a low point or sinkhole surrounded on all sides by higher ground (see figure 10).

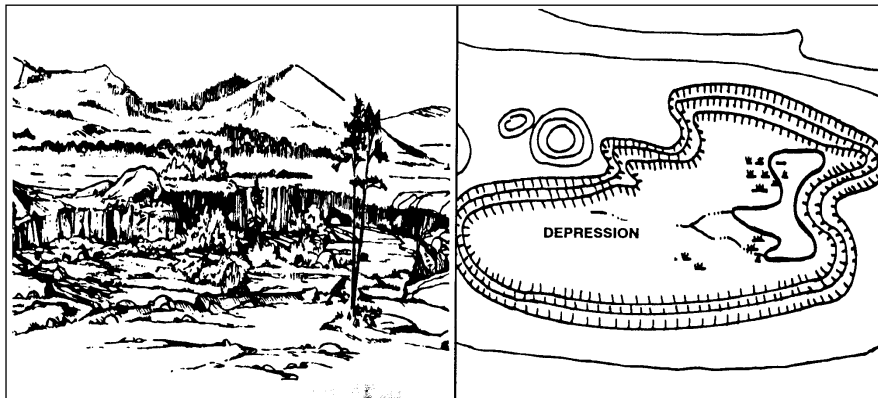


Figure 10. Depression

Cliff - Is a vertical, or near vertical, slope. When a slope is so steep that it cannot be shown at the contour interval, it is shown by a ticked line carrying contours. The ticks always point toward lower ground (see figure 11).

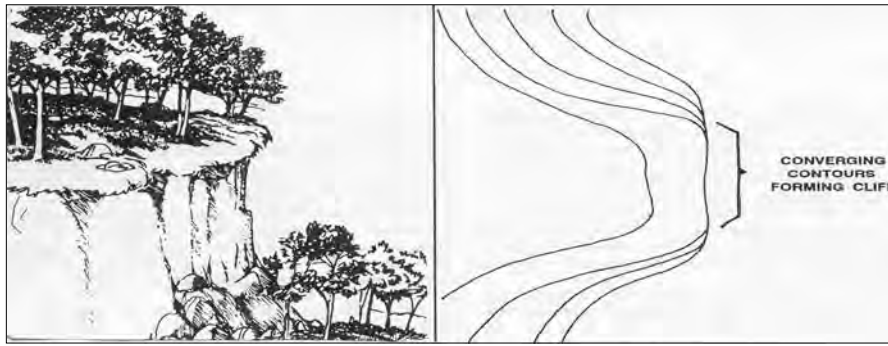


Figure 11. Cliff

Finger- Short continuous sloping line of high ground jutting out from the side of a ridge or hill. (see figure 12).

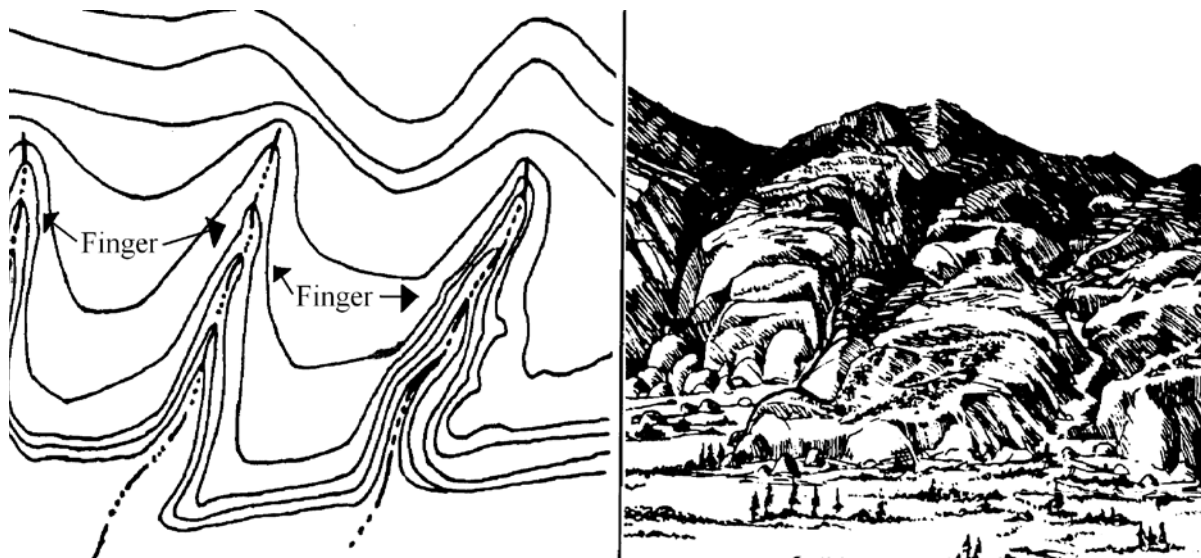


Figure 12. Finger

6. **MEASURING DISTANCE**

Straight Line Distance - used to measure line distance between two points:

Lay a straight strip of paper on the map so that the edge touches the center on both points.

Make a tick mark on the edge of the paper at each point.

Lay the paper strip along the scale that corresponds to the unit of measure you are working with.

Place the right tick mark of the paper strip on the largest full unit on the primary scale (to the right of zero) allowing the remainder to fall on the extension of the scale (to the left of zero).

Curved or Irregular Distance - used to measure distance along a winding road, stream, or any other curved line:

Make a tick mark near one end of the irregular line to be measured.

Align the paper strip along the center of the first straight portion of line.

Make a tick mark at the other end of that portion on both the paper strip and the map.

Keeping both tick marks together, pivot the strip about the second tick mark until another straight portion of that line is aligned.

Continue this process until the measurement is completed, then place the paper strip on the appropriate bar scale, and determine the ground distance measured.

7. HOW TO LOCATE A POSITION

Military Protractor- (see figure 12)

There are several types of protractors. All of them divide the circle into units of angular measure, and each has a scale around the outer edge and an index mark.

The index mark is the center of the protractor circle from which all directions are measured.

The military protractor, GTA 5-2-12, contains two scales; one in degrees (inner scale) and one in mils (outer scale).

This protractor represents the azimuth circle.

The degree scale is graduated from 0° to 360° ; each tick mark on the degree scale represents one degree. A line from 0° to 180° is called the base line of the protractor. Where the base line intersects the horizontal line, between 90° and 270° , is the index or center of the protractor.

When using the protractor, the base line is always oriented parallel to a north-south grid line. The 0° or 360° mark is always toward the top or north on the map and the 90° mark is to the right.

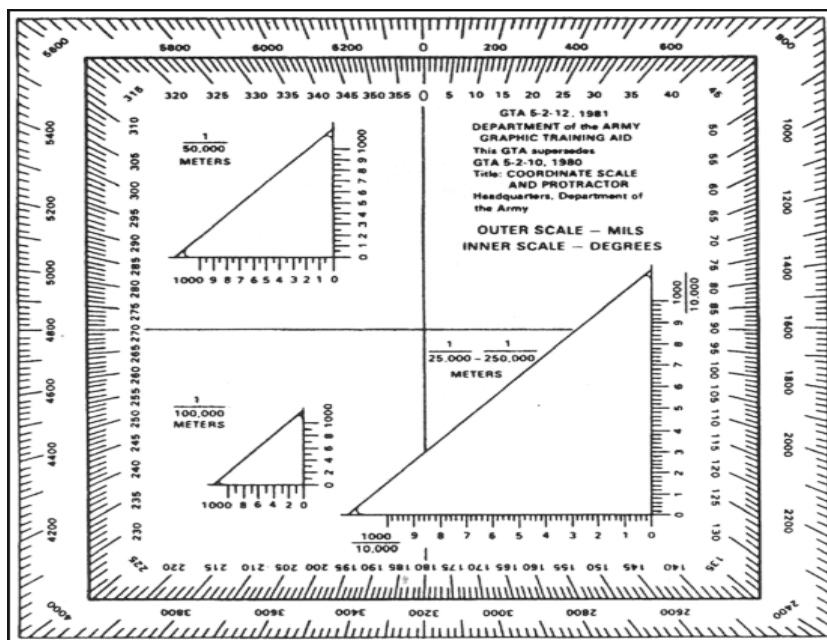


Figure 12. Military Protractor

Locate Grid Coordinates on a Map

Grid Lines - grid lines are a series of straight lines that intersect at right angles and form a series of squares. It is a system of squares similar to the block system of most city streets. Two digits are printed in large type at each end of the grid lines, and these same two digits appear at intervals along the grid lines on the face of the map. They are called principal digits.

Vertical Grid Lines - run from the bottom of the map sheet to the top of the sheet, they function as left or right and east or west of a grid square and are labeled in the margin.

Horizontal Grid Lines - run from the left side of the map sheet to the right side of the map sheet (east to west or left to right). They function as the bottom and top boundaries (southern and northern) of a grid square and are labeled in the margin.

Basic Map Reading Rule - the designation of a point is based on the principle right then up. Always read right on the vertical grid lines right then up on the horizontal grid lines.

Grid Square Identification - apply the map reading rule to identify a grid and locate a point within a grid square. Specifically:

The coordinates of a grid square are found by combining the values of the vertical and horizontal grid lines that form the lower left handed corner of that grid square.

First read right to the vertical grid line that forms the left or west boundary of the grid square and record the principal digits.

Next read up on the horizontal grid line that forms the left or west boundary of the grid square and record the principal digits.

The combination of the principal digits that label the vertical grid line and horizontal grid line are the identification of the grid square or its coordinates.

A four digit grid coordinate locates a point within 1000 square meters, on the map, which is called as grid square.

A six digit grid coordinate will locate a point on a map within 100 meters.

An eight digit grid coordinate will locate a point on a map within 10 meters and a 10 digit grid will locate a point within one meter.

Plotting Points on a Map

6-Digit Grid Coordinate - imagine dividing a grid square into 100 smaller squares. The coordinates of a point in such a grid square will have six digits. Each of the grid squares are 1000 meters by 1000 meters. Each grid square is divided into 100 smaller squares, each 100 meters long and 100 meters high. Read RIGHT, then UP for a 6-digit grid coordinates. There are three coordinate scales located on your protractor: 1:100,000 or 1:50,000 or 1:25,000. Use the one that corresponds with the scale of the map you are using. In most case, it will be 1:50,000.

Place the proper coordinate scale of your protractor on the map so that the zero-zero point is to the bottom right of the scale.

Place the zero-zero point at the lower left hand corner of the grid square so that you have a 4-digit grid coordinate.

Keeping the horizontal line of the scale directly on top of the East-West grid line and slide it to the right until the vertical line of the scale touches the point which the coordinates are desired.

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 North South grid line.

Determine your RIGHT reading by first reading the value of grid line to the left of the point. Add to this value the number that tells how far into the grid square point is.

Determine your UP reading by first reading the value of the horizontal grid line below the point. Add to this value the number which tells how far the point is up in the grid square. When determining both your RIGHT and UP reading, round your value to the closest number on you coordinate scale.

By combining the RIGHT reading with UP reading, you have accurately determined the 6-digit grid coordinate.

8-Digit Grid Coordinates - in some mapping situations, it is desirable to further divide a 100-meter grid square into 10-meter grid squares. This is done in the same manner as dividing a 1,000 meter grid square into 100-meter grid squares, either through estimation or by use of a coordinate scale. The result is an 8-digit grid coordinate which identifies a point on the map to within 10 meters. (see figure 13)

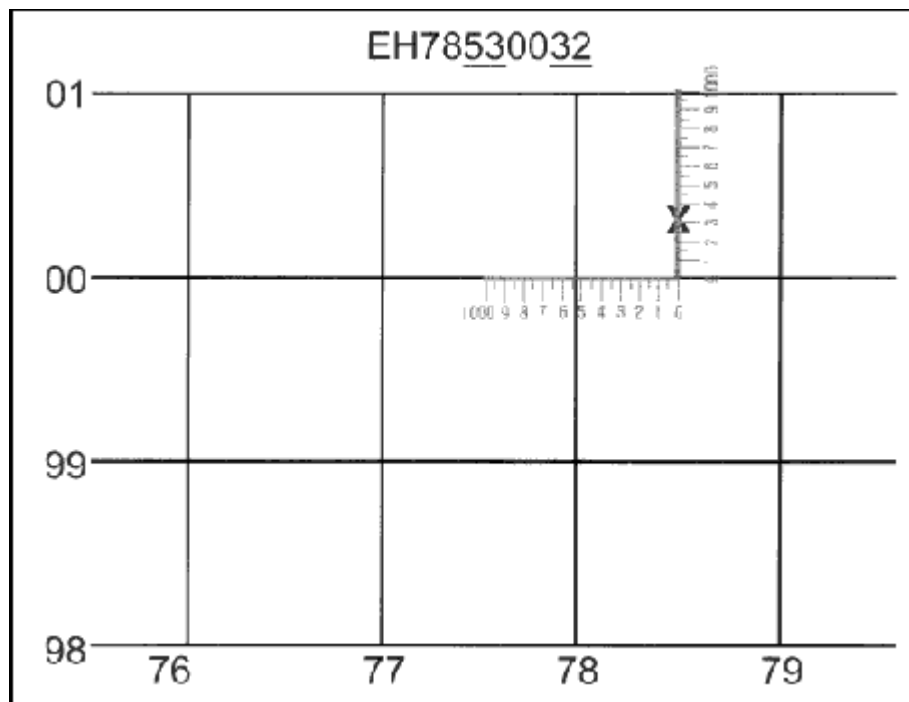


Figure 13. Protractor and Grid Lines

Locating Points on a Map - to locate a point on the map, use the following steps:

Locate the correct grid square by determining the 4-digit grid coordinates from the given 6-digit coordinates.

Have your 6-digit coordinates into two parts.

Determine the vertical (north-south) grid line. It is the first two numbers of your RIGHT reading.

Determine the horizontal (east-west) grid line. It is the first two numbers of your UP reading.

Plot the coordinates by placing the proper coordinate scale of your protractor with the zero-zero point at the lower left hand corner of the grid square and keep the horizontal line of the scale directly on top of the east-west grid line.

Examine the two sides of the coordinate scale to ensure that the horizontal line of the scale is aligned with east-west grid line and the vertical line of the scale is parallel with north-south grid line.

Move the protractor to the right until the vertical grid line intersects the horizontal scale at the 100-meter reading and the other point is your RIGHT reading.

Determine the position of your UP reading by plotting a plot adjacent to your vertical scale equal to your UP reading. (see figure 14)

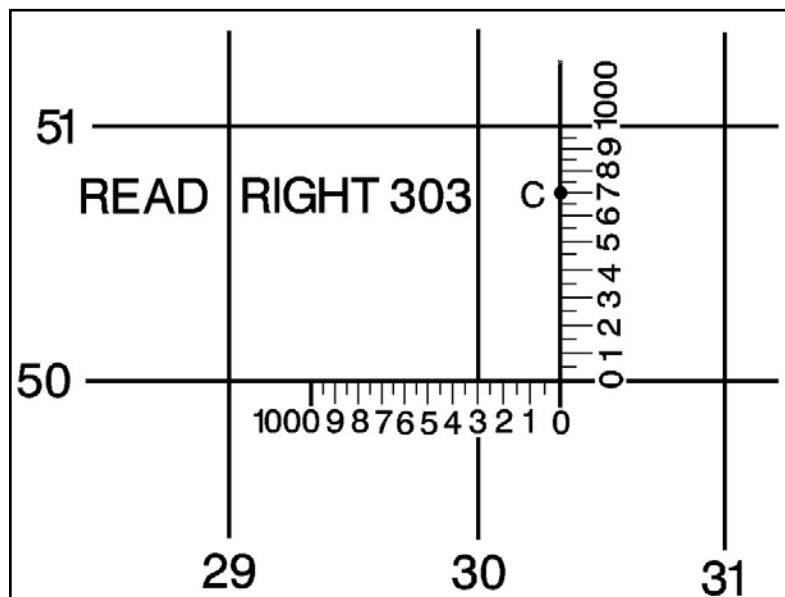


Figure 14. Protractor and Grid Lines

8. PLOTTING A GRID AZIMUTH

Azimuth Defined- An azimuth is a straight line from one point to another. An azimuth is also measured in a clockwise direction from a predetermined base line such as the index

mark on the protractor. An azimuth is an angle that is also part of a circle. An azimuth has 360 degrees.

Measured in a Clockwise Direction - the base line of an azimuth is 0° or 360° that progress in a clockwise direction in numerical value around the circle until it returns to the starting point. All azimuths between 0° and 180° will be on the right side of the imaginary circle and all azimuths between 180° and 360° will be on the left side of the circle. Keep in mind that there are only 360 degrees in a circle. For example, if you add 15° to 350° , then it would be expressed as 5° and not as 365° .

From a Predetermined Base Line - when we say that an azimuth is an angle measured in a clockwise direction from a predetermined baseline, we mean that it is a certain number of degrees measured in a clockwise direction from some sort of reference point. It is this portion of the definition that causes the most misunderstanding. There are three base lines—true north, magnetic north and grid north.

Determining a Grid Azimuth - there are two methods of measuring grid azimuths from one point to another on the map. Just remember that you dealing with GRID AZIMUTHS which can not be followed with a compass.

Protractor and String Method - modify your protractor by punching a hole through the index mark with a needle. Have a 6 inch string and tie a knot on each side of the protractor as close to the index line as possible to secure it.

Place the index mark on your starting point and ensure that the vertical base line is parallel with a north-south grid line and the horizontal base line is parallel with an east-west grid line.

Hold the protractor firmly against the map with one hand and stretch the piece of tread with your other hand so that the tread intersects your second point.

Protractor Straight Edge and Pencil Method - just remember that if you go in a straight line from one point to another, the azimuth will never change if you maintain that straight line.

Use an edge to draw a line connection two points.

Label the two points A and B, with A as your start point

Place the index mark of your protractor on the line you just drew where that line intersects a vertical grid line. This point should as close as possible to point A. Make sure that the vertical base line on your protractor is directly on the vertical grid line that your line intersects.

Plotting a Grid Azimuth - follow these steps:

Place the protractor on the map with the index mark at center mass of the known point.

Ensure the protractor's vertical base line is parallel with the closest north-south grid line and the horizontal base line is parallel with an east-west grid line.

Mark on the map at the desired grid azimuth.

Remove the protractor and draw a line connecting the known point and mark on the map.

Plot a known distance onto that azimuth, use a piece of paper to transfer the distance from the scale to the plotted azimuth.

Determining a Grid Back Azimuth - back azimuth is the reverse direction of a forward azimuth. To obtain a grid back azimuth from an azimuth less than 180° , add 180° and if the azimuth is 180° or more, subtract 180° . Use the acronym, L.A.M.S 180° .

9. **ORIENTATION OF A MAP**

A map is oriented when it is in position with its north and south corresponding to north and south on the ground.

Orienting a Map with a Compass

With the map in a horizontal position, the compass straight edge is placed parallel to a north-south grid with the cover of the compass pointing toward the top of the map.

This will place the black line on the dial of the compass parallel to grid north.

Since the needle on the compass points to magnetic north, we have a declination diagram on the face of the compass formed by the index line and the compass needle.

Rotate the map and compass until the direction on the declination diagram formed by the black index line and the compass needle match the directions shown on the declination diagram printed on the margin of the map. The map is then oriented.

If the magnetic north arrow on the map is to the left of grid north, the compass reading will equal the GM angle (given in the declination diagram).

If the magnetic north is to the right of the grid north, the compass reading will equal 360 minus the GM angle.

Orienting Without A Compass: Terrain Association

When a compass is not available, map orientation requires a careful examination of the map and the ground to find linear features common to both, such as roads, railroads, fence lines, power lines, etc.

By aligning the feature on the map with the same feature on the ground, the map is oriented.

Orientation by this method must be checked to prevent the reversal of directions that may occur if only one linear feature is used. Aligning two or more of these features may prevent this reversal.

Determining Your Position - now that you can orient your map, you must find your location on a map. If you know you're approximate location on a map, a study of nearby terrain features will help you determine your position.

Determine Your Location By Inspection - if you are standing in the vicinity of several prominent features which can easily be located on the map. By orienting the map and estimating your relation to these features, you should have no difficulty in determining your location.

10. MILITARY SYMBOLS ON A MAP

When the Marine Corps is on the move on land, it also moves its actions onto the map of the land where military activities are being conducted. There are map symbols for military activities. The symbols for different kinds of military units are not only very simple, but they are connected with the nature of the military activity itself which involves you.

Unit Symbols - the basic symbol for a military unit is a rectangle. We put a little staff on the rectangle and make a flag out of it; that means a command post or headquarters. The flag represents the unit commander's flag. Symbols are also used to show the size or type of the military unit.





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ORDNANCE

Size Symbols. The following symbols placed either in boundary lines or above the rectangle, triangle, or circle inclosing the identifying arm or service symbol indicate the size or type of military organization:

Squad



Section



Platoon



Company, Troop, Battery, Air Force flight



Battalion, Cavalry Squadron, or Air Force Squadron



Regiment or Group; combat team



Brigade, Combat Command of Armored Division, or Air Force Wing



Division or Command of an Air Force



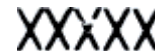
Corps or Air Force



Army



Group of Armies



Examples. The letter or number to the left of the symbol indicates the unit designation; to the right is the designation of the parent unit to which it belongs. Letters or numbers above or below boundary lines designate the units separated by the lines:

Company A, 137th Infantry

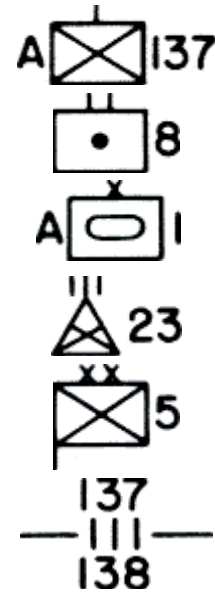
8th Field Artillery Battalion

Combat Command A, 1st Armored Division

Observation Post, 23d Infantry

Command Post, 5th Infantry Division

Boundary between 137th and 138th Infantry



References:

Guidebook for Marines (GBM), Chapter 27

Map Reading and Land Navigation, FM 21-26, Chapters 2-6

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1204

M-9 Service Pistol Familiarization

TERMINAL LEARNING OBJECTIVES

1. Given a tactical scenario in a combat environment, an M9 Service Pistol with magazine, individual combat equipment, and ammunition, engage targets with the M9 pistol, to meet mission requirements. (FMSO-FP-1204)
2. Given a M9 Service Pistol with magazine, and a small arms maintenance equipment case, maintain the M9 Service Pistol, to meet maintenance requirements. (FMSO-FP-1209)

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given an M9 Service Pistol, a loaded magazine and the necessary equipment at an approved pistol range, fire the M9 Service Pistol without safety violations, per the student handout. (FMSO-FP-1204a)
2. Without the aid of reference and given a description or title, identify the characteristics of the M9 Service Pistol, per the student handout. (FMSO-FP-1209a)
3. Without the aid of references, given a description, identify the parts of the M9 Service Pistol, per student handout. (FMSO-FP-1209b)
4. Without the aid of reference, given a description, identify the safety features of the M9 Service Pistol, per the student handout. (FMSO-FP-1209c)
5. Without the aid of references, given a description or title, identify the weapons conditions of the M9 Service Pistol, per student handout. (FMSO-FP-1209d)
6. Without the aid of references, given a description or title, identify the four (4) safety rules for the M9 Service Pistol, per the student handout. (FMSO-FP-1209e)

1. **DESCRIPTION**

The M9, 9mm pistol is a semi-automatic, magazine-fed, recoil operated, double-action weapon, chambered for the 9mm cartridge.

2. **CHARACTERISTICS**

The characteristics of the M9, 9mm pistol are as follows:

Weight with full magazine:	2.54 lbs.
Weight with empty magazine:	2.12 lbs.
Magazine capacity:	15 rounds
Maximum range:	1,800 meters
Maximum effective range:	50 meters
Trigger-pull, single action:	4 to 6.5 lbs.
Trigger-pull, double action:	7.5 to 16.5 lbs.

3. **THE FOUR SAFETY RULES-**

- (1) Treat every weapon as if it were loaded
- (2) Never point a weapon at anything you do not intend to shoot
- (3) Keep your finger straight and off the trigger until you are ready to fire
- (4) Keep the weapon on safe until you intend to fire

4. **SAFETY FEATURES** (See fig. 1)

Firing pin block - Physically blocks movement of the firing pin unless the trigger is held to the rear, raising the block out of the way.

Ambidextrous Safety - Lowers the hammer when applied without the danger of discharging the weapon. Rotates the firing pin striker out of alignment with the firing pin so that no force can be accidentally applied to the firing pin. The hammer cannot be cocked with the safety in the "SAFE" position.

Half-cock Notch - Stops the hammer from accidentally falling fully forward should the full-cock notch be stripped. Also catches the hammer should the cocking cycle be interrupted in the double-action fire mode.

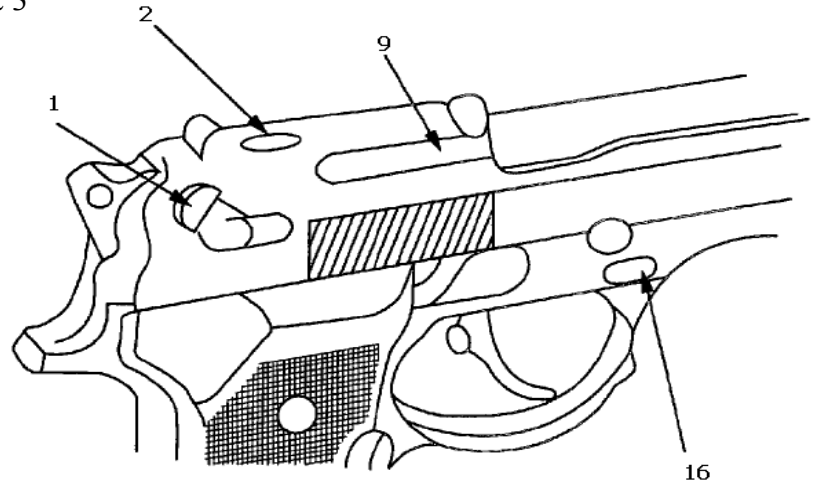
Extractor/loaded chamber indicator- When a round is in the chamber, the head of the extractor projects out from the surface of the slide, indicating a loaded weapon.



Figure 1. Safety Features

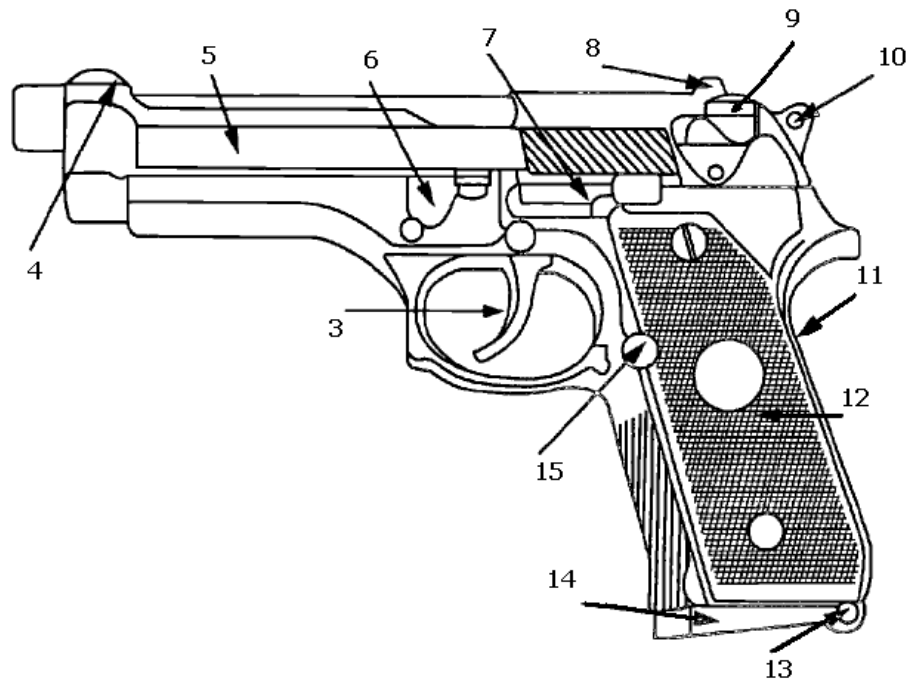
5. **NOMENCLATURE** See Figure 2 & 3

- (1) Firing pin block
- (2) Extractor/loaded chamber indicator
- (3) Trigger
- (4) Front sight
- (5) Slide assembly
- (6) Disassembly lever
- (7) Slide stop
- (8) Rear sight
- (9) Ambidextrous safety
- (10) Hammer
- (11) Receiver
- (12) Grip
- (13) Lanyard loop
- (14) Magazine (seated)
- (15) Magazine catch assembly
- (16) Disassembly button



Right Side View

Figure 2.



Left Side View

Figure 3.

6. WEAPON CONDITIONS

Condition Four

Magazine Removed
Chamber Empty
Slide forward
Weapon on safe

Condition Three

Magazine Inserted
Chamber Empty
Slide forward
Weapon on safe

Condition Two

Not Applicable to the M9 Service Pistol

Condition One

Magazine Inserted
Round in Chamber
Slide forward
Hammer down
Weapon on safe

7. DISSASSEMBLY

Disassembly of the M9 service pistol consists of field stripping into the four main groups for operator maintenance. No tools are required, and further disassembly is not authorized for the operator. Parts are machined to close tolerances, and disassembly must be carried out in the prescribed manner to prevent damage to the weapon.

The first step in disassembly is to *ensure the weapon is clear!* Then allow the slide to travel forward by depressing the slide stop.

With the pistol in the right hand and the muzzle slightly elevated, use the left hand to depress the disassembly lever release button and rotate the disassembly lever downward until it stops (See fig. 4).

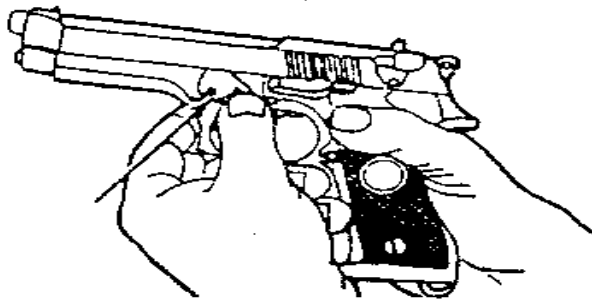


Figure 4. Rotation of Disassembly Lever Release Button

Pull the slide and barrel assembly forward and remove (See fig 5)

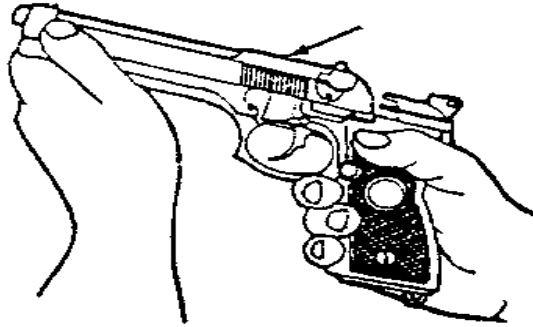


Figure 5. Removal of Slide and Barrel Assembly

Compress the recoil spring and spring guide, and lift and remove it from the slide and barrel (See fig. 6)

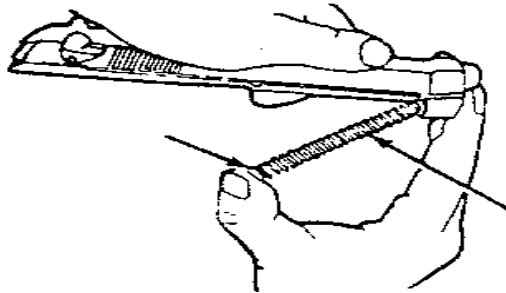


Figure 6. Removal of Recoil Spring from Spring Guide

Separate the recoil spring from the spring guide.

Push in on the locking block plunger while pushing the barrel forward slightly. Lift and remove the locking/barrel assembly from the slide (See fig. 7)

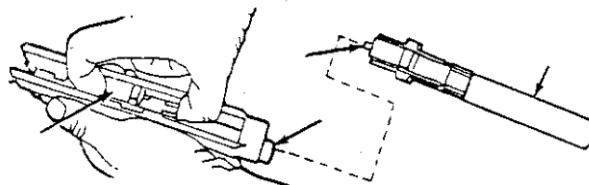


Figure 7. Removal of Locking Barrel Assembly from Slide

This completes general disassembly or field stripping. These are the four main groups of the weapon: (See fig. 8)

1. The receiver group
2. The slide group
3. The recoil spring and spring guide group
4. The locking block and barrel group

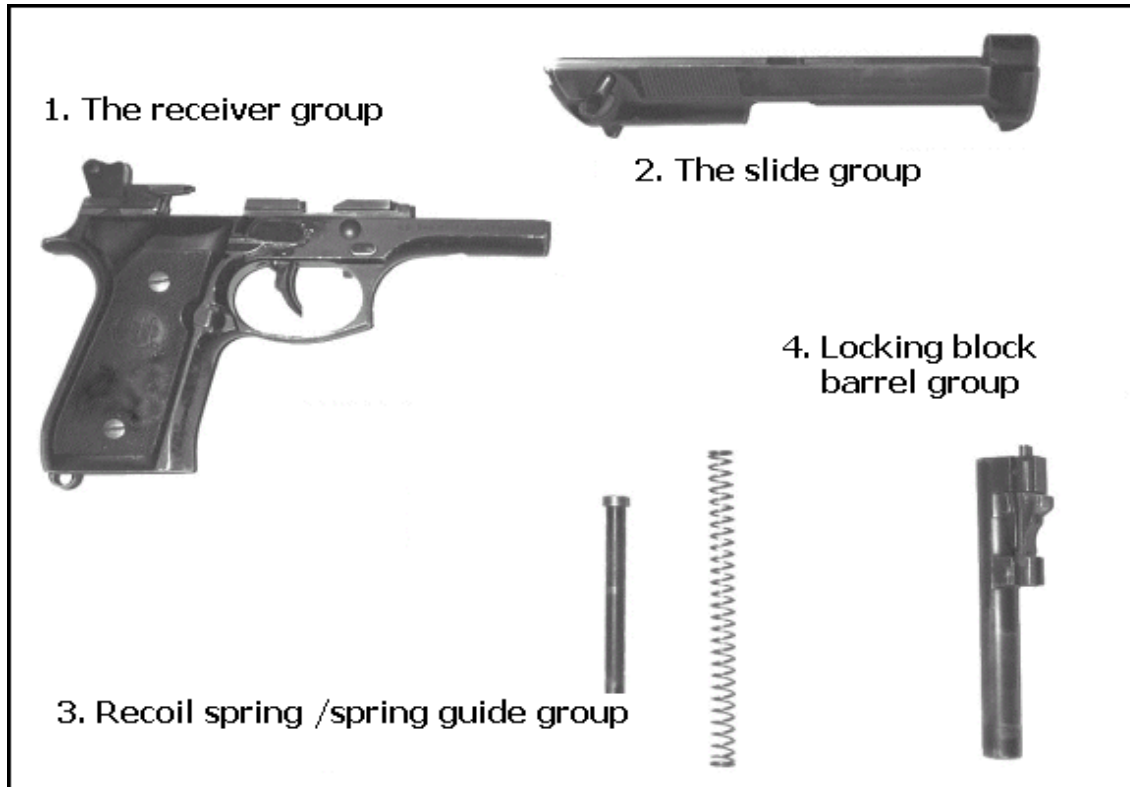


Figure 8. M9 Main Groups.

8. **DISASSEMBLY OF THE MAGAZINE** (See fig. 9)

Unload the magazine

Grasp the magazine firmly with the bottom plate up and the back of the magazine tube against the palm of the hand.

Release the bottom plate (1) by pushing down on the bottom plate retainer stud (2) in the center of the bottom plate (1). To remove the bottom plate, use the barrel locking block plunger or a cleaning rod. At the same time, slide the bottom plate (1) forward for a short distance using the thumb.

While maintaining pressure on the magazine spring, remove the bottom plate (1) from the magazine.

Remove the bottom plate retainer, magazine spring (3), and follower (4) from the magazine tube (5). Remove the bottom plate retainer (6) from the magazine spring (3)

Inspect – Check the spring and the follower for 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.

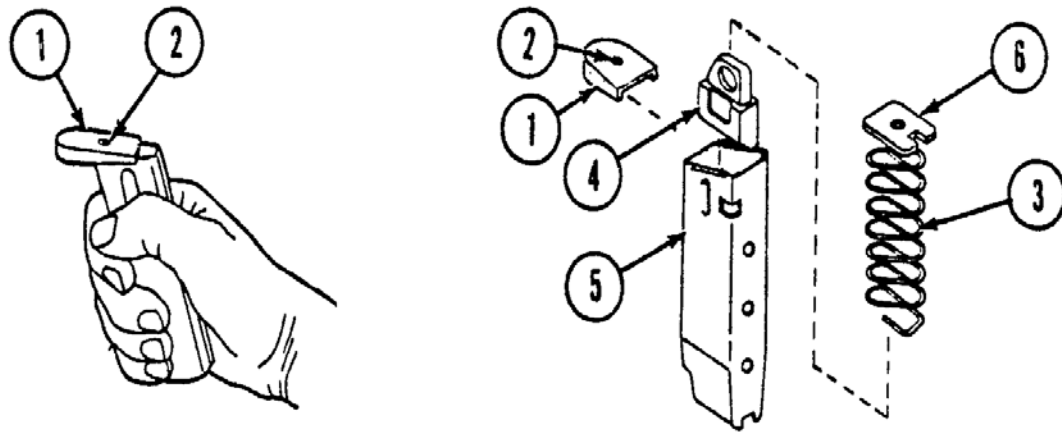


Figure 9. Disassembly of the Magazine

9. **CLEANING AND INSPECTION**

Cleaning will be conducted with the weapon field stripped. The recommended cleaning agent is CLP (Cleaning, lubricate, protective). During the cleaning process do not allow the hammer to fall when the slide is removed. Always manually lower the hammer when the slide is removed.

Slide Group - Clean with cloth, the All Purpose (AP) brush, and CLP. Remove all excess dirt and carbon. Ensure the breech face, slide grooves, safety, and extractor are free of dirt and residue.

Locking block / barrel group - Always clean the barrel from the chamber end first. Use a bore brush to loosen deposits and then swab with a cleaning patch and CLP. Continue this process until a clean patch no longer picks up deposits or residue. Clean the locking block with the AP brush.

Recoil spring and spring guide - Use the AP brush, cloth, and CLP. Be careful not to stretch, bend, or crimp the spring.

Receiver group - Use cloth and the AP brush with CLP to clean. Pay special attention to the disassembly lever, trigger, slide stop, hammer, and magazine release button.

Magazine- Wipe off the magazine tube and the follower with a cloth. Clean the magazine tube and follower with CLP and an All-purpose brush. With a cloth, wipe the magazine spring, bottom plate retainer, and bottom plate clean. Apply a light coat of CLP.

10. **REASSEMBLY**

As with most small arms, reassembly of the M9 is the reverse of disassembly.

First, replace the barrel by placing it in the inverted slide, muzzle end first, and then dropping the locking block end into place.

Insert the recoil spring guide into the recoil spring. Then replace the assembly in the bottom of the slide by placing the spring into the recoil spring housing and compressing it until the spring guide will fully seat into the locking block cut out.

Line up the rear of the slide with the front of the receiver guide rails and push the slide and barrel assembly until the rear of the slide is slightly past the rear of the receiver.

Rotate the disassembly latch upward until it clicks in place.

11. **ASSEMBLY OF THE MAGAZINE** (See fig. 10)

Insert the follower (1) into the top coil (2) of the magazine spring. The top coil has an upward and forward pointing end. Ensure that the notches (3) on the follower and magazine tube are on the same side.

Insert the magazine spring with the follower into the magazine tube. Turn the magazine bottom up with the backside against the palm of your hand.

Attach and center the bottom plate of the spring coil. (1) After insertion, you must maintain spring tension with your thumb. Do not place the lips of the magazine tube on a hard surface during reassembly

Push and hold the magazine spring (5) and the bottom plate retainer (4) down. At the same time, slide the bottom plate (6) over the sidewalls until it is fully seated. This will be indicated by a click.

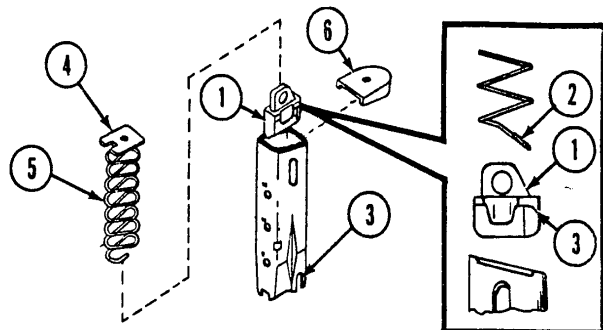


Figure 10. Assembly of the Magazine

12. WEAPONS COMMANDS

Load - Perform the following steps to load the pistol:

Ensure the pistol is on safe.

Use the right hand to grip the pistol grip firmly. Ensure that the pistol is pointed in a safe direction, bring the trigger guard to the right of eye level and cant the pistol so the magazine well faces inboard at approximately a 45-degree angle to the deck. Draw the right elbow in to facilitate control of the pistol.

Use the left hand to remove a filled magazine from the ammunition pocket.

Index the magazine by sliding the index finger along the forward edge of the magazine.

Insert the filled magazine into the magazine well by guiding it with the index finger and, with the fingers extended, pushing it in with the heel of the hand until it is fully seated. Do not relinquish contact with the magazine until it is fully seated (see figure 11).



Figure 11. Loading the Service PISTOL

Make ready - Perform the following steps to take the pistol from Condition 3 to Condition 1:

Firmly grip the pistol grip with the right hand. Ensure that the pistol is pointed in a safe direction and the slide is in its forward position.

Rotate the magazine well outboard to facilitate pulling the slide to the rear. With the fingers and thumb of the left hand, grasp the serrated sides of the slide just forward of the safety (see figure 12).

Pull the slide to its rearmost position by pushing forward with the right hand while pulling back on the slide with the left hand.

Release the slide, this strips a round from the magazine and chambers it as the slide moves forward.

Ensure the pistol remains on safe.

Conduct a chamber check to ensure a round is in the chamber. **Figure 12. Make Ready**



Fire - Perform the following steps to fire the pistol:

Keep trigger finger straight and use the right thumb to take the pistol off safe. Place the trigger finger on the trigger and apply pressure to the trigger until the shot is fired.

Cease-fire - Perform the following steps to execute a cease fire of the pistol:

Remove the finger from the trigger and place it straight along the receiver.

Place the pistol on safe without breaking the grip of the right hand. Assume a carry or transport position.

Unload - Perform the following steps to take the pistol from any condition to Condition 4:

Use the right hand to grip the pistol firmly. Ensure that the pistol is on safe.

Rotate the pistol so the magazine well is pointed inboard and angled down.

Depress the magazine release button to remove the magazine from the pistol.

Catch the magazine with the left hand and retain it.

Push upward on the slide stop with the right thumb and maintain pressure.

Rotate the weapon so the chamber is outboard.

Reach over the top of the pistol with the left hand and grasp the slide serrations with the thumb and index finger. The left hand should partially cover the ejection port so it is positioned to catch an ejected round.

Point the pistol in a safe direction and fully retract the slide and lock it to the rear. At the same time, catch the ejected round with the left hand.

Rotate the pistol so the inside of the chamber can be seen. Visually inspect the chamber to ensure it is empty.

Press the slide stop to release the slide and observe it going forward on an empty chamber.

Unload, Show Clear - Perform the following steps to take the pistol from any condition to Condition 4 (see figure 13).

Use the right hand to grip the pistol firmly. Ensure that the pistol is on safe. Rotate the pistol so the magazine well is pointed inboard and angled down.

Depress the magazine release button to remove the magazine from the pistol.

Catch the magazine with the left hand and retain it.

Push upward on the slide stop with the right thumb and maintain pressure.

Rotate the weapon so the chamber is outboard.

Reach over the top of the pistol with the left hand and grasp the slide serrations with the thumb and index finger. The left hand should partially cover the ejection port so it is positioned to catch an ejected round.

Point the pistol in a safe direction and fully retract slide and lock it to the rear. At the same time, catch the ejected round with the left hand.

Rotate the pistol so the inside of the chamber can be seen. Visually inspect the chamber to ensure it is empty.

Bring the pistol to the administrative transport and have another Marine visually inspect the chamber to ensure that the chamber is empty, no ammunition is present, and the magazine is removed.

Ensure the pistol is on safe. Acknowledge that the pistol is clear.

Press the slide stop to release the slide and observe it going forward on an empty chamber.



Figure 13. Unload and Show Clear

13. **WEAPON CARRIES**

As the threat level increases, so should the Marine's readiness for engagement. Weapons carries are designed to place the Marine in a state of increased readiness as the threat level increases. There are two carries with the pistol: the Alert and the Ready. The carries permit quick engagement when necessary.

Alert (see figure 14) is used when enemy contact is likely (probable). The Marine performs the following steps to assume the Alert:

Ensure the pistol is on safe.

Grasp the pistol grip firmly with two hands. (The trigger finger is straight and the right thumb is on the safety and in a position to operate it.)

Extend the arms down at approximately a 45-degree angle to the body or bend the elbows.

The muzzle of the pistol is pointed in the likely direction of the threat.



Figure 14. Alert Position

Ready is used when there is no target, but contact with the enemy is imminent.

The marine performs the following steps to assume the Ready (see figure 15):

Ensure the pistol is on safe.

Grasp the pistol firmly with two hands. (The trigger finger is straight and the right thumb is on the safety and in a position to operate it.)

Extend arms and raise the pistol to just below eye level so a clear field of view is maintained

Point the muzzle of the pistol in the direction of enemy contact.



Figure 15. Ready Position

14. **REMEDIAL ACTION**

The M9 service pistol is an effective and extremely reliable weapon. Proper care and preventive maintenance usually ensures the pistol's serviceability. However, stoppages, while infrequent, do occur. To keep the pistol in action, stoppages must be cleared as quickly as possible through remedial action. A malfunction cannot be corrected through remedial action by the shooter.

Stoppage- A stoppage is an unintentional interruption in the cycle of operation; e.g., the slide not moving forward completely. A stoppage is normally discovered when the pistol will not fire. Most stoppages can be prevented by proper care, cleaning, and lubrication of the pistol. Many stoppages of the M9 service pistol are caused by shooter error. The Marine must be aware of shooter-induced stoppages in order to avoid them or to quickly identify and correct the stoppage and return the pistol to action. In a shooter-induced stoppage, the shooter:

 Fails to make ready.

 Fails to take the pistol off safe prior to firing.

 Engages safety while firing.

 Engages magazine release button while firing.

 Engages slide stop while firing.

 Fails to reset the trigger.

Fails to recognize the pistol has run dry and the slide has locked to the rear.

Malfunction- A malfunction is a failure of the pistol to fire satisfactorily or to perform as designed (e.g., a broken front sight that does not affect the functioning of the pistol). A malfunction does not necessarily cause an interruption in the cycle of operation. When a malfunction occurs, the pistol must be repaired by an Armorer.

Remedial Action- There is no one set of procedures (i.e., immediate action) that can be performed to clear all or even most of the stoppages that can occur with the M9 service pistol. Therefore, remedial action requires investigating the cause of the stoppage, clearing the stoppage, and returning the pistol to operation. When performing remedial action, the Marine should seek cover if the tactical situation permits. Once a pistol ceases to fire, the Marine must visually or physically observe the pistol to identify the problem before it can be cleared: *Note:* The steps taken to clear the pistol are based on what is observed.

Remove the finger from the trigger and place it straight along the receiver.

Bring the pistol in close to the body and in a position to observe the chamber.

Pull the slide to the rear while observing the chamber area to identify the stoppage.

NOTE: Ensure the pistol does not move to safe when pulling the slide to the rear.

Correct the stoppage:

If there is a round in the magazine but not in the chamber, the slide is released and a round is observed being chambered.

If a round being chambered is not observed, the bottom of the magazine is tapped to seat it properly, and the slide is racked to the rear.

If there is no round in the magazine or chamber, a reload is conducted.

Fire the pistol.

Audible Pop or Reduced Recoil

WARNING: When an audible pop or reduced recoil is experienced, the shooter **DOES NOT** perform remedial action unless he is in a combat environment. An audible pop occurs when only a portion of the propellant is ignited. It is normally identifiable by reduced recoil and the pistol will not cycle. Sometimes, it is accompanied by excessive smoke escaping from the chamber area.

Training Environment

If an audible pop or reduced recoil is experienced during firing, cease fire immediately. Do not apply remedial action; instead, perform the following steps:

Remove the finger from the trigger and place it straight along the receiver.

Point the pistol down range.

Place the pistol on safe.

Raise a hand to receive assistance from available range personnel.

Combat Environment

The tactical situation may dictate correction of an audible pop or reduced recoil. To clear the pistol, perform the following steps:

Remove the finger from the trigger and place it straight along the receiver.

Seek cover if the tactical situation permits.

Unload the pistol, but leave the slide locked to the rear.

Insert something into the bore and clear the obstruction.

Observe the barrel for cracks or bulges.

Reload the pistol.

15. FIRING THE SERVICE PISTOL

The fundamentals of pistol marksmanship are aiming, trigger control, and breath control. Understanding and applying the basic pistol marksmanship fundamentals ensures your effectiveness in target engagement. The fundamentals must be continually studied and practiced because they are the means by which accurate shots are placed on target. Maintaining the correct relationship between the pistol sights is essential for accurate target engagement. Because of the short distance between the pistol sights, a small error in their alignment causes a considerable error at the target.

Sight Alignment- Sight alignment is the relationship between the front sight and rear sight with respect to the aiming eye. Correct sight alignment is the front sight centered in the rear sight notch with the top edge of the front sight level aligned with the top edge of the rear sight. There should be equal space on either side of the front sight.

Establishing Sight Alignment- The pistol is fired without benefit of bone support; therefore, the pistol is in constant motion. The shooter must continually strive to align the sights. To fire accurately, the sights must be aligned when the shot breaks.

Sight Picture- Sight picture is the placement of the front sight in relation to the target while maintaining sight alignment. See figure 16. Because the pistol is constantly moving, sight picture is acquired within an aiming area that is located center mass on the target. The aiming area allows for movement of the sights on the target while maintaining sight alignment. Each shooter defines an acceptable aiming area within his own ability to stabilize the sights; time, distance to the target, and personal ability dictate the aiming area. As the shooter becomes more proficient with the pistol, the aiming area becomes more precise.

The aiming area is determined by the shooter's stability of hold. The proper grip stabilizes the sights so sight alignment can be maintained, but the sights move continuously within the aiming area of the target. The shooter understands the pistol's movement and learns to apply



Figure 16. Sight Picture

trigger control as he is obtaining sight alignment/sight picture within the aiming area so the shot breaks the moment sight picture is established.

Grip- The grip is key to acquiring sight alignment. If the grip is correct, the front and rear sights should align naturally. Dry fire during presentation of the M9 service pistol aids in obtaining a grip that allows sight alignment to be acquired consistently.

Relationship between the Eye and the Sights- The human eye can focus clearly on only one object at a time. The shooter must focus on the top edge of the front sight and fire the shot while maintaining the relationship between the front and rear sights within the aiming area. Focusing on the top edge of the front sight rather than the target keeps the front sight clear and distinct, which allows the shooter to detect minor variations in sight alignment. Secondary vision allows the shooter to see the target (although slightly blurred) and maintain sight picture within his aiming area.

Trigger Control- Trigger control is the shooter's skillful manipulation of the trigger that causes the pistol to fire while maintaining sight alignment and sight picture. Proper trigger control aids in maintaining sight alignment while the shot is fired.

Sight Alignment and Trigger Control- Aiming and trigger control are mutually supportive; one cannot be performed without the other. Sight alignment and trigger control must be performed simultaneously to fire an accurate shot. As pressure is applied to the trigger, the sights may move, causing them to be misaligned. To fire accurate shots, the sights must be aligned when the shot breaks. Trigger control can actually assist in aligning the sights. With proper trigger finger placement and consistent muscular tension applied to the grip, the sights can be controlled as the trigger is moved to the rear. If the sights move extensively while pressing the trigger, this can indicate an improper grip or inconsistency in the muscular tension being applied to the grip.

Trigger Finger Placement- Once the grip is established, the finger is placed on the trigger. Placement of the finger should be natural and allow free movement of the trigger finger. A natural trigger finger placement allows the trigger to be moved straight to the rear while maintaining sight alignment. If the finger presses the trigger to the side, it can cause an error in sight alignment and shot placement. Each shooter must experiment with finger placement in order to determine effective placement on the trigger. Once established, effective trigger finger placement allows the trigger to be consistently moved straight to the rear while maintaining sight alignment.

Breath Control- Breathing causes movement of the chest, abdomen, and shoulders, which causes the pistol sights to move vertically while attempting to aim and fire. Therefore, it is necessary to stop breathing for a period of time while firing a shot or a series of shots. The object of breath control is to stop breathing just long enough to fire the shot while maintaining sight alignment, stabilizing the sights, and establishing the sight picture. To be consistent, the breath should be held at the same point in the breathing cycle; i.e., the natural respiratory pause. Breathing should not be stopped for too long because it has adverse visual and physical effects; holding the breath longer than is comfortable results in a lack of oxygen that causes vision to deteriorate and then affects the ability to focus on the sights.

References:

Battle Drill Guide

Marine Corps Combat Marksmanship Program, MCO 3574.2J w/CH 1

Marine Rifle Squad, MCWP 3-11.2

Pistol Marksmanship, MCRP 3-01B, Chapters 1 and 2

Pistol, Semiautomatic, M9, TM 1005A-10/1

Supporting Arms Observer, Spotter and Controller, (FMFM 6-8)

MCWP 3-16.6A

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1210

Service Carbine Familiarization

TERMINAL LEARNING OBJECTIVES

1. Given a scenario in a tactical environment, a service carbine, magazine ammunition, and cleaning equipment, maintain the service carbine and using the four weapons safety rules, engage targets with the service carbine, to display the ability to protect yourself and your patients from aggressive acts, per the reference. (FMSO-FP-1210)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a list of choices, identify the characteristics of the service carbine, within 80 percent accuracy, per MCRP 3-01A. (FMSO-FP-1210a)
2. Without the aid of reference, given a list of choices, identify the four safety rules for the service carbine, within 80 percent accuracy, per MCRP 3-01A. (FMSO-FP-1210b)
3. Without the aid of reference, given a list of choices, identify the weapon conditions for the service carbine, within 80 percent accuracy, per MCRP 3-01A. (FMSO-FP-1210c)
4. Without the aid of reference, given a list of choices, identify the components of the service carbine, within 80 percent accuracy, per MCRP 3-01A. (FMSO-FP-1210d)
5. Without the aid of reference, given a list of choices, identify the safety features of the service carbine, within 80 percent accuracy, per MCRP 3-01A. (FMSO-FP-1210e)
6. Without the aid of reference, given a service carbine, disassemble the service carbine, to 100 percent accuracy, per MCRP 3-01A. (FMSO-FP-1210f)
7. Without the aid of reference, given a service carbine, maintain the service carbine, in order to operate a functional weapon, per MCRP 3-01A. (FMSO-FP-1210g)
8. Without the aid of reference, given a service carbine, assemble the service carbine, to 100 percent accuracy, per MCRP 3-01A. (FMSO-FP-1210h)
9. Without the aid of reference, given a list of choices, describe the procedures to perform a function check of the service carbine, to 100 percent accuracy, per MCRP 3-01A. (FMSO-FP-1210i)
10. Without the aid of reference, given a service carbine, a magazine, ammunition, and necessary equipment at an approved range, load and unload the service carbine without safety violations, per MCRP 3-01A. (FMSO-FP-1210j)
11. Without the aid of reference, given a service carbine, a loaded magazine and the necessary equipment at an approved range, fire the service carbine without safety violations, per MCRP 3-01A. (FMSO-FP-1210k)

OVERVIEW

All Marines share a common war fighting belief: “Every Marine is a rifleman.” This simple credo reinforces the belief that all Marines are forged from a common experience, share a common set of values, and are trained as members of an expeditionary force in readiness. As such, there are no “rear area” Marines and no one is very far from the fight during expeditionary operations. The unit is only as strong as its weakest link. As the medical provider stationed with the Marines, you must be familiar with the service carbine and be able to defend yourself and assist your unit during engagements with the enemy.

The standard weapon issued to every Sailor is in the process of being changed. The new weapon being issued to all Navy E5 and below is the M4 Carbine service rifle. Since this is not your issued weapon, the purpose of this lesson is only to give you a familiarization with the weapon. If you are issued this weapon in the future, you are expected to receive follow on training to better familiarize you with it. We will cover both the M16 and the M4 Carbine so no matter what weapon you come across, you will be familiar with it.

1. CHARACTERISTICS

The M16/M4 Carbine rifle (see figures 1 and 2) is a 5.56mm, magazine-fed, gas-operated, air-cooled, shoulder-fired weapon that can be fired either in automatic three-round bursts or semiautomatic single shots as determined by the position of the selector lever.



M16



M4 Carbine

Figure 1.

M16		M4 Carbine
5.56 mm	<i>Caliber</i>	5.56 mm
8.79 pounds	<i>Weight (w/30 round magazine)</i>	7.5 pounds
39 5/8 inches	<i>Length (w/compensator)</i>	29.75 inches w/butt stock closed 33 inches w/butt stock open
1 / 7 twist	<i>Rifling</i>	1 / 7 twist
3,100 feet per minute (approximately)	<i>Muzzle velocity</i>	2,970 feet per minute (approximately)
52,000 PSI	<i>Chamber pressure</i>	52,000 PSI
800 rounds per minute (approximately)	<i>Cyclic rate of fire</i>	800 rounds per minute (approximately)
	<i>Maximum effective rates of fire:</i>	
45 RPM	<i>Semiautomatic</i>	45 RPM
90 RPM	<i>Burst</i>	90 RPM
12 – 15 RPM	<i>Sustained rate of fire</i>	12 – 15 RPM
	<i>Maximum effective range:</i>	
550 meters	<i>Individual/point targets</i>	500 meters
800 meters	<i>Area targets</i>	600 meters
3534 meters	<i>Maximum range</i>	3600 meters

Figure 2. Characteristics of each service rifle

2. **SAFETY RULES**

The following rules apply to all weapon systems.

1. Treat every weapon as if it were loaded
2. Never point a weapon at anything you do not intend to shoot
3. Keep your finger straight and off the trigger until you are ready to fire
4. Keep the weapon on safe until you intend to fire

3. **WEAPON CONDITIONS**

Condition Four

Magazine removed
Chamber empty
Bolt forward
Ejection port cover closed
Weapon on safe

Condition Three

Magazine inserted
Chamber empty
Bolt forward
Ejection port cover closed
Weapon on safe

Condition Two

Not applicable for the M16/M4

Condition One

Magazine inserted
Round in the chamber
Bolt forward
Ejection port cover closed
Weapon on safe

4. **COMPONENTS OF THE SERVICE CARBINE**

Before taking your rifle apart, you should know the nomenclature (names) of all externally visible parts. Using your own rifle, find and learn the nomenclature of all outside parts. Then, as you disassemble the rifle, learn the nomenclature of all internal parts (see figure 3).

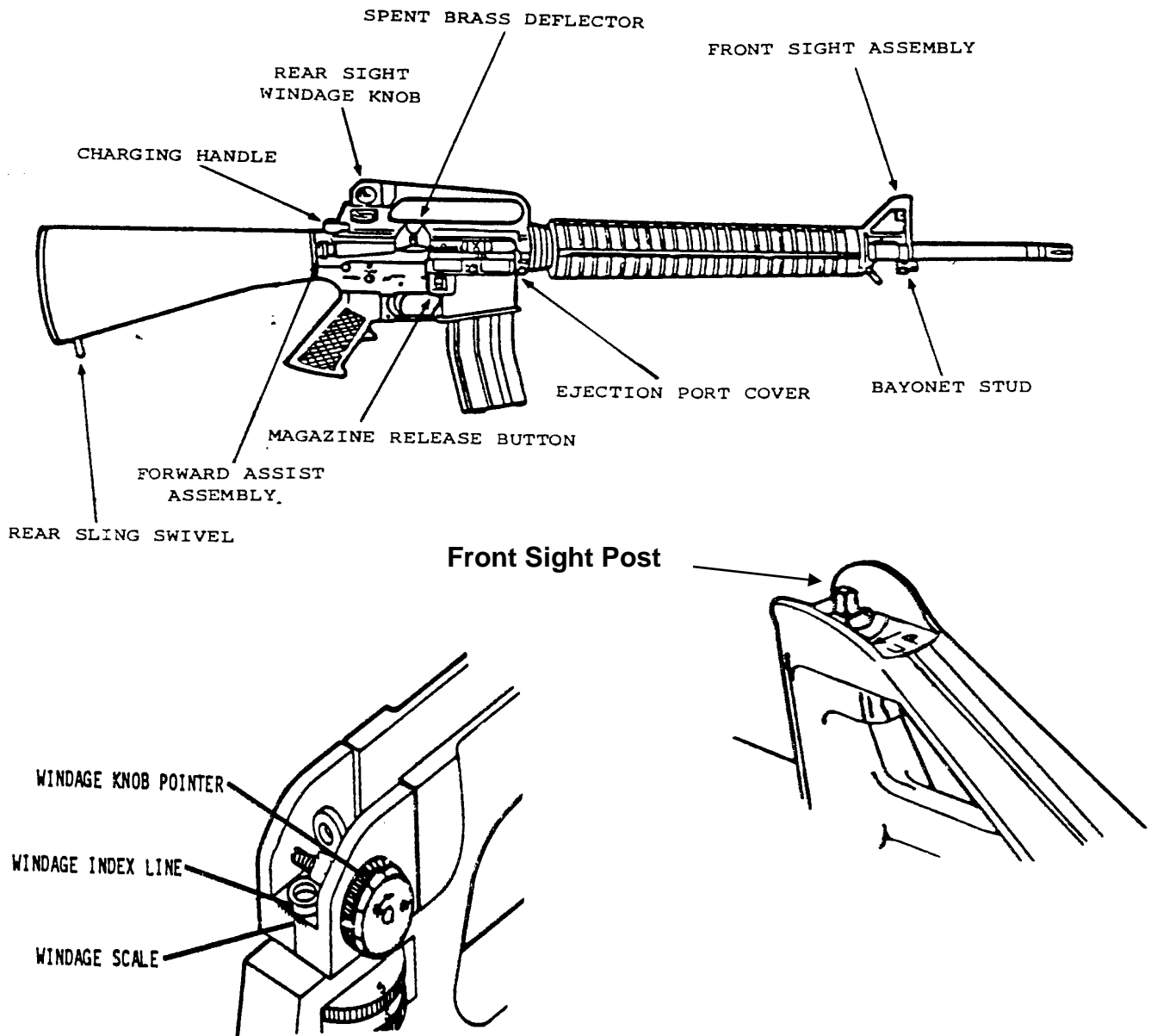


Figure 3. Nomenclature of External Parts

5. **SAFETY FEATURES OF THE SERVICE RIFLE**

Clearing the M16/M4 Carbine Service Rifle (Safety Features/Precautions)

Before you disassemble the rifle ensure the weapon is on safe (see figure 4).

- Attempt to point the selector lever to safe. If the weapon is not cocked, the selector lever cannot be pointed to safe.
- Remove the magazine from the weapon by grasping it with the left hand, press the magazine release button with your right index finger, and pull the magazine straight down (see figure 5).
- Lock the bolt carrier to the rear by grasping the charging handle, pressing the charging handle latch, and pull the charging handle all the way to the rear. -

Press in on the bottom of the bolt catch with the thumb or forefinger. Allow the bolt carrier to move slowly forward until the bolt engages the bolt catch. Return the charging handle to its forward position.

Inspect the receiver and chamber by looking through the ejection port to ensure these areas do not contain ammunition.



Figure 4. Selector Switch on Safe

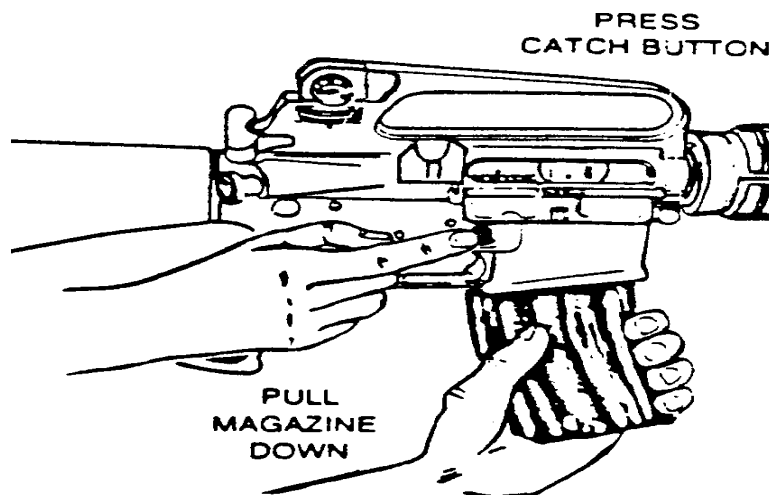


Figure 5. Removing the magazine

Check the selector lever to ensure that it points safe. The rifle is clear and safe only when:

- There is no round in the chamber
- The magazine is out
- The bolt carrier is locked to the rear
- The selector lever is in the safe position

6. DISASSEMBLY OF THE SERVICE RIFLE

Disassembly - When the weapon is clear you can disassemble the weapon by doing the following:

Allow the bolt carrier to go forward by depressing the upper portion of the bolt catch.

Remove the sling and place the rifle on the table or a flat surface, muzzle to the left, weapon on the right side.

Remove the hand guards

Place the butt of the weapon against a flat surface and pull down on the slip ring until the lower lip of one hand guard is clear.

Pull out and down on the hand guard until the upper lip is cleared of the hand guard cap.

Repeat the same operation to remove the other side of the hand guard. Considerable pressure is required to remove the hand guard from the slip ring.

Detach the upper receiver from the lower receiver (see figure 6).

Press out the take down pin from left to right until the upper receiver swings free of the lower receiver.

Press out the receiver pivot pin.

Separate the upper and lower receiver groups.

Place the lower receiver group on the table.



Figure 6. Detach upper and lower receiver

Removing the charging handle and the bolt carrier group

Hold the upper receiver group with the muzzle and carrying handle up. Grasp the charging handle.

Press the charging handle. Latch and pull the charging handle three inches to the rear to

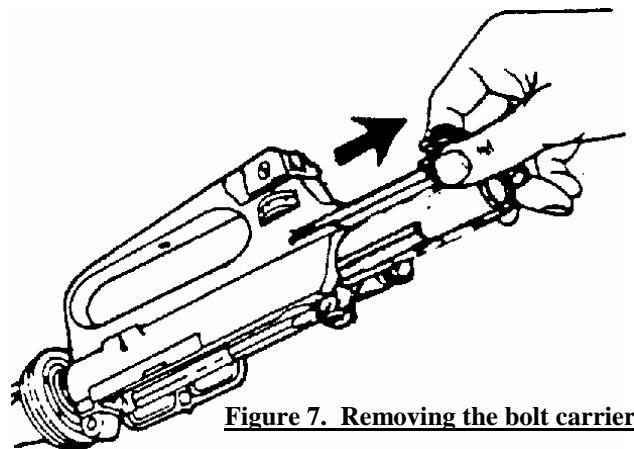


Figure 7. Removing the bolt carrier

withdraw the bolt carrier from the receiver (see figure 7).

Grasp the bolt carrier and pull it out from the receiver. When the bolt carrier is removed, the charging handle can be removed from its groove in the receiver.

Place the upper receiver on the table.

Disassemble the bolt carrier group (see figure 8)

Press out the fire-retaining pin from right to left.

Elevate the front of the bolt carrier and allow the firing pin to drop free from its recess in the bolt. Rotate the bolt until the cam pin is clear of the bolt carrier key and remove the cam pin by rotating the head 90 degrees (1/4 turn) in either direction. Lift out of well in the bolt and bolt carrier. After the cam pin is removed, the bolt can be removed from its recess in the bolt carrier and disassembly of the bolt carrier group is complete.

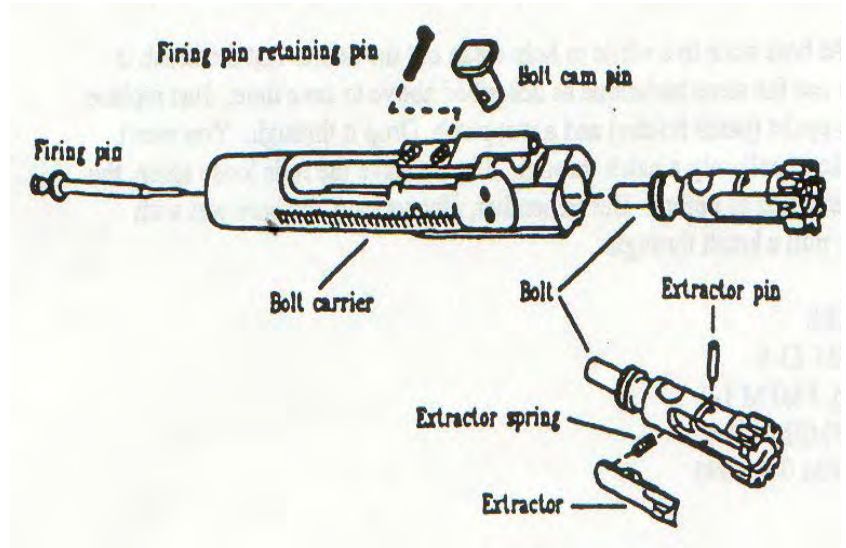


Figure 8. Bolt Carrier Group

Remove the buffer assembly

Push down on the buffer retainer.

Allow the buffer assembly to move forward slowly until it is clear of the buffer retainer. Depress the hammer to the rear (downward) to allow the buffer assembly to clear the hammer. Remove the buffer assembly and the action spring.

7. MAINTENANCE OF THE SERVICE RIFLE

Normal care and cleaning will result in proper functioning of all parts of the weapon. Improper maintenance causes stoppages and malfunctions. Only "issued" cleaning materials should be used. These cleaning materials are carried in the compartment provided in the stock of the weapon on the M16 or in the cleaning kit for the M4 Carbine. Do not use any abrasive material to clean the rifle. Cleaner Lubricant and Preservative (CLP) is the only authorized lubricant for the M16/M4 Carbine rifle.

Cleaning and lubrication of the upper receiver

Clean the upper receiver until free of powder.

After cleaning, coat the interior surfaces of the upper receiver with CLP. Pay particular attention to shiny surfaces which indicate areas of friction.

Cleaning and lubrication of the barrel

Attach a bore brush to the cleaning rod, dip it in CLP, and brush the bore thoroughly.

Brush from the chamber to the muzzle using straight-through strokes.

Push the brush through the bore until it extends beyond the muzzle compensator.

Continue this process until the bore is free of carbon and fouling (never reverse the direction of the brush while in the bore).

Remove the brush from the cleaning rod and dry the bore with clean patches.

Do NOT attempt to retract the patch until it has been pushed all the way out of the muzzle compensator.

CAUTION: The cleaning rod is to be supported by hand, one section at a time, to prevent flexing and damage to the bore.

Cleaning the chamber

Attach the chamber-cleaning brush to a section of the cleaning rod.

Dip it in CLP, and insert it in the chamber.

Scrub in a circular motion.

Remove the brush and dry the chamber thoroughly with clean patches.

Clean the locking lugs in the barrel extension, using a small bristle brush dipped in CLP to remove all carbon deposits.

Clean the protruding exterior of the gas tube in the receiver with the bore brush attached to a section of the cleaning rod.

After cleaning, lubricate the bore and locking lugs in the barrel extension by applying a light coat of CLP to prevent corrosion and pitting. If the hand guards have been removed, rub a light coat of CLP on the surface of the barrel.

Place one or two drops of CLP on the front sight post.

Cleaning and lubrication of the bolt carrier group

Thoroughly clean all parts with a patch or an all-purpose brush dipped in CLP.

Clean the locking lugs of the bolt, using an all purpose brush and CLP.

Ensure that all carbon and metal filings are removed; then wipe it clean with dry patches and lubricate lightly.

Use an all-purpose brush dipped in CLP to scrub the extractor to remove carbon and metal filings; also clean the firing pin recess and the firing pin.

When dry and before final assembly, apply a coat of CLP to the bolt body, rings and carrier key.

When bolt carrier group is reassembled, apply a liberal amount of CLP to all exterior surfaces with particular emphasis to the friction points (i.e., rails and cam area). Put one drop of CLP in the cam pin track and two drops in the gas ports.

Cleaning and lubrication of the lower receiver group

Wipe any particles of dirt from the trigger mechanism with a clean patch or brush and place a drop of CLP on each of the pins for lubrication. Components of the lower receiver group can be cleaned with CLP and a brush.

Use a scrubbing action to remove all carbon residue and foreign material and then drain

the CLP from lower receiver and wipe dry.

Cleaning and lubrication of the magazine

Disassemble the magazine, being careful not to stretch or bend the spring.

Scrub the inside of the magazine with a bristle brush, dipped in CLP, and wipe it dry.

The magazine is made of aluminum and does not need any lubrication.

Scrub the spring clean of any foreign material using an all-purpose brush dipped in CLP.

Wipe dry and apply a very light coat of CLP to the spring.

8. **ASSEMBLY OF THE M16/M4 CARBINE RIFLE**

Lower receiver group assembly

Press hammer to the rear (downward).

Insert the buffer assembly into the recess in the stock of the weapon.

Depress the buffer retainer so that the buffer assembly will insert into the recess completely.

Release the pin so the buffer assembly is locked into place.

Set the bolt carrier group down on the table.

Bolt carrier group assembly

Insert the bolt through the front end of the carrier with the extractor facing at the 11 o'clock position.

Insert the cam pin into the carrier and rotate it ¼ turn.

Insert the firing pin through the rear of the carrier and let it drop into the recess for the firing pin.

Insert the firing pin retainer pin into the carrier from left to right.

Set the bolt carrier group down on the table.

Upper receiver group and charging handle assembly

Replace the charging handle by placing the charging handle inside the upper receiver. This is done by lining up the grooves on the charging handle with the slots in the upper receiver and pushing it in about one inch. Then, insert the bolt carrier group, with the carrier key resting in the charging handle, into the upper receiver until they lock into place.

Assembly of major parts

Align the upper receiver with the lower receiver together, push in the pivot, and take down pins to lock the receivers together.

Insert the top of each hand guard cap and pull down on the slip ring so the bottom lip of the hand guard will slip in and lock in place when you release the slip ring.

Lock the bolt to the rear by pulling on the charging handle and pressing the bolt catch and letting the carrier go forward slowly until the bolt catch engages the bolt carrier group.

Return the charging handle to the original position. Place the selector lever on safe

Replace the sling on the weapon.

9. **FUNCTION CHECK**

A function check of the rifle consists of checking the operation of the rifle while the selector lever is in each position; Safe, Semi, and Burst

Pull charging handle to the rear and release.

Place selector lever on "Safe."

Pull trigger - Hammer should not fall.

Place selector lever on "Semi."

Pull trigger and hold to the rear - hammer should fall.

Pull charging handle to the rear and release.

Release the trigger and pull to the rear again - hammer should fall.

Place selector lever on "Burst."

Pull charging handle to the rear and release.

Pull trigger and hold to the rear - hammer should fall.

Pull charging handle to the rear three times and release.

Release trigger and pull again - hammer should fall.

10. **LOADING AND UNLOADING THE SERVICE RIFLE**

Perform the following steps to fill the magazine:

Remove a magazine from the magazine pouch.

Place a round on top of the follower.

Press down until the round is held between the follower and feed lips of the magazine.

Repeat until the desired number of rounds is inserted. The recommended number of rounds per magazine is no more than 29. Thirty rounds in the magazine may prohibit the magazine from seating properly on a closed bolt.

Tap the back of the magazine to ensure the rounds are seated against the back of the magazine.

Perform the following steps to empty the magazine:

Using your thumb, push on the cartridge base of the top round, forcing it forward and out of the magazine. Continue this procedure until the magazine is empty.

References:

MCRP 3-01A, Rifle Marksmanship

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FMSO 1205

Identify NBC Preventive Measures

TERMINAL LEARNING OBJECTIVES

1. Given the NBC Personal Protective Equipment, identify NBC preventative measures to wear the gear and equipment effectively per the references. (FMSO-FP-1205)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, identify the components of the M40A1 Field Protective Mask to ensure serviceability, within 80 percent accuracy, per TM 3-4240-279-10. (FMSO-FP-1205a)
2. Without the aid of reference, given a description or list, identify the accessories of M40A1 Field Protective Mask to ensure serviceability, within 80 percent accuracy, per TM 3-4240-279-10. (FMSO-FP-1205b)
3. Without the aid of reference, given a description or list, identify the NBC alarm to meet mission requirements, within 80 percent accuracy, per FMFM 11-2. (FMSO-FP-1205c)
4. Without the aid of reference, given a description or list, identify the procedure on how to use the drinking system of the M40A1 Field Protective Mask to ensure serviceability, within 80 percent accuracy per TM 3-4240-279-10. (FMSO-FP-1205d)
5. Without the aid of reference, given an M40A1 Field Protective Mask and exposure to an irritant gas in a gas chamber or simulated combat environment, don and clear the gas mask in nine seconds or less, to 100 percent accuracy, per FMFM 11-2. (FMSO-FP-1205e)
6. Without the aid of reference, given a description or list, identify the cleaning procedures for the M40A1 Field Protective Mask to ensure proper donning and clearing in 9 seconds or less, within 80 percent accuracy, per FMFM 11-2. (FMSO-FP-1205f)
7. Without the aid of reference, given a description or list, identify the limitations of Mission-Oriented Protective Posture (MOPP) to meet mission requirements, within 80 percent accuracy, per FMFM 11-2. (FMSO-FP-1205g)
8. Without the aid of reference, given a description or list, identify the levels of Mission-Oriented Protective Posture (MOPP) to meet mission requirements, within 80 percent accuracy, per MCWP 3-37.3. (FMSO-FP-1205h)

INTRODUCTION

The M40 Field Protective Mask (FPM) is used to protect the individual's face, eyes and lungs against field concentration of chemical and biological (CB) agents, toxins and radioactive fallout particles. The M40 FPM will not protect the wearer against industrial gases such as ammonia or carbon monoxide. It is not effective in confined spaces, where the oxygen content of the air is low. The M40 FPM comes in three (3) sizes: small, medium and large. The size mark is located on the top left portion of the mask.

1. COMPONENTS AND MAINTENANCE OF THE M-40 FPM

When you receive a FPM you should inspect the following components for serviceability (see Figure 1):

Face piece Assembly

- Made of silicone rubber with in-turn peripheral face seal and binocular rigid lens system.
- Visually inspect for holes, tears, splits, soft and sticky parts.

Head Harness

- Secures and attaches the face piece to the wearers head.
- Visually inspect for dirt, cuts, tears, fraying, loss of elasticity and missing parts on straps.

Eye-lenses, Eye-rings and Outserts

- Provides protection to the wearer's eyes.
- Inspect the outsert for cracks, cuts, scratches, distortion or corrosion and discoloration that will affect vision.

Hood

- Provides head, neck and face mask protection against liquid chemical agents.
- Examine the hood for cuts, holes or tears. Make sure the straps do not have frays, tears, or missing hardware. Also check the zipper for broken and inoperative parts.

Canister

- Air-filtering medium that can be mounted on the left or right side of the face piece, so that a weapon can be shouldered. Right handed shooters will normally locate the canister on the left side of the mask and left handed shooters vice versa.
- Check that air intake is not clogged with dirt.
- Inspect the threads on the canister and the seams for cracks, dents and holes.
- Check for visible water damage; any moisture will render the canister unserviceable.

Outlet Valve Disk and Outlet Valve Cover

- Outlet valve disk releases exhaled air and prevents unfiltered air from entering the face piece.
- Remove any dirt or moisture, rotate outlet valve disc to make sure it is not sticking and inspect for cuts, tears and holes.
- Check that outlet valve disk is present and is not curled or distorted.

Internal/External Drink Tubes

- Allows wearer to drink in a contaminated environment or for donning mask in long periods of time.
- Make sure tubes are not clogged by connecting M1 canteen cap and blowing air through system.

Airflow Deflector

- The airflow deflector is securely mounted inside face piece.
- Inspect mounting holes for cuts or tears.

Inlet Valve

- Inlet valve disk allows filtered air to enter the face piece and prevents moist exhaled air from entering the canister. Check inlet valve to ensure it is properly mounted on post.
- Inspect inlet valve for cuts, holes, or tears and make sure it is not stuck to the valve body.

Nose-cup Assembly

- The nose cup valve disk allows filtered air to enter the nose cup and prevents moist exhaled air from fogging eye lenses in cold weather.
- Inspect nose-cup for cracks or holes; ensure the nose-cup is not pulled away from the back of the front voice-meter housing and the nose-cup valve disks are present. Rotate disks to make sure they are not stuck, curled, or torn.

Voice-mitter

- Transmits your voice outside of the face piece.
- Inspect voice-meter for bends, cracks, or punctures.
- The beads in the center of each voice-meter should be facing outward.

Carrier

- Provides space for storage of the mask and authorized accessories.
- Inspect for torn, damaged, or missing hardware.
- Avoid mildew, solvents, or abrasive materials that may harm the face piece.

Waterproof Bag

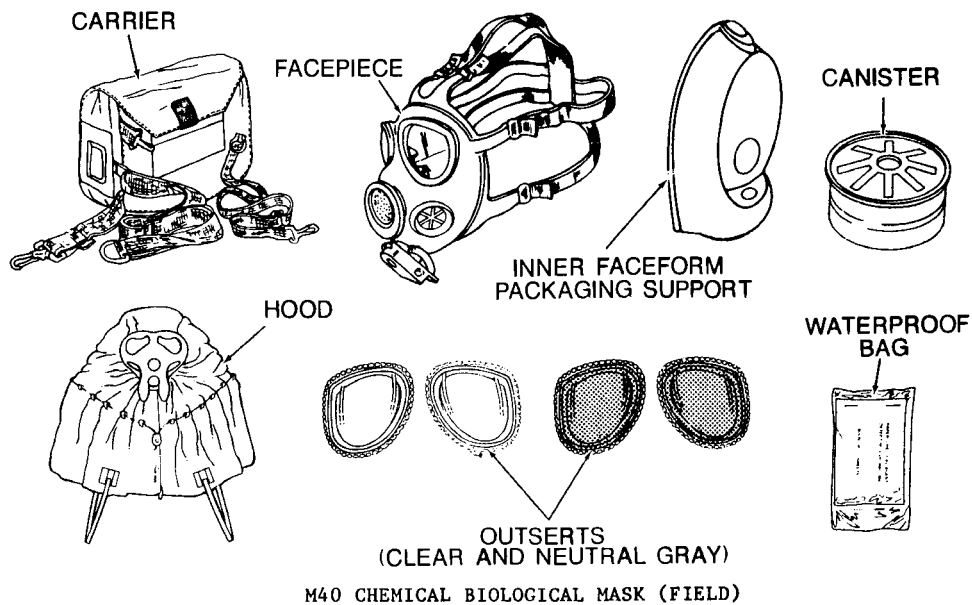
- Inspect for cracks, tears, holes, or brittleness, rubber bands are not sticky.

Optical Inserts

- Inspect for broken lenses or frame (if issued).

Face form

- Maintains mask shape.



1-0

Figure 1. Components of the M-40 FPM

2. **ACCESSORIES OF THE M40 FPM**

When you receive a FPM you should inspect the following accessories for serviceability:

- M1 canteen cap
- Optical inserts
- M291 decontaminating kit

3. **NBC ALARM**

Hand Cranked Siren

- Hand cranked, requires no electrical power.
- May be vehicle mounted.
- 03 dB at 10 feet.

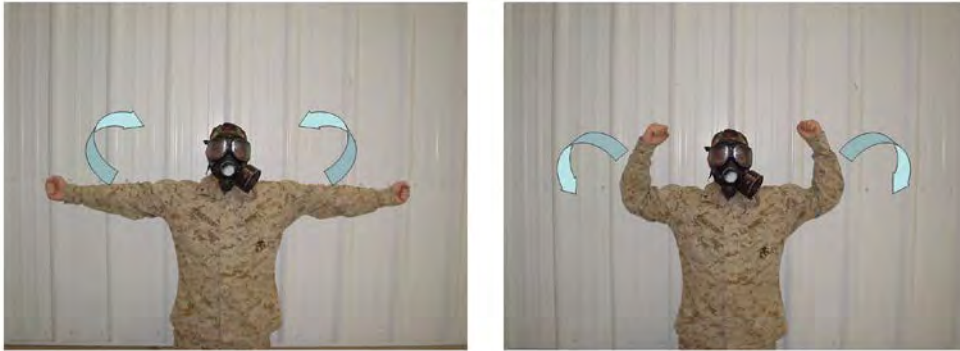
Vocal

- "GAS-GAS-GAS"
- "SPRAY-SPRAY-SPRAY"
- "FALLOUT-FALLOUT-FALLOUT"



Visual

- Hand and arm signals.



Audio

- Rapid continuous beating of a metal object
- Horn blasts
- Ratio of 1:1

Audiovisual

- Automatic chemical agent detectors all have flashing lights and/or audible alarms.

4. M40 FPM DRINKING SYSTEM PROCEDURES

Prior to using the drinking system, use M8 chemical agent detector paper to check for contamination. If contamination is detected, decontaminate the drinking tube and the M1 canteen cap with the M291 decontamination kit. After decontamination, recheck the surfaces with M8 chemical agent detector paper.

- By pressing in on the top of the outlet valve, the internal drinking tube can be grasped between your teeth (see Figure 3a).
- Pull the quick connect coupling out of the outlet valve cover (see Figure 3b).

Figure 3a

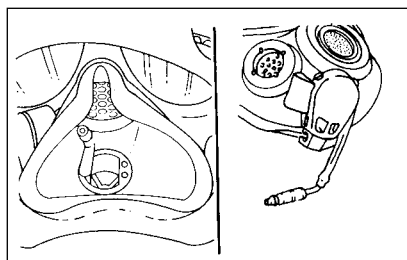


Figure 3b

- Remove the cap cover from the canteen cap (decontaminate if necessary).

- With the canteen right side up, insert the quick connect coupling into the M1 canteen cap and blow air into the drinking system to create positive pressure within the canteen (see Figure 4).

- Raise and invert the canteen and begin drinking water.

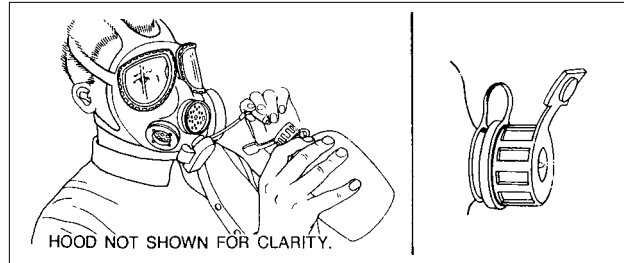


Figure 4

5. **MASKING PROCEDURES**

To prevent a bad seal, men should be clean shaven and women should remove all hair devices, hair knots, buns, or braids.

When the verbal or visual signal sign for an NBC attack has been given, you must follow these procedures in a time limit of 9 seconds without hood or 15 seconds with hood.

-Stop breathing and close your eyes.

-Open carrier and grab the face piece. The mask is stored with the head harness pulled over the front of the mask.

-Place your chin in chin-pocket of the face piece.

-Clear the field protective mask.

-Cover the outlet valve with the palm of one (1) hand.

-Exhale sharply so that the air escapes around the edges of the face piece.

-Cover the air inlet port of the canister with the palm of your free hand, and breathe in. The face piece should collapse against your face and remain there while holding your breath. If the face piece collapses consider it airtight.

-Grasp the tab and tighten straps and adjust. Make sure the square harness patch is centered in the rear of your head.

6. **CLEANING THE M-40 FPM**

Wash the mask anytime it needs cleaning. A white or rust colored waxy film is not dirt; it is from the preservatives built in the rubber. It will bleed off as long as the face piece is good.

Required materials: soft cloths, soft bristle brushes, warm soapy water, and warm clear water. Procedural Steps:

- Remove the canister by unscrewing it from mask.
- Dip clean soft cloth in warm soapy water and wring it out. Wash mask inside and out.
- Wash voice-meter, outlet valve cover, and inlet valve assemblies. Be careful with rubber disks.
- Rinse cloth in clear, warm water and wring it out. Wipe all washed parts.
- Dry all parts and mask with dry, soft cloth. Use brush in hard to get areas.
- Replace parts taken off. Make sure rubber disks are snug and flat. Clean the lenses using polish or warm, soapy water.

7. **LIMITATIONS OF MISSION-ORIENTED PROTECTIVE POSTURE (MOPP)**

MOPP is a flexible system of protection against chemical agents, which is used in chemical warfare to facilitate mission accomplishment. Because of body heat buildup and basic human needs, the over garment can't be worn for an indefinite period. MOPP however, gives the commander and staff a range of choices of levels of chemical protection for their units - from no protection at all to full protection.

Heat Exhaustion - Individuals working at a heavy work rate while in protective gear may experience heat exhaustion (dizziness and fainting) at any time, especially during periods of high temperatures.

Work Rate - Consideration of such factors as mask breathing resistance, increase in body temperature from work energy, solar heat and psychological and physiological stress.

Five Senses - Involving the senses or related functions such as manual dexterity, visual acuity and voice communication; will operate at varying decreased levels of efficiency.

Personal Needs - Individuals can be in full chemical protection for indefinite periods and still attend to certain personal needs such as caring for wounds, personal hygiene, sleep and elimination of body waste.

Eating - The ability of troops to eat in an NBC environment depends on the type and extent of contamination. Some of the available options are as follows:

- If the troops are in a contaminated area, move them into a collective protection facility.
- Postpone meals until a clean area is reached.

8. LEVELS OF MISSION-ORIENTED PROTECTIVE POSTURE

MOPP Level 1 - This level of protection is established when the *general warning* is given and the threat of NBC warfare exists.

- Over garment is worn open or closed
- Over boots are carried
- Mask is carried
- Gloves are carried

MOPP Level 2 - This level of protection should be established during tactical situation that requires units to cross-terrain where the previous use of chemical agents is unknown.

- Over garment is worn open or closed
- Over boots are worn
- Mask is carried
- Gloves are carried

MOPP Level 3 - This level of protection should be established when units are on the move and a chemical attack is possible.

- Over garment is worn and closed
- Over boots are worn
- Mask and hood are worn; hood is open or closed, based on temperature
- Gloves are carried

MOPP Level 4 - This level of protection should be established when a unit will be operating within an area of contamination, or if there is an imminent threat of attack.

- Over garment is worn and closed
- Over boots are worn
- Mask and hood are worn and closed
- Gloves are worn

References:

NBC Decontamination (FM 3-5), MCWP 3-37.3
Nuclear, Biological, and Chemical (NBC) Operations, FMFM 11-2
Operators Manual: Mask, Chemical - Biological, Field, ABC-M17, M17A1, and M17A2,
TM 3-4240-279-10

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FMSO 1401

Assessing and Managing Chemical Agent Casualties

TERMINAL LEARNING OBJECTIVE

1. Given a chemical warfare agent casualty in a tactical environment and standard field medical equipment and supplies, manage chemical agent casualties, to prevent further injury or death. (FMSO-HSS-1401)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, identify the definition of chemical warfare agents within an 80 percent accuracy, per MCWP 3-37.1. (FMSO-HSS-1401a)
2. Without the aid of reference, given a description or list, identify the characteristics of nerve agents within an 80 percent accuracy per MCWP 3-37.2. (FMSO-HSS-1401b)
3. Without the aid of reference, given a description or list, identify the characteristics of blister agents within an 80 percent accuracy, per MCRP 4-11.1A. (FMSO-HSS-1401c)
4. Without the aid of reference, given a description or list, identify the characteristics of blood agents within an 80 percent accuracy, per MCRP 4-11.1A. (FMSO-HSS-1401d)
5. Without the aid of reference, given a description or list, identify the characteristics of choking agents within an 80 percent accuracy, per MCRP 4-11.1A. (FMSO-HSS-1401e)
6. Without the aid of reference, given a description or list, identify the characteristics of military chemical compounds within an 80 percent accuracy, per MCRP 4-11.1A. (FMSO-HSS-1401f)
7. Without the aid of reference, given a description or list, identify the characteristics of incapacitating agents within an 80 percent accuracy, per MCRP 4-11.1A. (FMSO-HSS-1401g)
8. Without the aid of reference, given a description or list, identify the characteristics of standard CBRN NATO markers within an 80 percent accuracy, per MCWP 3-37.2. (FMSO-HSS-1401h)

HISTORY

The use of chemical weapons dates back to at least 423 B.C. when allies of Sparta used sulfur fumes during the Peloponnesian War.

World War I, German units released Chlorine and Mustard Gas which caused several thousand casualties and deaths at Ypres Belgium. During World War II, Germany utilized cyanide gas and other chemical agents in its concentration camps.

Widely publicized reports of Iraqi use of chemical agents against Iran during the 1980's led to a United Nations investigation that confirmed the use of Sulfur Mustard (HD) and Sarin (GB).

During Operation Desert Storm, the United States destroyed several Iraqi chemical stockpiles both in air and on land. Since Operation Desert Storm, Congress has passed a bill mandating the destruction of all US chemical agents.

1. CHEMICAL WARFARE (CW)

The use of chemical agents in military operations to kill, seriously injure or incapacitate personnel through physiological effects. They can be dispersed by missiles, rockets, bombs, mines, spray tanks or artillery rounds.

2. NERVE AGENT CHARACTERISTICS

Nerve agents are the most toxic chemical warfare agents, potentially causing effects within seconds and death within minutes. All nerve agents are liquids with the non-persistent agents (G series) being volatile enough to be a vapor hazard. Even though the V series agents are primarily considered contact hazards; they are at least twice as potent as GB, and even a minute amount of airborne material is extremely hazardous. MOPP IV is required for protection against all nerve agents. Table 2-1 lists the common nerve agents by their persistency.

Table 2-1. Nerve Agents by Persistency	
NONPERSISTENT	PERSISTENT
GA (Tabun) Ethyl N, N-dimethylphosphoroamidocyanidate	VX O-Ethyl methyl Phosphonothiolate
GB (Sarin) Isopropyl methylphosphonofluoridate	
GD (Soman) Pinacolyl methyl phosphonofluoridate	Vx ("V sub x") O-ethyl S-(2-dimethylaminoethyl) methylphosphonothiolate
GF (Cyclosarin) Cyclohexyl methylphosphonofluoridate	

Types of Nerve Agents

Tabun (GA) GA was the first of the nerve agents developed by the Germans. Because of its volatility, GA is primarily an inhalation hazard. **Warning:** Tabun (GA) may react to form cyanogen chloride(CK) in bleach slurry

Sarin (GB) GB was the second agent developed by the Germans. Pure GB is odorless and colorless. At room temperature, this agent is volatile and will begin to evaporate, causing a vapor hazard. In many cases, clothing affords minor protection, however, with GB, clothing may actually enhance the potency of liquid GB by preventing evaporation, thereby increasing the agent's effective dose.

Soman (GD) GD, when pure, is also colorless. GD differs from other nerve agents in that the effectiveness of 2-PAM Cl is not as effective. Adequate "rescue" requires pretreatment with pyridostigmine, which will be discussed later in the lesson.

Cyclosarin (GF) GF is both colorless and odorless liquid when pure.

VX VX (O-ethyl methyl phosphonothiolate) is a colorless and odorless liquid when pure. VX is significantly less volatile than the other nerve agents; however, it does vaporize to some extent and is extremely potent. A significant component of airborne VX is percutaneous absorption of the vapor (vapor absorbed through the skin).

Effects on the Body Basic life functions (such as walking or breathing) are normally carried out in a series of "contract then relax" processes. This is accomplished by a delicate balance of chemicals in the body (neurotransmitters that tell the muscle to "contract"; and enzymes which react with the neurotransmitter to allow it to "relax"). Nerve agents affect the body by inhibiting the body's ability to use an enzyme called acetylcholinesterase, causing a build up of acetylcholine. This causes uncontrollable contraction of muscles and organs. Death generally comes from either cardiac or respiratory failure.

Routes of Exposure

Vapor Nerve agent vapors present a respiratory hazard and can also be absorbed into the body through the eyes. In the case of some nerve agents, percutaneous absorption of the vapor is also hazardous.

Liquid Nerve agents can be absorbed into the body through direct contact with liquid agents (percutaneous). Liquid nerve agents can also be ingested if food and/or water are contaminated (gastrointestinal).

Symptoms Generally, the severity and reaction time for symptoms of nerve agent exposure differ depending on the physical state of the agent (vapor or liquid) and amount of exposure. Personnel poisoned by nerve agents may experience symptoms in the following order:

-Miosis (pinpointed pupils), runny nose, and chest tightness

- Diminished vision and headache
- Nausea, vomiting, and cramps
- Drooling, excessive sweating, drowsiness, and confusion
- Difficulty breathing, twitching, jerking, and staggering
- Convulsions, coma and death

Treatment Casualties poisoned by nerve agents require treatment with atropine, 2-PAM chloride (2-PAM Cl), convulsant antidote for nerve agents (CANA), and possibly pyridostigmine bromide.

Atropine binds to receptor sites thereby blocking the excess acetylcholine caused by nerve agent poisoning.

2-PAM Cl This drug acts by reactivating acetylcholinesterase inhibited by a nerve agent.

CANA prevents and treats convulsions caused by exposure to nerve agents in moderate to severe cases.

Pyridostigmine Bromide (PB) This medicant is used as a pretreatment for exposure to GD (Soman). Unlike other G and V series nerve agents, GD attaches permanently to acetylcholinesterase. Pyridostigmine itself also inhibits the same enzyme as GD (acetylcholinesterase), however, the interaction between pyridostigmine and acetylcholinesterase is reversible. Atropine is still needed to counteract the excess acetylcholine and 2-PAM Cl is still needed to reactivate acetylcholinesterase sites protected by the pyridostigmine. PB is distributed to military personnel in the form of nerve agent pyridostigmine pretreatment tablet sets (NAPP), which include 21 30-mg tablets. One tablet is taken every eight hours. Each NAPP tablet set provides a week of pyridostigmine pretreatment for one Marine (see figure 1).



Figure 1. Pyridostigmine Bromide

First Aid As previously discussed in earlier periods of instruction, nerve agents are among the most toxic chemical warfare agents Marine may be exposed to in the future. We've also learned that adequate treatment (Atropine, 2PAM Cl, and CANA) can be used to negate the effects of these agents.

Nerve Agent Antidote Kit Mk I (NAAK Mk I). The NAAK Mk I is used to treat nerve agent exposure (see figure 2). The kit consists of two auto-injectors (one with 2mg of **Atropine** and another with 600mg of **2 PAM Chloride**), a plastic clip which holds the auto-injectors and a foam carrying case. Marines are issued three kits, which are usually stored inside the mask carrier.



Figure 2. NAAK Mk I

Convulsant Antidote for Nerve Agents (CANA) The CANA is used to treat the convulsions associated with severe nerve agent symptoms. It consists of a single autoinjector containing 10mg of **Diazepam**. The CANA is only used for buddy aid. If you are capable of injecting yourself with a NAAK, you do not need the CANA.

Self-Aid The first priority for Marines potentially exposed to nerve agents, is to prevent further exposure and mitigate the effects of any agent introduced to the body. Masking, donning protective clothing, and immediate decontamination of exposed skin, are all vital to ensuring the safety of the Marine. If exposure occurs and Marines are experiencing mild symptoms, the following self-aid procedures must be initiated without direction from superiors. First aid must occur immediately or symptoms will become more severe.

STUDENT NOTE:

If relief is obtained from one set of NAAK Mk I injections and breathing is normal, carry on with combat duties. Dryness of mouth is a good sign, meaning that enough atropine has been administered to carry on duties. The amount of atropine administered will depend on the symptoms the casualty is exhibiting. An additional listing of mild/severe nerve agent symptoms can be found in Table 2-2 below. Giving a nerve agent casualty more than three injections may create a nerve agent antidote overdose, which could result in incapacitation. Only medical personnel, i.e., Combat Medic/Corpsman, may administer additional atropine if symptoms persist. Additionally, ensure you use the casualty's NAAK Mk I and not your own.

Table 2-2. Symptoms of Nerve Agent Poisoning for Use in First Aid	
MILD Symptoms	SEVERE Symptoms
• unexplained runny nose	• strange or confused behavior
• unexplained sudden headache	• increased wheezing and increased dyspnea (difficulty in breathing)
• sudden drooling	• severely pinpointed pupils
• difficulty seeing (dimness of vision and miosis)	• red eyes with tearing
• tightness in the chest or difficulty breathing	• vomiting
• wheezing and coughing	• severe muscular twitching and general weakness
• localized sweating and muscular twitching in the area of contaminated skin	• involuntary urination and defecation
• stomach cramps	• convulsions
• nausea with or without vomiting	• respiratory failure
• tachycardia followed by bradycardia	• bradycardia

Decontamination Considerations Flush eyes with water immediately. Use the M291 Skin Decontamination Kit to remove any liquid nerve agent on skin or clothing. Use the M100 Sorbent Decontamination System (SDS) for equipment. Hypochlorite (HTH) is also effective on equipment. Water, steam, and absorbent materials (earth, sawdust, ashes, and rags) are effective for physical removal when the M291 kit is not available.

3. **BLISTER AGENT CHARACTERISTICS**

Blister agents (vesicants) are used to produce casualties, degrade fighting efficiency, and to restrict use of terrain and equipment. As their name implies, most blister agents produce fluid-filled blisters. Death is unlikely except in extremely high doses. MOPP IV is required for protection. Vesicants can be categorized into three different groups: mustards, arsenicals and urticant.

Types Of Blister Agents

Mustards Because of their physical properties, mustards are persistent under cool conditions; however, evaporation increases as the temperature increases. It is possible to increase their persistency even more by dissolving them in thickeners. Eyes and respiratory tract are the most sensitive target organs. Ocular effects (eyes) appear in a shorter period of time after exposure, and are more debilitating than respiratory effects. Both liquid and vapor mustard agent rapidly penetrate the skin. Warm, moist areas with thin skin (external genitalia, underarms, inside elbow, and neck) are much more sensitive than other areas. Sweaty skin absorbs more mustard than dry skin. See Table 3-1 for a listing of mustard agents.

Table 3-1. Blister Agents (Mustards)	
HD	Distilled Mustard
H	Levinstein Mustard
HN-1	Nitrogen Mustard
HN-2	Nitrogen Mustard
HN-3	Nitrogen Mustard
HT	Mustard-T Mixture

Arsenicals The arsenical vesicants are respiratory tract irritants and produce lung injury with sufficient exposure. The vapors are irritating to the eyes and the liquid may produce serious eye lesions. Absorption of vapor or liquid through the skin may lead to systemic intoxication or death. See Table 3-2 for a listing of arsenicals.

Table 3-2. Blister Agents (Arsenicals)	
L	Lewisite
HL	Mustard-Lewisite Mixture
PD	Phenyldichloroarsine
ED	Ethyldichloroarsine
MD	Methyldichloroarsine

Urticants Because they do not produce fluid-filled blisters, urticants, by definition, are not true vesicants. These agents produce solid lesions instead. **Phosgene Oxime (CX)** is the primary urticant of military interest. CX can penetrate garments and rubber much more quickly than other agents. It affects the skin, eyes, and lungs. No other chemical agent produces such an immediately painful onset that is followed by rapid tissue necrosis.

Effects on the Body Blister agents burn and blister the skin or any other part of the body they contact, including mucous membranes, and eyes. They damage the respiratory tract when inhaled and cause vomiting and diarrhea when ingested. Figure 3 shows the percentages and locations of Mustard Burns among 6,980 Cases from WWI.

Routes of Exposure Liquid blister agent is rapidly absorbed into the skin causing severe burns in the affected area. Vapor will cause damage to the respiratory tract, eyes and moist areas of the skin.

Symptoms The severity of a blister agent burn is directly related to the concentration of the agent, duration of contact with exposed tissue, and the location on the body. Most blister agents are subtle in action, except for lewisite (L) and phosgene oxime (CX), which cause immediate pain on contact. Tables 3-3 and 3-4 list symptoms for blister agent exposure by vapor/liquid.

Table 3-3. Symptoms of Blister Agent Exposure - VAPOR	
MILD	SEVERE
• Tearing	• Marked eyelid edema
• Itchy, burning, gritty feeling in the eyes	• Possible corneal damage
• Runny nose, sneezing	• Productive cough
• Hoarseness, hacking cough	• Severe eye pain
• Erythema	• Labored breathing
	• Blistering

Table 3-4. Symptoms of Blister Agent Exposure – LIQUID	
Eyes	<ul style="list-style-type: none"> • Eyes are particularly sensitive to liquid blister agent. • Following exposure, there will be a latent period where no symptoms occur. • Latent period will be from one to three hours for a heavy exposure up to twelve hours from a mild exposure. • After the latent period, tearing, grittiness and redness are common. Temporary blindness may occur, but is rarely permanent.
Skin	<ul style="list-style-type: none"> • Liquid blister agents produce almost no immediate symptoms on the skin, except for lewisite (L) and phosgene oxime (CX) that cause immediate pain on contact. • Following a latent period of six to 12 hours, blisters will form.
Gastrointestinal	<ul style="list-style-type: none"> • Liquid blister agent poisons food and water, making them unusable. • If ingested, liquid blister agent produces vomiting, pain, diarrhea, lesions and hemorrhaging of the gastrointestinal tract.

Treatment When exposure is suspected, time is critical. Time is critical because blister agents become “fixed” to tissue components within two minutes after direct exposure. Using the M291 Skin Decontamination Kit as soon as possible to remove agent and flushing the eyes with water will do much to prevent or lessen the physical damage from blister agent exposure. Medical treatment consists of supportive therapy, determined by the medical provider once casualties have been evacuated. Additional treatment should be provided to prevent secondary infection of blisters/lesions. There are no antidotes or treatments that negate the agent’s destructive ability.

First Aid The only first aid available for blister agent exposure is decontamination as soon as possible.

Self-Aid Marines exposed to liquid blister agent must perform decontamination. Decontamination is most effective if performed within the first two minutes after exposure.

Step 1 Stop breathing, close your eyes, don and clear the field protective mask, and pass the alarm. The mask and protective clothing are worn continually until the “all clear” signal is given.

Step 2 Perform immediate decontamination to neutralize any liquid contamination. Use the M291 Skin Decontamination Kit for skin exposure and water from a canteen for eye decontamination. The risk of leaving vesicant in the eyes is much greater than the risk from exposure of the eyes to vesicant vapors during the short period of decontamination. Decontamination, therefore, must be performed despite the presence of vapor.

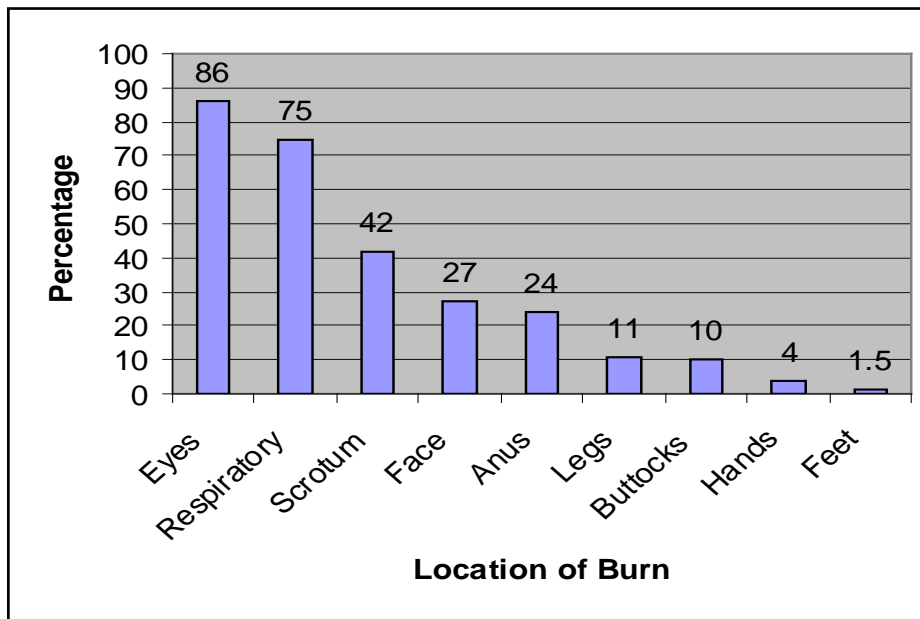


Figure 3. Locations of Mustard Burns among 6,980 Cases from WWI

Buddy Aid There is no specific buddy aid for exposure to blister agents. If required, assist the buddy with masking and skin decontamination. Immediate decontamination of personnel is vital to reduce the severity of injury and number of casualties.

Decontamination Considerations Flush eyes with water immediately. Use the M291 Skin Decontamination Kit to remove any liquid blister agent on skin or clothing. Use the M100 SDS for equipment. HTH is also effective on equipment. Water, soaps, detergents, steam, and absorbent (earth, sawdust, ashes, and rags) are effective for physical removal.

4. **BLOOD AGENT CHARACTERISTICS**

Blood agents are very toxic chemical warfare agents that, at high concentrations, can cause effects within seconds and death within minutes in unprotected personnel. Blood agents are highly volatile, and therefore, nonpersistent. Field protective masks with fresh filters provide adequate protection against field concentrations. Blood agents may damage field protective mask filters, therefore filters must be changed according to unit SOP and as directed by higher headquarters. Table 4-1 lists three blood agents of military significance. Table 4-2

compares the volatilities of other chemical warfare agents to the blood agent, hydrogen cyanide.

Table 4-1. Blood Agents of Military Importance	
AC	Hydrogen Cyanide
CK	Cyanogen Chloride
SA	Arsine

Table 4-2. Comparative Volatilities of Chemical Warfare Agents	
Agent	Volatility*(mg/m³)
Hydrogen Cyanide (AC)	1,000,000
Sarin (GB)	22,000
Soman (GD)	3,900
Sulfur Mustard (HD)	900
Tabun (GA)	610
VX	10
*Approximate amount of agent (in milligrams) that 1m ³ of air can hold at 25°C.	

Effects on the Body The cyanogens (AC and CK) affect bodily functions by inactivating the cytochrome oxidase system. This poisoning prevents cellular respiration and the normal transfer of oxygen from the blood to body tissues. SA causes hemolysis (breakdown) of the red blood cells. Death comes from respiratory arrest and cessation of cardiac activity.

Routes of Exposure Blood agents enter the body through the respiratory system. The field protective mask provides adequate protection against blood agents.

Symptoms Blood agents cause fewer symptoms than other chemical warfare agents. Inhalation of small amounts may cause giddiness, headache and faintness, confusion, chest pain, difficulty breathing, and ultimately unconsciousness. Symptoms specific to each of the blood agents can be found in Table 4-3.

Table 4-3. Blood Agent Symptoms by Agent		
AC	CK	SA
<ul style="list-style-type: none"> • increase in rate & depth of respiration (casualty may not be able to hold his/her breath) • pink color of casualty's skin • respiratory arrest • cessation of cardiac activity (death) 	<ul style="list-style-type: none"> • immediate lacrimatory effect (tearing) and irritant effect on nasal passage • high concentrations of ck produce effects similar to ac • lung irritation can lead to pulmonary edema 	<ul style="list-style-type: none"> • abdominal pain • confusion • nausea and vomiting • weakness • anemia and kidney damage • exposure to liquid can cause frostbite.

Treatment Antidotes to blood agent poisoning are available in the US. Medication used (sodium thiosulfate and sodium nitrite) are quite effective if administered to exposed

personnel before heart failure. These drugs form compounds that have a higher affinity for cyanides, thus freeing cytochrome oxidase to resume its normal activity.

First Aid There is no first-aid or medicants for the treatment of blood agents that can be self-administered. Marines exposed to blood agents will only have a short time to react before they are unable to put their mask on. Speed is absolutely essential.

Self-Aid Stop breathing, close your eyes, don and clear the field protective mask, and pass the alarm. The field protective mask is worn continually until the “all clear” signal is given.

Buddy Aid Mask the casualty and seek medical attention.

Decontamination Considerations Move to fresh air; no decontamination necessary under field conditions.

5. CHOKING AGENT CHARACTERISTICS

Choking agents attack the lung tissue, causing them to fill with fluid. This results in a condition known as pulmonary edema (“dry land drowning”) and can cause death due to lack of oxygen. Choking agents are nonpersistent. The field protective mask provides adequate protection against choking agents. There are two choking agents of military significance:

CG (Phosgene)*
DP (Diphosgene)

**Only one considered likely to be used in the future.*

Effects on the Body Choking agents cause irritation to mucus membranes (such as bronchi, trachea, larynx, pharynx and nose). These irritated tissues secrete fluid faster than the body is able to absorb the fluid.

Routes of Exposure Choking agents are nonpersistent agents, employed in vapor form. Therefore, the primary route of exposure is inhalation.

Symptoms The symptoms of choking agent will manifest immediately. Initial symptoms may include: tears, dry throat, coughing, choking, tightness in chest, nausea, vomiting, and headache. Lung damaging concentrations may not be detected by smell. In extreme cases, damaged tissues swells, lungs become fluid-filled, and death results from lack of oxygen; thereby, causing unprotected personnel to “choke.”

STUDENT NOTE:

The severity of exposure to choking agents cannot be estimated from immediate symptoms. Full effects may be delayed up to 72 hours after exposure.

Treatment There is no specific treatment other than pulmonary care (oxygen) for choking agents.

First Aid Since choking agents attack the lung tissue, it is important to note that any activity or stress after exposure to a choking agent is likely to worsen the effects, potentially turning a sub-lethal dose into a lethal exposure. There is no specific first aid required for choking agents.

Self-Aid Stop breathing, close your eyes, don and clear the field protective mask, and pass the alarm. The mask and protective clothing are worn continually until the “all clear” signal is given. Continue normal combat duties **unless** there is difficulty breathing, nausea, vomiting or unusual shortness of breath. Should these symptoms appear, there should be quiet rest until medical evacuation is accomplished.

Buddy Aid Buddy aid is not necessary, as choking agents produce no immediately lethal effects. Ensure Marines experiencing symptoms of exposure minimize their activities until medical evacuation is accomplished.

Decontamination Considerations Skin decontamination is usually not necessary with these agents unless they are disseminated in very cold climates.

6. **MILITARY CHEMICAL COMPOUND CHARACTERISTICS**

As previously stated, military chemical compounds are less toxic than the chemical warfare agents we just discussed, and include, riot control agents (RCAs), respiratory irritant agents, smoke and obscurants, and incendiary materials. The two families of military chemical compounds we will discuss are riot control agents and respiratory irritants.

Riot Control Agents (RCAs) These chemicals rapidly produce sensory irritation or disabling physical effects which disappear within a short time after exposure. A listing of standard tear-producing agents currently in the US inventory for RCAs can be found in table 7-1 below. They are local irritants that, in very low concentrations, act primarily on the eyes, causing intense pain and tearing. At high concentrations they irritate the respiratory tract and the skin. They can also cause nausea and vomiting. The protective mask and ordinary field clothing secured at the neck, wrists and ankles provide protection against field concentrations of RCAs.

In general, these agents cause rapid onset of effects (seconds to minutes) and have a relatively brief duration of effects (15 to 30 minutes) once the exposed subject is removed from the contaminated atmosphere and has removed the contamination from clothing. Due to the temporary effects of their use, these agents are widely used for training, riot control, and situations where long-term incapacitation is unacceptable. These agents have proven highly effective when used against poorly equipped combatants and noncombatants.

Table 7-1. Riot Control Agents and Chemical Compound	
Riot Control Agents	Chemical
CS (CS1, CS2, CSX)	O-Chlorobenzylidene malononitrile
CR	Dibenz (b,f)-1:4-oxazepine
OC	Capsaicin (oleoresin capsicum)

CS The US adopted CS (o-chlorobenzylidene malononitrile) for combat training and riot control purposes in 1959. CS produces an intense burning and irritation of the eyes, with mild to severe conjunctivitis. It also produces a burning sensation in the nose and mucous membranes of the respiratory tract, followed by draining of the nasal sinuses. The chest feels constricted, with a sensation of choking and being unable to breathe. CS is also a skin irritant, and is capable of causing erythema, edema, and in some cases vesication (blistering). Table 7-2 details the clinical effects caused by exposure to field concentrations of RCAs. CS exists as a family of four forms: CS, CS1, CS2, and CSX. Different forms of CS have different persistency characteristics because of varying formulation, dissemination, and rate of hydrolysis (reaction with water causing decomposition/breakdown of the agent). CS has been found to persist in snow for as long as 30 days but its persistency in soil varies, depending on the condition of the soil.

CR The US approved the use of CR (dibenz (b,f)-1:4-oxazepine) in 1974 for use in riot control situations. CR is both more potent and less toxic than CS. The severity of symptoms increases with the CR concentration and in any environment that is high in temperature and humidity. CR does not degrade in water, and is persistent in the environment, persisting for up to 60 days under suitable conditions.

OC Capsaicin (OC) is an agent derived from cayenne peppers. OC stimulates sensory nerve endings, causing reflex changes in blood pressure and respiration. It causes pain, edema (swelling), and erythema (redness) of the tissues with which it makes contact, including airway mucosa. As OC is a powerful irritant and lacrimator, contact with the eyes is extremely painful.

Table 7-2. Clinical Effects of Riot Control Agents	
<p style="text-align: center;">Eye</p> <ul style="list-style-type: none"> • burning, irritation • conjunctival injection • tearing • blepharospasm • photophobia 	<p style="text-align: center;">Airways</p> <ul style="list-style-type: none"> • sneezing • tightness in the chest • irritation • secretions
<p style="text-align: center;">Skin</p> <ul style="list-style-type: none"> • burning • erythema 	<p style="text-align: center;">Nose</p> <ul style="list-style-type: none"> • rhinorrhea • burning pain
<p style="text-align: center;">Gastrointestinal Tract</p> <ul style="list-style-type: none"> • gagging • retching • vomiting 	<p style="text-align: center;">Mouth</p> <ul style="list-style-type: none"> • burning of mucous membranes • salivation

First Aid for RCAs

Self-Aid Marines who are experiencing mild symptoms will be capable of performing self-aid but will require observation to ensure they don't progress into more severe symptoms.

Step 1 Stop breathing, close your eyes, don and clear the field protective mask, and pass the alarm.

Step 2 Keep your eyes open as much as possible, and move out of the contaminated area.

Step 3 When it is safe to do so, remove your mask and blot away tears. **DO NOT** rub eyes. If drops have entered the eyes, flush with large amounts of water.

Buddy Aid for RCAs There is no buddy aid for riot control agents.

Decontamination Considerations Use soap and water on skin and equipment contaminated with CS, CS1, or CS2.

7. **INCAPACITATING AGENT CHARACTERISTICS**

Incapacitation, in a military context, is defined as the inability to perform one's mission (or military task) effectively. Incapacitating agents differ from other chemical warfare agents in that the lethal dose is theoretically many times greater than the incapacitating dose. Typically, these agents do not seriously endanger life and cause no permanent injury.

Effects on the Body Incapacitating agents interfere with the higher functions of the brain such as attention, orientation, perception, memory, motivation, conceptual thinking, planning and judgment. Virtually all drugs capable of producing psychological or behavioral effects

can be classified as an incapacitating agent. These agents can also be grouped into four discrete categories: deliriant, stimulants, depressants, and psychedelics. During this period of instruction, we will only cover one incapacitating agent.

Since BZ (3-Quinuclidinyl benzilate) is considered the most likely candidate for military use, this deliriant will be the only incapacitating agent discussed. As their name suggests, these agents produce delirium, which is an incapacitating syndrome (group of symptoms) involving confusion, hallucinosis, and disorganized speech and behavior.

Specific qualities of BZ include the following:

BZ is capable of producing delirium at very low concentration with a high safety margin.

Skin absorption is possible with proper solvents.

Full recovery from BZ requires two to three days.

Routes of Exposure Incapacitating agents may be disseminated as a liquid or a gas, depending on agent and solvents used. MOPP IV is required to protect against incapacitating agents.

Symptoms Small doses of BZ cause sleepiness and diminished alertness. Exposure to field concentrations of BZ may result in the following symptoms:

- Restlessness, dizziness, or giddiness
- Failure to obey orders, confusion, erratic behaviors
- Stumbling or staggering
- Vomiting
- Dryness of mouth
- Tachycardia (rapid heart rate) at rest
- Elevated body temperature
- Flushed face
- Blurred vision
- Slurred or nonsensical speech
- Hallucinatory behavior
- Stupor
- Coma

Treatment Generally, specific medical treatment is not necessary in instances of exposure to incapacitating agents. Subjects exposed to BZ however, can be treated with the drug physostigmine.

First Aid First aid for incapacitating agents generally consists of close observation, supportive care with fluids, and (when required) restraint and confinement. Weapons and all other potentially harmful items should also be removed from affected personnel, to include cigarettes, matches, medications, and small items that might be accidentally eaten by the casualty.

Self-Aid

Step 1 Stop breathing, close your eyes, don and clear the field protective mask, and pass the alarm. The mask and protective clothing are worn continually until the “all clear” signal is given.

Step 2 Perform immediate decontamination to neutralize any liquid contamination.

Buddy Aid

Step 1 Immediately mask any casualty that does not have a mask on if the atmosphere is (or may still be) contaminated.

Step 2 Remove or neutralize any liquid contamination with the M291 Skin Decontamination Kit.

Step 3 Closely monitor casualty with regards to first aid measures mentioned. If the casualty is stuporous or comatose, be sure that breathing is unobstructed; turn the casualty on one side to avoid aspiration in case vomiting should occur. Monitor body temperature as well, as BZ may cause a significant rise in body temperature (similar to heat stroke).

Decontamination Considerations. Decontaminate with soap and water or use M291 Skin Decontamination Kit if soap and water are not available.

8. **CHARACTERISTICS OF STANDARD NATO CBRN CONTAMINATION MARKERS**

Throughout NATO, the signs used for marking CBRN contaminated areas are standardized in color, shape and size. This permits easy identification, and allows for universal understanding of where contamination on the battlefield is located.

The color of the sign indicates the type of hazard, i.e., chemical, biological or radiological.

CBRN contamination markers are triangle shaped. The base (top edge) is approximately 11½ inches (28 centimeters) and the sides are approximately eight inches (20 centimeters). The sign is always placed with the base of the triangle facing up. The signs can be made of wood, plastic, metal, or any other available material. There are four standard NATO CBRN contamination markers: chemical; biological; radiological; and chemical minefield (unexploded mines).

Chemical Contamination Marker The chemical contamination marker has a **YELLOW** background with **RED** lettering that spells “**GAS.**”

Biological Contamination Marker The biological contamination marker has a **BLUE** background with **RED** lettering that spells “**BIO.**”

Radiological Contamination Marker The radiological contamination marker has a **WHITE** background with **BLACK** lettering that spells “**ATOM.**”



References:

MCWP 3-37.1 Weapons of Mass Destruction

MCRP 4-11.1A Treatment of Chemical Agent Casualties and Conventional Military Injuries

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1402

Assessing and Managing Biological Agent Casualties

TERMINAL LEARNING OBJECTIVE

1. Given a biological warfare agent casualty in a combat environment with standard field medical equipment and CBRN Personal Protective Equipment, assess, and identify injuries and initiate appropriate treatment for biological agents reducing the risk of complications, further injury, or death, per the references. (FMSO-HSS-1402)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, state the US policy on biological warfare within an 80 percent accuracy, per MCWP 3-37.1B. (FMSO-HSS-1402a)
2. Without the aid of reference, given a description or list, state the definition of a biological warfare agent within an 80 percent accuracy, per FM 8-9. (FMSO-HSS-1402b)
3. Without the aid of reference, given a description or list, identify characteristics of biological warfare agent attacks, within an 80 percent accuracy per FM 8-9. (FMSO-HSS-1402c)
4. Without the aid of reference, given a description or list, identify ways that biological warfare agents are disseminated within an 80 percent accuracy, per FM 8-9. (FMSO-HSS-1402d)
5. Without the aid of reference, given a description or list, identify biological warfare agents of military importance and their symptoms and treatment, within an 80 percent accuracy per MCRP 4-11.1C. (FMSO-HSS-1402e)

1. UNITED STATES BIOLOGICAL WARFARE POLICY

United States policy on Biological Warfare – President Nixon established the current United States policy that unconditionally renounces all methods of biological warfare on 25 November 1969. President Nixon restricted the United States biological weapons program to defensive research such as immunization. He directed the Department of Defense to devise a plan to dispose of existing stocks of biological agents and weapons. On 14 February 1970, the United States banned toxin weapons. By 26 December 1975, the United States had completely destroyed all of its biological weapons.

2. BIOLOGICAL WARFARE AGENT DEFINITION

The NATO definition of a biological warfare agent is: viruses, bacteria, or other microorganisms that cause death or disease in humans, animals or plants or cause the deterioration of material.

Historic Examples of Biological Warfare

600 BC - the Athenians contaminated the River Pleisthenes with skunk cabbage, giving the defenders of Kirrha violent diarrhea, which led to their defeat.

1346 - the Tatars catapulted plague - infected bodies into Kaffa, a well fortified seaport. Ships leaving Kaffa carried plague-infested refugees (and rats) to other Mediterranean ports. A bubonic plague epidemic quickly spread throughout Europe between 1347 and 1351, killing an estimated 25 million people.

1763 - during Indian Chief Pontiac's Rebellion in New England, Colonel Henry Bouquet, a British Officer, proposed giving the Indians at Fort Pitt, PA, blankets used by patients infected with smallpox. An outbreak of smallpox at Fort Pitt and Fort Carillon erupted, which spread like wildfire among Native American tribes throughout the Ohio River Valley.

1863 - during the United States civil War, the Confederates retreating in Mississippi left dead animals in wells and ponds to deny water sources to the Union troops.

1916 - Germany's biological warfare program during WWI featured covert operations to infect livestock with disease and contaminate animal feed to be exported to Allied forces.

1932-1945 - Japan embarked on an aggressive biological warfare program against the Soviet Union and Mongolia in 1939, against Chinese civilians from 1940 to 1944 and against Chinese troops in 1942, the Japanese unleashed anthrax, cholera, and plague on at least eleven Chinese cities, Japan conducted biological warfare experiments in occupied Manchuria until the end of WWII. Japan's Imperial Unit 731 used at least 3,000 prisoners of war as test subjects.

1978 - a Bulgarian exile, Georgi Markov, was stabbed with the end of an umbrella, which inserted into his flesh a small steel pellet containing ricin. He died several days later.

The incident was the first case in recent history of state-sponsored terrorism with a biological agent.

1979 - at least 66 Soviet civilians are believed to have died from inhalation anthrax, following a mysterious explosion at the Soviet Institute of Microbiology and Virology in Sverdlovsk.

1985 - the Dalles, Oregon- Members of the Baghwan Shree Rajnees Cult deliberately contaminated salad bars with Salmonella typhimurium. The subsequent outbreak investigation confirmed more than 750 cases of infection. Their goal was to incapacitate voters to prevent them from voting and thus influence the outcome of a local election.

2001 - currently unknown perpetrators used the US Postal Service to deliver envelopes containing anthrax spores to locations in Florida, New York City, Connecticut, New Jersey, and Washington D.C. By December 2001, twenty two cases were confirmed (11 inhalation, 11 cutaneous) with five deaths attributed to the mailing of anthrax.

3. **CHARACTERISTICS OF A BIOLOGICAL ATTACK**

There are several characteristics of a biological attack that we can use to help determine whether an attack has occurred.

Unusual Number of Casualties An unexpected large number of casualties may occur during a short period of time. This includes evidence of a massive single source disease outbreak, as well as a large number of casualties relative to the number of exposed individuals.

-Casualties within 48-72 hours (or longer) suggest an attack with a microorganism.

-Casualties within minutes to hours suggest exposure to a toxin.

Unusual Distribution of Casualties Depending on the intended target, both military and civilian casualties can occur.

If only military casualties are noted, then military food or water supplies may have been targeted.

Casualty distribution aligned with wind direction might be an indicator of an aerosol attack. Lower attack rates among those working indoors, especially in areas with filtered air or closed ventilation systems, may also be evidence of a Biological Warfare attack.

Unusual Geographic Distribution If casualties are noted to be restricted to one or two small areas in one large area, that may indicate a Biological Warfare attack. Certain biological agents, such as toxins, can be used most effectively on smaller targets, while others can be disseminated more efficiently over extremely large areas (anthrax spores, for example)

Unusual Disease Pattern The disease pattern is likely to differ from those of naturally occurring epidemics. For example, except for food-borne outbreaks, disease incidence in naturally occurring epidemics usually increases over a period of weeks or months.

In a Biological Warfare attack, the increase in disease incidence may be only hours or days. Furthermore, instead of the usual peaks and troughs evident in most natural outbreaks, a steady and increasing stream of patients will be seen in a Biological Warfare attack, similar to a food poisoning outbreak.

Unusual Disease Outbreak The occurrence of a vector-borne disease without the vector (e.g., mosquito or tick) or the occurrence of a disease that is highly unusual for the geographic area.

Higher command authorities must be notified upon the emergence of an atypical (not normal) pattern. An example would be an outbreak of Venezuelan Equine Encephalitis (VEE) in Europe where it does not naturally occur or such an outbreak during the winter (the disease requires a mosquito vector for transmission in a natural outbreak).

Unusual Disease Symptoms An unusually high frequency of respiratory disease from a disease that more often occurs naturally as a skin disease (e.g., inhalation versus cutaneous anthrax; pneumonic versus bubonic plague) and vice versa.

Illness in Animals and Humans An increased number of sick or dead animals, often of different species (e.g., horses, cows, dogs) at the same time as an increased number of human illnesses.

Evidence of an Attack Although rare, a witness to an attack or the discovery of a likely delivery system may be further evidence of a Biological Warfare attack.

“Own Goals” and “Hang Fires” A number of initial Biological Warfare attacks may be expected to fail in this manner so one should look for unusual disease events in the opposition.

-An Own-Goal will result in unexpected and unusual deaths thanks to a device going off too soon. An example would be, a terrorist's bomb going off in their house while being constructed or in a car on the way to the target.

-A Hang Fire would be evidenced by excessive preventive action without obvious cause until intelligence is available, as the opponents have to defuse and decontaminate equipment.

Medical Surveillance A Biological Warfare attack may be completed before a local commander is aware that the attack has taken place. The first attempt that must be made is to distinguish between a possible Biological Warfare attack and a disease outbreak of natural origin. This can only be accomplished through adequate means of medical surveillance,

which is defined as the continuing scrutiny of all aspects of occurrence and spread of disease that are pertinent to effective control.

-Factors to be considered include the following:

-Disease incidence (number who have the disease).

-Expected disease incidence for the area of operations (a Biological Warfare attack would result in a higher than expected incidence).

-Sudden appearance of a disease that is unusual for the area of operation.

-Determination of the source of the disease (e.g., aerosol pattern, food borne illness, water borne illness, vectors, geographic pattern).

Medical Indications Sick individuals may be the only initial indication that a Biological Warfare attack has occurred.

Most early symptoms from a Biological Warfare attack will be similar to the flu. An unusual number of cases of skin rash, jaundice, diarrhea, sore throat, pneumonia, mental abnormalities, or hemorrhaging may also be encountered.

Naturally occurring disease and illness from a Biological Warfare attack may occur simultaneously, which can further complicate the recognition of an attack. Additional confusion may result when multiple Biological Warfare agents are used simultaneously, or if chemical and biological agents are combined in a single attack.

Detectors The Department of Defense has several biological detectors that can provide confirmation of the presence of biological agents, however most are extremely large and not employable in a tactical scenario. Additionally, these large biological detectors are designed for “detect to treat,” not detect to warn.

The US Army does have a vehicle mounted biological detection system called the Biological Integrated System (BIDS). The BIDS is a Corps level asset and limited in number. The Marine Corps is currently developing a tactical CBRN reconnaissance vehicle capable of point biological detection.

4. **DISSEMINATION OF BIOLOGICAL AGENTS**

The term “dissemination” refers to the intentional release of a biological agent in a manner that enables it to reach the portals (routes) of entry of the intended target (humans, animals, plants, etc.) in a viable and virulent state. Based on possible routes of entry, the agent’s characteristics, and the results desired, certain methods of dissemination are feasible for biological attacks.

The effectiveness of these methods is determined by both physical and environmental factors that may limit the ability of the agent to establish infection.

Dissemination methods are related to the routes of entry through which pathogens may be introduced into the body to establish infection. These routes of entry (dissemination methods) are inhalation (delivery by aerosol), percutaneous (through the skin), and oral. The fourth method of dissemination is cover dissemination.

Inhalation or Aerosol Route of Entry The primary route of exposure to biological agents is through the respiratory tract. Delivery by aerosol is considered to be the most effective means of dissemination. Infectious disease organisms are subject to decay over time, which will vary with environmental factors and the nature of the organism.

Inhalation of agents (respiratory exposure) results in deposition of infectious or toxic particles directly within the lungs, which may provide a further direct pathway into the systemic circulatory system (bloodstream) depending on the size of the droplet. Access to the circulatory system requires particles ranging from 0.5 to 5 microns in diameter.

Infection by the respiratory route may induce disease at doses lower than those generally associated with naturally acquired infections by the oral route and the incubation period may be much shorter.

Droplets as large as 20 microns can infect the upper respiratory tract. However, these relatively large particles are filtered by natural processes and are too large to reach the systemic circulation.

Smaller sized particles are not efficiently retained by the human respiratory tract and are relatively unstable under environmental conditions.

Aerosol delivery systems aim to generate invisible clouds with particles or droplets between 0.5 and 10 microns that can remain suspended for long periods.

Atmospheric conditions are critical to the effective use of biological agents distributed by aerosol exposure.

In general the optimal time for use of aerosolized biological weapons is during the late night and early morning, when inactivation of biological agent aerosols by ultra-violet (UV) radiation is minimal. UV will kill or breakdown most BW agents quickly.

Neutral or inversion conditions are most likely to be present at these times which best allows an agent cloud to travel along the land surface.

Percutaneous Route of Entry A second portal of entry that can be utilized for biological agent employment is the skin. Penetration of the skin can be accomplished by the bite of an arthropod vector, injection, or absorption.

Arthropod Vectors These insects are capable of transferring pathogens to man through breaks in the skin. The spread of disease by arthropod vectors to man is well established in

history. Some examples of vectors and the pathogens they are capable of transmitting include:

Mosquitoes: Malaria, yellow fever, dengue fever, several types of encephalitis

Flies: Typhoid fever, amoebic dysentery, African sleeping sickness

Fleas: Plague, typhus

Injection Biological agents can be injected through the skin (example: assassination of Bulgarian exile, Georgi Markov).

Absorption Some biological agents can be absorbed directly through the skin causing systemic effects. Others can be used to damage the skin itself, to provide a greater portal of entry for other agents.

Oral Route of Entry Direct contamination of consumables, such as drinking water, foodstuffs, and medications, could be used as a means to disseminate infectious agents or toxins.

This method of attack would be most suitable for sabotage activities and might be used against limited targets such as water or food supplies of a military unit or base.

Filtration and chlorination significantly reduce this hazard as it pertains to water. However, survivability of the infectious agent or toxin in water is highly variable.

Covert Dissemination Because of detection difficulties, the variety of potential agents, ways they may be employed, and small amounts required to cause infection, biological agents lend themselves well to covert or hidden operations. Sabotage is the direct application, by a person, of material to the target. It is generally covert in nature.

5. **BIOLOGICAL AGENTS OF MILITARY IMPORTANCE**

Numerous military references available will explain in detail the agents/pathogens that may be utilized as biological weapons.

Smallpox has likely claimed more lives than any other infectious disease. In the 20th century alone, before it was eradicated by universal vaccination, smallpox killed up to 500 million people.

Vaccination programs ceased in 1980. The Soviet Union then launched a program to mass-produce the virus as a bio-weapon. Russia may still maintain a research program to produce virulent and contagious strains, supposedly as a defensive measure.

The only confirmed repositories of smallpox are at the Center for Disease Control and Prevention in Atlanta, GA and at the Institute of Virus preparations in Moscow.

While the chance of terrorists obtaining smallpox is remote, it is considered a grave bioterrorism threat because the disease is highly contagious and deadly. Both China and North Korea are suspected to have stocks.

Smallpox has no natural reservoirs other than humans. There are two clinical forms of smallpox.

Variola Major the severe and most common form, with a more extensive rash and higher fever. Historically, variola major has an overall fatality rate of about 30%.

Variola Minor is a less common presentation of smallpox, and a much less severe disease, with death rates historically of 1% or less.

Incubation Period - 10-14 days

Symptoms - High Fever, headache, backache, and vomiting, and of course rash (pox on the face and the arms that spreads to the trunk).

Transmission - Aerosol or person-to-person. It is highly contagious; however, smallpox victims show clear signs of the disease, and anyone who was exposed to them could be vaccinated post-exposure.

Treatment - there is no current treatment against the smallpox virus. Vaccination given 3-5 days post-exposure can prevent the disease. Quarantine the casualty and maintain strict sterile procedures and provide supportive care

Vaccine - the Vaccine exists but is currently not recommended for the general public. Stockpiles of the vaccine are being increased. No one except for military personnel has been vaccinated since 1972, and people vaccinated before then have likely lost immunity. There are no routine immunizations of US forces for smallpox. When the threat indicates, senior leadership may direct vaccination of personnel. Vaccination of vaccinia virus. Revaccination should be carried out every 10 years for personnel who are at risk of infection.

Viral Hemorrhagic Fever (VHF) viruses are comprised of four families of viruses. Examples include Ebola and Marburg (filoviruses), as well as Lassa and Machupo (arena viruses).

Incubation Period - ranges from days to months.

Symptoms - high fever, rash, low blood pressure, fatigue, hemorrhage, shock multiple organ system failure, and death being the most severe.

Transmission - the primary means of delivery would most likely be by aerosol release, however secondary person-to-person transmission is also likely with some viruses. Some VHF viruses also rely on vector transmission (mosquitoes, ticks, and rodents).

Treatment - the antiviral drug ribavirin has been used in some instances; however, this drug's usefulness has not been tested for all VHF viral infections.

Vaccine - the only VHF vaccine currently in widespread use is the yellow fever vaccine. Other VHF vaccines are in various stages of development and testing.

Anthrax Anthrax gets its name from the Greek word for coal, anthrakis, because lesions that turn jet-black, characterize the skin form of the disease. Anthrax is naturally occurring and is acquired from animals or animal products. Animals get it from ingesting spores found in soil. The three forms; cutaneous, inhalation, and gastrointestinal, are all caused by the same bacterium, Bacillus Anthracis.

Incubation period - 12 hours – 7 days

Symptoms Signs usually present within 48 hours. The incubation period for anthrax is hours to 7 days.

Cutaneous on the skin

- Begins as a papule followed by the formation of a fluid filled vesicle
- Normally appears on hands and forearms first
- The vesicle typically dries and forms a coal-black scab. This scab is usually surrounded by mild to moderate edema (sometimes with small secondary vesicles).
- Pain is unusual, and if present, is caused by secondary infection

Inhalation in the lungs

- Gradual and nonspecific onset of fever, malaise, fatigue, nonproductive cough and mild chest discomfort
- Initial symptoms are followed by a short period of improvement (hours to 2-3 days)
- Abrupt onset of severe respiratory distress with dyspnea, diaphoresis, stridor and cyanosis
- Septicemia, shock and death usually follow within 24-36 hours after onset of respiratory distress

Gastrointestinal in the intestines

- Presents with severe sore throat or a local oral or tonsillar ulcer
- Nonspecific symptoms of nausea, vomiting and fever
- Followed by severe abdominal pain with hematemesis and diarrhea

Transmission - letters with anthrax powder will cause only isolated cases of disease, relatively few in number. Poisoning of food is difficult to achieve with anthrax and is not considered likely. Aerosol is the gravest threat. An odorless, invisible cloud of anthrax could trigger thousands of cases of inhalation anthrax, the most deadly form of the disease. A government study estimated that about 200 pounds of anthrax released upwind of Washington, D.C., could kill up to 3 million people. Making a lethal anthrax aerosol requires access to advanced biotechnology, which some experts believe is beyond

the capability of most terrorists. However, groups with substantial funding and expertise could acquire the needed materials. Aum Shinrkyo, the cult infamous for releasing Sarin gas in the Tokyo subway, tried several times to disperse aerosols of anthrax.

Treatment - Ciprofloxacin 400mg IV every 8-12 hours or 500mg by mouth twice daily for four weeks. And employ standard precautions for handling, treating, and moving all active cases. Inhalation anthrax, however, progresses so quickly that, once symptoms are clear, it may be too late for drugs to prevent death.

Vaccine - the vaccine for anthrax used by the U.S. military is not currently available to the public. It is given in a series of six shots over 18 months. Annual booster injections are recommended.

Plague There are various forms of plague; all caused by the bacteria *Yersinia pestis*. Bubonic plague, historically the most common, is transmitted from rats to humans by infected fleas. Nearly 19,000 cases were reported worldwide between 1980 and 1994. It is possible that infected insects could be used as weapons. Experts see a much greater risk in the spraying of *Yersinia pestis* in aerosols; inhaled bacteria would trigger cases of highly lethal pneumonic plague.

Incubation Period - 1-6 days

Signs and Symptoms of Plague

Bubonic

- Acute onset fever, malaise, headache, nausea/vomiting
- Swollen lymph nodes in the groin or axilla region
- May have lesion at flea bite site
- Bubonic plague may progress spontaneously to the septicemic form with organisms spreading to the lungs and producing pneumonic disease

Pneumonic

- Acute onset of fever, chills and malaise
- Hemoptysis
- Nausea/vomiting/diarrhea and abdominal pain
- Dyspnea, stridor and cyanosis
- Death is caused by respiratory failure and circulatory collapse
- Almost always fatal if not treated within 24 hours

Septicemic Plague

- Fever, chills, malaise, nausea, vomiting and diarrhea
- Purpura (a rash from destroyed blood cells leaking into the skin)
- Acrocyanosis (discoloration of the extremities)
- Abdominal pain
- 25% of bubonic plaques progress septicemic plague

Transmission - vectors, aerosol, or person to person. Pneumonic plague is contagious through respiratory droplets.

Treatment for Plague

- Quarantine the casualty for the first 48 hours
- Maintain standard precautions for bubonic plague patients and droplet precautions for pneumonic plague patients
- Streptomycin 30mg / kg / day IM in two divided doses for 10 -14 days
- Doxycycline 200mg IV then 100mg IV BID, until clinically improved then 100mg PO BID for a total of 10-14 days
- Vigorous fluid resuscitation

Vaccine - no vaccine is available to the general public.

STUDENT NOTE

Experts consider plague a Biological Warfare threat for several reasons:

1. The bacterium has been widely available for military and civilian researchers.
2. Techniques to mass produce and aerosolize plague were developed in the Soviet Union and hundreds of former Soviet scientists may have this knowledge.
3. A small number of plague cases are likely to cause panic given the history of the disease.

Tularemia The US military studied this infectious organism as a weapon in the 1950's and 1960's. The agent that causes tularemia, *Francisella tularensis*, is one of the most infectious bacteria known; inhaling as few as 10 microscopic germs can trigger disease. This disease occurs naturally in small mammals i.e., mice, squirrels, and rabbits. Human infection can result from insect bites or handling infected animals. Infected flies, ticks, or mosquitoes could intentionally be released as weapons, but direct spraying is a more likely threat.

Incubation period - 1-14 days

Symptoms - fever, chills, headache, cough, and lethargic behavior, swollen and sore lymph nodes, skin ulcers, red and sore eyes, abdominal pain, diarrhea and vomiting, and pneumonia.

Transmission - aerosol, food, or vectors. Human to human transmission has not been documented. The World Health Organization estimated that if 110 pounds of the aerosolized bacteria were sprayed over a city of five million, it could cause 250,000 casualties and kill 19,000. Respiratory failure or shock would cause most fatalities.

Treatment - early antibiotic therapy is effective and, if started within 24 hours of exposure, may prevent disease. A variety of antibiotics available, some antibiotics may be powerless against genetically engineered strains.

Vaccine - no vaccine is available for the general public. The U.S. Food and Drug Administration are investigating a vaccine that is now available for high-risk lab workers.

Botulinum Toxin Development of the botulinum toxin as a possible weapon began 60 years ago. Terrorists have attempted to use it at least three times in Japan between 1990 and 1995. Naturally occurring botulism is food borne or occurs in wounds. It has been aerosolized for weapon use.

Botulinum Toxin is the most poisonous substance known. Experts consider it a major threat because of its lethality and relative ease of production. Botulism is the disease triggered when the toxin gets absorbed through the small intestine, lungs, or an open wound. It does not penetrate skin.

The toxin affects neurotransmitters, causing permanent nerve damage, paralysis, and when untreated, respiratory failure and death. Natural cases of botulism are rare and typically result from contamination of home-canned foods.

Incubation period before symptoms - generally 12-72 hours

Symptoms - nausea and vomiting occurs when bacteria are ingested; it may not appear if purified toxin is spread on food. Difficulty speaking, seeing, or swallowing, drooping eyelids, muscle weakness starting in the trunk and moving to the limbs, muscle paralysis and difficulty breathing.

Transmission - aerosol or food. The disease is not contagious

Treatment

- Rest
- Oxygen, if available
- Cricothyroidotomy, if needed
- Mechanical ventilation
- IV and IM administration of trivalent botulinum antitoxin (ABE)

Vaccine - no vaccine is available for the general public. An investigational vaccine is available for the military and lab workers.

Decontamination Considerations for Biological Agents Guidelines for performing biological warfare casualty decontamination are very broad and general in scope. Generally speaking, patient decontamination for biological agent exposure consists of a 0.5 percent bleach solution. Specific decontaminants for a bacteria and viruses are not currently part of the military inventory, as they are either extremely costly, and in most cases, adequate weathering will reduce most biological hazards.

For example, anthrax contamination discovered in congressional buildings was fumigated with chlorine dioxide gas, in addition to other decontamination resources utilized to eradicate anthrax spore hazards. While decontamination efforts were successful, these resources do not exist in the US military inventory.

References:

NATO Handbook on the Medical Aspects of NBC Defense Operations, FM 8-9
Potential Military Chemical/Biological Agents and Compounds, MCRP 3-37.1B
Treatment of Biological Warfare Agent Casualties, MCRP 4-11.1C

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1403

Assessing and Managing Radiation Casualties

TERMINAL LEARNING OBJECTIVE

1. Provided with a simulated scenario where an attack utilizing CBRN weapons or agents may have occurred, and given indicators relating to the attack, identify nuclear, biological, chemical and radiological weapons effects and identify proper treatment in accordance with MCO 3400.3_ (CBRN Defense Training), MCRP 3-0A (Unit Training Management Guide) and MCRP 3-0B (How to Conduct Training). (5700-TRG-1002)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, state the US policy on the use of nuclear weapons within 80 percent accuracy, per MCWP 3-37.1. (FMSO-HSS-1403a)
2. Without the aid of reference, given a description, list significant events in nuclear warfare history within 80 percent accuracy. (FMSO-HSS-1403b)
3. Without the aid of reference, given a description or list, state two types of nuclear reactions to within 80 percent accuracy per FM 8-9. (FMSO-HSS-1403c)
4. Without the aid of reference, given a description or list, state the five types of nuclear bursts to within 80 percent accuracy, per FM 8-9. (FMSO-HSS-1403d)
5. Without the aid of reference, given a description or list, state the four effects of nuclear detonations to within 80 percent accuracy, per FM 8-9. (FMSO-HSS-1403e)
6. Without the aid of reference, given a description or list, define the terms associated with the yield of a weapon to within 80 percent accuracy, per FMFM 11-2. (FMSO-HSS-1403f)
7. Without reference, given a description or list, describe the four types of nuclear radiation to within 80 percent accuracy, per FM 8-9. (FMSO-HSS-1403g)
8. Without reference, given a description or list, define the terms associated with the measurement of radiation to within 80 percent accuracy, per MCWP 3-37.2. (FMSO-HSS-1403h)
9. Without reference, given a description or list, describe symptoms and treatment of radiation exposure within an 80 percent accuracy, per MCRP 4-11.1B. (FMSO-HSS-1403i)
10. Without reference, given a description or list, state the unit survival measures for responding to a nuclear attack to within 80 percent accuracy, per MCWP 3-37.2. (FMSO-HSS-1403j)

1. **UNITED STATES POLICY ON NUCLEAR WEAPONS**

The current United States policy is to deter enemy CBRN weapons use through a strong nuclear force and conventional capabilities. These conventional capabilities include counterforce, active and passive defense, and consequence management, all of which enable United States forces to survive, fight, and win in CBRN environments.

With respect to nuclear weapons use specifically, the United States **may use** nuclear weapons to terminate a conflict or war at the lowest acceptable level of hostilities. This means the United States may use nuclear weapons first. Nuclear weapons employment by the United States is governed by guidance to the Joint Force Commander as contained in JP 3-12, *Doctrine for Joint Nuclear Operations*, and other strategic level directives. The US remains party to treaties and international agreements that limit proliferation, testing, and possession of nuclear weapons.

2. **SIGNIFICANT EVENTS IN NUCLEAR WARFARE HISTORY**

Discovery of Radioactivity Henri Becquerel was born into a family of scientists. In 1896, Becquerel accidentally discovered radioactivity while investigating phosphorescence in uranium salts. Investigating the work of Wilhelm Conrad Roentgen, Becquerel wrapped a fluorescent mineral, potassium uranyl sulfate, in photographic plates and black material in preparation for an experiment requiring bright sunlight.

However, prior to actually performing the experiment, Becquerel found that the photographic plates were fully exposed. This discovery led Becquerel to investigate radioactivity, the spontaneous emission of radiation by material. In 1903 he shared the Nobel Prize in Physics with Pierre and Marie Curie "*in recognition of the extraordinary services he has rendered by his discovery of spontaneous radioactivity.*"

6 December 1941 President F. D. Roosevelt approves the development of the atomic bomb. This is given the name "The Manhattan Project."

16 July 1945 The Manhattan Project is proven a success by the detonation of the first nuclear weapon at the Trinity test site near Alamogordo, New Mexico. The yield of this weapon was equivalent to 18,600 tons of TNT.

25 July 1945 President H. S. Truman gave the final approval for the use of atomic weapons against the Japanese.

6 August 1945 The first nuclear weapon to be used in war, a 9,700-pound Uranium bomb dubbed "Little Boy," was dropped by the Enola Gay on the city of Hiroshima.

9 August 1945 Three days later, the last nuclear weapon to be used in war, a 10,000-pound Plutonium bomb called "Fat Man," was dropped on the city of Nagasaki. Total casualties and injuries estimates are shown below.

Estimate of Casualties	Hiroshima	Nagasaki
Pre-detonation population	350,000	195,000
Deaths	66,000	39,000
Injuries	69,000	25,000
Total casualties	135,000	64,000

2 September 1945 Japan surrenders to the allied forces aboard the USS Missouri in Tokyo Bay.

3. TYPES OF NUCLEAR REACTIONS

Fission Fission is a nuclear process by which a heavy unstable nucleus is divided into two or more lighter nuclei and energized neutrons, resulting in the release of substantial amounts of energy. The materials used to produce nuclear explosions by fission are those isotopes of Uranium or Plutonium, which undergo fission most readily. These are ^{235}U and ^{239}Pu . As illustrated in Figure 1, a free neutron impacts the nucleus of a heavy, unstable atom. This results in the atom splitting into two or more atoms plus two or three free neutrons. Most importantly, though, is the release of an enormous amount of energy.

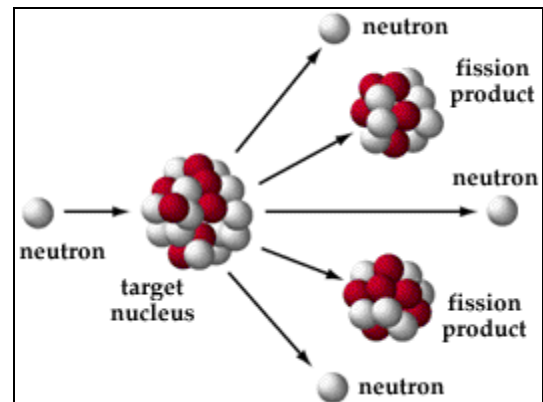


Figure 1: Fission

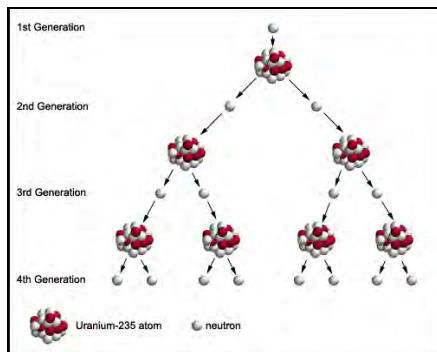


Figure 2: Nuclear Chain Reaction

In terms of continued energy production, the most significant point about the fission process is the emission of free neutrons, which can, in turn, produce other fission events, which in turn produce still another generation of free neutrons. This phenomenon is called a **nuclear chain reaction**. Each generation of fission-produced neutrons is capable of triggering a large number of fission reactions; and so, within a few generations, the total number of fissions produced can be monstrous (Figure 2).

Fusion Fusion is defined as the joining of atomic nuclei to form a heavier nucleus. If two nuclei of light atoms fuse, the fusion is accompanied by the release of a great deal of energy. The energy of the sun is believed to be derived from the fusion of hydrogen atoms to form helium. In nuclear fusion, a pair of light nuclei combines to form the nucleus of a heavier atom. This is generally done with two isotopes of Hydrogen, Deuterium and Tritium (see Figure 3 below) and is also known as a hydrogen bomb.

Nuclear fusion can only be brought about by means of very high temperature (millions of degrees) and pressure. The only thing that will produce the heat and pressure necessary for a

fusion reaction is a fission reaction. The fusion process is a clean nuclear reaction that has no radioactive byproducts and is referred to as "thermonuclear."

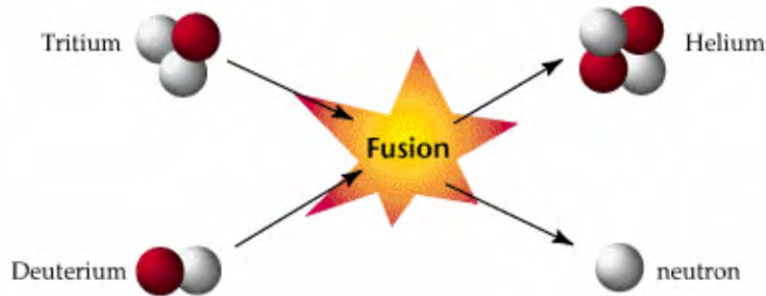


Figure 3: Fusion

4. **FIVE TYPES OF NUCLEAR BURSTS**

The height of any given burst will determine the type of burst. There are five different types of bursts: high air burst, low air burst, surface burst, subsurface burst, and underwater burst.

STUDENT NOTE:

Airbursts are the most efficient type of nuclear burst for causing destruction due to the force of the explosion.

High Air Burst This type of burst occurs when a nuclear weapon is detonated at a height that includes damage or casualties to ground targets, such as in an air defense role. Under these circumstances, neither induced radiation nor fallout of tactical significance occurs.

Low Air Burst These bursts occur when a nuclear weapon produces damage or casualties on the ground, but the burst is kept above the minimum fallout safe height. Under these circumstances, only neutron-induced radiation occurs. Since this type of radiation is relatively limited in area, changes in tactical plans can normally be made to ensure that it does not grossly interfere with military operations.

Surface Burst When a surface burst (or near surface burst) is employed, both neutron induced radiation and fallout result, as indicated by the dark, dirty, mushroom shaped cloud (because of the dirt and debris that is drawn up into it). The fallout pattern can be expected to overlap and overshadow the entire induced radiation (*radiation produced as a result of exposure to radioactive materials, particularly the capture of neutrons.*) pattern.

Subsurface Burst Subsurface bursts are detonated below the surface of the earth and are capable of producing induced radiation.

Underwater Burst The greatest radioactive hazard from an underwater burst is emitted from the base surge. This is a misty, highly radioactive cloud of water droplets (spray), moving rapidly outwards from ground zero, for a distance of 2 to 4 miles.

The base surge droplets evaporate, leaving behind an invisible base surge of radioactive gases and particles in the air, which continues to expand outwards and move in the downwind direction.

The length of time for which the invisible base surge remains radioactive depends on several factors including the energy yield of the explosion, the burst depth, and the nearness of the sea bottom to the point of burst.

Where the burst depth is sufficient to prevent the fireball from breaking the surface, virtually all energy is dissipated as shock, and the fallout is negligible.

5. **EFFECTS OF NUCLEAR DETONATIONS**

There are four effects of nuclear weapons detonations that are of military significance. These effects are thermal energy, nuclear blast, electromagnetic pulse(EMP), and nuclear radiation. (Note: EMP is a product of nuclear detonations; however, the energy output poses no threat to personnel or structures, and is not directly measured.)

Thermal Energy Within milliseconds after detonation, the temperature of the fireball reaches several million degrees centigrade resulting in a large output of thermal energy in the form of heat and light. Thermal energy travels in a straight line and is easily attenuated, being stopped by a small amount of material. If the material is flammable, it may burn resulting in widespread fires. The light from a nuclear explosion may cause temporary or permanent blindness.

Nuclear Blast The nuclear blast manifests as air pressure or wind emanating from the explosion. This blast travels in all directions and is 50% of the energy released from a nuclear explosion. There are two phases to the blast. The first phase is a compression wave traveling out from ground zero. After this initial wave passes, there will be a lull as the air pressure drops. This drop in air pressure around ground zero results in a second phase, a less intense negative phase coming back towards ground zero. There are two ways a nuclear blast wave can cause damage.

Overpressure is the difference between the pressure inside and outside of an object. This is due to what experts call "hydraulic ramming." It occurs when tornado winds catch on a small opening into the house, suddenly jamming the house with air - like blowing up a balloon. The resultant "overpressure" can cause the house to blow outwards, appearing to explode. The pressure from a nuclear blast can cause buildings or material to do the same and can harm personnel internally.

Dynamic Pressure This is the pressure of the wind against an object. Walk outside into a breeze and the force of the air molecules on one's face is an example of dynamic

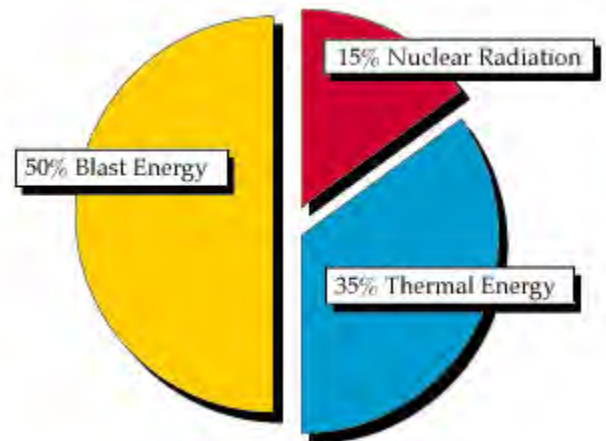


Figure 4: Nuclear Detonation Effects

pressure. Dynamic pressure causes damage by pushing objects around, into or through other objects.

Electromagnetic Pulse (EMP) is a broadband electromagnetic energy pulse of short duration produced by the interaction of nuclear radiation with the atmosphere and the earth's surface. It is short lived, but produces tremendous amounts of energy. High altitude and surface burst are the primary producers of EMP.

STUDENT NOTE:

The amount of energy released from a nuclear detonation is tremendous. There is, however, no way to quantify this amount of energy, and thus, the proportion is not included with the other three effects found in Figure 4.

Collectors of EMP Energy EMP will have a tendency to collect in things like long runs of cable, corrugated roofs, metal fencings, large antennas, power lines etc. Care should be taken to disconnect these items when possible to avoid the collection of EMP.

Equipment Susceptible To EMP

Most susceptible Computers, power supplies, alarms systems, intercom system and life-support system controls

Less susceptible Vacuum-tube equipment that does not include semiconductor rectifiers (transmitter, receivers and teletype-telephone).

Least susceptible High voltage 60 cycles per second (cps) equipment (transformers, motors, heaters, heavy-duty relays, circuit breakers).

Nuclear Radiation Blast and thermal effects occur to some extent in all types of explosions, whether conventional or nuclear. The release of ionizing radiation, however, is unique to nuclear explosions and is an additional casualty producing mechanism. This radiation is emitted at the time of detonation in the form of initial radiation and downwind as residual radiation (fallout).

Initial Radiation is ionizing radiation emitted within the first minute after detonation and results almost entirely from the nuclear processes occurring at detonation. About 5% of the energy released in a nuclear airburst is in the form of initial neutron and gamma radiation. The neutrons result almost exclusively from the energy producing fission and fusion reactions, while the initial gamma radiation comes from these reactions as well as from the decay of short-lived fission products.

The intensity of initial nuclear radiation decreases rapidly with distance from the point of burst due to absorption, scattering and capture by the atmosphere. The type of radiation received at a given location also varies with distance from the explosion. Near the point of the explosion, the neutron intensity is greater than the gamma intensity, but with increasing distance, the neutron radiation decreases. Ultimately, the neutron component of initial radiation becomes negligible in comparison with the gamma component.

The range for significant levels of initial radiation does not increase markedly with weapon yield and, as a result, the initial radiation becomes less of a hazard with increasing yield. With larger weapons, above 50 Kilotons (KT), blast and thermal effects are so much greater in importance that initial radiation can be ignored.

Residual Radiation is defined as that radiation which is emitted later than 1 minute after detonation and comes principally from the decay of radioisotopes produced during the explosion. Residual radiation takes the form of fallout from surface bursts or neutron induced areas from airbursts.

Fallout Large amounts of earth and other material will be vaporized by the heat of the fireball and drawn up into the mushroom cloud. This material becomes radioactive and returns to the earth as fallout. Fallout can be divided into immediate, medium range and long-range fallout.

Immediate fallout is heavy debris deposited within half an hour after the burst. This occurs mostly in the same area in which physical damage occurs.

Medium Range fallout is deposited between half an hour and 20 hours after a nuclear explosion. Medium range fallout is militarily significant and may extend out hundreds of kilometers from ground zero when large weapons are used. This is the primary concern when conducting nuclear hazard prediction.

Long-Range fallout consists of very small particles, which may fall for months or even years, particularly after a high yield thermonuclear explosion. This is diffused and eventually deposited over a large area of the earth's surface.

Neutron Induced Areas Neutrons are produced in all nuclear bursts. Some of these neutrons may be captured by the various elements in the soil under the burst. As a result, these particles become radioactive, emitting beta and gamma radiation for an extended period. Because beta particles are a negligible hazard unless ingested or in direct contact with the skin, neutron induced areas are primarily a gamma radiation hazard. Neutron induced areas are present in all nuclear explosions, but are of operational concern in airburst only. An airburst will produce a circular pattern of neutron-induced activity around ground zero that is unaffected by weather.

6. **YIELD OF NUCLEAR WEAPONS**

The "yield" of a nuclear weapon is a standard measurement of the amount of explosive energy it can produce. Yield is commonly expressed as the quantity of chemical explosive (TNT) that would produce the same energy release when it explodes. For example, the atomic weapon which decimated Hiroshima in 1945 had a yield of 13 kilotons; that is, the explosive power of 13,000 tons of TNT. The largest conventional bomb dropped in World War II contained about 10 tons of TNT.

Since Hiroshima, the yields of nuclear weapons have been vastly increased. The world's largest nuclear detonation, set off in 1962 by the Soviet Union, had a yield of 58 megatons: equivalent to 58 million tons of TNT.

STUDENT NOTE:

As the yield of nuclear weapons increase, the destruction caused does not increase as one might expect, and varies on the deployment of such devices. For example, a single nuclear bomb with a yield of 1 megaton would destroy 80 square miles, while 8 bombs, with a yield of 125 kilotons each, would destroy 160 square miles. This is one reason for the development of delivery systems that are capable of carrying multiple warheads.

7. TYPES OF RADIATION

There are four types of radiation associated with nuclear detonations that are of biological significance.

Alpha particle is a helium nucleus consisting of two protons and two neutrons. They are positively charged and highly ionizing but have little penetrating power Figure (5). If the source of the radiation is external to the body, all of the alpha radiation is absorbed in the superficial layers of dead skin cells, or any outer clothing or covering. Because of this, alpha radiation is not an external hazard but is a significant hazard if ingested or inhaled.

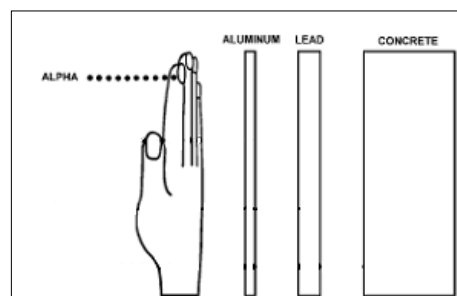


Figure 5: Alpha

Beta particles are electrons that are ejected from an atom when the atom rearranges itself into a more stable configuration. They are negatively charged, but can only penetrate a few millimeters of skin tissue (Figure 6). If the beta-emitting material is on the surface of the skin, the resulting beta radiation causes damage to the skin similar to a superficial thermal burn but causing significantly more damage.

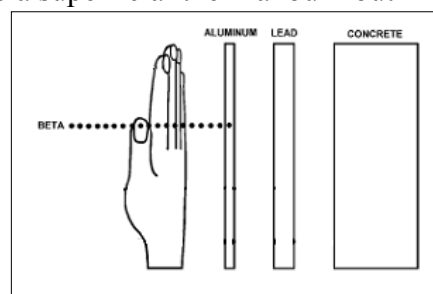


Figure 6: Beta

If the beta particles are ingested or inhaled, the damage will be in small spheres of tissue around each fragment or radioactive source. The total tissue damage is a function of the number of such sources within the affected tissue. Dead cells are replaced quickly in most tissues. The less dense energy deposition of beta radiation may simply damage rather than kill affected cells, thereby causing cells to mutate as they divide. Beta radiation is a significant hazard if ingested or inhaled.

Gamma radiation is emitted during the nuclear detonation or later in fallout. It is an electromagnetic wave and has no charge. Because gamma radiation has no charge or mass, it is highly energetic and is extremely penetrating (Figure 7).

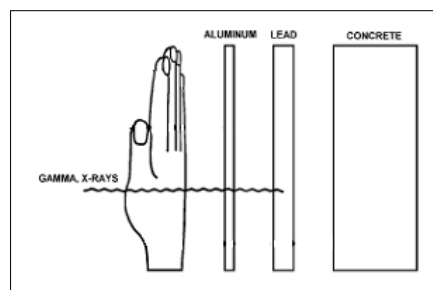


Figure 7: Gamma

Because of its penetrating power, the effects of gamma radiation can be independent of the location of the source, (i.e., internal or external to the body). High-energy gamma emitters deposited within the body can result in total body irradiation just as effectively as external sources, if the

quantities deposited are large enough and despite the fact that the emitters may not be distributed uniformly throughout the body.

Neutron Neutrons are produced in the processes of nuclear fission and fusion. Neutrons have no charge, yet because of their relatively large mass, they can severely disrupt atomic structures (Figure 8). Compared to gamma rays, neutrons can cause much more damage to tissue. Collisions with atomic nuclei slow down a neutron so it may undergo nuclear capture. In nuclear capture, the neutron is actually absorbed into the target nucleus making the nucleus unstable and, therefore, radioactive.

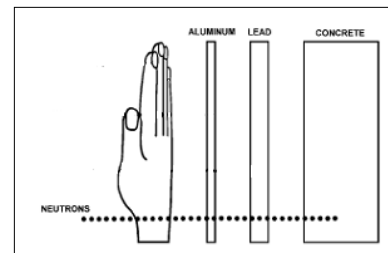


Figure 8: Neutrons

8. **MEASUREMENT OF RADIATION**

The detection and measurement of radioactive fallout produced by nuclear explosions will give important information affecting operations. There are different units for measuring radiation, just as there are different units of measurement for distance.

Radiation Absorbed Dose (rad) A rad is a measurement of energy absorbed, per unit of absorbed mass. The rad was developed to place all types of radiation on an equal footing. Earlier types of measurement, like the roentgen, only dealt with individual radiation types in a certain medium, like air. The rad deals with any kind of radiation in any medium in terms of fundamental energy units. The sub unit of the rad is the millirad (mrad). It takes 1000 mrad = 1 rad.

Gray (Gy) is the international unit that is used to measure radiation in the same manner as the rad. One hundred centigray (cGy) is equal to one gray. Most of the Marine Corps radiation detection and measuring equipment reads in Gray.

Total Dose is the amount of radiation absorbed by man and material. Dose is best compared to the odometer in a car. The odometer tells someone the total number of miles the car has been driven. Instruments designed for total dose will tell someone the total number of rad or an equivalent unit of measurement it has been exposed to.

Dose Rate is the degree of exposure to radiation, normally expressed in cGy per hour (cGyph). Back in the previously mentioned car, one can compare a dose rate instrument to the speedometer. The speedometer will tell the driver the rate at which they are moving. The dose rate instrument will tell an individual their rate of exposure to radiation. Even though the car is moving at 55 mph, that doesn't mean 55 miles has been instantly covered in distance. Similarly, being exposed to 25 cGyph does not mean one has received a dose of 25 cGy, but will if they remain in the area for one hour.

9. **SYMPTOMS AND TREATMENT OF RADIATION EXPOSURE.**

Radioactive material released into the environment can pose both an internal and external hazard to personnel operating in radiological environments. Of the four types of radiation, alpha and beta radiation present primarily internal hazards, while gamma and neutron radiation present both internal and external hazards.

STUDENT NOTE:

Alpha and Beta radiation affect the body by entering through inhalation, ingestion or open wounds. Gamma and neutron radiation penetrates most material and can affect the entire body.

Symptoms The key signs and symptoms of radiation sickness that indicate radiation exposure has occurred are described below. Some of these signs and symptoms, along with the information provided in the table below (see Figures 9 and 10), can provide an estimate as to the approximate severity of exposure.

DOSE (cGy)	SYMPTOMS	ONSET	DURATION
0-35	None	N/A	N/A
35-75	Mild Nausea, Headache	6 Hours	12 Hours
75-125	Nausea/Vomiting (30%)	3-5 Hours	24 Hours
125-300	Nausea/Vomiting (70%)	2-3 Hours	3-4 Days
300-530	Nausea/Vomiting (90%) Diarrhea (10%)	2 Hours 2-6 Hours	3-4 Days 2-3 Weeks
530-830	Severe Nausea/Vomiting (90%) Diarrhea (10%)	1 Hour 1-8 Hours	Direct Transit into GI Syndrome
830-3000	Severe Nausea/Vomiting (90%) Disorientation (100%)	3-10 Min 3-10 Min	Persists Until Death 30 Min-10 Hours

Figure 9: Dose, Onset, and Duration of Symptoms

Nausea and Vomiting occur with increasing frequency as the radiation dose exceeds 100 to 200 cGy. Their onset may be seen as long as 6 to 12 hours post exposure and usually subsides within the first day for these lower doses. The occurrence of vomiting within the first two hours is usually associated with a severe radiation dose. Vomiting within the first hour, especially if accompanied by explosive diarrhea, is associated with doses that frequently prove fatal. Due to the transient nature of these symptoms, it is possible that the patient will have already passed through the initial phase of GI distress before being seen by a physician. It will be necessary to inquire about these symptoms at the initial examination.

Hyperthermia Casualties who have received a potentially lethal radiation injury show a significant rise in body temperature within the first few hours post exposure. Although the number of cases is few and is frequently overlooked, this condition appears to be a consistent finding. The occurrence of fever and chills within the first day post exposure is associated with a severe life-threatening radiation dose. Hyperthermia may occur in patients who receive lower, but still serious radiation doses (200 cGy or more).

Erythema A person who has received a whole body dose of more than 1000 cGy will develop erythema within the first day post exposure. Erythema is less frequently seen with lower doses (200 cGy or more). Erythema multiforme is characterized by spots, blisters, or other lesions on the skin and usually results from a reaction to medications, infections, or illness.

Hypotension A noticeable and sometimes clinically significant decline in systemic blood pressure has been recorded in victims who have received a supralethal whole body radiation dose. A severe hypotensive episode was recorded in one person who had received several thousand cGy. In persons who received several hundred cGy, a drop in systemic blood pressure of more than 10 percent has been noted. Severe hypotension after irradiation is associated with lethal injury. However, if the radiation dose has been determined to be less than 1000 cGy, then a physical injury should be suspected as being responsible for the hypotension.

ORGANS	RELATIVE RADIOSENSITIVITY
Lymphoid organs; bone marrow, testes and ovaries; small intestines; embryonic tissue	High
Skin; cornea and lens of eyes; gastrointestinal organs: cavity, esophagus, stomach, rectum	Fairly high
Growing cartilage; the vasculature; growing bones	Medium
Mature cartilage or bone; lungs; kidneys; liver; pancreas; adrenal gland; pituitary gland	Fairly low
Muscle; brain; spinal cord	Low

Figure 10: Relative Radiosensitivity of Various Tissues

Neurological Dysfunction Experience indicates that almost all persons who demonstrate obvious signs of damage to the central nervous system (CNS) within the first hour post exposure have received a supralethal dose. Symptoms include mental confusion, convulsions, and coma. Without aggressive medical support, these patients succumb within 48 hours.

Psychological Effects Personnel witnessing a nuclear detonation are likely to suffer sensory overload as well as the fear of injury or death. Some personnel may have immediate adverse psychological reactions, even in the absence of actual physical injury.

Treatment Nuclear casualties should be treated the same as conventional casualties. Wounds caused by blast are similar to other combat wounds. Thermal burns are treated as any other type of burn. First aid cannot help radiation casualties. These casualties must be referred to medical facilities.

STUDENT NOTE:

It is important to remember a prognosis based on physical factors is sometimes difficult because it is possible for some people to absorb nearly twice as much radiation as others without serious harm. The very old and very young are the most susceptible. Pathological examinations would not only be largely impracticable but of little use. We come eventually to old fashioned clinical medicine and observation and particularly to timing of onset of symptoms after exposure, for the real guide. If there are no symptoms for 24 hours after exposure and then they consist only of slight vomiting and nausea, the prognosis is good. If persistent vomiting occurs within two hours, fever before seven days, or purpura (hair loss) before three weeks, the prognosis is probably hopeless. Treatment consists of rest and sedation and a bland nourishing diet with plenty of fluids. In the more severe cases, intravenous fluids and antibiotics of the erythromycin wide-spectrum type should be started after the fifth day.

10. UNIT SURVIVAL MEASURES FOR NUCLEAR WARFARE

Unit survival measures include protective steps taken pre-attack, during, and post-attack that can be accomplished in the event of a nuclear threat or attack. In addition to these specific actions, additional considerations, such as those indicated below, must be taken into account. Personnel can reduce their risk of becoming casualties by knowing how terrain affects nuclear weapons. It is essential for personnel to recognize positions that provide optimum protection against possible nuclear blasts.

Reverse slopes of hills and mountains give some nuclear protections. Both heat and light from the fireball of a nuclear blast, as well as the initial radiation tend to be absorbed by hills and mountains. Energy that is not absorbed is deflected above personnel because of the slope.

The use of gullies, ravines, ditches, natural depressions, fallen trees, and caves can also reduce the number of nuclear casualties. While predicting the actual point of a nuclear attack is impossible, the best protection remains an area below ground with some form of overhead cover.

When the threat of nuclear weapons use is high, smoke can be used to attenuate (weaken) the thermal energy effects from nuclear detonations.

Pre-attack Actions These actions are critical because they will increase the unit's survivability to the greatest possible extent. These actions range from selecting the right shelters, fortifying those shelters, and protecting vital equipment. Of primary concern should be protection from gamma and neutron radiation. Gamma radiation protection requires thick layers of dense or heavy shielding material, such as lead, iron, or stone. Neutron radiation protection, however, can be provided by light, hydrogen-based materials (water, paraffin, and oil).

STUDENT NOTE:

Water delays and absorbs neutrons, however, since gamma radiation is also given off in a nuclear detonation, dense shielding is still required.

Fighting Positions Digging in provides improved defense, as earth is a good shielding material. Not only does a well-constructed fighting position provide excellent protection against initial nuclear effects, but it can also reduce residual radiation (from fallout).

Field-Expedient Overhead Cover Adequate overhead cover is capable of reducing exposure to thermal and initial nuclear radiation, as well as fallout. When constructing effective overhead cover, personnel should keep these factors in mind: choose dense covering materials; cover in depth; provide strong supports; and cover as much of the opening as possible.

Earth-Shielded Positions Bunkers can provide excellent protection against all effects of a nuclear detonation. It is important that as much earth cover as possible should be placed between the individual and the blast. Sand, or compact clay, provides better radiation shielding than earth (because it is denser). Dampening the cover (earth, clay, concrete) protects from both gamma and neutron radiation.

Buildings Certain types of building can offer excellent shelter from nuclear hazards, and require only a minimum amount of time and effort to adapt for use. Buildings must be chosen carefully; the stronger the structure, the better protection against blast effects.

Tents Not a preferred shelter against the effects of nuclear weapons, however, they can provide limited protection from residual nuclear effects (particulate fallout).

Armored Vehicles These vehicles are capable of providing good nuclear protection, which can also be improved (if time is available) by digging-in these vehicles, or placing them in trenches or cuts in roadways. Sandbags can also be used as radiation shielding.

Electromagnetic Equipment When ample warning has been given, electronic equipment (radios and computers) must be turned off and protected. Damage from an EMP can induce a current in any unprotected electrical conductor and disrupt or overload and damage components.

During Attack Actions As previously covered in the CBRN Immediate Actions period of instruction, nuclear attack indicators are unmistakable. Immediate actions must be automatic and instinctive. These steps include the following:

- Drop facedown immediately with head facing the blast.
- Close eyes.
- Protect exposed skin from heat by putting hands and arms under or near the body and keeping the helmet on.
- Remain facedown until the blast wave passes and debris stops falling.

Additional protective measures for personnel in fighting positions or shelters must be initiated automatically as well. These steps were also previously covered and additional information can be found in MCWP 3-37.2, page II-14.

Post-attack Actions Protection must not stop when the attack ends. Post-attack recovery begins immediately after an attack.

Personnel must check for contamination. Hazards must be reduced utilizing appropriate decontamination techniques (brush, scrape, or flush radiological contamination from surfaces).

Unit personnel should cover positions and shelters, and RADIAC meter operators begin continuous monitoring. Use of IPE effectively reduces the amount of contamination that can enter the lungs and the potential for skin burns (alpha and beta particles).

References:

FMFM 11-2 Nuclear, Biological, and Chemical Operations

MCWP 3-37.2 NBC Protection

MCWP 3-37.3 NBC Decontamination (FM 3-5)

FM 8-9 NATO Handbook on the medical aspects of NBC Defense Operations

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1405

Recognize Combat Stress Disorders

TERMINAL LEARNING OBJECTIVES

1. Given a psychological casualty in a simulated combat environment and standard field medical equipment and supplies, manage combat stress disorders to stabilize the casualty, per the references. (FMSO-HSS-1405)

ENABLING LEARNING OBJECTIVES

1. Without the aid of references, given a description or title, identify the definition of combat stress, within 80 percent accuracy, per FM 90-44, Combat Stress and FM 22-51, Leaders' Manual for Combat Stress Control. (FMSO-HSS-1405a)
2. Without the aid of references, given a list, identify factors that increase the risk of combat stress, within 80 percent accuracy, per FM 90-44, Combat Stress and FM 22-51, Leaders' Manual for Combat Stress Control. (FMSO-HSS-1405b)
3. Without the aid of references, given a list, identify the symptoms of combat stress disorder, within 80 percent accuracy, per FM 90-44, Combat Stress and FM 22-51, Leaders' Manual for Combat Stress Control. (FMSO-HSS-1405c)
4. Without the aid of references, given a list, identify treatment for combat stress disorder, within 80 percent accuracy, per FM 90-44, Combat Stress and FM 22-51, Leaders' Manual for Combat Stress Control. (FMSO-HSS-1405d)
5. Without the aid of references, given a list, identify prevention techniques of combat stress, within 80 percent accuracy, per FM 90-44, Combat Stress and FM 22-51, Leaders' Manual for Combat Stress Control.. (FMSO-HSS-1405e)

1. **COMBAT STRESS DEFINED**

Combat stress is defined as the mental, emotional, or physical tension, strain, or distress that results from exposure to combat related conditions. Shell shock, as combat stress was called during World War I, often was viewed as a coward's reaction to fighting. There were little or no selection process to filter out those with psychiatric illnesses before entering the military. Men were killed by firing squad that today would never have been admitted into the military. The few men who were diagnosed with combat fatigue were evacuated home, often when it was too late for recovery. Many developed chronic psychiatric conditions.

However, World War II changed a few things. In the US, there was more pre-recruitment screening. The problem of combat stress was grudgingly accepted as part of warfare and by the end of WWII, psychiatrists were stationed within many units. Another major change was men were no longer moved away from the front to receive treatment, except for logistical reasons or in severe cases. In Korea there was even a mobile psychiatric unit conducting "stress control operations" near the front.

Male culture still had difficulty dealing with man's emotional response to war. Vietnam underlined this. Despite progress, there remained little acknowledgement of combat stress. Many men turned to drugs such as marijuana, heroin, and alcohol. The lack of engagement with such a central issue cost many men their lives on the battle field, in conflict zones, and with post traumatic disorders ending in suicide after the war ended.

2. **RISK FACTORS**

Combat and combat-related military missions can impose combinations of heavy physical work, sleep loss, dehydration, poor nutrition, severe noise, vibration, blasts, exposure to heat, cold or wetness, poor hygiene facilities, and perhaps exposure to infectious diseases, toxic fumes or other substances. These, in combination with other influences such as concerns about problems back home, affect the ability to cope with the perception of danger and diminish the skills needed to accomplish the mission. Environmental stressors often play an important part in causing the adverse or disruptive combat stress reaction behaviors. Figure 1 lists several risk factors that may lead to increased combat stress disorders.

<u>Personal</u>	<u>Unit</u>
Problems at home (financial, marital) Sleep deprivation Poor physical condition Malnutrition Substance abuse	Poor unit cohesion Poor leadership Intense and frequent exposure to high combat Improper or inadequate training

Figure 1. Risk Factors of Combat Stress

3. **PHYSICAL SYMPTOMS**

Mild stress reactions may be signaled by changes in behavior and only noticeable by the person himself or by close friends. Leaders and medical personnel depend on information from the service member or their comrades for early recognition of combat stress reactions to

provide prompt and appropriate help. Figure 2 lists mild stress reactions and figure 3 lists severe stress reactions that you may see.

Physical Reactions	Emotional Reactions
Trembling Jumpiness Cold sweats, dry mouth Insomnia Pounding heart Dizziness Nausea, vomiting, or diarrhea Fatigue “Thousand-yard” stare Difficulty thinking or speaking	Anxiety, indecisiveness Irritability, complaining Forgetfulness, inability to concentrate Nightmares Easily startled by noise, movement, and light Tears, crying Anger, loss of confidence in self and unit

Figure 2. Mild Stress Reactions

Physical Reactions	Emotional Reactions
Constantly moving around Flinches or ducks at sudden sound/movement Shakes, trembles Cannot use part of body (hand, arm, leg) for no apparent physical reason Inability to see, hear, or feel Insomnia, severe nightmares Is physically exhausted; cries Freezes under fire or is totally immobile Stares vacantly, staggers or sways when standing Panics, runs away under fire	Talks rapidly and/or inappropriately Argumentative; acts recklessly Indifferent to danger Memory loss Stutters severely, mumbles or cannot speak at all Sees or hears things that do not exist Has rapid emotional shifts Socially withdrawn Apathetic Hysterical outbursts Frantic or strange behavior

Figure 3. Severe Stress Reactions*

*The above listed warning signs do not necessarily mean that the person must be relieved from duty. They do, however, indicate an immediate need for evaluation.

Although most people suffering from combat stress usually improve when they are able to get warm food, rest, and an opportunity to share feelings with comrades, their unit leader, or to their Corpsman, some do not. If the symptoms endanger the individual, others, or the mission, or if they do not improve within a day or two, or seem to worsen, they must be referred to the unit Chaplain or Medical Officer.

4. COMBAT AND OPERATIONAL STRESS CONTINUUM

The Stress Continuum (see figure 4) is a model that identifies how Sailors and Marines react under stressful situations. It is the foundation of Navy and Marine Corps efforts to promote psychological health.

The continuum is a color-coded map to identify behaviors that might arise from serving in combat, in dangerous peacekeeping missions and in the highly charged day-to-day work that

is required of today's military. While its primary use is for individual service members, the continuum also is a valuable tool to track behaviors of military families and commands.

Common Behaviors of the Four Zones

GREEN (READY): Not stress-free, but mastering stress with good coping skills. Ready to go!

- Remain calm, steady, confident
- Exhibit ethic and moral behavior
- Eat healthfully, exercise regularly and get proper sleep
- Keep a sense of humor and remain active socially, spiritually
- Use alcohol in moderation, if at all
- Get the job done and show respect for fellow warriors

YELLOW (REACTING): Reacting to life's normal stressors. Mild and reversible!

- Feel anxious, fearful, sad, angry, grouchy, irritable or mean
- Cut corners on the job
- Are negative or pessimistic
- Lose interest, energy or enthusiasm
- Have trouble concentrating
- Become excessive in spending, Internet use, playing computer games, etc.

ORANGE (INJURED): Stress injuries damaging the mind, body or spirit. Temporarily non-mission ready!

- Lose control of emotions or thinking
- Have nightmares, sleep problems, obsessive thinking
- Feel guilt, shame, panic or rage
- Abuse alcohol or drugs
- Change significantly in appearance or behavior
- Lose moral values

RED (ILL): Stress injuries that become stress illnesses. Only diagnosed by health professionals! These are Orange Zone behaviors that persist, get worse, or get better and then come back worse. The service member cannot function properly.

All medical disorders in individuals exposed to combat or other operational or traumatic stress are found in the Red Zone. These include posttraumatic stress disorder (PTSD), major depression, certain anxiety disorders and substance abuse disorders. The

distinction between Orange Zone stress injury and Red Zone stress illness can only be made by a medical or mental-health professional.

Red Zone illnesses are very treatable. The majority of Sailors and Marines who are treated finish their tours of duty and many continue to serve. Early treatment is the key.

Resilience to stress is the underlying theme of the continuum— building it, maintaining it and restoring it when necessary.

The more resilience shown by a service member the easier it is to stay in the Green Zone.

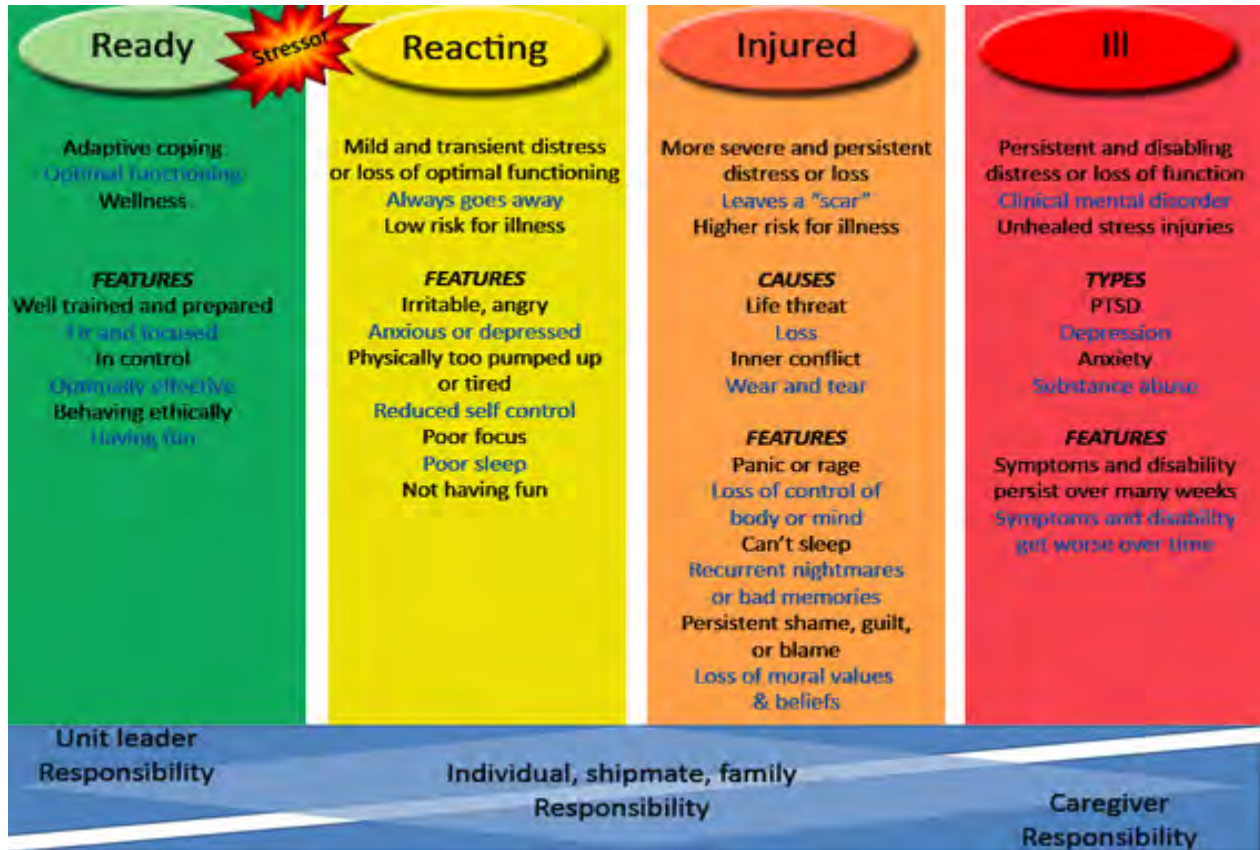


Figure 4. Combat and Operational Stress Continuum

COSC Decision Flowchart (see figure 5) is a simple tool for leaders to determine where a Marine fall on the stress continuum and shows what to do to mitigate or, if necessary, treat the injury or illness. The Decision Flowchart is applicable at all stages of the deployment cycle. The lists of stress symptoms on the far right, highlighted by the Yellow, Orange, and Red brackets, give the leader or Marine some indications of typical problems at each level of function. The diamonds in the middle specify decisions needed to determine the severity of the stress problem, and the boxes on the left indicate what action needs to be taken for each level of severity. It can also be used by individual Marines to evaluate themselves or their buddies who have symptoms of deployment-related stress. This is used by leaders to determine what actions should be taken with Marines experiencing combat stress problems.

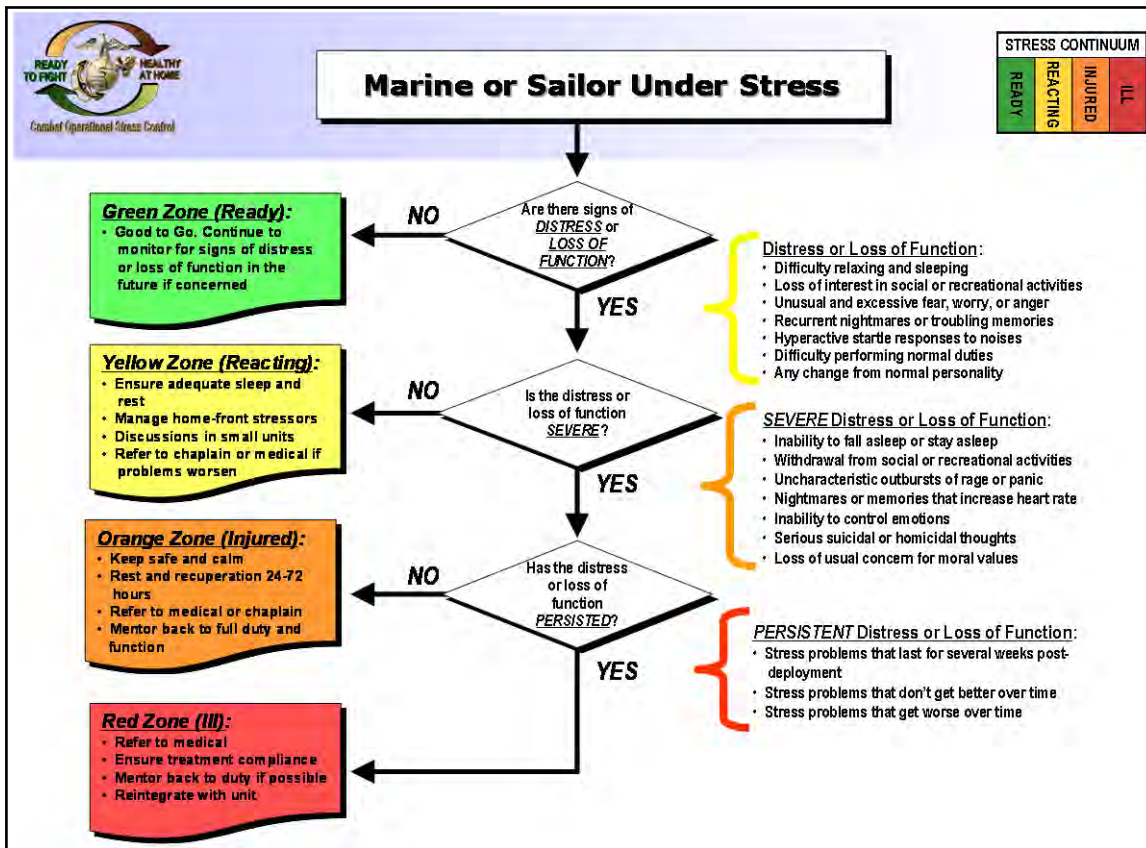


Figure 5. Combat Operational Stress Decision Flowchart

5. TREATMENT

Treatment is kept very simple. Most people experiencing combat stress do not need therapy or psychotherapy. The goal is to rapidly restore the person's coping skills so that he or she functions and returns to duty. Sleep, food, water, hygiene, encouragement, work details (to keep them busy), and confidence restoring talk are often all that is needed to restore the person back to full operational readiness.

This can be done while still attached to their unit (provided that the unit is not actively engaged in combat operations), in rear positions, or at medical companies. If they are sent to a medical unit, they should not be co-located with patients that have been injured or are sick. The person experiencing combat stress must be encouraged to continue to think of himself as a warfighter, rather than a “patient” or a “sick person.”

Every effort is made to reinforce the person's identity. They are required to wear their uniform, keep their normal protective equipment, and flak vests with them. When possible, they are allowed to keep their weapons after the weapons have been cleared. These are the biggest factors that aid in returning battle-fatigued members to effective duty.

6. **PREVENTION**

The old saying that the best offense is a great defense is true in preventing combat stress. You play a vital role in preventing severe combat related disorders. Education of troops and your corpsman is vital.

Preparation to control stress starts long before they actually reach combat. The word control has been chosen deliberately. It is used to emphasize the active steps which leaders, supporting personnel, and the individual must take to keep stress within the acceptable range. Stress is a fact of life for everyone. It is controlled combat stress (when properly focused by training, unit cohesion, and leadership) that gives marines and sailors the necessary alertness, strength, and endurance to accomplish their mission. Controlled combat stress can call forth stress reactions of loyalty, selflessness, and heroism. See figure 6 for a general list of preventive measures for each period.

<p><u>Pre-deployment</u></p> <ul style="list-style-type: none">- Be aware of commitments- Prepare family and loved ones- Get your personal affairs in order- Educate your troops and yourself in the kinds of reactions to stress they can expect while in garrison, the field exercise, and actual combat. <p>Help them understand the formation of a reaction to stress and the range of normal reaction that will help them develop more healthy adaptation responses.</p> <p><u>During deployment</u></p> <ul style="list-style-type: none">- Learn how much stress you can handle- Recognize stress in yourself and others- Maintain physical fitness (the #1 way to reduce stress!!!)- Spend time alone (be aware of too much time alone, however)- Establish support groups- Stay out of set routines as this will lead to boredom- Try to get at least four hours of sleep per day- Get good sleep before going on sustained operations

Figure 6. Control of Combat Stress

Combat Operational Stress First Aid (COSFA)

Stress first aid requires a set of skills designed to address a certain type of problem in a certain situation—the ability to perform a quick and accurate assessment, to find the best way to meet the specific needs identified, and to identify when more than first aid is needed to ensure that such further treatment is received quickly.

These skills require familiarity with the many signs and symptoms of injury and the uses and limitations of resources available. Flexibility is the key, since each situation is unique. Stress first aid consists of seven actions and is organized on three levels (see figure 7):

Continuous Aid

- 1) Check: Assess, observe and listen
- 2) Coordinate: Get help, refer as needed

Primary Aid

- 3) Cover: Get to safety ASAP
- 4) Calm: Relax, slow down, refocus

Secondary Aid

- 5) Connect: Get support from others
- 6) Competence: Restore effectiveness
- 7) Confidence: Restore self-esteem and hope



Figure 7. 7 C's of Stress First Aid

CONCLUSION

It is important to treat combat stress casualties as close to the front as possible. Everyone is susceptible to the effects of combat stress, regardless of past performance, rank, or duty. Combat stress reactions are inevitable in combat, but high stress casualties are not. History shows that highly trained and small cohesive units with good leadership have less problems. By educating our Marines, Sailors, and ourselves we can be proactive in recognizing and taking action when we deal with combat stress.

REFERENCES

FM 22-51, Leaders' Manual for Combat Stress Control
MCRP 6-11, Combat and Operational Stress Control
Naval Center for Combat Operational Stress Control, website

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1701

Provide Health Service Administrative Support

TERMINAL LEARNING OBJECTIVE

1. Given the requirement, necessary records, forms and the references, perform administrative procedures to ensure mission essential medical administrative functions within the unit are met, per the references. (FMSO-HSS-1701)

ENABLING LEARNING OBJECTIVES

1. Without the aid of reference, given a description or list, describe the proper procedures to initiate Light Duty, within 80 percent accuracy, per MANMED P-117, Chapter 18. (FMSO-HSS-1701a)
2. Without the aid of reference, given a description or list, describe the proper procedures to initiate a Limited Duty Board, within 80 percent accuracy, per MANMED P-117, Chapter 18. (FMSO-HSS-1701b)
3. Without the aid of reference, given a description or list, describe the proper procedures to initiate a Physical Evaluation Board, within 80 percent accuracy, per MANMED P-117, Chapter 18. (FMSO-HSS-1701c)
4. Without the aid of reference, given a description or list, identify Special Duty Examinations conducted for Navy and Marine Corps personnel, within 80 percent accuracy, per MANMED P-117, Chapter 15. (FMSO-HSS-1701d)
5. Without the aid of reference, given a description or list, identify appropriate Marine Corps Inspection Programs, within 80 percent accuracy, per NAVMC Directive 5040.6 (current series). (FMSO-HSS-1701e)
6. Without the aid of reference, given a description or list, describe the proper procedures on how to write an Evaluation/Fitness Report and Counseling Record, within 80 percent accuracy, per BUPERSINST 1610.10 (current series). (FMSO-HSS-1701f)
7. Without the aid of reference, given a description or list, describe the proper procedures on how to process Navy and Marine Corps Award nominations, within 80 percent accuracy, per SECNAVINST 1650.1 (current series). (FMSO-HSS-1701g)

INTRODUCTION

Navy Medicine will evaluate each instance in the career of a Navy and Marine Corps active duty service member (ADSM) in which a medical condition will be responsible for the member's inability to operate in a medically unrestricted duty status. Periods of "light duty" may be sufficient to allow a return to duty status; failing this, Navy Medicine will conduct Medical Evaluation Boards (MEBs) to determine whether the member will be placed on temporary LIMDU and/or referred into the Disability Evaluation System (DES). For the purpose of determining cases to be referred to MEBs, "medically unrestricted duty status" signifies that there is no medical condition prohibiting the member's ability to fully execute the duties and responsibilities of their rank, rate, specialty, or office including operational/worldwide assignability.

1. LIGHT DUTY

A properly credentialed DOD health care provider may recommend a Navy or Marine Corps member for light duty to evaluate the affect that an illness, injury, or disease process has on the member's ability to be in a medically unrestricted duty status. "Light duty" is a period when the member reports to their work space, but during the period the member is excused from the performance of certain aspects of military duties, as defined in their individual light duty write-up. The goal of light duty is to allow for appropriate clinical evaluation without causing further damage to the patient during the evaluation period. A provider placing a member on light duty does so only with the expectation that the member will be able to return to medically unrestricted duty status at the end of the light duty period; care must be exercised to ensure that light duty is not abused or used as an inappropriate substitute for MEB overview of a case.

Light duty presumes frequent provider and patient interaction to determine whether return to medically unrestricted duty status or more intensive therapeutic intervention is appropriate in any given case. Therefore, light duty will be ordered in periods not to exceed 30 days to ensure appropriate patient clinical oversight. Consecutive light duty for any "new condition" up to 90 days may be ordered by the provider (in maximum 30-day periods), but in no case will light duty exceed 90 consecutive days, inclusive of any convalescent leave periods. At the end of the light duty period, the member will either be immediately returned to medically unrestricted duty or will be referred to an MEB.

Key Points

- A provider recommending a member for light duty will complete NAVMED 6310/1, Individual Sick Slip, clearly annotating the restrictions and limitations imposed upon the member's duty, as well as the time period required in a light duty status.
- Light duty is a recommendation to the member's command. The command is under no obligation to either accept the members light duty status or to conform to the recommendations.
- When a command cannot accommodate a member in a light duty status with the physical limitations and restriction prescribed, the health care provider recommending

Light Duty should initiate MEB proceedings which will lead to the patient's placement on temporary Limited Duty.

- Placing a member on light duty does NOT, in and of itself, require the convening of a MEB.

2. **LIMITED DUTY (LIMDU)**

A properly convened MEB at a Military Treatment Facility (MTF) may recommend that a member be placed on a documented period of medically restricted duty as a result of illness, injury, or disease process. LIMDU is a period when the member reports to their work space, but during the period the member is excused from the performance of certain aspects of military duties as defined in their individual LIMDU write-up.

LIMDU is similar in many respects to light duty; major differences between the two are that, in comparison to light duty, LIMDU periods:

- Last longer than light duty periods.
- Require notification to not only the parent command, but to respective service headquarters and the servicing Personnel Support Detachment (PSD) of the member's status.
- May necessitate the transfer of the member from the parent command if it is a deployable unit.
- Does not necessarily require the consent of the member's parent command, or of the respective service headquarters.
- LIMDU may only be provided to a patient as the result of the actions of a MEB properly convened at a MTF. To recommend a service member for LIMDU, a health care provider who is board certified or board eligible must complete NAVMED 6100/5, Abbreviated Medical Evaluation Board Report (Section 1), have the patient complete Section 2, and forward to the appropriate MTF.

To return a patient to duty from LIMDU, the attending physician shall record the information relevant to the return to medically unrestricted duty in the patient's medical record using the NAVMED 6100/6, Return of a Patient to Medically Unrestricted Duty from Limited Duty. A return to duty from LIMDU status does not necessitate the convening of a MEB, but does require the approval of the Convening Authority prior to becoming effective. A note merely stating "returned to duty" or "fit for duty" is clinically insufficient and not appropriate. The NAVMED 6100/6 note must depict the findings, prognosis, and any residual effects that may be apparent. Additionally, the physician will counsel the patient of the return to duty status and ensure that the patient, along with the NAVMED 6100/6 presents to the MTF patient administration for appropriate counseling and to ensure appropriate official notification procedures are complete.

Convening Authority (CA) - authority in Navy Medicine to convene a MEB is granted exclusively to the commanding officers of naval medical centers, naval hospitals, naval medical clinics, and the naval ambulatory care centers. Approval from CA is required for a member to be placed on LIMDU and return to Full Duty status prior to becoming effective.

MTF commanders, may; however, consider authorizing their respective branch clinic's clinical staffs to serve as MEB members and to initiate Medical Evaluation Board Report (MEBR) which then must be forwarded to the MTF for processing and CA approval and signature before the MEBR findings or recommendations become effective.

Medical Evaluation Board - is a panel of providers attached to one of the MTFs whose commander or commanding officer (CO) has been expressly designated to hold "convening authority." In essence, if a patient has a medical condition which will be responsible for their inability to operate in a medically unrestricted duty status for 90 days or greater duration, the patient must be referred to a MEB. A MEB evaluates the patient and produces a MEBR. The Manual of the Medical Department has a complete list of all circumstances and medical conditions indicating need for a referral to a MEB. The purpose of the MEBR is to:

- Place a patient on LIMDU.
- Verify that the member is "fit for duty," after being cleared from LIMDU, and should be able to execute the duties of their respective office.
- Refer a patient to the Physical Evaluation Board (PEB) for a determination of the patient's fitness for continued service.

A MEB should convene when a provider determines that:

- A member has a condition that appears to significantly interfere with performance of duties appropriate to the member's office, grade, rank, or rating.
- A member has a condition that will prohibit returning the patient to his or her parent command in a medically unrestricted duty status following appropriate light.
- A member has a condition that may seriously compromise the member's health or well-being if the member were to remain in the military service.
- A member has a condition that may prejudice the best interests of the Government if the member were to remain in the military service.
- A member has a condition that requires assignment limitations (e.g., geographic restraints or assignment near a particular MTF with specialty services, etc.).
- A member refuses reasonable medical or dental treatment (including surgery) and the member's ability to perform medically unrestricted duty is suspect. In these cases, the CA will determine the "reasonableness" of the member's refusal to accept indicated care, predicated on appropriate clinical standards of practice, availability of reliable care, and other factors the CA deems appropriate.
- A member who has "self-referred" for elective care outside the direct Military Health System (MHS) (e.g., for organ donation or corrective laser eye surgery) who sustains an untoward outcome that calls into question the member's continued fitness for service as a result of that care

3. **PHYSICAL EVALUATION BOARD (PEB)**

The PEB is an administrative board that determines whether a service member's disability prevents his or her continued performance in the Navy or Marine Corps. The PEB is

comprised of two levels of boards which review medical evidence and make determination of fitness or unfitness to continue naval service. If the PEB determines that a service member is unfit to continue naval service, and finds the service member is eligible for disability benefits, the PEB determines the percentage of the service member's disability compensation. Depending on the severity of the illness or injury, the service member receives either medical retirement or disability severance pay. As stated earlier, the MEB will refer patients to the PEB using the MEBR. Under no circumstances will the MEBR prepared by the MTF state that the member is unfit, or provide recommendation for a disability percentage rating. The treatment facility will determine if medical condition is due to an injury requiring a line of duty determination, and inform the member's command if such a requirement exist.

Medical Board Report Preparation - a trained Command Limited Duty Coordinator will be designated in writing as liaison to the MTF Patient Admin with the MEB process. MTFs must have the board report completed, sent, and accepted by the PEB within 30 days of the date of dictation of the MEBR by the attending physician. MTFs must include in their "30-day window" appropriate time periods for MEBR dictation, review, and signature by the MEBR members, and final review and signature by the CA.

A provider recommending a member for MEB for referral to PEB will complete NAVMED 6100/5, Abbreviated Medical Evaluation Board Report clearly annotating the restrictions and limitations imposed upon the member's duty.

Immediately upon concluding that a patient is to be referred to a MEB, the attending physician determining the need for the patient's referral, will personally annotate this decision in the patient's medical record on a SF 600, Chronological Record of Medical Care and DD 2766, Adult Preventive and Chronic Care Flowsheet.

A complete Physical Exam will be conducted within six months of the date of the MEBR. Copies of all narrative summaries of hospitalizations and all procedure reports from specialty clinics will be submitted with the package. Contents of the MEBR Package will also include:

- 1) Dictated Abbreviated Medical Board Report
- 2) NAVMED 6100/1, Medical Board Report Cover Sheet
- 3) NAVMED 6100/2, Medical Board Statement of Patient
- 4) NAVMED 6100/4, Medical Board Certificate Relative to Counseling on Refusal of Surgery and/or Treatment
- 5) Patient Information Sheet (available electronically)

Non-Medical Assessment (NMA) - is the Commanding Officer's assessment of the member's performance of duty. This document is crucial in summarizing the member's limitations from the perspective of the Commanding Officer. The NMA is one document, comprised of a brief questionnaire along with a narrative summary. Commanders will make sure that NMA is submitted to the requesting facility within 15 calendar days from the date of receipt of such request.

Line of Duty Investigation (LODI) - is an inquiry used to determine whether an injury or disease of a member performing military duty was incurred in a duty status, and if not in a duty status, whether it was aggravated by a military duty, and whether incurrence or

aggravation was due to the member's intentional misconduct or willful negligence (if required).

In addition to health record entries, information on each patient referred to a MEB must be entered into the Medical Board Online Tri-Service Tracking (MEDBOLTT) system (or any system that should replace it). Route the original for appropriate review, action and disposition. Be sure the copy in the medical record is legible and signed.

NOTE: The MEDBOLTT is a Web-based system accessible to those MTFs with CA to perform MEBs. It captures and shares data globally, allowing all MTFs with CA to research, for any patient referred to a MEB, both the contemporary board activity as well as historical referrals to any MEB. Forms can also be downloaded from the MEDBOLTT website.

Physical Evaluation Board Liaison Officer (PEBLO) Counseling - the PEBLO provides a critical, congressionally mandated function of vital importance in the operation of the MTF MEB role. The PEBLO is guided by SECNAVINST 1850.4 series in their role of counseling Navy and Marine Corps members who have been entered into the DON Disability Evaluation System. Upon receipt of findings, the PEBLO counsels patients who have received findings of unfit for continued naval service, options for "home awaiting orders" status and as well as options for pursuing Permanent Limited Duty status (PLD). All PLD actions, accordingly, are regulated by service headquarters. Patients receiving PEB findings of unfit for continued naval service who wish to pursue PLD must submit this request pursuant to receiving their PEB findings. Additional information on this topic is available from the PEBLO and in SECNAVINST 1850.4 series.

4. **SPECIAL DUTY EXAMINATIONS**

Certain groups of personnel in the Navy and Marine Corps, by reason of the particular type of duty to which they will be assigned, are required to meet physical standards which differ from regular enlistment, commissioning, and annual Physical Health Assessments (PHA).

Aviation Duty - Aviation medical examinations are conducted to determine whether or not an individual is both physically qualified and aeronautically adapted to engage in duties involving flight. Aviation physical standards and medical examination requirements are developed to ensure the most qualified personnel are accepted and retained by naval aviation. Further elaboration of standards, medical examination requirements, and waiver procedures are contained in the Aeromedical Reference and Waiver Guide (ARWG); (see <http://www.nomi.med.navy.mil/Nami/WaiverGuideTopics/index.htm>).

All aviation personnel admitted to the sicklist, hospitalized, and determined to be physically unable to perform flight duties will be issued an Aeromedical Grounding Notice (NAVMED 6410/1), and an entry will be made in the member's health record on the Special Duty Medical Abstract (NAVMED 6150/2). This grounding notice will remain in effect until the member has been examined by a flight surgeon and found physically qualified. At such time, an Aeromedical Clearance Notice (NAVMED 6410/2) will be issued recommending returning the member to flight status and a corresponding health record entry made on the NAVMED 6150/2.

Examination Interval - As described in the OPNAVINST 3710.7 series, Chapter 8, all aviation personnel involved in flight duties are required to be evaluated annually. Generally it is preferred that scheduling occurs within the interval from the first day of the month preceding their birth month until the last day of their birth month. However, examinations may be scheduled up to 3 months prior to expiration to accommodate specialty clinic and other scheduling issues. This 3-month window is referred to as the "vulnerability window." To accommodate special circumstances such as deployment requirements, permanent change of station, temporary duty, or retirement, this window may be extended up to a maximum of 6 months with written approval by the member's command. Aviation designated personnel (including those personnel who are assigned to nonflying billets or duties) shall comply with these frequency requirements as well as those specified by Bureau of Naval Personnel (BUPERS) or Commandant, letters. Follow the OPNAVINST 3710.7 series, "flight personnel delinquent in receiving an aviation physical examination shall not be scheduled to fly unless a waiver has been granted by BUPERS/CMC."

Diving Duty - Personnel whose duty exposes them to a hyperbaric environment must conform to the physical standards for Diving Duty. Such personnel include, US Navy Divers, those engaged in hyperbaric chamber duty (clinical, research, and recompression), hyperbaric sonar dome work, ship/boat divers, and candidates for similar duty that are trained in a U.S. Navy program. Compartment workers who are submariners and have a current medical examination filed in their health record will be considered qualified for hull containment testing, non submariners or divers will require a diving duty medical examination.

Dive Medical Examinations (DME) will be performed by a medical officer who has successfully completed the Undersea Medical Officer (UMO) course at the Naval Undersea Medical Institute (NUMI) and includes the Diving Medical Officer (DMO) course given at the Navy Diving and Salvage Training Center (NDSTC). This officer will carry the secondary specialty code for UMO. Any Navy credentialed physician or other health care provider may perform a DME, but it must be reviewed and countersigned by a credentialed UMO.

Examination Interval - The DME is performed on candidates when applying for initial diving duty. The anniversary examination is performed on designated divers at birth date at ages 20, 25, 30, 35, 40, 45, 50, and annually thereafter, and in support of waiver requests when a diver's physical condition requires a finding of NPQ for diving duty. All members on diving duty will have an annual PHA to maintain diving duty qualifications.

Occupational Exposure to Ionizing Radiation - NAVMED P-5055, Radiation Health Protection Manual, is the governing document for the Naval Service Radiation Health Protection Program. It provides ionizing radiation exposure limits, dosimetry requirements, medical examination requirements, administrative and repeating requirements, and command duties and responsibilities for the Radiation Health Protection Program.

Command Responsibility - the Commanding Officer or Officer in Charge of each naval facility will ensure that personnel have a radiation medical examination prior to being occupationally exposed to ionizing radiation.

Types of Ionizing Radiation Medical Examinations

Pre-placement Examination (PE) - personnel who are being considered for routine assignment to duties requiring occupational exposure to ionizing radiation will be given a radiation medical examination, defined as a pre-placement examination, prior to assignment a transfer to those duties.

Re-examination (RE) - personnel who are to be continued in routine duties requiring occupational exposure to ionizing radiation must have a radiation medical examination, defined as a re-examination. The re-examination is required to be performed every five years within 30 days of the member's birthday following the year of initial employment (month and year).

Situational Examination (SE) - any individual who has exceeded the radiation protection standards for occupational exposure per chapter 4 of NAVMED P-5055.

Termination Examination (TE) - reasonable efforts will be made to ensure that a worker receives a termination examination. If a termination examination is not completed or not performed (e.g., due to lack of employee cooperation, etc.), a DD 2808 will be completed to the maximum extent practicable. The reasons why the form is incomplete will be recorded in block 73. Personnel will be given a radiation medical examination, defined as a termination examination, if they satisfy one of the following conditions:

- 1) Upon separation or termination of their active duty or employment if they received a preplacement radiation medical examination, have documented occupational radiation exposure (including personnel monitored for exposure but who received 00.000 rem), and have not had a TE.
- 2) When permanently removed from the Radiation Health Program.
- 3) When assigned or transferred to duties no longer involving occupational exposure.

Explosive Handler and Hazardous Material Vehicle Operators - medical examinations of explosive handlers and Hazardous Material Vehicle Operators are conducted to ensure active duty personnel who handle explosives or operate vehicles or machinery which transport explosive or other hazardous material are physically qualified. Members who are qualified under this section meet the physical qualification requirements of the Federal Highway Administration, DOT, CFR Part 391.

Examination Interval - active duty military personnel who are explosive handlers or hazardous material vehicle operators will have a medical examination every five years up to age 50, then annually.

NOTE: Complete requirements of specific Special Duty examinations can be found in NAVMED P-117, Manual of the Medical Department, Chapter 15.
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5. **MARINE CORPS INSPECTION PROGRAMS**

Mission readiness of a command is at the forefront of a Commander's thoughts. The Marine Corps has designed an extensive program to prepare and inspect the readiness of each command. The fundamental purpose of an inspection is to assess, assist and enhance the ability of a command to prepare for and to perform its assigned mission. The command's mission shall be the focus of the inspection. The Inspector General of the Marine Corps

(IGMC) will ensure through an inspection that commands are complying with Marine Corps orders, policies, and procedures, and accomplishing its assigned mission, tasks, and functions.

Command Inspection Program (CIP) - the purpose of the CIP is to assess the overall effectiveness of the Commanding General's Inspection Program (CGIP). The CIP by the IGMC will be conducted, at a minimum, on a triennial basis. Efforts will be made to inspect on a biennial basis. These inspections will be short notice (approximately 48-72 hours prior notification).

Unit Inspection Program (UIP) - the purpose of the UIP is to inspect those independent units/activities of the Marine Corps that are not in the operational or administrative chain of command of a major subordinate commander (MSC).

Inspection Checklists - the Automated Inspection Reporting System (AIRS) contains the inspection checklists that are updated by the HQMC functional area sponsor and maintained by the IGMC. These checklists contain those areas, at a minimum, that should be inspected in any one functional area. Inspectors from the IGMC and command inspectors general (CIG) shall use AIRS inspection checklists when conducting inspections. Current AIRS checklist is available through the Marine Corps homepage and IGMC website.

Report of findings, discrepancies and recommended corrective actions will be provided to the commander of the inspected unit and will form the basis for any required corrective action and/or refinement to successful programs. Inspectors will address findings and discrepancies by providing appropriate comments and suggestions to correct shortcomings.

Follow-up Inspection - an inspection of the action taken by a unit to correct deficiencies identified during a previous inspection. The purpose is to assess whether corrective action is effectively completed, producing the desired results, not causing new problems, economical and efficient, and is practical and feasible.

6. **EVALUATION/FITNESS REPORT**

Types of Reports

Regular reports are submitted periodically according to schedule and on other occasions specified in the Evaluation Manual and must be continuous for all Naval service personnel on active duty or drilling Reserve programs except for enlisted initial entry training and other limited circumstances.

Types of regular reports include: Periodic Report, Promotion/ Frocking, Letter of Extension Report, Not Observed Report, Detachment of Individual Report and Detachment of Reporting Senior Report.

FITREP/EVAL ending dates are the last day of the month for officers and the 15th of the month for enlisted.

	OFFICERS (Active)	OFFICERS (FTS)	ENLISTED (All)
January	O3	O3	
February	O2	O2	
March	W5, W4,W3	W5, W4,W3	E5
April	O5	O5	E9
May	O1	O1	
June			E4
July	O6	O6	E3/2/1
August			
September	W2	W2	E8, E7
October	O4	O4	
November			E6
December			

Concurrent reports provide a record of significant performance in an additional duty (ADDU) or temporary additional duty (TEMADD) status. They are optional unless directed by higher authority, and may not be submitted by anyone in the regular Reporting Senior's direct chain of command.

Operational Commander Reports are optional, and may only be submitted on commanding officers or officers in charge by operational commanders who are not also their regular Reporting Seniors.

Guide for Completing Reports

Reporting Seniors - COs and officers in charge (OICs) are a reporting senior by virtue of their command authority. They may submit properly authorized FITREPs, CHIEFEVALs, and EVALs on any member who has reported to them for duty, whether junior or senior to them in grade. The term "commanding officer" is inclusive of all Services and their civilian equivalents within the U.S. Federal government. An OIC is a

reporting senior if they are in charge of commissioned or established activities listed in the Standard Navy Distribution List.

Raters - EVALs on personnel E6 and below should contain the signatures of a rater and senior rater. The signature of the reporting senior is required. This ensures that Navy's senior enlisted and junior officer supervisors are properly included in the enlisted EVAL process. The rater for personnel E1-E4 can be an E6 or civilian equivalent. For personnel E5-E6, the rater should be a Navy CPO whenever possible, but if none is available within the command, the rater may be a military or civilian supervisor who is an E7 equivalent or higher. Typically, the senior rater will be the member's division officer or department head.

Basic Do's and Don'ts - do NOT use underlining, **boldface**, *italics*, centering or **highlighting**. Handwritten comments or additions to comments are not allowed except reports on E4 and below that may be entirely or partially handwritten. Continuation sheets and enclosures are not allowed except an endorsed statement submitted by the member, a flag endorsement, where required, a letter of extension of a concurrent/regular report or a classified letter supplement. Do not include classified matter in the report and do not submit classified supplements unless absolutely necessary. Include required comments and address special interest items as appropriate.

Style and Content - avoid preambles and get directly to performance. Do not use puffed-up adjectives. Use direct, factual writing which allows the performance to speak for itself. Bullet style is preferred. Give examples of performance and results (cause and effect). Don't rank numerically. Comparisons must be in general terms and supported by evidence. Be consistent with trait marks. Comments on poor performance or misconduct where necessary, but be judicious. Define acronyms. Avoid making recommendations.

Electronic Forms Software - NAVPERSCOM (PERS-32) supplies application programs to support automated preparation and submission of FITREPs, CHIEFEVALs, and EVALs. These applications print complete, filled-in reports and summary letters on plain paper. The software provides help screens, spell check, calculates the individual trait averages, and has validation features that will prevent many common errors. The program is available for downloading at

www.npc.navy.mil/CareerInfo/PerformanceEvaluation/SoftwareForms. The CHIEFEVAL is an interactive Adobe form that prints completed filled-in reports and performs limited validation checks. The CHIEFEVAL form also spells check and calculates the individual trait average on completed reports.

NAVPERS 1616/26 Evaluation Report and Counseling Record (E1-E6)

NAVPERS 1616/27 Evaluation & Counseling Record (E7 - E9)

NAVPERS 1610/02 Fitness Report and Counseling Report (O1 - O6)

Processing and Mailing Reports - NAVPERSCOM copy is the official record copy for E1 to O6. Although original reports and signatures are preferred, photocopied signatures are acceptable. When laser-printing or copying the report it is preferred that the back of the form be printed or copied head-to-toe on the reverse of the front. The number of required paper copies is as follows:

Grade of Member	Number of Copies	NAVPERSCOM	Member	Reporting Senior	Command
O1-O6, W2-W5	3	X	X	X	
E7-E9	4	X	X	X	X
E5-E6	3	X	X		X
E1-E4	3	X	X		X

Mail report within 15 days of the ending date for active duty members and within 30 days for inactive duty members. The package shall include the signed summary letter and all original reports. Mail the reports and summary letters together in a standard 9"x12" envelope. Do not use security wrappings unless a classified supplement is enclosed. More than one summary group may be enclosed in each envelope. Mail reports to:

COMMANDER
NAVY PERSONNEL COMMAND PERS-32
5720 INTEGRITY DRIVE
MILLINGTON TN 38055-3200

7. MARINE CORPS EVALUATION SYSTEM

Marine Corps Performance Evaluation System (PES) provides for the periodic reporting, recording, and analysis of the performance and professional character of Marines in the grades of Sergeant through Major General. Reporting seniors document their observations and assessment of the performance and character of a Marine on form NAVMC 10835A, USMC Fitness Report via the Automated Performance Evaluation System (A-PES). The fitness report document, through communication to the Commandant of the Marine Corps (CMC), provides a history of a Marine's performance and potential.

Reporting Senior(RS) - The RS is the first commissioned or warrant officer (or civilian GS-9/equivalent or above) in the reporting chain senior to the Marine being reported on (MRO). In unique situations, senior enlisted Marines may serve as RSs with an approved policy waiver. As the officer/supervisor closest to the MRO, the RS is directly responsible for the Marine's daily taskings and supervision. The RS is in the best position to observe the Marine's performance and character. This immediate officer/supervisor relationship applies equally to both operating and supporting establishments. Commanding officers, officers in charge, and officers specifically authorized by the RO may be the RS for officers of the same grade.

CMC will control the number of Marines to be promoted to SGT through the use of the Automated Composite Score System. Promotions will be authorized on the basis of vacancies existing throughout the Marine Corps and will be effected by authorized commanders.

Reporting Cycle - the below chart displays the reporting cycles for the active duty component of the Marine Corps.

Grade	Reporting Period Ends
Sgt	September
SSgt	September
GySgt	September
1stSgt/ MSgt	September
SgtMaj/ MGySgt	June
WO/CWO	October
2ndLt	N/A
1stLt	October
Capt	June
Maj	June
LtCol	June
Col	July

Fitness Report Occasions - Marines in the grades of sergeant through colonel require fitness reports for any of the following 13 occasions:

- Grade Change (GC)
- CMC Directed (DC)
- Change of Reporting Senior (CH)
- Transfer (TR)
- Change of Duty (CD)
- To Temporary Duty (TD)
- From Temporary Duty (FD)
- End of Service (EN)
- Change in Status (CS)
- Annual (Active Component) (AN)
- Annual (Reserve Component) (AR)
- Semiannual (lieutenants only) (SA)
- Reserve Training (RT)

Proficiency and Conduct Markings - Also known as Pros/Cons, are assigned for Marines in the grades of Private through Corporal. These marks record the Marine's performance which is used to determine

eligibility for reenlistment, qualification for certain types of duty assignments, characterization of service upon discharge, and computation of composite scores for promotions. At a minimum, proficiency and conduct marks are required to be recorded during the semi-annual evaluation periods ending 31 January and 31 July. Proficiency and conduct marks are also required whenever a Marine is transferred, discharged, released from active duty, promoted to Cpl/Sgt, assigned to or completed tad in excess of 30 days, or at other times as outlined in the IRAM.

8. NAVY AND MARINE CORPS AWARDS

Awards are important symbols of public recognition for rewarding extraordinary heroism, exceptionally meritorious service, or outstanding achievement and other acts or services which are above and beyond that normally expected and which distinguish an individual or unit among those performing similar acts or services. Awards recognizing specific acts should be bestowed as soon as possible after achievement. As a naval officer you are a respected leader and role model. As such, it is extremely important for you to recognize the people who work for you, civilian and military alike. One of the basic tenets of leadership is that a good leader takes care of his or her people.

For military personnel, an award can range from a simple, positive comment about a junior's performance to writing the person up for a medal. More commonly, enlisted people are nominated for Sailor of the Quarter honors. Criteria are locally developed and you should consult the local instruction for nomination procedures. Enlisted awards such as Flag Officer letters of commendation and medals add to the Sailor's final multiple for advancement. Most commands have a local awards system that covers granting awards such as Letters of Recognition, Letters of Appreciation, and Letters of Commendation. These are generally easy to accomplish for deserving personnel and can be used for either military or civilian personnel.

As a general rule, only one award will be made for the same act, achievement, or period of meritorious service. It is inappropriate to duplicate awards; however, an award for heroism or specific achievement within the period of meritorious service is not considered duplication. Neither the summary of action nor the citation issued for the meritorious service should mention the heroic service or the specific achievement previously recognized.

Three Types of Awards

Personal awards are for individual heroic or meritorious acts.

A routine End of Tour (EOT) award is not an integral part of the awards system. A copy of all personal awards received during the tour period must be submitted with the EOT award to the awarding authority.

An impact award is for a short duration (up to 3 months) and specific achievement; this award cannot support an EOT award and a copy of it must be enclosed with the EOT award. Sailor of the Year, and similar awards, denote a specific competitive achievement; this award can support an EOT award and a copy of it must be enclosed with the EOT award. Only one award of this nature can be earned in any given year.

Mid-tour awards are not appropriate; commands should retain the nomination or inclusion in the EOT award. A tour is normally designated by a set of orders to leave

the command, not by a change of position within the command. This should not hinder a command from awarding an EOT award and/or an additional award for members who extend at arduous duty stations or operational commands.

Unit awards are awarded to ships, squadrons, commands, or units for heroic or meritorious acts.

Service awards recognize individuals for duty in areas of particular concern, like the Vietnam Service Medal or the Navy and Marine Corps Overseas Service Ribbon.

Forms for submitting awards:

OPNAV 1650/3, Personal Award Recommendation

OPNAV 1650/14, Unit Award Recommendation

Maintenance of Records

Chief of Naval Operations - Tasked with maintaining the Navy Department Awards Web Service (NDAWS), the Navy's authoritative electronic awards system. NDAWS consists of a public website, a Navy-wide awards processing application, control of personal and unit award forms, and the Navy's authoritative awards database

NDAWS Authorities - Provide PERS-312 a copy of the signed award citation, or certificate in the case of Navy and Marine Corps Commendation and Achievement Medals, for entry into the member's electronic service record. Enter approved awards into NDAWS.

Awarding Authorities - Maintain a permanent record of all awards processed, including the OPNAV 1650/3, a signed copy of the citation, supporting documents, and any related correspondence. Documents must be transmitted to the appropriate NDAWS Authority in the chain of command.

In the case of Marine Corps personnel assigned to Navy commands, forward a copy of the adjudicated (approved or disapproved) OPNAV 1650/3, Summary of Action, and signed citation to CMC for recording in APS and entry in the Marine's official military record.

For awards considered but not recommended for approval, the recommendation must be forwarded via the remaining chain of command to the appropriate awarding authority.

For Marine Corps Personnel - use of the electronic Awards Processing System (APS) satisfies the above requirements. Marine Corps Awards Branch (MMMA) shall provide the Personnel Management Support Branch (MMSB) a copy of the award recommendation and citation for entry into the Marines Official Military Personnel File.

Processing of awards for Navy Personnel assigned to a Marine Corps unit will follow Marine Corps guidelines.

References:

Manual of the Medical Department, NAVMED P-117

Marine Corps Individual Records Administration Manual (IRAM), MCO P1070.12K

Marine Corps Readiness Inspections & Assessments, NAVMC DIR 5040.6H

Navy Performance Evaluation System, BUPERINST 1610.10C

Navy and Marine Corps Awards Manual SECNAVINST 1650.1H

Performance Evaluation System, MCO P1610.7F

UNITED STATES MARINE CORPS
FIELD MEDICAL TRAINING BATTALION
BOX 555243
CAMP PENDLETON, CA 92055-5243

FMSO 1001

Improvised Explosive Devices

TERMINAL LEARNING OBJECTIVE

1. Given a tactical scenario with an Improvised Explosive Device (IED) threat training aids and an IED lane, visually identify IEDs to ensure identification of ground emplaced IEDs, Suicide Vehicle-borne IEDs (SVIEDs), and Suicide Bomber attack IEDs is confirmed in accordance with the references. (MCCS-IED-1001)
2. Given a tactical scenario with an IED threat training aids and an IED lane, conduct immediate actions in response to an IED to ensure the tactical effects of IED(s) on mission accomplishment are mitigated, in order to meet the concept of operations and the commander's intent, in accordance with the mission order and the references. (MCCS-IED-1002)

ENABLING LEARNING OBJECTIVES

1. Given a list of choices, select the definition of an IED, within 80 percent accuracy, per MCIP 3-17.01. (MCCS-IED-1001a)
2. Given a list of choices, identify primary indicators of an IED, within 80 percent accuracy, per MCIP 3-17.01. (MCCS-IED-1001b)
3. Given a list of choices, identify likely locations of an IED, within 80 percent accuracy, per MCIP 3-17.01. (MCCS-IED-1001c)
4. Given a list of choices, identify the characteristics of vehicles used in Vehicle Borne IED (VBIED) and Suicide Vehicle Borne IED (SVBIED) attacks, within 80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1001d)
5. Given a list of choices, identify the physical characteristics of a SVBIED driver, within 80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1001e)
6. Given a list of choices, identify the common characteristics of a potential suicide bomber attack, within 80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1001f)
7. Given a list of choices, identify common employment techniques of IEDs, within 80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1002a)
8. Given a list of choices, identify mitigating tactics that can be employed in an IED environment, within 80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1002b)
9. Given a list of choices, identify non-lethal deterrents that can be employed in an IED environment, within 80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1002c)
10. Given a list of choices, identify the procedures for conducting 5 to 25 meter checks, within

80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1002d)

11. Given a list of choices, identify the 5 C's and their definitions, within 80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1002e)
12. Given an operational environment containing IEDs, react to an IED detonation, within 80 percent accuracy, per JIEDDTF 05-23. (MCCS-IED-1002f)

INTRODUCTION

Improvised Explosive Devices (IEDs) account for the majority of wounded and killed soldiers in combat situations. As an emergency provider you are more likely to encounter injury from conventional explosives than from a chemical, biological, or nuclear attack. It is important to consider some basic tactics, techniques, and procedures (TTP's). Understanding the TTP's will allow you to safely operate in an IED environment.

Knowing what to look for and where to look is a starting point. Understanding how to move, as part of a patrol or resupply element, for example, will give you an edge on the battlefield. It is important to remember that IEDs are not the enemy. The people using the IEDs are the enemy. They can be defeated by being observant and looking for IED indicators.

1. **TERMINOLOGY**

Improvised Explosive Devices are those devices that are placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals and designed to destroy, incapacitate, harass, or distract. They may incorporate military weapons, but are normally devised from non-military components.

Booby Traps are explosive or non-explosive devices or other materials, deliberately placed to cause casualties when an apparently harmless object is disturbed or a normally safe act is performed.

Mines are explosives or materials, normally encased, designed to destroy or damage ground vehicles, boats, or aircraft, or designed to wound, kill, or otherwise incapacitate personnel. They may be detonated by the actions of its victims, by the passage of time, or by controlled means.

2. **COMPONENTS OF AN IED**

IEDs can vary widely in shape and form. IEDs share a common set of components that consist of the casing, initiating system, and main charge.

Casings can range in size from a cigarette pack to a large truck or airplane. The container is used to help hide the IED and to possibly provide fragmentation. Countless containers have been used as casings, including soda cans, animal carcasses, plastic bags, and vests or satchels for suicide bombers.

Initiating Systems cause the main charge to function. It can be a simple hard wire (for command detonation) or a radio frequency (RF) device, such as a cell phone or a toy car remote control. The initiator almost always includes a blasting cap and batteries as a power source for the detonator. Any type of battery can be used (9-volt, AA, or car batteries). Initiating systems are triggered in three ways.

Time. Timed IEDs are designed to function after a preset delay, allowing the enemy to make his escape or to target military forces which have created a pattern.

Command. Command-initiated IEDs are a common method of employment and allow the enemy to choose the optimal moment of initiation. They are normally used against targets that are in transit, or where a routine pattern has been established. The most common types

of command-initiated methods are with command wires or radio-controlled devices, such as cordless telephones and remote car openers.

Victim. Victim-actuated IED is initiated by the actions of its victim(s). There are various types of initiation devices, to include pull or trip, pressure, pressure release, movement-sensitive, light-sensitive, proximity, and electronic switches.

Main Charge

High Explosive. High Explosive main charges are the most commonly encountered in theater. Common explosives used are military munitions, usually 122mm or greater. These items are the easiest to use and provide a ready-made fragmentation effect and multiple main charges together over long or short distances for simultaneous detonation. Common hardware, such as ball bearings, bolts, nuts, or nails can be used to enhance the fragmentation. Propane tanks, fuel cans, and battery acid can and have been added to IEDs to propagate their blast and thermal effects.



Artillery shells have become a common form of improvised explosive devices used by insurgents.

Chemical. A chemical IED is a main charge with a chemical payload in conjunction with an explosive payload. Chemical IEDs are fabricated to kill or incapacitate victims with a chemical, rather than explosive, effect. Some indicators for chemical IEDs are smaller blasts, odor, gas cloud, and liquid on or near the suspected IED.

3. **IED DETECTION**

There are many ways to detect IEDs. The best means of detection is your situational awareness. Examples of indicators, locations, and considerations of IEDs include:

Primary IED Indicators. The primary indication of an IED will be a change in the baseline (something new in the routine that was not there the previous day). Vigilant observation for these subtle indicators can increase the likelihood of IED detection. Some examples of possible roadside IED indicators may include:

- Unusual behavior patterns or changes in community patterns, such as noticeably fewer people or vehicles in a normally busy area, open windows, or the absence of women or children.
- Vehicles following a convoy for a long distance and then pulling to the roadside. Personnel on overpasses.
- Signals from vehicles or bystanders (flashing headlights).

- People videotaping ordinary activities or military actions. Enemies using IEDs often document their activities for use as recruitment or training tools.
- Suspicious objects.
- Metallic objects, such as soda cans and cylinders.
- Markers by the side of the road, such as tires, rock piles, ribbon, or tape that may identify an IED location to the local population or serve as an aiming reference for the enemy triggering the IED (such as light poles, fronts or ends of guardrails, and road intersections).
- New or out of place objects in an environment, such as dirt piles, construction, dead animals, or trash.
- Graffiti symbols or writing on buildings.
- Signs that are newly erected or seem out of place.
- Obstacles in the roadway to channel traffic.
- Exposed antennas, detonating cord, wires, or ordnance.
- Wires laid out in plain site; these may be part of an IED or designed to draw friendly force attention before detonation of the real IED.

Locations of IEDs. IEDs may be placed anywhere enough space exists or can be created to hide or disguise the IED. Whenever possible, devices are located where they can exploit known US patterns, such as the use of a main supply route, or vulnerabilities, such as soft-skinned vehicles or chokepoints. Common areas of IED placement may include:

- Previous IED sites.
- Frequently traveled or predictable routes, such as roads leading to bases and along common patrol routes.
- Boundary turnaround points (pattern).
- Medians, by the roadside (usually within 10 feet), or buried under the surface of any type of road, often in potholes and covered with dirt or reheated asphalt.
- Trees, light posts, signs, overpasses, and bridge spans that are elevated.
- Unattended vehicles, carts, or motorcycles (attached or installed in them).
- Hidden inside guardrails or under any type of material or packaging.
- Potential incident control points (ICPs).
- Abandoned buildings or structures (sometimes partially demolished).
- Hidden behind cinder blocks, or piles of sand to direct blast into the kill zone.
- Animal carcasses and deceased human bodies.
- Fake bodies or scarecrows in coalition uniforms.
- At the edge of town.

Vehicle Borne IED/Suicide VBIED. VBIED is a parked vehicle in a high traffic area with the intent of causing the most damage. An SVBIED is when the driver is willing to give their own life in the process of detonating his explosives. These are very successful because the enemy is mobile and is able to choose a time and place with great flexibility. This unpredictability makes them difficult to identify.

Driver Indicators:

- A lone male driver is the historical standard for VBIED operations; however, there could be any number of people in the vehicle if an unsuspecting person is driving the VBIED. Some VBIEDs have two to three people and females are sometimes used as a distraction.
- Ignoring orders to stop - attempting to circumvent a security checkpoint, or attempting to maneuver too close to coalition assets.
- Unusual appearance - the enemy may be uncharacteristically clean-shaven and have very short haircuts. Cutting the hair is part of the purifying ritual that many follow prior to an attack.
- Age in mid-twenties - the average Middle Eastern suicide terrorist is about 24-25 years old, but this may vary in each unique situation.
- Driving erratically - driving too slow or too fast.
- Wearing inappropriate dress for the environment.

Vehicle Indicators:

- Noticeable sagging of the vehicle.
- An additional antenna for radio-controlled devices.
- Darkened or covered windows to conceal either the vehicle's contents or actions of the driver.
- Recent painting of vehicle to cover body alterations.
- Crudely covered holes made in the vehicle to hide explosives.
- New welding marks.
- No license plates.
- Escorted by unusual security detail for type of vehicle.
- New tires on an old vehicle.
- Anything unusual in factory-build compartments.
- New or shiny bolts and/or screws.
- Unusual scratches, possibly made by screwdrivers, wrenches, or similar tools.
- Signs of tampering, such as broken parts or bent sheet metal.
- Areas and components cleaner or dirtier than surrounding areas.
- Wire and tape stored in the vehicle.

Situation Indicators:

- Camera crew in the area.
- Observing the same vehicle more than once.
- Absence of normal routine for that Area of Operation (AO).
- Odd traffic patterns.
- Person(s) observed conducting reconnaissance.
- Vehicle testing local defenses (i.e., drives at a high speed towards traffic control point and then breaks off).

Suicide Bombers (personal borne IED-PBIED). Most suicide attacks involve SVBIEDs, and include casualty rates from tens to hundreds. There has been an increasing trend for suicide bombers to attack with an explosive vest, belt, or baggage. United States and Coalition Forces have been attacked within the perimeter of a base; civilians have been attacked at polling stations and police recruitment drives. With better techniques being used to reduce the effectiveness of VBIEDs, the potential for the enemy to adapt to using suicide bombers increases.

PBIED Design. If the charges used by bombers are effectively packaged and concealed, a suicide bomber could carry up to 45 pounds of explosives; however, most suicide belts are designed to hold smaller amounts, up to 12 pounds. It should be noted that fragment producing materials are often incorporated into the design of these belts/vests.

PBIED Indicators. Indicators of a potential PBIED attack include individuals who deliberately ignore orders to stop or attempt to circumvent a security checkpoint, those wearing too much clothing for the prevailing weather conditions, one with suspicious bulges in his/her clothing, carrying packages/bags or wearing satchels/backpacks, and an individual handling wires, switches, an actuator, or a "dead man's" switch.



Employment Techniques. IEDs can be used in a variety of ways. There are some TTPs that the enemy has used in order to hinder the mobility efforts of coalition forces, though enemy TTPs constantly change and adapt in an effort to stay ahead of coalition TTPs. The enemy also incorporates the use of small arms fire in conjunction with the IED attack to harass forces and increase the lethality of attacks.

Disguised static IEDs have been concealed with a variety of things (trash, boxes, tires, etc.) and placed in, on, above, or under where potential targets appear. Multiple IEDs have also been daisy chained, or linked together with detonation cord or electrical wire so that all charges detonate simultaneously, in order to achieve simultaneous explosions.

Thrown or projected IEDs (improvised grenades or mortars) have also been used against coalition forces. One TTP targets convoys as they drive under and overpass, attempting to drop IEDs in the back of vehicles as they pass under. Convoys must be aware of the 360-degree threat while traveling. Changing speeds and dispersion will help mitigate the threat to some extent.

Another example of how IEDs have been used is the hoax IED. These include something that resembles an actual IED, but has no charge or fully functioning initiator device. A fake IED along a given route and seen by the lead vehicle in a convoy will cause the convoy to come to a stop. Stopping for the hoax IED may leave the convoy in the kill zone of the real thing. Hoax IEDs are also used to learn coalition procedures, monitor time, delay or harass activities in support of the mission. Other techniques used that are less specific include:

The Basic IED Attack - in the basic attack, the enemy will place IEDs along routes on either side of the road awaiting foot patrols or convoys to approach in order to cause the most damage to personnel or vehicles.

The "Broken-down" Vehicle Attack - this attack uses a simulated broken down vehicle placed on the side of the road to cause convoys to change their intended route. The broken down vehicle is staged along either side of the road, blocking one or all of the trafficable lanes. This causes the convoy to be directed between the broken down vehicle and an emplaced IED.

Coordinated Attack - numerous enemies work together to emplace an IED along a route, usually in an urban area. The enemy is usually located where they have the best escape route to not be seen or caught. Once the IEDs have been detonated, the enemy breaks contact and blends in with the population.

Ramming Convoys - the enemy has been known to ram their vehicle (possibly an SVBIED) in the rear of a convoy or to the side as they pass in order to get the convoy to slow or come to a complete stop.

Motorcycles - motorcycles are used by the enemy in areas of decreased mobility in order to harass convoys and possibly throw IEDs or grenades in the rear of vehicles.

4. **OPERATIONS IN AN IED ENVIRONMENT**

In order to counter the effects of an IED, there are several things that can be done. Wearing all personnel protective gear available, to include ballistic eye protection, Kevlar helmets, body armor with plates, and hearing protection is the most basic. Other simple, but critical, force protective measures include wearing seatbelts when moving and ensuring that all personnel have as much of their body inside the vehicle as possible to reduce the possibility of being struck by shrapnel or being exposed to the initial blast.

Pre-movement Rehearsals - Operating units must be prepared to react quickly and efficiently to any attack. Study updated maps, as a significant number of IEDs are set up in the exact same location of previous attacks. Remember that IED attacks may be just one part of a complex attack. The unit must be prepared to react to any threat after the IED detonates and move out of the kill zone as quickly as possible.

Patrolling - One of the most important things you can do to protect yourself and your unit is to limit your predictability. Vary routes, movement techniques, and your TTPs for dealing with different situations. Never forget that the enemy is always watching. Patrols should change direction and speed at seemingly random intervals, especially in areas of previous IED attacks.

5. TECHNIQUES TO COUNTER ATTACKS

There are certain things every member of the unit can do to counter specific attacks. Every member of the patrol should be alert and constantly aware of the situation around them. Know the authorized Escalation of Force (EOF) and Rules of Engagement (ROE).

The actions listed below will help limit your vulnerability in specific situations:

Counter VBIED/SVBIED Techniques. The key to surviving a VBIED/SVBIED attack is standoff and cover. Know that a SVBIED can come from any direction. Units have been attacked by vehicles turning into a patrol from oncoming traffic, moving in a convoy, or in firm base attacks. Maintain an aggressive security posture and have a plan for dealing with civilian traffic. When dealing with VBIED/SVBIED attacks, it is important to:

- Have a plan to deal with approaching vehicles. Decide if they will be allowed to pass or not and have a plan for the EOF.
- Be aware of danger areas/choke points such as turnoffs that force patrol to slow down.
- Watch merging traffic as VBIEDs have been used near on and off ramps to get close to coalition vehicles.

Counter Suicide Bomber Techniques

- Evacuate the area immediately. Safe distances will depend on the mass of explosive carried by the bomber and the amount and type of fragmentation used.
- “Close and negotiate” tactics **should not be attempted**, as suicide bombers are usually trained to avoid surrender at all costs.
- A “fail safe” cell phone or radio-controlled initiator could be used in the event that the bomber is incapacitated or hesitates. This tactic would normally involve a second suspect with a line-of-sight view of the bomber and should always be considered.
- If a “deadly force” response is taken, bullet impact may initiate/detonate the explosive charge(s). Firing on the suspect should only be undertaken from protective cover.
- If the suspect is neutralized and there is no explosion, **do not administer first aid**. Wait for EOD to render safe the explosive charge.

Actions at Halts. If a patrol or convoy must stop during movement, avoid clustering vehicles and vary the vehicle interval between elements; establish your own local security and employ techniques to create standoff. Most importantly, do not remain at one site too long and conduct 5 to 25 meter checks as described below.

5 to 25 Meter Checks - Depending on the length of time of the halt, the area to clear varies from 5 to 25 meters. **At every halt, no matter how short, the crew must clear 5**

meters around the vehicle while still inside the vehicle. For extended halts, teams must clear 25 meters around the patrol or convoy.

5 Meter Checks:

- Identify a position to halt.
- Visually check the area 5 meters around your vehicles.
- Look for disturbed earth and suspicious objects, loose bricks in walls, and security ties on streetlights or anything out of the ordinary.
- Start your search at ground level and continue up above head height. Then conduct a physical check for a radius of 5 meters around your position. Be systematic, take your time, and show curiosity. If the tactical situation permits, use a white light or infrared (IR) light at night.
- If in an armored vehicle, remain mounted during your 5 meter check to take advantage of the vehicle's protection.

25 Meter Checks:

- Add to the 5 meter check when the patrol or convoy leader decides to occupy an area for any length of time.
- Once 5 meter checks are done, continue visually scanning out to 25 meters.
- Conduct a physical search for a radius of 25 meters around your position.
- Look for IED indicators and anything out of the ordinary.

Actions on Contact. Should you be part of a patrol or convoy that finds an IED, the five "Cs" will help to ensure that the situation can be dealt with quickly and safely. Remember, an IED that is found is still an IED attack. By finding the IED, you have just disrupted the enemy's attack. Do not forget about the enemy's other forms of attack, RPGs, small arms fire, mortars, and secondary IED. **Enemy IED site = Enemy ambush site. You are in the kill zone!**

IEDs Found Before Detonation - A simple set of guidelines that you should use when you encounter a suspected IED are the five "Cs":

Confirm - You should always assume the device will explode at any moment. From a safe distance, look for IED indicators while attempting to confirm the suspected IED. Use all tools at your disposal, to include moving to a better vantage point and using optics to look for tell-tale signs of an IED. Never ask civilians to remove an IED and do not attempt to do the job of explosive ordnance disposal (EOD) or engineers.

Clear - Evacuate the area to a safe distance (terrain will dictate) but do not set a pattern. Keep in mind some threats require more standoff than others. Assess whether your distance and cover is adequate and direct people out of the danger area. Sweep the area for any secondary device or trigger person. Once scene is safe, question, search, and detain as needed. **Do not** allow anyone to enter your cordon other than those responsible for rendering the IED safe (EOD).

Call/Check - Let your higher headquarters know what you have found. When you move to a new location, all personnel should conduct 5 and 25 meter checks for secondary

IEDs. Always assume a found IED is bait and the real IED is near your “secure” location.

Cordon - Establish blocking positions to prevent vehicle and foot traffic from approaching the IED. Establish 360 degree inner and outer cordon to secure and dominate the area. Most likely, the enemy is watching and waiting to make his move.

Control - Control the area until EOD arrives. Clear and set up an entry control point (ECP) for first responders. Do not let others go forward to “inspect” the IED. Make contingency plans for coordinated attacks.

IED Detonation. Immediate actions differ when an IED is actually detonated. The enemy may often combine the IED attack with a direct fire ambush to increase the lethality of the attack. If an ambush does accompany an IED attack, the priority shifts to address the direct fire and then conducting the 5 C’s. It is important to keep several things in mind when dealing with IED detonation:

- Respond quickly and aggressively in accordance with ROE.
- Immediately scan outward. The biggest mistake Marines can make is focusing inwards toward the site of the IED detonation and forgetting about the enemy.
- Move out of kill zone.
- Search for additional IEDs.
- Treat/Evacuate casualties.
- Report situation.
- Expect follow on attacks.

Chemical IED - Coalition forces have had several encounters with IEDs also having chemical filler in conjunction with the explosive. Due to the complexity of manufacturing exact payloads the chemical effect is difficult to achieve. Units must be aware of the capabilities, and know what to do in the event of a chemical attack. Specifically:

Move upwind, to high ground at least 240 meters away from release point.

Normal combat uniform provides some protection; individual protective suits, masks and gloves will provide additional protection.

Detectors will alarm but best warning comes from your sense of sight and smell.

What NOT To Do with Suspected IEDs

NEVER APPROACH A SUSPECTED IED. Establish standoff by using binoculars and RCOs from multiple angles to confirm the presence of an IED. When in doubt, back off and call EOD.

DO NOT PICK UP DET CORD. Det cord is an **explosive** and the presence of it alone is enough to call EOD. Do not trace or pull on det cord.

DO NOT DIRECTLY TRACE COMMAND WIRE (CW). The enemy has placed trip wires and other IEDs under/in the vicinity of command wires. When a command wire is located, rather than walking parallel to or over the wire to locate the initiation point, work in an “S” pattern, crossing the CW until the initiation point is located.

DO NOT FOCUS ON THE “FOUND” IED. An IED, once found, is not going to move. Conduct secondary sweeps (5 to 25) and set in cordons. Always think a couple steps ahead and have a plan for any possible encounters that may arise. Again, once positive IED indicators are found move to safe distances and call EOD.

References:

IED Defeat, MCIP 3-17.01

Joint Improvised Explosive Device Defeat Organization Tactics, Techniques and Procedures Handbook, JIEDDTF 05-23