FMFM 2-7

Fire Support in Marine Air-Ground Task Force Operations

U.S. Marine Corps

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FOREWORD

1. PURPOSE

Fleet Marine Force Manual (FMFM) 2-7, *Fire Support in Marine Air-Ground Task Force Operations*, sets forth the doctrine for fire support in Marine Air-Ground Task Force (MAGTF) operations.

2. SCOPE

This manual addresses the fundamentals, the fire support means, the uses of fire support, and the doctrine for fire support coordination in MAGTF operations. The manual is designed to be read, understood, and applied when using FMFM 6-18, *Techniques and Procedures for Fire Support Coordination*.

3. SUPERSESSION

FMFM 7-1, *Fire Support Coordination*, dated 23 April 1981.

4. CHANGES

Recommendations for improvements to this manual are invited from commands as well as individuals. Forward suggestions using the User Suggestion Format to:

Commanding General
Doctrine Division (C 42)
Marine Corps Combat Development Command
2042 Broadway Street Suite 210
Quantico, VA 22134-5021

5. CERTIFICATION

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

M. P. CAULFIELD
Major General, U.S. Marine Corps
Director, MAGTF Warfighting Center
Marine Corps Combat Development Command
Quantico, Virginia

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User Suggestion Form

From:

To: Commanding General, Doctrine Division (C 42), Marine Corps Combat Development Command, 2042 Broadway Street Suite 210, Quantico, Virginia 22134-5021

Subj: RECOMMENDATIONS CONCERNING FMFM 2-7, *FIRE SUPPORT IN MARINE AIR-GROUND TASK FORCE OPERATIONS*

1. In accordance with the foreword to FMFM 2-7, which invites individuals to submit suggestions concerning this FMFM directly to the above addressee, the following unclassified recommendation is forwarded:

Page	Article/Paragraph No.	Line No.	Figure/Table No.

Nature of Change:

- ☐ Add
- ☐ Delete
- ☐ Change
- ☐ Correct

2. Proposed new verbatim text: (Verbatim, double-spaced; continue on additional pages as necessary.)

3. Justification/source: (Need not be double-spaced.)

Note: Only one recommendation per page.

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Fire Support in Marine Air-Ground Task Force Operations

Table of Contents

Page

Chapter 1. Introduction

Overview 1-1
Doctrine—1-1
Techniques and Procedures—1-1

Fire Support 1-1
Fire Support Coordination—1-2
Fire Planning—1-2
Delivery of Fires—1-2

Marine Corps Warfighting Concept 1-2
Maneuver Warfare—1-2
Combined Arms—1-2
MAGTF—1-3

Fire Support System 1-3
Target Acquisition—1-3
Weapons System—1-3
Command and Control System—1-4

Fire Support Responsibilities 1-4
Command—1-4
Control—1-5
Coordination—1-6

Responsibility of the MAGTF and Subordinate Commanders 1-6
MAGTF Commander—1-6
GCE Commander—1-6
ACE Commander—1-7
CSSE Commander—1-7

Responsibility in Amphibious Operations 1-8
Commander, Amphibious Task Force—1-8
Commander, Landing Force—1-9
FSCC—SACC Relationships—1-10

Responsibility in Joint Operations 1-10

Chapter 2. Fire Support Means

Artillery 2-1
Mission of Marine Artillery—2-1
Command and Control of Artillery—2-1
Tactical Mission—2-2
Organization for Combat—2-4
Artillery in Reserve—2-5
Artillery Characteristics—2-5

Mortars 2-9
Mission of Mortars—2-9
Command and Control of 81 mm Mortars—2-9
Command and Control of 60 mm Mortars—2-9
Mortar Characteristics—2-10

Naval Gunfire 2-11
Mission of NGF—2-11
Command and Control of NGF—2-11
NGF Characteristics—2-11
Accuracy—2-12

Marine Aviation 2-13
Mission of Marine Aviation—2-13
Command and Control of Marine Aviation—2-13
Characteristics of Marine Aviation—2-14

Chapter 3. Fundamentals for Employment of Fire Support

Firepower and Mobility 3-1
Firepower—3-1
Mobility—3-1

Characteristics of Fire Support 3-1
Targeting—3-2
Allocation of Fire Support—3-3
Mobility—3-3
Continuity—3-3
Fire Support Coordination—3-3
Close Liaison—3-4

Fire Support Contribution to Combat Power 3-4
Fire Support Can Complement or Supplement a Supported Activity—3-4
Fire Support Can Reinforce the Effects of Another Activity—3-4
Fire Support to Create Opportunity—3-5
Fire Support as an Extension of Maneuver—3-5
Fire Support to Cause Enemy Reactions—3-5

Terminal Effects—the Basic Consideration 3-5
Destruction Fire—3-5
Neutralization Fire—3-6
Harassing Fire—3-6
Interdiction Fire—3-6
Illumination Fire—3-6
Suppressive Fire—3-6
Screening Fire—3-6

Other Considerations 3-7
Target Selection—3-7
Terrain and Weather—3-7
Ability to Observe Impact of Rounds—3-7
Stationary Target—3-7
Provide Necessary Support With Least Possible Ammunition—3-7
Fires in Support of the Offense—3-7
Fires in Support of the Defense—3-8

Chapter 4. Fire Support Coordination

Principles of Fire Support Coordination 4-1
Know and Understand the Commander's Intent—4-1
Plan Early and Continuously—4-1
Exploit All Available Targeting Assets—4-1
Consider the Use of All Available Fire Support Means—4-1
Use the Lowest Capable Echelon—4-2
Use the Most Effective Means—4-2
Furnish the Type of Support Requested—4-2
Avoid Unnecessary Duplication—4-2
Consider Airspace Coordination—4-2
Provide Adequate Support—4-2
Provide Rapid Coordination—4-3
Provide for Flexibility—4-3
Provide for the Safeguarding of Friendly Forces and Installations—4-3

Fire Support Planning 4-3

Fire Support Planning for Amphibious Operations 4-4
Fire Support Requirements—4-4
Special Considerations—4-4

Coordination in Operations 4-5

Fire Support Coordination Agencies 4-6

Fire Support Coordination Measures 4-8
Boundaries—4-8
Permissive Measures—4-8
Restrictive Measures—4-9

Fire Support Communications 4-9

Other Coordination Considerations 4-9

APPENDIXES:

A Glossary A-1
B References B-1

Chapter 1

Introduction

Overview

The purpose of this book is to provide doctrine for fire support in Marine Air-Ground Task Force (MAGTF) operations. Chapter 1 of this manual defines fire support, describes the fire support system, and identifies the fire support responsibilities. Chapter 2 identifies and provides information about each fire support means essential to its effective employment. The mission, command, control, and characteristics of each resource are addressed. Chapter 3 presents fundamentals for the employment of fire support. Chapter 4 provides an overview of fire support coordination.

Doctrine

FMFM 2-7 provides the doctrinal foundation for employment of fire support in MAGTF operations. Doctrine is the fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application. (Joint Pub 1-02) As it is implemented, doctrine demands the ability of one to think, teach, and lead.

Techniques and Procedures

FMFM 2-7 is intended as a preface to using FMFM 6-18, *Techniques and Procedures of Fire Support Coordination*. **Techniques** are methods of accomplishing a goal or mission. Techniques enhance one's ability to accomplish a task. For example, the integration of artillery fires for suppression of enemy air defenses (SEAD) in a close air support (CAS) mission. **Procedures** are a series of standardized steps for doing something. For example, the artillery call for fire, the 9-line CAS brief, and artillery gunnery computations.

Fire Support

Fire support is the assistance to elements of the ground forces engaged with the enemy rendered by other firing units, including (but not limited to) artillery, mortars, naval gunfire (NGF), CAS, and close-in fire support (CIFS). Fire support entails the collective and coordinated use of weapons. Fire support delivered by indirect-fire weapons and armed aircraft comprise one element of firepower; direct-fire weapons provide the other. The fires of indirect- and direct-fire weapons are integrated with each other, with other assets such as electronic warfare (EW), and with maneuver to produce combat power. Combat power includes the destructive and/or disruptive force a unit can apply at a given time. Combat power is optimized when it is delivered at a decisive time and place.

The term *supporting arms* is often used when referring to fire support, particularly in amphibious operations. Supporting arms are the air, sea, and land weapons of all types employed to support ground units. (Joint Pub 1-02) The terms *supporting arms coordination* and *coordination of supporting fires* are also used.

Fire support is composed of three parts—**fire support coordination, fire planning, and delivery**

of fires. Proper application of these parts results in the employment of weapons for optimum effectiveness, while providing safety to friendly forces and installations.

Fire Support Coordination

Fire support coordination is the planning and executing of fire so that targets are adequately covered by a suitable weapon or group of weapons. (Joint Pub 1-02) Fire support coordination has two subdivisions: fire support planning and coordination in operations. Fire support planning is the continuous and concurrent process of analyzing, allocating, and scheduling of fire support to integrate it with the maneuver forces to maximize combat power. Fire support planning results in a fire support plan which outlines how the commander directs the use of his available indirect-fire weapons and armed aircraft. Battalion and company level fire support planners coordinate the delivery of these fires with the fires of direct-fire weapons. Coordination in operations is the process of implementing the fire support plan and managing the fire support available to combat units. See chapter 4 for a discussion on fire support coordination.

Fire Planning

Fire planning is the planning conducted by supporting arms agencies for the employment of their weapons so that the fires will be coordinated in support of the maneuver commander's concept of operation. Fire plans are prepared to implement and extend the supported commander's fire support plan.

Delivery of Fires

Delivery of fire is the execution of fire plans and necessary coordination in operations. Fires are delivered to produce a variety of effects. Chapter 3 discusses the contributions fires can make to combat power.

Marine Corps Warfighting Concept

Maneuver Warfare

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

Combined Arms

Combined arms is the tactics, techniques, and procedures employed by a force to integrate firepower and mobility to produce a desired effect upon the enemy. Combined arms is accomplished through the tactics and techniques that combat forces use at the lower levels and through the allocation of assets at the higher levels. The tool used to generate combined arms is the MAGTF.

The purpose of using combined arms is to employ units and weapons for mutual support to achieve complementary and reinforcing effects that neither could gain separately. The strengths of one are used to compensate for the limitations of, or to magnify the force of, another.

Combined arms is applied at all levels, from the fire team to the MAGTF command element (CE). FMFM 1, *Warfighting*, cites the application of combined arms with its discussion of the fire team's employment of the grenade launcher and automatic rifle.

Supporting arms can be used to achieve a combined arms effect. An example could be the integration of indirect fire with aviation. To neutralize or destroy a mobile armored

formation, indirect fires can be used to slow, canalize, and restrict the target until aircraft can deliver their ordnance onto the target. Indirect fires could not by themselves cause the desired effect on the target, but they can fix the target for the more effective means of fire support, in this case, the aircraft.

At the MAGTF level, the application of combined arms continues. Marine Corps assets could be integrated with external assets; i.e., joint and allied forces. An example would be the integration of the capabilities of the U.S. Marine Corps aircraft and the capabilities of the U.S. Air Force aircraft. Further combined arms effects could be achieved using other means.

MAGTF

MAGTFs are task-organized for a specific mission. At the completion of that mission, the task organization is dissolved in accordance with prearranged plans. The MAGTF includes a CE, one or more ground combat elements (GCEs), an aviation combat element (ACE), and a combat service support element (CSSE). The MAGTF can function in an amphibious operation in support of a naval campaign, or in sustained operations ashore as part of a larger joint or combined land campaign.

In a MAGTF, fire support may be provided by the GCE, the ACE, and by other supporting forces; e.g., the Air Force, Navy, Army, and allied forces. The fire support, while used primarily by the GCE, may be used to support any element of the MAGTF or to support other forces.

Fire Support System

Understanding the fire support system is essential to employing fire support effectively. (See fig. 1-1.) The system embodies three components—target acquisition, weapons systems, and a command and control (C^2) system. When functioning together, these components provide the firepower that a commander needs.

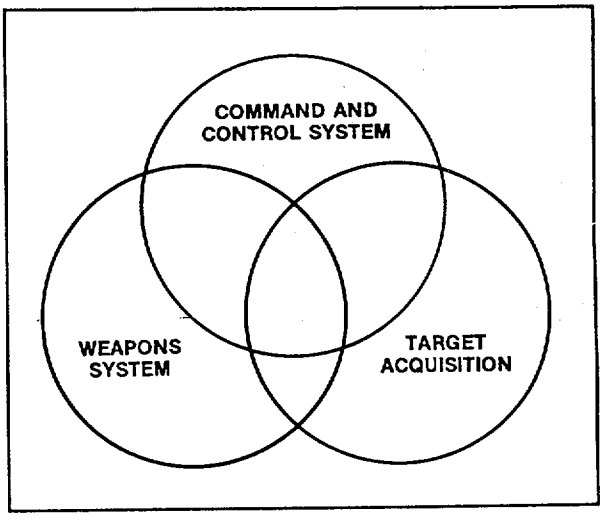

Figure 1-1. Fire Support System.

Target Acquisition

Target acquisition is the detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. (Joint Pub 1-02) Without accurate target location data, indirect-fire weapons are of limited value. Target acquisition is performed by all means available to the MAGTF. See figure 1-2 for some of the target acquisition means available.

Weapons System

A weapons system is the weapon and those components required for its operation. The system includes a delivery vehicle and weapon combination including all related equipment, materials, services, and personnel required so that the system becomes self-sufficient in its intended operational environment.

Weapons and ammunition provide the means to attack targets. A variety of weapons and ammunition allows for the selection of the most suitable means to attack a target.

CE	GCE	ACE
Unmanned aerial vehicles (UAV) Deep reconnaissance units Signals intelligence (SIGINT) collectors Photographic and satellite sources Human intelligence (HUMINT) Adjacent units External sources	Forward observers (FOs) Forward air controllers (FACs) Naval gunfire (NGF) spotters Naval aviation observers (NAOs) Ground intelligence sensors Weapons-locating radar Combat troops Reconnaissance units	Forward air controller (airborne) FAC(A) Naval aviation observers (NAOs) Other aircraft (including recon and electronic warfare [EW])

Figure 1-2. Target Acquisition Means.

Weapons systems must be supported, sustained, and employed for survivability. Without support, the sustainment of firepower is threatened. This support includes technical support and combat service support (CSS). Technical support enhances the delivery of accurate fires. Examples are the meteorological and survey support for artillery units; beacon support for NGF and CAS. CSS is essential to a weapons system. Equipment cannot move if it lacks fuel or there are no roads. Weapons cannot fire if they lack ammunition or if they are broken. Marines cannot move or shoot well if they do not have water or food for extended periods of time. Finally, certain actions must be taken to increase the chances for survival of weapons and the personnel who operate these weapons. Active and passive defensive measures must always be considered and implemented to avoid enemy detection and position-fixing capabilities. Other actions include the avoidance of predictable actions and the employment of disciplined and trained fire control procedures, operations security, and electronic counter-countermeasures.

Command and Control System

The command and control system is the facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing, and controlling operations of assigned forces pursuant to the missions assigned. (Joint Pub 1-02) The responsibility for the establishment of the C^2 system is vested in the commander. The commander establishes C^2 agencies to assist in organizing, planning, directing, coordinating, and controlling fire support. (See fig. 1-3.)

Fire Support Responsibilities

The commander is responsible for all that happens or fails to happen within his command. This is especially true regarding the planning and coordinating of fire support. To clearly understand the commander's responsibilities, it is important to be familiar with the terms command, control, and coordination.

Command

Command is the authority that a commander in the military Service lawfully exercises over subordinates by virtue of rank or assignment. Command includes the authority and responsibility for effectively using available resources and for planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned missions. It also includes responsibility for health, welfare, morale, and discipline of assigned personnel. (Joint Pub 1-02) The commander can delegate authority but he cannot delegate responsibility.

ATF	CE	GCE	ACE	CSSE
Supporting arms coordination center (SACC)	Fire support coordination center (FSCC)	FSCCs	Direct air support center (DASC)	Rear area operations center (RAOC)
Tactical air control center (TACC)			Tactical air command center (TACC)	

Figure 1-3. Agencies Established to Assist in Fire Support.

Control

Control is the authority which may be less than full command exercised by a commander over part of the activities of subordinate or other organizations. (Joint Pub 1-02) Control, unlike responsibility, can be delegated. Control of supporting arms equates to the authority a commander has over certain activities, and it may exist in several forms. The following subparagraphs discuss these forms of control.

Control Exercised by Supported Commanders

A commander is given authority over all activities, including the use of supporting arms within his assigned zone of action or sector defense. The commander exercises control through his fire support coordination center (FSCC), forward observers, NGF spotters, and forward air controllers (FACs) as appropriate.

Control of Artillery

The commander of the force (GCE) or division exercises control of artillery in his organization through the commander of that artillery unit. The higher artillery commander organizes artillery for combat to meet the needs of the force as a whole and the needs of subordinate units. He receives guidance from the commander of the force or division of which the artillery is a part. The selection of firing positions, assignment of fire missions, resupply, etc., are controlled by artillery commanders; however, the delivery of fires and positioning must be cleared by the appropriate ground commander who has control of that zone or sector.

Control of Naval Gunfire

Naval commanders are always responsible for the allocation, logistics support, and operational control (OPCON) of fire support ships. In the postlanding phase of an amphibious assault, the commander, amphibious task force (CATF) may pass control of NGF to the commander, landing force (CLF). This control equates to the authority to assign tactical missions to ships assigned to the CLF. Prior to this passage of control, the assignment of tactical missions is discharged by the CATF. When ships are given tactical missions, the selection of targets, the timing of fires, specification of the line of fire (when not inconsistent with safe navigation), and the adjustment of fires are functions of the supported unit.

Air Control

Air control is the authority to direct the physical maneuver of aircraft in flight or to direct an aircraft or surface-to-air weapon (SAW) unit to engage a specific target. Air control is performed when an air controller maneuvers an aircraft by directing the pilot, or a missile controller directs a SAW unit to engage a particular target. Tasks dealing with the actual

maneuver of aircraft are air control tasks. For more information on air control, see FMFM 5-60, *Control of Aircraft and Missiles* (under development).

Coordination

Coordination is the action necessary to ensure adequately integrated relationships between separate organizations located in the same area. Coordination may include such matters as fire support, emergency defense measures, area intelligence, and other situations in which coordination is considered necessary. (FMFRP 0-14) The responsibility for coordination is always vested in the commander. Planning and coordinating the use of supporting arms requires close interaction among all organizations involved.

Responsibility of the MAGTF and Subordinate Commanders

MAGTF Commander

The MAGTF commander exercises authority in the planning and operational phases. The MAGTF commander exercises his authority during planning and execution of operations to focus his assets and accomplish his mission. He has three separate but possibly concurrent engagements: the deep battle, the close battle, and the rear battle. The deep battle lies beyond the area of influence of the GCE commander(s). It is the battle on which the MAGTF commander usually focuses. To execute this deep battle, the MAGTF commander retains OPCON of all organic assets which can influence the deep battle, including Marine aviation, and exercises priority of tasking aircraft. He also retains OPCON of long-range target acquisition assets. If NGF assets are available, the MAGTF commander may retain some of these assets to support the deep battle and allocate NGF assets to subordinate commands as appropriate. Command, control, and coordination responsibilities in amphibious and joint operations are discussed on pages 8 through 11 of this chapter.

The MAGTF commander establishes an FSCC. The MAGTF FSCC is a task-organized facility which includes the personnel, equipment, and communications links appropriate to the fire support coordination functions to be performed and the tactical situation. The MAGTF FSCC is staffed using the supporting arms representatives * (e.g., artillery officer, air officer, etc.) on the MAGTF CE's staff as a nucleus with augmentation from USMC and external sources. USMC sources may include the air/naval gunfire liaison company (ANGLICO) (if not otherwise committed); the GCE(s); assets of an uncommitted MAGTF; and/or non-Fleet Marine Force (FMF) assets. External sources can include representatives or liaison personnel/teams from joint and allied forces.

The role of the MAGTF FSCC is to implement the MAGTF commander's intent which will be focused on the deep battle. The preponderance of the MAGTF FSCC's effort is in planning as opposed to the actual integration of the delivery of supporting arms. The MAGTF FSCC complements and extends the fire support coordination efforts of other elements of the MAGTF. The MAGTF FSCC maintains close coordination with the GCE(s) FSCC for integration of the fire support plans of the deep and close battles. The MAGTF FSCC interfaces with the ACE's Marine Air Command and Control System (MACCS). Such interface is made by collocation with a task-organized MACCS agency. For more on the MAGTF FSCC, see chapter 4 of this manual, and FMFM 2-7.1, *Fire Support Coordination by the MAGTF Command Element* (under development).

*** NOTE:** These supporting arms representatives were previously referred to as the supporting arms special staff.

GCE Commander

The GCE is a task-organized element constructed around an infantry unit and includes

appropriate combat support and CSS units. The GCE commander establishes the GCE FSCC to perform his fire support coordination functions. FSCCs are also established by subordinate commanders of the GCE down to the battalion level. The GCE FSCC has sufficient target analysis and communications capability to plan fires, perform targeting, integrate fires with maneuver, and accomplish coordination during operations. The GCE FSCC plans and integrates fire support within the GCE's area of influence.

The GCE has organic artillery and mortar support. It also plans and coordinates the delivery of other assets such as NGF, air support, EW, etc., as allocated by the MAGTF commander. The delivery of aviation support is enhanced by tactical air control parties (TACPs) organic to the GCE. Depending on the size of the airspace to be controlled, the number and geographical spread of units, the extent of projected air operations, communications requirements, and mobility requirements, a DASC or liaison team thereof will be collocated with the GCE FSCC.

The GCE FSCC coordinates with the adjacent GCE's FSCC when the MAGTF has multiple GCEs, with other elements of the MAGTF (e.g., CSSE), and with adjacent external forces on fire support coordination matters. Matters which cannot be resolved by direct coordination between subordinate FSCCs are resolved by the MAGTF FSCC. Fires for the close and rear battle are integrated and coordinated by the FSCCs of the GCE(s) who are supported by DASC.

ACE Commander

The ACE is a task-organized element comprised of a headquarters and an aviation unit which varies in size from a helicopter squadron (–) (Rein) to one or more aircraft wings. Although normally viewed as a supporting arm, the ACE may be tasked as the focus of effort for the MAGTF. The ACE commander performs his fire support functions through the MACCS. These functions include control and coordination of aircraft supporting maneuver forces. In amphibious operations, control and coordination of aircraft is initially discharged by the CATF. When control of air operations has been passed to the CLF, the ACE coordinates air operations in the objective area, including antiair warfare (AAW) and airborne EW, but excluding antisubmarine warfare, antisurface warfare, sea mining, and mine countermeasure operations. The ACE manages the airspace within the MAGTF's area of responsibility. The ACE provides all or a portion of the six functions of Marine aviation in varying degrees based on the tactical situation and the MAGTF's mission and size. The six functions of Marine aviation are offensive air support, assault support, air reconnaissance, EW, AAW, and control of aircraft and missiles. The ACE receives targeting information, targeting guidance, and the fire support plan from the MAGTF. The ACE is responsible for detailed aviation planning to support the MAGTF commander's fire support plan.

CSSE Commander

The CSSE commander's responsibility in fire support includes providing CSS for the sustainment of fire support, functioning as the rear area security coordinator (RASC) when designated, and employing indirect fire assets when these means are allocated. The MAGTF commander normally designates the CSSE commander as the RASC. As the RASC, the CSSE commander will direct and control rear area security (RAS)through the rear area operations center (RAOC). The RAOC is staffed using organic CSSE personnel, with augmentation from—

- ANGLICO, if not otherwise employed in its primary mission.
- FMF assets.
- Assets from non-FMF organizations.

Fire support is used for RAS as required. The fire support representatives in the RAOC coordinate the delivery of fire support with the

FSCC of the GCE. When there is more than one GCE, the coordination is effected with the GCE closest to the projected/actual location of enemy rear area activity.

Responsibility in Amphibious Operations

Commander, Amphibious Task Force

As the overall commander, the CATF is charged with overall responsibility for an amphibious operation. The CATF commands all elements of the amphibious task force (ATF), including the fire support elements. Because these fire support elements are organic to the component commanders, command of the fire support elements seldom changes. The CATF's command of landing force (LF) fire support elements is exercised through the CLF as a component commander. CATF's fire support responsibilities consist of planning, targeting, control, coordinating, and monitoring of fire support activities.

The CATF establishes a SACC at the ATF level of the amphibious organization. Subordinate naval commanders also establish SACCs when appropriate; e.g., attack group, advanced force. The SACC is a single location on board an amphibious command ship in which all communication facilities incident to the coordination of fire support of the artillery, air, and naval gunfire are centralized. This is the naval counterpart to the fire support coordination center utilized by the landing force. (Joint Pub 1-02) The SACC is staffed by the personnel from the ATF, with LF representatives assigned.

As the coordinating authority for planning, the CATF is responsible for preparation of the overall plan for the amphibious operation. This includes the planning for the employment of all aircraft, artillery, and NGF prior to the transfer of control and coordination responsibility ashore. The CATF prepares a coordinated air and naval plan for all phases of the operation. Close interface between the SACC and the ATF joint intelligence center is essential for targeting.

Upon initiation of planning, the CATF prepares and publishes the ATF target list. The target list is a listing of targets maintained and promulgated by the senior echelon of command; it contains those targets which are to be engaged by supporting arms, as distinguished from a "list of targets" which may be maintained by any echelon as confirmed, suspect, or possible targets for informational and planning purposes. (Joint Pub 1-02) Since the ATF target list contains those targets which are to be **engaged**, the ATF target list should consist of high-payoff targets. There is only one ATF target list. The ATF target list includes recommended targets from all levels of the LF provided during concurrent planning and coordination. The ATF target list is kept current by the promulgation of target bulletins (TARBULs). TARBULs add new targets as they are discovered, delete inactive and destroyed targets, and assess the damage on targets attacked.

Initially, the CATF exercises control over air and NGF, and through the CLF, artillery. (See fig. 1-4.) Air control is exercised by various commanders as the operation progresses. Air control may be delegated to an advanced force commander and to the attack group commander in their respective landing areas. The CATF assumes control of all air operations upon arrival in the objective area. Subsequently, control of all or a portion of air operations may be passed to the CLF or the joint task force commander concerned. As the first LF elements reach the shore, that portion of control that relates to the firing of specific missions in support of the LF shifts to those elements. With the commencement of on-call fires, the control of supporting arms in the attack of specific targets and target areas becomes an LF responsibility when the target affects the LF.

The CATF exercises overall coordination for the delivery of NGF, air support, and LF artillery fire, including requests for the use of nuclear and chemical weapons. The extent of coordination exercised by the SACC is primarily supervising

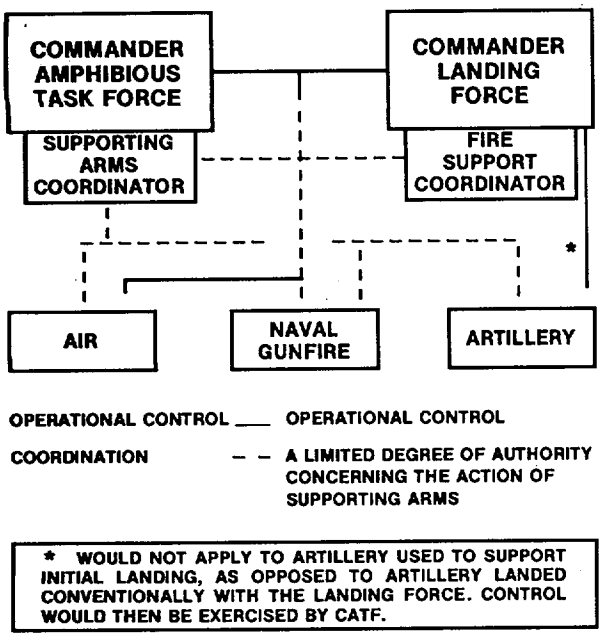

Figure 1-4. Control and Coordination Relationships (Prior to Passing Any Control and Coordination Functions Ashore).

the execution of a detailed fire support plan. Coordination of supporting fires is accomplished by subordinate units within their own boundaries and with adjacent units, with SACC assistance when required. The actions of subordinate FSCCs usually do not begin until after the execution of the overall ATF planned fires and after FSCCs are established ashore. The SACC makes appropriate coordination to achieve a combined arms effect, such as the inclusion of EW support.

When LF command and coordination agencies are phased ashore and operating effectively, the CATF normally passes the responsibility for appropriate fire support coordination and control functions to the CLF upon request. Thereafter the CLF coordinates the fires of all supporting arms with troop maneuvers. The CATF's SACC assumes a standby or monitoring status, prepared to take control and coordination responsibility if required. The CATF continues to assist the targeting function by passing appropriate information to the MAGTF G-2 ashore. This information is used by the G-2 section in its liaison with the FSCC.

Commander, Landing Force

The CLF is the officer designated in the initiating directive to command the LF. In Navy/Marine Corps amphibious operations, the MAGTF commander is the CLF. The CLF has responsibility for the coordination of LF requests for fire support during all phases of the operation. Air, artillery, and NGF requirements of the LF are integrated with planned maneuver operations. Consolidated requests for air and naval gunfire support (NGFS) are presented to the CATF for fulfillment. The CLF plans and controls artillery for the operation.

Conditions permitting, the responsibility for overall coordination of fires and the control of air and NGF is normally transferred to the CLF when the CLF has established the necessary facilities ashore for control and coordination. However, this does not mean that they must be transferred simultaneously. In most cases, the responsibility for overall coordination can be passed earlier than control due to the more complex facilities required for control. After responsibility for coordination and control has been passed ashore, the CLF is responsible for overall planning, coordination, and control of the fire support means available in the objective area. Responsibility for the maintenance of the target list is normally passed to the CLF when the CATF transfers control to the CLF.

Fire support is coordinated through FSCCs established at each echelon of the LF, from battalion to MAGTF. In Navy/Marine Corps amphibious operations, the MAGTF FSCC is the LF FSCC.

The LF FSCC provides LF representatives to work in the ATF SACC. Other LF representatives may also be provided, such as representatives from the GCE, ACE, CSSE, EW,

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unmanned aerial vehicle (UAV), etc. These representatives work in the ATF SACC during the period prior to the passage of coordination responsibility to the CLF. These representatives review requests of LF elements ashore, monitor fire support activities, and plan additional requirements. They make recommendations regarding troop safety and type and means of delivery. They also record all target information for future reference ashore. One of the representatives provided is the LF fire support coordinator (FSC). The LF FSC is provided by the LF FSCC. The LF FSC keeps the SACC informed of the use of artillery in order to permit overall coordination of supporting arms. The artillery headquarters keeps the LF FSC informed of the artillery tactical situation using the LF artillery command/fire direction net.

When subordinate amphibious attack groups and corresponding landing groups are formed, fire support coordination agencies are formed for them and employed in a manner similar to those of the CATF/CLF. The advanced force echelon of the FSCC is usually referred to as the *FSCC detachment with the advanced force SACC*. The FSCC detachment embarks with the necessary personnel and equipment required to conduct operations, while facilitating the subsequent transfer to the ATF flagship. Personnel normally include NGF, air, and target information officers (TIO) or their representatives. An experienced individual is appointed to head the FSCC detachment. Functions of the FSCC detachment include advising the advanced force commander and his staff as to the priority of targets from the LF point of view, and the gathering, tabulation, and reporting of information of importance to the CLF about pre-D-day operations. The FSCC detachment, working with the advanced force SACC, analyzes the results of pre-D-day operations and makes appropriate recommendations to the advanced force commander concerning the execution of the landing as planned.

FSCC—SACC Relationships

Upon receipt of the initiating directive for an amphibious landing, CATF and CLF establish the SACC and FSCC, respectively. Since the CATF/CLF relationship is that of equals in the planning stage, liaison between coordination centers should be established so that concurrent planning can begin. They work together to accomplish the overall fire support planning for the assault and subsequent *LF* operations ashore.

After passage of control and coordination responsibilities ashore, the SACC performs a monitoring function. The SACC does those tasks necessary to maintain the ability to resume control and coordination responsibility should the need arise. Additionally, the SACC will continue to control and coordinate those functions not passed ashore, as required.

Responsibility in Joint Operations

The MAGTF can operate as a subordinate to a designated joint force commander (JFC). In some operations, the MAGTF commander may be designated as the JFC. The JFC is responsible for the planning, coordination, and execution of effective fire support in a joint operation. Joint Pub 3-09, *Doctrine for Joint Fire Support* and FMFM 2-7.1, *Fire Support Coordination by the MAGTF Command Element* (under development), provide detailed information for fire support coordination in joint operations.

Chapter 2

Fire Support Means

This chapter appraises the fire support means available to the commander and provides fundamental information conducive to their employment. Detailed information on each can be found in appropriate reference materials. See appendix B for references.

Artillery

Mission of Marine Artillery

The mission of artillery in the Marine division is to furnish close and continuous fire support by neutralizing or destroying targets which threaten the success of the supported unit. To accomplish its mission, artillery conducts three tasks:

- Provide timely, close, accurate, and continuous fire support.
- Provide depth to combat by attacking hostile reserves, restricting movement, providing long-range support for reconnaissance elements, and disrupting C^2 systems and logistical installations.
- Deliver counterfire within the range of the weapons systems to ensure the freedom of action of the ground forces.

Command and Control of Artillery

The artillery regiment is the primary source of fire support in the Marine division. Through a process referred to as **organization for combat**, artillery units are assigned a command relationship and receive a tactical mission which delineates their fire support responsibility.

The assignment of a command relationship is based primarily on the factors of mission, enemy, terrain and weather, troops and support available, and time available (METT-T). The organization may be modified as the operation or phases of an operation change. For example, in compositing two MAGTFs into a larger MAGTF, artillery units are normally reorganized and placed under the command of the senior artillery commander. Through command relationships, artillery is placed with an organization. The commander exercises control of artillery placed in his organization. The command relationship given (or inherent) to an artillery unit may be organic, assigned, attached, OPCON, or administrative control.

Command Relationships

Organic means assigned to and forming an essential part of a military organization. (Joint Pub 1-02) The artillery regiment is the organic artillery component of the Marine division.

Assign means to place units or personnel in an organization where such placement is relatively permanent, and/or where such organization controls and administers the units or personnel for the primary function, or greater portion of the functions, of the unit or personnel. (Joint Pub 1-02) Artillery may be assigned in the strategic tailoring of a force to meet specific requirements of a theater of operation or a contingency plan.

Example: 1st Battalion, 12th Marines is assigned to 3d Marines.

Attach (NATO) means to place units or personnel in an organization where such placement is relatively temporary. Subject to

limitations imposed in the attachment order, the commander of the formation, unit, or organization receiving the attachment will exercise the same degree of command and control thereover as he does over the units and persons organic to his command. However, the responsibility for transfer and promotion of personnel will normally be retained by the parent formation, unit, or organization. (Joint Pub 1-02) Supply and maintenance requirements should be specified in the attachment order in terms of what the receiving unit will provide and what the parent unit will provide. Attachment may apply to artillery in several situations:

- Artillery is **attached to a supported unit** when artillery requirements cannot be adequately provided by the parent artillery organization and control compels the establishment of a command relationship between the supported and supporting commander. Artillery units are not normally attached to battalion-sized or smaller maneuver units unless distance, communications, or other factors do not allow the artillery headquarters to exercise adequate control over the artillery units. An example of the above is an artillery battery attached to the GCE of a Marine expeditionary unit (MEU). Attachment reduces the ability of the higher artillery commander to meet the needs of the force or division commander. There is essentially no difference in quantity and responsiveness of artillery whether a battalion is placed in direct support (DS) of a regiment or attached to it. However, from the higher artillery commander's point of view, there is a difference. When an artillery unit is attached, the higher artillery commander loses C^2 over that unit. In contrast, if a DS mission is assigned to the unit, the higher artillery commander can use that unit's fires when it is not firing for the supported unit, can reposition the artillery unit if he so desires, and can even change the mission of the unit if necessary.

- Artillery may be **attached to another artillery unit** for reinforcement. For example, an artillery battalion supporting a reinforced infantry regiment may have attached firing batteries, counterbattery radar platoon detachment, etc.

- When a suitable artillery headquarters is unavailable, an artillery battalion or battery may be attached to another of like size to form an **artillery groupment.** Groupments are temporary formations used when one unit must exercise greater control over another unit than is inherent in a reinforcing mission. Attachment is established for logistical and administrative considerations. The senior commander of the two units is the groupment commander, and he assigns missions to the subordinate unit.

Operational control is the authority delegated to a commander to direct forces assigned so that the commander may accomplish specific missions or tasks which are usually limited by function, time, or location; to deploy units concerned, and to retain or assign tactical control of those units. It does not include authority to assign separate employment of components of the units concerned. Neither does it, of itself, include administrative or logistic control. (Joint Pub 1-02) OPCON has an occasional use in establishing a relationship between artillery units; e.g., an artillery battalion may be given OPCON of a radar section. However, it is rarely used to establish a relationship between an artillery unit and a supported unit.

Administrative control is the direction or exercise of authority over subordinate or other organizations in respect to administrative matters such as personnel management, supply, services, and other matters of the subordinate or other organizations not included in the operational missions. (Joint Pub 1-02) Administrative control is used occasionally in establishing command relationships for artillery units.

Tactical Mission

Standard Tactical Mission

Infantry units are usually given mission-type orders; e.g., prevent the enemy from crossing the river. Artillery units are assigned tactical missions. A tactical mission defines the fire support responsibility of an artillery unit, normally a battalion, to a supported unit or to

support responsibility of an artillery unit, normally a battalion, to a supported unit or to another artillery unit. These missions are assigned by the higher artillery commander, based on the guidance given by the commander of the force or division to which the artillery is a part. An artillery unit assigned a tactical mission remains under the command of the higher artillery commander. Like command relationships, tactical missions may change in the course of the battle. There are four standard tactical missions for artillery, described by inherent responsibilities. (See fig. 2-1.)

When an artillery unit is assigned a tactical mission of DS, the artillery unit designates how calls for fire will be answered to fit the needs of the supported unit. Each firing battery may have its own conduct of fire (COF) net, each net monitored by the battalion fire direction center (FDC); or the battalion FDC may establish multiple COF nets and direct firing batteries to respond to calls for fire on a designated net and respond to fire missions assigned by the battalion FDC.

TACTICAL MISSIONS	INHERENT RESPONSIBILITIES						
ARTY UNIT WITH MISSION OF	ANSWERS CALLS FOR FIRE IN PRIORITY FROM	ESTABLISHES LIAISON WITH	ESTABLISHES COMMUNICATIONS WITH	HAS AS ITS ZONE OF FIRE	FURNISHES FORWARD OBSERVERS	IS POSITIONED BY	HAS ITS FIRES PLANNED BY
DIRECT SUPPORT	1. SUPPORTED UNIT 2. OWN OBSERVERS 3. HIGHER ARTILLERY HEADQUARTERS	SUPPORTED UNIT (DOWN TO BATTALION LEVEL)	SUPPORTED UNIT	ZONE OF SUPPORTED UNIT	TO EACH COMPANY-SIZED MANEUVER ELEMENT OF SUPPORTED UNIT	UNIT COMMANDER AS DEEMED NECESSARY OR ORDERED BY HIGHER ARTILLERY HEADQUARTERS	DEVELOPS OWN FIRE PLAN
REINFORCING	1. REINFORCED UNIT 2. OWN OBSERVERS 3. HIGHER ARTILLERY HEADQUARTERS	REINFORCED UNIT	REINFORCED UNIT	ZONE OF FIRE OF REINFORCED UNIT	UPON REQUEST OF REINFORCED UNIT	REINFORCED UNIT, OR ORDERED BY HIGHER ARTILLERY HEADQUARTERS	REINFORCED UNIT
GENERAL SUPPORT	1. HIGHER ARTILLERY HEADQUARTERS	NO INHERENT REQUIREMENT	NO INHERENT REQUIREMENT	ZONE OF SUPPORTED UNIT	NO INHERENT REQUIREMENT	HIGHER ARTILLERY HEADQUARTERS	HIGHER ARTILLERY HEADQUARTERS
GENERAL SUPPORT REINFORCING	1. HIGHER ARTILLERY HEADQUARTERS 2. REINFORCED UNIT 3. OWN OBSERVERS	REINFORCED UNIT	REINFORCED UNIT	ZONE OF SUPPORTED UNIT TO INCLUDE ZONE OF REINFORCED UNIT	UPON REQUEST OF REINFORCED UNIT SUBJECT TO PRIOR APPROVAL OF HIGHER ARTILLERY HEADQUARTERS	HIGHER ARTILLERY HEADQUARTERS OR REINFORCED UNIT SUBJECT TO PRIOR APPROVAL BY HIGHER ARTILLERY HEADQUARTERS	HIGHER ARTILLERY HEADQUARTERS

Figure 2-1. Artillery Tactical Missions.

Nonstandard Tactical Mission

When fire support requirements cannot be met or completely conveyed by one of the standard tactical missions, a nonstandard tactical mission may be assigned. A nonstandard mission amplifies, changes, or limits one or more of the inherent responsibilities of a standard tactical mission. The nonstandard stipulations should not degrade the ability of a unit to accomplish the inherent responsibilities of the standard mission. The DS tactical mission should not be modified. The nonstandard tactical mission is normally used when there is not enough artillery to cover artillery requirements. An example of a nonstandard mission is as follows:

1st Bn 10th Mar (155,T): GS, 2d priority in calls for fire (PCFF) light armored infantry (LAI) battalion (Bn) until 031600 AUG

(1st Bn is GS to the division, but 2d PCFF is to LAI Bn.)

On-Order Missions

On-order missions serve as warning orders to alert units of anticipated changes to their tactical mission. This enables the artillery commander to plan and initiate preparations for transition to another mission. The assignment of an on-order mission must take into account positioning and ammunition requirements.

Organization for Combat

The organization for combat must make artillery immediately responsive to the needs of the front line troops, while retaining some artillery responsive to the needs of the force or division commander. This is accomplished in part by the establishment of the organization for combat. For example, general support (GS) establishes centralized control while DS establishes decentralized control. Other methods used to accomplish this are by the assignment of priority of fires and priority targets. The optimum degree of control varies with the tactical situation. Regardless of the degree of centralization, the force or division commander can exercise control of an artillery unit as long as the unit remains under his control.

There are several guiding fundamentals when organizing for combat. These fundamentals include: providing maximum feasible centralized control, ensuring adequate support for committed maneuver elements, providing weight to the main attack or most vulnerable area, facilitating future operations, and ensuring immediately available artillery for the higher commander.

Maximum Feasible Centralized Control

Centralized control places artillery responsive to the needs of the higher headquarters and the force as a whole. Artillery is most effective when control is centralized at the highest level consistent with its fire support capabilities and the requirements of the overall mission. Centralized control permits flexibility in artillery employment ensuring effective support to the force as a whole and its subordinate units. Centralized control is essential in defensive situations where the force or division commander will need to use his artillery to respond to the enemy's initiatives. The GS and general support-reinforcing (GS-R) tactical missions provide for centralized control.

Decentralized control makes artillery responsive to the needs of the front line troops. In offensive situations, the commander possesses the initiative. An organization for combat which places artillery responsive to subordinate commanders is favorable in these situations. The DS tactical mission accomplishes decentralized control.

Priority of Fires

When required, control of artillery can be further allocated by assignment of priority of fires. Priority of fires is guidance to a fire support planner to organize and employ fire support means in accordance with the relative importance of the maneuver units' missions. Priority of fires is normally used to strengthen the main effort or the most vulnerable area.

Priority Targets

Priority targets are a means of allocating control of artillery to a supported unit. A priority target is a target which when requested for attack takes priority over all other requests. Priority targets are designated by the maneuver battalion commander, who also provides specific guidance as to when the targets will become priority, munitions to use, accuracy, and desired effects. When not engaged in fire missions, firing units will lay on priority targets, thereby increasing responsiveness.

Adequate Support for Committed Maneuver Elements

Adequate fire support must be provided to units committed in combat. What constitutes *adequate support* is determined by the commander, considering METT-T. The minimum adequate fire support for a committed unit (e.g., infantry regiment or separate maneuver battalion) is considered to be one artillery battalion in DS. Some situations may require more artillery support; e.g., reinforcing or GS-R artillery. This may result in less support to one unit to increase the combat power of another.

Weight the Main Attack or Most Vulnerable Area

Weight must be added to support the main attack or to strengthen the most vulnerable area. This fundamental can be accomplished in several ways:

- Reinforcing or GS-R missions.
- Assignment of positions and azimuths of fire.
- Allocation of additional ammunition.
- Assignment of priority of fires.

Facilitate Future Operations

Artillery must be responsive to unforeseen events and capable of smooth transition from one mission to another. Nonstandard and on-order tactical missions, positioning, and allocation of ammunition facilitates this fundamental.

Immediately Available Artillery for the Higher Commander

The force or division commander must retain immediately available artillery with which he can influence the action. GS and GS-R missions facilitate this fundamental.

Artillery in Reserve

Artillery is not held in reserve. Artillery with a unit assigned a reserve mission is given another tactical mission within the division, or employed in support of another division if the parent division is in reserve. Liaison sections may remain with the reserve unit for planning purposes.

Artillery Characteristics

Artillery is the commander's principal means of fire support in ground combat. It can yield substantial firepower to the supported unit. There are fundamental considerations for the optimum employment of artillery.

Weapons and Ammunition

Artillery weaponry includes cannons and rockets that can deliver accurate fires at extended ranges. Marine artillery cannons consist of light (120 mm or less) and medium (121 mm through 160 mm) weapons. Marine heavy artillery (161 mm through 210 mm) is currently located only on board maritime prepositioning ships. There are no very heavy (greater than 210 mm) caliber weapons in the Marine Corps inventory. A variety of munitions provide increased flexibility in attacking targets.

Heavier caliber weapons produce greater effectiveness from one hit than lighter calibers. A direct hit by a light caliber weapon is usually required to destroy a hard target such as an armored personnel carrier. An impact within 10 m by a light caliber weapon will destroy, or

seriously damage, a medium target, such as a truck, radar station, or a missile launcher. However, a direct hit is not always required to destroy a target by a heavier caliber weapon.

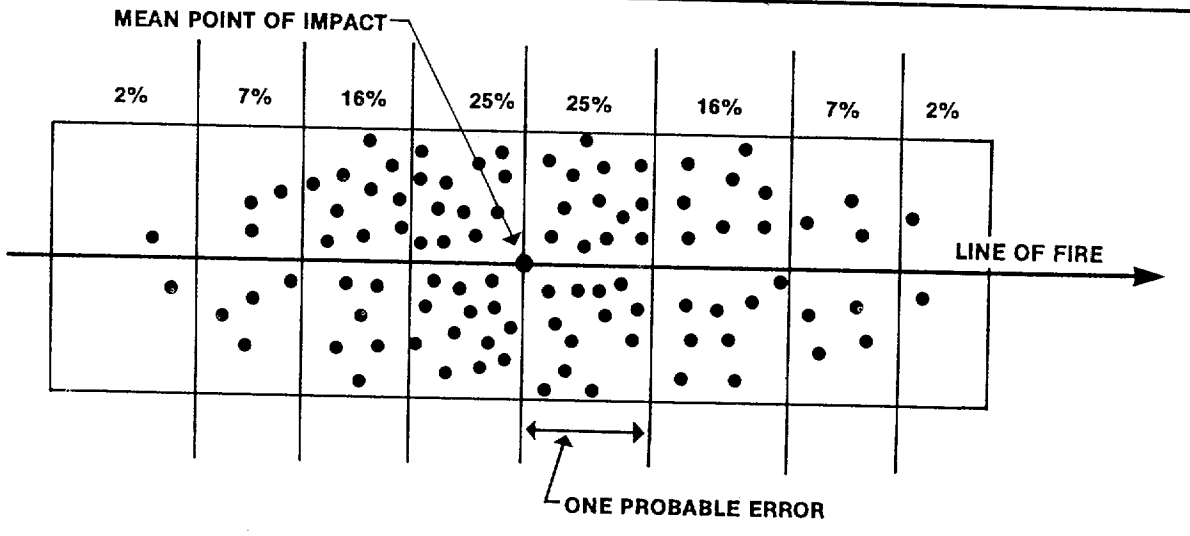
Accuracy

Artillery weapons are area weapons rather than point-target killers. The exception is guided projectiles such as Copperhead, which give the artillery a single shot kill capability against moving and stationary armored targets. Artillery weapons can be employed using either direct or indirect delivery techniques. Fires can be delivered without observation, but are delivered most effectively when observed.

Delivery accuracy is a measure of the ability of a weapon system to place munitions on an aiming point. Inaccuracy of a weapon system is caused by a number of factors including hardware inaccuracies, environmental effects, and human error. Some of these errors are inherent to the artillery gunnery system and cannot be eliminated, thus resulting in natural dispersion. Dispersion must be understood by all concerned with artillery fire.

If several rounds are fired under identical conditions from a single weapon with the same firing data, the rounds will not fall on the same point. The pattern on the ground will be roughly elliptical, with the long axis along the line of fire. Half of the rounds fired will fall within a predictable distance over or short of the point of aim. This distance is referred to as one probable error in range (PE/R). All rounds fired will impact within four PE/Rs of the aim point. The same procedure applies to deflection and height of burst probable errors. (See fig. 2-2.) Generally, the closer the weapon is to the target, the more accurate the fire.

The dispersion of artillery impact is a characteristic which can be regarded as either a capability or a limitation, depending on the type of target under attack. Against area targets, the bursting projectiles in the dispersion pattern achieve a wide area coverage. However, when attacking small area or point targets, the dispersion phenomenon necessitates the firing of many rounds in order to expect one round to cause effect on the target.



For an M-198 howitzer firing high explosive (HE) at a range of 6,000 meters (charge 5, Green Bag Propellant), 50% of the rounds will impact within 9 meters over or short of the aim point. It is possible for some rounds to impact up to 36 meters from the aim point. By contrast, if the PE/R is 20 meters, some rounds could impact as much as 80 meters over or short of the target. This data, provided by the FDC upon request, allows the commander to close with his fires while being attentive to the probability of casualties to his troops.

Figure 2-2. Probable Error in Range.

Massed Fires

Massing artillery fires on targets or critical points normally results in maximum effectiveness with a minimum expenditure of ammunition and reduces vulnerability to enemy target acquisition devices. Successive volleys give the enemy time to react and seek greater cover and increase the enemy's capability of acquiring friendly artillery fires.

Massed fires are most important when engaging relatively *soft* targets (e.g., personnel in open) which can quickly become *hard* (e.g., personnel with overhead cover. Massed fires inflict damage and casualties on the enemy before the enemy has time to react and seek cover). Massed fires do not give increased effectiveness for targets that are hard and stay hard. In this case, an accurate volume of fire is more important.

The capability of artillery units to mass fires is influenced by accurate survey and utilization of gunnery techniques. Physical massing of artillery units is not required to deliver massed fires. The organization for combat must provide a single commander the ability to order all available artillery to fire on high-payoff targets (HPTs) when required. (See fig 2-3.)

Mobility

Artillery units must be able to keep up with the supported unit. Through mobility, artillery can—

- Displace quickly.
- Place the bulk of artillery fires where and when needed.
- Position itself to enhance accuracy.
- Ensure coverage of the supported unit's zone of action.

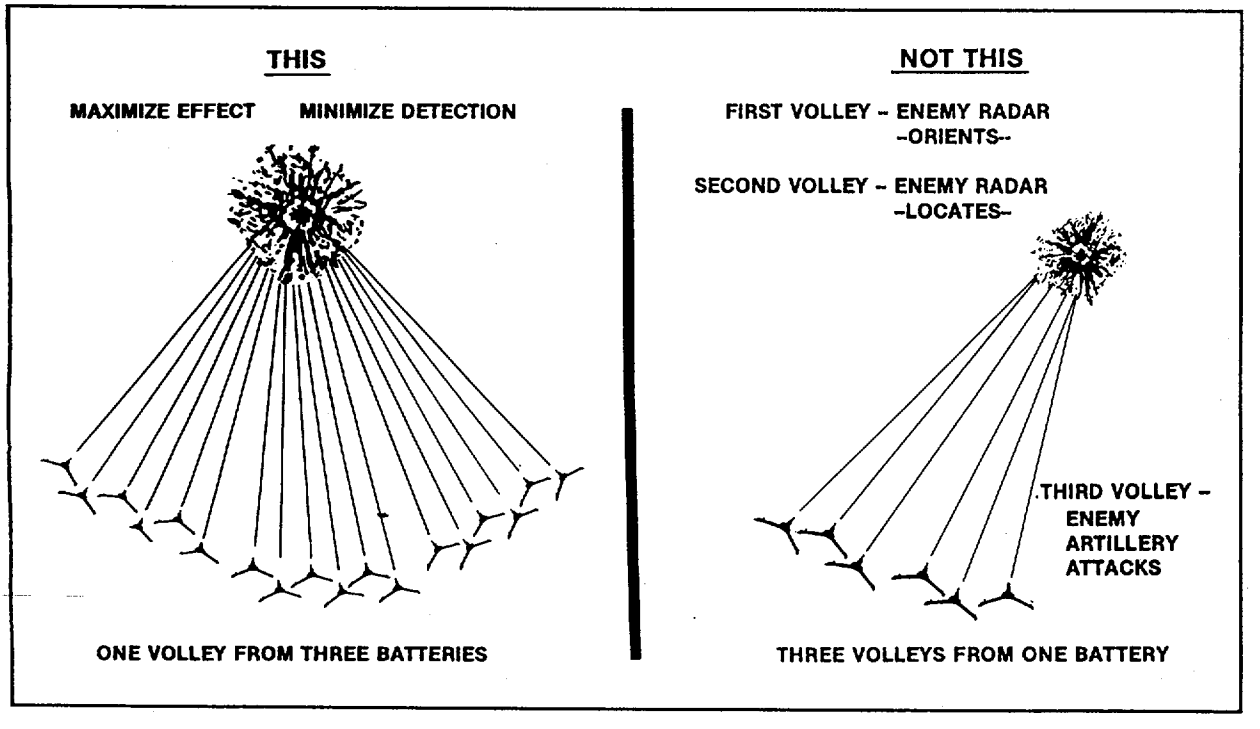


Figure 2-3. Artillery Employment.

Artillery weapons are capable of rapid overland/sea transport or helicopter lift. They are also capable of rapidly shifting fires to expand coverage to the supported unit.

In appraising the mobility of artillery, consideration must be given to its CSS. Other considerations include—

- Artillery displacement must be correlated with the maneuver and fire support requirements of the supported unit.
- Prudent positioning, route precedence, and engineer support contribute to artillery's mobility.

Responsiveness

A characteristic of artillery is speed in executing fire missions, regardless of weather, visibility, or situation. This rapid action allows close integration with maneuver. Responsiveness can be obtained through organization for combat, multiplicity in communications, and continuous CSS. To ensure responsiveness, FOs, liaison officers (LNOs), and artillery commanders must know, understand, and anticipate the supported commander's requirements and actions. Supported commanders can enhance responsiveness by providing timely, definitive guidance to supporting artillery commanders.

Vulnerability

Firing and communications signatures make artillery vulnerable to detection. Artillery is susceptible to interference from enemy air, ground, and counterfire attacks, particularly during displacement. It is difficult for artillery units to defend themselves against ground or air attacks and still provide fires to the supported force with current tables of organization. During the landing phase of an amphibious operation, artillery is particularly vulnerable. Considerations to reduce vulnerability include—

- Dispersed, defilade, and hardened positions, prudent and deceptive displacements, avoidance of stereotyped methods, application of proper gunnery techniques, and other passive and active measures increase the survivability of artillery.
- Attack guidance which allows for artillery fires at decisive times and places in sufficient volume renders effective support while enhancing survivability.
- Counterfire should not be perceived as an artillery duel. While the mission of artillery is to provide counterfire, effective counterfire is rendered when all means capable of delivering this support are used. Jamming of enemy counterbattery radars and artillery conduct of fire nets can enhance the counterfire effort.

Continuity

Artillery is capable of providing close and continuous fire support. Except during displacement, artillery can deliver observed and unobserved fires under all conditions of weather and visibility. Artillery has the capability to use various techniques of movement (e.g., displace by echelon) for continuous coverage of the supported unit. Continuous action is also enhanced by firing from widely dispersed positions and passive and active defensive measures. Essential to continuity is the resupply of ammunition. Extensive firing at sustained rates creates a major logistics problem and may necessitate the assistance of other units of the LF to move sufficient ammunition.

Effects of Weather and Terrain

Weather and terrain can influence the effects of some munitions (e.g., snow reduces the effectiveness of family of scatterable mines. Terrain may dictate organization for combat, effect vulnerability of friendly artillery, and govern CSS capability.

Mortars

Mission of Mortars

The mission of mortars is to give close continuous fire support to the infantry commander in offensive combat and in the defense.

Command and Control of 81 mm Mortars

The 81 mm mortar platoon is an organic component of the weapons company of the infantry (including LAI Bn). The battalion commander directs the employment of the platoon based on the mission and the assigned frontage of the battalion. The platoon may be given a tactical mission of GS or DS, or may be attached to a subordinate unit.

General Support

When the mortar platoon is in GS, it supports the entire battalion as directed by the battalion commander. By keeping the platoon in GS, the battalion commander retains flexibility, ease of coordination of fires, and the ability to mass fires. Direct tactical control (i.e., selection and occupation of firing positions), as well as administrative matters remains with the platoon commander.

Direct Support

The mortar platoon, or an element thereof, may be employed in DS of a specific unit of the battalion; e.g., a company. Liaison is maintained between the 81 mm platoon commander and the supported unit through an FO. The platoon commander retains responsibility for the control of the mortar unit/element's actions, to include positioning and displacement. The supported commander controls the allotted fires. This relationship is normally assigned for a specific mission or phase of an operation. DS may be warranted when the mortar platoon cannot provide the required support while its fires are under battalion control.

Attached to a Subordinate Unit of the Battalion

The mortar platoon, or an element thereof, may be attached to a subordinate unit of the battalion. Attachment is justified when the mortar platoon cannot give adequate support to a unit by operating in a GS or DS role. Attachment is used when a subordinate unit is operating beyond the effective range of the mortar weapon; e.g., a patrol, an independent attack, or during the early phase of an amphibious operation. The subordinate unit commander normally exercises C^2 responsibility to include logistics support for the attached mortar unit/element. This is the least desirable method of employment.

Command and Control of 60 mm Mortars

The 60 mm mortar section is an organic component of the weapons platoon of the rifle company. The company commander is responsible for the tactical employment of the mortar section. He assigns missions and priority of fires, allocates priority targets, designates general firing locations, and approves fire plans. He determines the appropriate method of support (GS, DS, or attached). He plans logistical support, determining the amount and composition of the ammunition load and its distribution and resupply. The weapons platoon commander is the primary advisor to the company commander on the tactical employment of the mortar section. He recommends employment techniques, positions the section, and assists the commander in developing the company fire support plan.

General Support

When the mortar section is in GS, it supports all rifle platoons as directed by the company commander. By keeping the section in GS, the company commander retains flexibility, ease of coordination of fires, and the ability to mass fires. Direct tactical control of the section remains with the weapons platoon commander. Fires are controlled from the company command

post when observation of the entire company zone of action is possible from that position. If not, the mortar section leader mans an observation post to control the fires. GS is the preferred method of employment.

Direct Support

The mortar section may be employed in DS of a specific unit of the company; e.g., a rifle platoon. The section leader establishes direct liaison with the supported rifle platoon commander and conducts fire missions as requested by him. The weapons platoon commander is responsible for the control of the section's actions to include positioning and displacement.

Attachment to a Rifle Platoon

The mortar section, or an element thereof, may be attached to a rifle platoon. Attachment is justified when the mortar section cannot give adequate support to a rifle platoon by operating in GS or DS. Situations for attachment arise when a rifle platoon is—

- Operating as the advance party in an approach march.
- Operating as a patrol whose route takes it out of mortar range.
- Conducting a withdrawal or is situated in a platoon strong point.

When a mortar squad is attached to a rifle platoon, the rifle platoon commander assumes the tactical command, supply, and administrative functions normally exercised by the weapons platoon commander. Attachment is the least desirable method of employment. The employment of separate mortar squads attached to individual platoons lessens the destructive power achieved by consolidating the section. Attachment also increases the problems associated with ammunition distribution and resupply, as well as fire control.

Priority of Fires and Priority Targets

As with artillery, priority of fires may be used to decentralize the control of mortars. Mortars can also be assigned priority targets.

Mortar Characteristics

The mortar is the infantry commander's *hip pocket* weapon. Understanding the characteristics of the mortar is critical to its successful employment on the battlefield.

Weapons and Ammunition

The 81 mm mortar platoon employs eight mortars and the 60 mm mortar section employs three mortars. Mortars can provide a heavy volume of responsive, accurate fire with a variety of ammunition. They are ideal for attacking close-in targets, targets on reverse slopes, and those targets in areas difficult to reach with low-angle fire. Mortars are particularly effective in providing white phosphorous and illumination support.

Mobility

Mortars are transported by vehicle, helicopters, or by man-pack. Mortars can be man-packed in terrain where vehicular support is restricted. However, in a fast-moving operation, the mobility of mortars, coupled with their limited-range capability, may be a restricting factor. Mortars also have the capability to be fired from a light armored vehicle.

Massing

Mortar fires can be massed on a target by the organic unit. However, massing of mortar fires outside the zone of action of the organic unit is difficult due to the limited range of the mortar.

Responsiveness

Responsiveness is an inherent characteristic of mortars.

Vulnerability and Continuity

The high angle trajectory and long time of flight causes the mortar to be vulnerable to enemy counterfire. Active and passive measures are used to increase survivability. Because ammunition for mortars may have to be man-packed, sustainment of mortars may be difficult. So mortars should be employed as an immediately available source of fire support for the infantry commander. Other indirect fire weapons are used when they can achieve the desired results.

Naval Gunfire

Mission of NGF

The general mission of NGFS units in an amphibious operation is to support the assault by destroying or neutralizing:

- Shore installations that oppose the approach of ships and aircraft (pre-D-day);
- Defenses that may oppose the LF (D-day);
- Defenses that may oppose the post-landing advance of the LF (post-D-day).

Command and Control of NGF

The task grouping of the ATF includes NGFS ships organized into fire support groups, units, or elements. A fire support group is a temporary grouping of ships under a single naval commander charged with supporting troop operations ashore. A fire support group may be further subdivided into fire support units and elements. The CATF will normally control NGF during debarkation and landing of the assault waves. Thereafter, he may delegate this control authority to his fire support group commander. CATF will assign ships to provide support as determined by the NGFS requirements developed by the CLF. The LF naval gunfire officer (NGFO) recommends tactical missions to meet these gunfire support requirements. CATF assigns individual ships tactical missions of either direct or general support to specific LF units. Reserve support ships not assigned to support specific LF units are maintained in an on-call status directly under the gunfire support group commander or his subordinate unit commander(s).

When the number of ships permits, each assault battalion will be assigned a ship in DS. The DS mission establishes a one-to-one relationship between a NGFS ship and the supported unit. The ship delivers fires on planned targets and targets of opportunity in her zone of fire, which normally corresponds to the zone of action of the supported unit. When possible, ships capable of performing simultaneous missions (e.g., MK-86 gunfire control system-equipped) will be given a DS mission to allow for maximum firepower to the forward units of the LF.

The GS mission requires a NGFS ship to support the force as a whole or that portion of the force to which the ship is assigned. A GS ship attacks targets in her zone of fire which corresponds to the zone of action of the supported unit. Prearranged fires are delivered in accordance with a schedule of fires published in the ATF operation order and the NGFS plan in the LF operation order. Fires may also be allocated to a subordinate unit for a specific mission(s). Upon completion of the mission(s), the ship reverts to GS. GS ships are assigned to regimental-sized units or larger.

As with artillery, the assignment of priority of fires establishes the precedence of NGF delivery to a designated unit. Movement and rotation of ships in the fire support area (FSA) make it difficult to assign priority targets to NGF.

NGF Characteristics

Weapons and Ammunition

The active fleet is armed with NGFS ships equipped with 5-inch and 16-inch guns and missiles such as Tomahawk. The 5-inch guns are found on frigates, destroyers, cruisers, and battleships. The 5-inch/54 caliber gun is the primary weapon. It is versatile but lacks the destructiveness of the larger caliber gun. The 5-inch/38 caliber is found on some ships. The 16-inch gun and Tomahawk missiles are found on the battleships. Naval guns can fire a variety of shell-fuze combinations.

Accuracy

NGF ships are equipped with automated fire control equipment for the calculation of firing data. However, the firing accuracy of NGF is dependent on the ship's ability to fix her position. If navigational aids (e.g., radar beacons, landmarks) are not available, there will be appreciable inaccuracies in unobserved fires and in the initial salvo of observed fires.

A characteristic high muzzle velocity and flat trajectory make the naval gun effective against material targets presenting a vertical face to the gun-target line (GTL). Such targets may be engaged at short ranges by direct fire using optical and electronic equipment aboard ship.

Due to the changing of the ship's positions and the relatively large range probable error, NGF accuracy decreases when attacking small targets at long ranges using indirect fire techniques. The naval gun produces a dispersion pattern that is elongated along the GTL, the size dependent on the gun and the firing range. For a 5-inch gun, rounds may impact up to 150 m over or short and within 50 m left or right of the point of aim at 21,000 m. The dispersion pattern for the 16-inch gun is appreciably larger.

While NGF can deliver unobserved fires, these fires are generally inaccurate and effectiveness is reduced. When fire is delivered in close support of troops, adjustment by an observer or spotter is required.

Mobility

NGFS ships are capable of considerable mobility along a coastline within the limits imposed by hydrography and hostile action. In operations on peninsulas, islands, and inland areas where ground movement is often restricted, NGF can range targets beyond that of other indirect-fire weapons.

Each NGF ship executing a tactical mission is assigned a definite sea area in which to operate. These areas are called FSAs. At times, it may be advantageous to position a ship at an exact location within an FSA from which fire is to be delivered. Such locations, referred to as fire support stations, are used when a specific GTL is required or maneuvering room is restricted. The selection, location, and size of FSAs are determined during amphibious planning.

Mobility allows the firing ship to be positioned for optimum support to the LF. The most favorable position is normally one which causes the GTL to be parallel to the front line trace of the friendly force or along the axis of a target. If the ship is firing underway, changes in the GTL may necessitate cancellation of a fire mission to preclude danger to friendly forces. This situation may be partially offset by restricting the movement of the ship. (See fig. 2-4.)

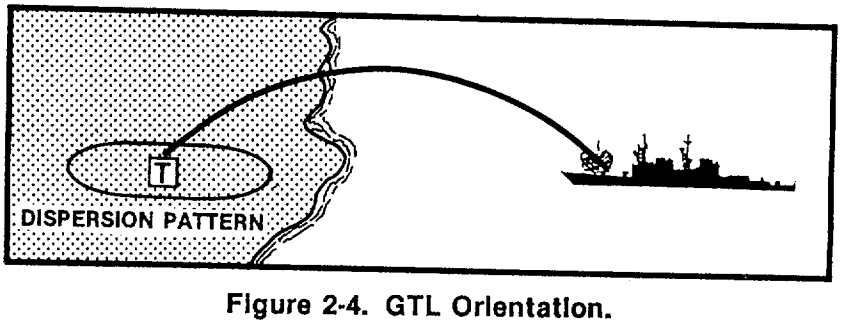


Figure 2-4. GTL Orientation.

Massed Fires

NGFS are capable of delivering high volumes of massed fires. Several ships can mass fires on a target. Power loading and mechanical hoisting equipment on ships enhance high rates of fire for short periods.

Responsiveness

NGFS can respond rapidly to requests for fire support in most situations. However, ships may be underway on a course or in an area that requires a change in the GTL and its positioning in order to hit a target. Reliance on the radio as the single means of communicating may limit responsiveness during periods of interference, interruption, or equipment failure. NGF responsiveness is enhanced through the assignment of DS missions and by positioning ships for the delivery of fire on planned targets.

Vulnerability and Continuity

Enemy defenses, such as attacks by enemy aircraft, surface-delivered fires, and minefields, may limit the availability of NGFS to the LF. Gunfire ships may be withdrawn from support to the LF to resume their primary mission (e.g., AAW or antisubmarine warfare) in defense of the ATF.

Adverse weather may affect the delivery of NGF. Hydrographic conditions for the ship and visibility conditions for the spotter may restrict the ship's ability to place accurate fires onto a target. Radar beacons may be employed to offset this limitation.

The quantity of ammunition available for NGFS is dependent upon the ship's magazine capacity and the quantity needed by the ship for self-defense. Ships can be rotated for replenishment to allow continuous NGFS.

The ability of NGF to support inland operations is limited. Thus, maximum use should be made of these fires while the LF is within NGF range.

Marine Aviation

Mission of Marine Aviation

The mission of Marine aviation is to participate as the supporting air component of the FMF in the seizure and defense of advanced naval bases and for the conduct of such landing operations as may be essential to the prosecution of a naval campaign. A collateral mission is to participate as an integral component of naval aviation in the execution of such other Navy functions as the Fleet commanders may direct. The Marine expeditionary forces (MEFs) and Marine expeditionary brigades (MEBs) normally have the equipment and personnel to accomplish all aviation functions required by the mission, forces assigned, and enemy threat. However, the ACE of a MEU normally will only be equipped to accomplish a portion of these functions. Tactical aviation, operating as part of the concerted air-ground effort, has a powerful and direct effect in ensuring success in battle. It creates the opportunity for battle by deceiving, dislocating, and disrupting the enemy.

The ACE is the aviation arm of the MAGTF. The ACE is task-organized to assist the MAGTF commander in accomplishing the MAGTF's mission. The ACE commander employs his aviation assets to meet the priorities and requirements established by the MAGTF commander and his own requirements. ACE assets are best employed when available assets are brought together in a coordinated manner to weight the main effort. Aviation assets are not normally held in reserve.

Command and Control of Marine Aviation

The MACCS is established for the control of aircraft, missiles, and UAVs. The MACCS is a tactical C^2 system which provides the tactical air commander (TAC), normally the ACE commander, with the means to command,

coordinate, and control all air operations within an assigned sector and to coordinate air operations with other Services. It is composed of C^2 agencies with communications-electronics equipment that incorporates a capability from manual control through semi-automatic control. The two major categories of the MACCS are air direction and air control. Air direction is the guidance and supervision which a commander employs to focus his resources on mission accomplishment. It occurs in the following sequence: apportionment, allocation, tasking, fragmentary order. Air control is the authority to effect the maneuver of aircraft.

The tactical air command center (TACC) is the senior air C^2 agency in the MACCS. It is the agency from which the TAC manages all aviation assets to support the MAGTF. The TAC allocates aircraft to offensive air support missions directly supporting the MAGTF's point of main effort (POME). Additionally, aircraft are allocated to assault support missions for the GCE and CSSE of the MAGTF. The TAC decentralizes control of most of the offensive air support and assault support assets to the DASC for coordination with the GCE and CSSE and for procedural control within the DASC's assigned area of responsibility.

Characteristics of Marine Aviation

Aircraft and Ordnance

Marine aviation units are equipped with a variety of aircraft weapons and associated systems. A variety of ordnance can be delivered, including guns firing an assortment of projectiles, rockets, and guided missiles with diverse warheads and fuzing, laser-guided bombs of different weights, incendiary mixtures, chemical spray tanks (only in A-4 aircraft currently in USMCR), and nuclear and non-nuclear bombs in various yields and weights. This multiplicity of ordnance, coupled with a myriad of attack tactics, allows for selection of attack means best suited to the target.

Accuracy

The accuracy of attack aircraft is variable; many factors contribute to its delivery. Accuracy is of primary concern when engaging targets in the proximity of friendly troops. Timely and accurate air support produces a positive effect on the morale of supported troops and a detrimental effect on the enemy.

Mobility

The outstanding characteristics of aircraft are mobility and range. Aircraft can attack targets at greater range than other supporting arms and can overcome target disposition or environment restrictions. The speed of aircraft enables commanders to concentrate overwhelming firepower in the objective area from distant and dispersed sources and to deliver surprise attacks. The speed and maneuverability of aircraft also provide a measure of protection from enemy fire.

The ability to exploit the mobility of aircraft may be dependent on the commander's emphasis on degrading enemy air defenses. For example, in preparation for a major offensive, the POME may initially be reducing/degrading enemy air defenses which will allow for the increased use of ground attack aircraft as the battle unfolds. Increased dependence is normally placed on air support during periods when—

- Artillery is embarked during the amphibious assault.
- Land operations have extended beyond the range of NGF.
- Artillery capability has diminished due to enemy counterfire, extended range of an oncoming threat, difficulties in ammunition resupply.

Responsiveness

The responsiveness of air support is a function of many factors. The primary factor is the distance the aircraft must fly (from the sea base, airfield, holding point/area) to the target. Properly employed attack helicopters and short takeoff/vertical landing aircraft can reduce response times considerably. Aircraft can respond more rapidly when it is positioned on station with proper ordnance and when pilots are familiar with the battle situation. Aircraft can be maintained in an alert status over designated points during an assault or other critical phases of a battle. This requires the forecasting of air support requirements and continuous liaison between ground and air commanders. The degree of control and coordination required for the delivery of airstrikes is reflected in response times. This is affected by the placement of fire support coordination measures; i.e., the fire support coordination line (FSCL).

Vulnerability

Enemy forces may employ air defense systems that can form a significant threat to friendly aircraft. The availability of friendly aircraft and the tactics that pilots use are contingent upon the air threat. Aircraft should be selectively employed against HPTs to reduce their exposure. The enemy's air defense capability can be curtailed through proper attack tactics and SEAD. Suppression of enemy air defenses is that activity which neutralizes, destroys or temporarily degrades enemy air defenses in a specific area by physical attack and/or electronic warfare. (Joint Pub 1-02) SEAD is conducted using multiple means, including—

- Destructive means delivered by direct- and indirect-fire weapons, precision munitions, aviation ordnance, attack helicopters, and raids.
- Disruptive means such as EW, chaff, and flares.
- Combination of destructive and disruptive means.

Continuity

Even though extremely heavy precipitation may degrade all-weather aircraft, air support is available 24 hours a day. The most significant limitation of aircraft is the difficulty in providing air support at night and during periods of bad weather. The weather at the target rather than enroute and home base weather are of primary concern. Poor weather at the target area creates difficulty in locating the target and limits the types of attack which can be made. The employment of air support radar teams helps in target identification and delivery during these conditions. Also, the radar beacon forward air controller (RABFAC) can be used to provide a reference point for RABFAC-compatible aircraft. The RABFAC provides an electromagnetic pulse on the aircraft's weapon system computer. RABFAC-compatible aircraft include the following (to varying degrees): A-6, A-7, F-111, F-4 (USAF), and F-16.

Air support requires the availability of suitable operating sites/bases for servicing and rearming aircraft. Initially, suitable land bases within supporting distance will be utilized until expeditionary landing areas and airfields are constructed or captured in the objective area. In the absence of suitable theater airfields, air support will be provided by sea-based aircraft during the initial phase of operations. In an antiair, threat-rich environment, the only CAS missions which may be worthy are those of an emergency nature.

Radio communications are of great importance to air support operations. This is the only means of relaying detailed instructions to airborne aircraft.

Chapter 3

Fundamentals for Employment of Fire Support

Firepower and Mobility

The MAGTF generates combined arms combat power by attaining a balance between firepower and mobility. Mobility assets are employed with supporting firepower and firepower assets are organized for mobility.

The MAGTF commander organizes his forces for the most effective application of combined arms. Operational resources are organized under a single commander for optimum employment. The focal point in the MAGTF for combined arms is Marine Corps infantry. The infantry may not always be the most significant, dominant, or decisive element in the MAGTF combined arms team. At times, or in given situations, other elements may assume primary roles. Regardless, the infantry is the universal element of combined arms because it will have an important role in almost every operation and must be flexible and adaptable to generate combined arms combat power.

Firepower

The Marine infantry battalion, the basic maneuver unit of the MAGTF, has the capability for generation of substantial firepower using organic small arms, direct-fire weapons, and indirect-fire weapons. Each element of the battalion—from the fire team to the company—can engage the enemy with immediately available weapons to gain fire superiority and the initiative without delay. This results in the enemy being hit hard and fast and being thrown off balance.

Fires delivered by organic weapons are augmented rapidly by weapons too large for the infantry to carry—supporting arms and direct-fire weapons external to the supported unit. Tanks, artillery, NGF, armed helicopters, and if necessary, CAS project additional force to counter the enemy. Both organic and nonorganic firepower is responsive to the needs of the Marines doing the fighting.

Mobility

Mobility is the quality or capability of military forces which permits them to move from place to place while retaining the ability to fulfill their primary mission. (Joint Pub 1-02) Marine Corps infantry are general purpose, each unit capable of multiple forms of mobility—foot mobile, motorized (truck-mounted), mechanized (supported by assault amphibious vehicle, tanks and LAI Bns) and helicopterborne. Mobility allows the infantry the ability to position much of its firepower where and when it is needed. Firepower assets that lack true mobility are of little tactical or operational value.

Characteristics of Fire Support

Fire support is an essential component in maneuver warfare doctrine. Successful fire support requires one to understand the fundamentals of maneuver warfare. Understanding the fundamentals of maneuver warfare will enable fire support personnel to provide effective fire support in operations

characterized by flexibility, mobility, and agility. FMFM 1, *Warfighting*, describes these fundamentals. Briefly, these fundamentals are as follows:

- Focus on the enemy instead of terrain.
- Act more quickly than the enemy can react. Decentralized decision making allows commanders to implement operational and tactical decisions more quickly than the enemy. Such quickness allows commanders to dictate the course of the battle to the enemy.
- Support maneuver by fire. Firepower supports maneuver by creating gaps for maneuver, suppressing and disrupting enemy forces, or physically destroying the remnants of enemy units whose cohesion has been destroyed.
- Issue mission-type orders. Mission-type orders specify what must be done without prescribing how it must be done. Commanders provide their intent to help subordinates anticipate requirements as the battlefield changes.
- Avoid enemy strength and attack enemy weaknesses.
- Exploit tactical opportunities. Higher commanders should maintain the flexibility and agility to react quickly and decisively to fleeting opportunities created by subordinates.
- Designation of POME. The main effort is the most important operational task to be accomplished, that task on which the overall success of the operation depends at that instant. In the offense, the main effort is normally the main attack. Through the main effort, the commander provides focus to the decentralized efforts of his command. All elements of the command must understand and support the main effort. The main effort shifts as the battlefield changes.
- Avoid set rules and patterns. The enemy must not be allowed to anticipate tactical events or he will seize the initiative.
- Act boldly and decisively. Commanders must be able to deal with uncertainty, take prudent risks, and use initiative within their commander's intent to seize fleeting opportunities.
- Command from the front. Commanders position themselves well forward to make effective and timely decisions based on first-hand knowledge of the situation.

Targeting

Targeting is the process of selecting targets and matching the appropriate response to them taking account of operational requirements and capabilities. (Joint Pub 1-02) The purpose of targeting is to select for attack those enemy installations, units, or equipment which are most vulnerable and the attack of which best supports the accomplishment of the mission. In maneuver warfare, the focus is on a mobile, evasive target—the enemy. Enemy targets must be detected, accurately located, identified, and prioritized for effective attack. This is not to say that terrain is unimportant. Rather, terrain may facilitate the detection, location, and engagement of the enemy. Target acquisition is essential in the formula for firepower. Vital to targeting is a responsive means of reporting and disseminating target information and intelligence.

In some situations, accurate target locations may initially be scarce, and, as a result, they must be developed as the battle progresses. In these situations, fire support must be positioned to respond to those targets as they are uncovered.

Targeting is based on the scheme of maneuver and/or tactical plan, with an assessment of the weather, terrain, and enemy situation. The targeting effort is focused on the commander's intent through such processes as intelligence preparation of the battlefield (IPB) and target value analysis (TVA). IPB is the systematic and continuous process that integrates the enemy's doctrine with the weather and terrain, the mission, and the specific battlefield environment

to systematically determine his capabilities and limitations for a specific geographic area. TVA is a process which links the effects of attacking a target to the target's function. Through TVA, those targets whose attack will provide the greatest tacical benefit are identified. Areas of interest, decision points, and attack guidance are also identified in the targeting process.

Well thought-out targets can contribute to the targeting process. Targeting can be conducted analytically and selectively by applying the knowledge of the enemy order of battle and his tactics. For example, a specific target may be plotted on the forward slope of a hill—vice the top of the hill, as this is the position where the enemy is more likely to be.

Allocation of Fire Support

The battlefield may become extended as combat units are employed against enemy formations in widely-separated areas. The commander allocates fire support for the generation of combined arms combat power for multiple committed units. This allocation is founded on the factors of METT-T and the commander's intent.

Circumstances may dictate that more fire support is needed for a specific unit(s) or that a certain supporting arm would be more appropriate. Such may be the case in the allocation of support to the POME. Adequate support is provided by allocation of means, the assignment of tactical missions, priority of fires, positioning of fire support, and by allocating ammunition to fire support means. The potential forces of other combined arms are considered in determining the requirements of adequate support.

Mobility

Mobility is a necessary function for achieving and maintaining combined arms combat power. Supporting arms assets must be able to keep up with the supported unit. They must be capable of delivering fire support which exploits the benefits rendered by mobility. Commanders can enhance the mobility of their supporting arms through several means—

- Establishing continuous liaison to facilitate forecasting of and preparation for battle needs.
- Assigning basic loads commensurate with the fire support needs and the unit's organic assets. Augment with external transportation support when required.
- Establishing priorities (route precedence, positioning, etc.)
- Utilizing engineer activities (road construction/clearing, airfield construction).
- Maintaining freedom of movement through friendly air superiority (when possible), air defense coverage, and provision of counterfire.
- Seizing and securing lines of communications.

Continuity

Continuity of firepower is as important as generating firepower. The requirement of continuity must be uppermost in the supported and supporting commander's thought process in planning and during the delivery of fire support. Continuity in fire support equates to adequate communications, positioning of resources, responsive logistical support, and survivability. In the event that an FSCC should become a casualty, the commander must have plans to re-constitute an FSCC or to replace the personnel and equipment in order to resume fire support coordination and planning activities.

Fire Support Coordination

The unit that can react the quickest will be the most effective and probably win the battle. Thus, fire support planning and coordination in operations must be responsive. This requires forecasting of fire support requirements. A complex plan, overlaid with numerous target symbols, redundant or unnecessary fire support coordination measures, and sophisticated schedules of fire, may appear thorough but in

reality will not be very flexible. Commanders must avoid employing this type of fire support plan as a sense of security. Instead commanders should look at fire support plans as tools that are easy to understand, simple to execute, and readily amendable. This does not reduce the importance of planning. On the contrary, plans must be well thought out, closely integrated, and coordinated. Each component-preplanned targets, fire support coordination measures, and schedules of fire must serve a specific role in the generation of combat power. While the result may appear less voluminous, the plan will be functional—as a tool should be. Commanders can contribute by clearly projecting their intent through attack guidance and by establishing priorities. Coordination must be simple and direct, making use of standardized procedures and techniques, where possible.

Close Liaison

Close liaison at each echelon—company through MAGTF CE—is essential. Supporting arms representatives and commanders must know, understand, and anticipate the supported commander's actions and requirements. They must read the battle with him, think ahead, and project fire support assistance; not wait to be told what support is needed. The supported commander concentrates on the enemy, anticipating his actions and reactions to gain an advantage on him. His orders are likely to be brief, formed as he is seeing and reading the battle. Responsiveness of fire support is dependent on the ability of supporting commanders to react to the commander's needs.

Fire Support Contribution to Combat Power

The value of fires is determined by how well they contribute to the supported activity. Fires usually have little value in and of themselves. While fires can kill or wound individuals, destroy individual pieces of equipment, or destroy individual structures, fires rarely, if ever, destroy entire forces. Rather, fires disrupt, delay, or damage forces. Most forces, if left alone, can quickly reorganize, resume movement, or repair damage. Thus, disruptions, delays, and damage caused by fires are valuable only if they facilitate some other actions by friendly forces. Fires contribute to combat power in a variety of ways, often in combination. Some of these ways are provided below as aids for thinking about how to employ fire support.

Fire Support Can Complement or Supplement a Supported Activity

Fire support can be integrated with a supported activity to create combat power. Fires may be delivered before, after, or simultaneously with a supported activity. These fires can be used to soften the enemy, create gaps, provide screens, obscure the enemy observers, or afford protection.

Fires may be delivered to complement the activities of the force. For example, counterbattery fires may be delivered to suppress the enemy artillery while the infantry attacks or defends against an attack by the enemy.

Fires may be used to suppress one fortified enemy position while the infantry attacks another.

Fires may be delivered on the same object which the supported unit is attacking. For example, a fortified position may be attacked by supporting fires while the infantry attacks it.

Fires can be used to lead supported units onto an objective. For example, artillery fires are delivered onto and beyond the objective, then shifted beyond the objective as the infantry closes. Mortars deliver fire on the reverse slope; tank and other direct-fire weapons fire on the objective. Infantry advances under a canopy of fire.

Fire Support Can Reinforce the Effects of Another Activity

Fires can be employed to magnify the effects of another combined arms activity. This

multiplicity adds to the total combat power, produces another dimension with which the enemy must contend, and affords backup in potential breakdowns which are certain to occur on the battlefield. Example: artillery fires planned to cover a minefield. The minefield itself will slow the enemy. But as the enemy moves to overcome the effects produced by the minefield, he is hammered by artillery fires.

Fire Support to Create Opportunity

Fire support can be employed as a means to allow another activity to occur. Examples: a concept of operation's success may be contingent on the availability of CAS. This prerequisite may necessitate creating an environment in which CAS can be used. The planning and execution of SEAD creates an opportunity for air operations in support of the maneuver force. Another example is the delivery of fires to hamper and disrupt the employment of fire support by the enemy, making friendly fire support more effective; e.g., counter-OP fires.

Fire Support as an Extension of Maneuver

Fire support may be exploited by attacking enemy positions, units, or installations not accessible by maneuver forces, or to further the attack initiated by maneuver forces. Examples: attacking enemy reserve forces to prevent them from reinforcing forward units engaged with friendly forces; attacking fleeting targets during exploitation and pursuit; isolating enemy forces for defeat in detail. Fire support can be used to establish/maintain battle momentum; e.g., countermechanized fires.

Fire Support to Cause Enemy Reactions

The effects of fires can cause the enemy to do something such as slow down, displace, deploy, change direction, communicate, fire. This often makes him vulnerable to the force of another supporting arm. For example, reconnaissance fire delivered on a suspected enemy position may cause him to disclose his presence by movement or return of fire.

Terminal Effects—the Basic Consideration

The effectiveness of fires is determined largely through their terminal effects produced on a target. Fires are particularly effective when combined with other assets such as EW to attain combined arms effects on a target. EW can augment fire support in destruction, neutralization, harassing, suppression, and screening missions. Such employment can reduce ammunition expenditure and further confuse the enemy.

Destruction Fire

Destruction fire is fire delivered for the sole purpose of destroying material objects. (Joint Pub 1-02) Defining the word destruction is easy, defining what it is and determining when it has been achieved is difficult, particularly for an area target. To achieve destructive effects on a target, it is not necessary to completely destroy (e.g., demolish) the target. A target may be considered destroyed if it cannot perform its primary mission, such as a tank or artillery piece that cannot shoot or a radar site that cannot acquire. The determination of when a target has been destroyed is situational dependent. Some units and positions can sustain casualties and damage and still accomplish their mission. Destructive fire can be delivered by aircraft, artillery, mortars, and NGF. Artillery, mortars, and NGF are area weapons. Therefore to achieve destructive fire with these area weapons requires a heavy expenditure of ammunition, considerable time, and a means of observation. The type and composition of the target may dictate what type fire support means is employed. For example, destruction of a fortified bunker may dictate attack by aircraft while destruction of an enemy position in the open can be achieved by an indirect-fire weapon.

Neutralization Fire

Neutralization fires are delivered to render the target ineffective or unusable. (Joint Pub 1-02) The fires are used to temporarily hamper the movement and/or the firing of the weapon. For example, artillery fires may destroy an enemy battery's FDC. For the time it takes the enemy to rearrange their operations so the battery has a fire direction capability, the battery is neutralized. Like destruction, the effects required to render a target neutralized are situational dependent. Neutralization fires can be delivered by aircraft, artillery, mortars, and NGF.

Harassing Fire

Harassing fire is fire designed to disturb the rest of the enemy troops, to curtail movement and, by threat of losses, to lower morale. (Joint Pub 1-02) These fires are delivered occasionally, usually at night or during periods of reduced visibility. Harassing fires can be delivered intermittently to deceive the enemy as to what friendly maneuver is doing or preparing to do. Ammunition constraints and the threat may limit or make unfeasible the use of these fires. Harassing fire missions are normally conducted at division or higher levels. Harassing fires are well suited to aircraft, particularly against deep targets, and artillery and mortars. NGF cannot deliver unobserved fire with sufficient accuracy for harassing small targets; however they are suited for harassment of large area targets that are not close to friendly lines.

Interdiction Fire

Interdiction fire is fire placed on an area or point to prevent the enemy from using the area or point. (Joint Pub 1-02) Roads, railways, routes, and other lines of approach or communications may be interdicted to prevent, reduce, or disrupt the enemy forces, supplies, and communications. Like harassing fires, interdiction fires are delivered by division or higher levels when adequate resources exist. Aircraft are the most effective in the execution of interdiction missions. Artillery can deliver effective interdiction fires. Mortars have limited utility in interdiction due to range. NGF can deliver interdiction fires with limited effectiveness due to its dispersion pattern.

Illumination Fire

Illumination fire may be used to observe enemy operations and movements, to adjust observed fire during hours of darkness, and to provide assistance to friendly night operations. Aircraft possess an excellent capability for illumination. Tactical aircraft can provide illumination for short periods (15 minutes each) while the KC-130 aircraft can provide continuous illumination for up to 6 hours. Artillery and mortars possess the best ability for the delivery of point illumination. NGF can deliver effective illumination; however, the quantity provided may be limited by the magazine capacity of the ship.

Suppressive Fire

Suppressive fires are fires on or about a weapons system to degrade its performance below the level needed to fulfill its mission objectives, during the conduct of fire mission. (Joint Pub 1-02) The effects are only temporary. Suppressive fires facilitate maneuver by stunning the enemy and keeping his head down. The effects are rendered only while the firing is occurring. When the firing stops, the enemy returns to action. To be effective, the supported unit must accomplish something while the suppressive fires are being delivered—bypass, maneuver to assault the target or attack it with direct- or indirect-fire weapons for neutralization or destructive effects. Suppressive fires can be delivered by all indirect-fire weapons and aircraft.

Screening Fire

Screening fires are fires using smoke projectiles to obscure the enemy's observation of friendly forces and their movement. Screening fires can be delivered by artillery, mortars, and to a limited extent, NGF.

Other Considerations

Target Selection

Fire support should not be wasted on unprofitable or unnecessary targets, nor should combat elements be used to do what fire support can do quickly. Targets should be attacked only if their attack contributes to the accomplishment of the mission. The commander directs/guides the selection and attack of targets by establishing target selection standards and attack guidance. Target selection standards are used to classify a target as either a "target" or a "suspected target," based on accuracy requirements. Attack guidance is specified by the commander and magnified by his operations staff and FSC to explain how and when targets should be attacked. It includes any restrictions on engagement, use of munitions, or use of fire support means.

Terrain and Weather

Terrain and weather may limit the use of fire support, or may improve the effectiveness of supporting fires; e.g., restricting the enemy's movement and providing points with good observation.

Ability to Observe Impact of Rounds

When observation (which includes sensors, radio intercepts, and for fixed installations, aerial photographs as well as observers) is possible, fires can be adjusted to provide the best possible effect and continued only so long as they yield beneficial results.

Stationary Target

For fires to seriously destroy or damage a target, the target must usually remain stationary or move very little while the fires are hitting it. For an area target, such as a tank or infantry battalion, individuals and pieces of equipment may move, but the unit is considered a stationary target if a portion of the unit remains in the dispersion pattern of the incoming rounds. For example, if fires are delivered on a tank battalion when it starts through a narrow pass, individual tanks will rapidly pass through the impact area. Since a part of the battalion will continue to be in the impact area, it is essentially a stationary target and, therefore, susceptible to damaging fires. The tanks that become damaged may block the incoming tanks which have not yet entered the pass.

Provide Necessary Support With Least Possible Ammunition

In some circumstances, fire support is best used to neutralize or suppress a target rather than destroy it. Because neutralization and suppression requires less ammunition and takes less time, more targets can be attacked with the same assets when firing neutralization or suppressive fires rather than destructive fires.

Fires in Support of the Offense

In the offense, fires may be delivered during preparation for an offensive action. Such fires can be delivered prior to the leading elements of the attacking force crossing the line of departure or when ground contact is made with the enemy—whichever comes first. These fires may be delivered prior to or delivered as preparation fires.

Fires are delivered during the conduct of an attack. Such fires are delivered from the time the leading elements cross the line of departure until after the assault on the enemy and consolidation by the friendly force. Positioning of weapons, range, and GTL orientation in relation to leading assault units should provide the most accurate fires so that assault troops can lean into supporting fires.

Fires are delivered during exploitation. Such fires are delivered following the assault on the enemy force and involve supporting operations to exploit success of initial gains. These fires continue into the pursuit.

Fires in Support of the Defense

Fires in support of a specific defensive operation or phase of operation are generally characterized by heavy, on-call concentrations.

Fires are delivered to place the enemy under increasing volumes of fire as he approaches a defensive position. Long-range fires are delivered by aircraft and long-range indirect-fire weapons. Fires are planned along expected enemy routes. Kill zones are planned around obstacles and barriers or natural terrain in which the enemy may become delayed or canalized.

Fires are delivered within the battle area. Such fires may include fires in support of a counterattack and barrage fire. Barrage fire is fire which is designed to fill a volume of space or area rather than aimed specifically at a given target. (Joint Pub 1-02) They are prearranged barriers of fire designed to protect friendly troops and installations by impeding enemy movements across defensive lines or areas.

As the enemy approaches the defensive position, indirect- and direct-fire weapons, crew-served weapons, CAS and CIFS, and small arms are integrated into close defensive fires. Final protective fires (FPFs) are immediately available to provide a barrier of fire designed to impede enemy movement across defensive lines or areas. FPFs consist of final protective lines (FPLs), principal direction of fires (PDFs), and barrages. FPLs and PDFs apply to small arms; artillery and mortars normally fire barrages. NGF is not assigned FPFs because of its dispersion pattern.

Chapter 4

Fire Support Coordination

Principles of Fire Support Coordination

Fire support coordination is a continuous process of evaluating fire support needs or missions, analyzing the situation, and planning and orchestrating the implementation of the fire support plan while in a continually changing environment. The process enables the commander to use his available firepower to influence the action while ensuring the safety of his troops.

The goal of fire support coordination is to accomplish coordination in a timely manner to allow for the responsive delivery of fires. The maximum effectiveness of fire support is achieved by applying the principles of fire support coordination. These principles serve as a mental framework for fire support coordination. While some of these principles are more applicable to either planning or coordination, all must be applied to furnish effective fire support.

Know and Understand the Commander's Intent

Commander's intent must be understood at the lowest practical level of command. It is the commander's responsibility to provide his intent. It is the commander's staff and supporting commanders and their representatives' (e.g., LNOs, observers) responsibility to ensure they understand it.

The commander's intent establishes the framework within which fire support coordinators and supporting arms commanders and their representatives can conduct fire support coordination. The commander's intent is the basis to make fire support decisions during planning and during the battle, to determine when and how fires will be delivered, to determine requirements, and to project assistance to the commander.

As automated equipment is fielded, it is important to remember that people must make decisions. If people rely on computers to make fire support decisions, the enemy will be able to anticipate our actions.

Plan Early and Continuously

Fire support planning is a component of battle planning. Both begin upon receipt of the mission and the commander's intent and end with mission accomplishment. Planning must be continuous to meet the needs of the present tactical situation and to prepare for the next. Warning orders and reverse planning assist subordinates and supporting units in anticipating requirements and conducting their own planning. Time must be allowed for fire support means to reposition and resupply. Time must be allowed for preparation, dissemination, and review (rehearsal as appropriate) of fire plans.

Exploit All Available Targeting Assets

Targets can be effectively attacked only if there is an accurate and responsive target acquisition system. Target information from all available assets must be rapidly evaluated and routed to the appropriate fire support delivery agency.

Consider the Use of All Available Fire Support Means

All fire support means—organic, assigned, attached, and supporting—are employed to make use of their potential contribution to the

achievement of combat power, consistent with responsiveness, economy, and priorities. A concerted effort is made to use all fire support means in a coordinated manner, ensuring they complement each other and that the coordination process permits simultaneous employment to the maximum extent possible. In some situations, it may be required to use the most available means even though it is not the most effective.

Use the Lowest Capable Echelon

This principle has two applications: coordination and delivery means. **Coordination** is accomplished at the lowest echelon capable of coordinating effective support. For example, in regimental operations, if two battalion FSCCs can effect the required coordination directly, the regimental FSCC will monitor and intercede only if the action affects the regiment as a whole. Similarly, if two subordinate elements of the MAGTF (e.g., two GCEs) can effect the required coordination, action by the MAGTF FSCC may not be required. Effective coordination can be enhanced if senior commands encourage and permit subordinate commands to coordinate without undue interference from above, if the other principles of fire support coordination are adhered to, and if fire support coordination measures are used properly. Fire support is **delivered** by the lowest echelon with the means available to achieve the desired results. If artillery in direct support can achieve the desired results, there is no need to risk an aircraft for the mission.

Use the Most Effective Means

Fire missions are assigned to or requested from the agency that can deliver the most effective fire. The most effective means varies with the nature and importance of the target, the likelihood of the target staying in its current location, the availability of observers, the availability of attack means, and the results desired. It may be necessary to temporarily fix the target until a more effective means can attack it. For example, indirect fire can fix a mobile target until aircraft can arrive.

Furnish the Type of Support Requested

The requesting agency is usually in the best position to determine its immediate fire support requirements. However, existing conditions, (e.g., availability of ammunition, tactical considerations, or higher priorities) may make it impractical to provide the type of fire support requested. In these cases, an alternate type of fire support will be provided, using the type of fire support requested as a basis. When a fire support request is disapproved, the original request is stopped, an alternate agency assigned the mission, and the requester notified of the type of support he is to receive. When appropriate and permitted by the tactical situation, the requester should be informed as to the nature of the disapproval to avoid similar future delays.

Avoid Unnecessary Duplication

Fire support should not be wasted by "overkilling" targets. However, economy should not be practiced to the detriment of the mission. Unnecessary duplication should not be confused with effective employment of combined arms.

Consider Airspace Coordination

Because all fire support uses airspace, coordination must be effected to reduce interference between users. The extent of airspace coordination is dependent on the time available. It may consist of a prearranged airspace coordination area (ACA) or make use of lateral, altitude, or time separation plans.

Provide Adequate Support

The factors of METT-T and the commander's guidance determine the amounts and types of fire support needed for success.

Provide Rapid Coordination

Procedures for rapid coordination must be established and practiced in order to attack targets within the shortest possible time. A delay in the delivery of fires on a target may jeopardize the success of the entire force.

Provide for Flexibility

The fire support plan and its method of execution must allow for changes in any of the elements of METT-T.

Provide for the Safeguarding of Friendly Forces and Installations

Providing safeguards to friendly troops, vessels, aircraft, and installations is a basic tenet of fire support coordination. Several measures accomplish this principle. Some of them are the use of fire support coordination measures, restricted firing positions to eliminate or reduce firing signatures, and the consideration of the location of friendly forces during target analysis.

Fire Support Planning

Fire support planning encompasses those activities that are essential to the development of a fire support plan that optimizes the available fire support means. The purpose of fire support planning is two-fold: To achieve maximum effectiveness and efficiency from fire support means in meeting fire support requirements of the force as dictated by METT-T and to determine the allocation of fire support. If delivery is too slow, the fires may be efficient but may likely be ineffective. Rigidity in fire support will allow the enemy to get the upper hand. If the enemy is allowed to get into the commander's decision-making loop, he will be able to anticipate and counter the commander's actions.

The fire support planning process is dictated by the tactical situation. Fire support planning is founded on the commander's intent, the factors METT-T, and guidance received from higher headquarters. In situations where time is available and a clear picture of the enemy can be drawn, the fire support planning process tends to be deliberate and detailed. Commanders at higher, lower, and supporting echelons work closely to develop the fire support plan. Targets are analyzed in detail to determine the type and quantity of fires needed to achieve the desired results. The higher echelon coordinates the fire support planning to ensure effectiveness and efficiency in the attack of these targets. In situations where the friendly force is in contact with the enemy, however, planning time may be limited and the enemy situation less defined due to the dynamics of the battle. Thus fire support planning must be expedited. The plan must be developed in sufficient detail to support the operation, yet timely enough to be read, understood, and executed. Less time will be available for the evaluation of targets. In more extreme situations, the commander may have to allocate fire support assets to a lower echelon. The lower echelon then develops and executes the fire support plan. This latter method is referred to as quick fire support planning.

Fire support planning includes many facets such as estimates of supportability, the determination of requirements, allocation of resources, targeting, coordination, and preparation and dissemination of the fire support plan. The planning may span from very formal written products to informal, oral briefings, or short messages. Detailed techniques and procedures of fire support planning are discussed in chapter 5 of FMFM 6-18, *Techniques and Procedures for Fire Support Coordination.*

Fire support planning is accomplished under the direct supervision of the FSC as a commander's designated head of his fire support coordination agency which is the FSCC. He is assisted by supporting arms commanders and their representatives and the commander's staff.

Fire Support Planning for Amphibious Operations

Amphibious operations are the most complex of all military operations. The amphibious fire support planning process is characterized as a detailed, concurrent method conducted by ATF and LF staffs. Amphibious planning is conducted by the ATF (SACC) and LF (FSCC). The relationships and roles of these agencies are discussed in chapter 1. Details of amphibious planning can be found in NWP 22-2 (Rev. B)/ FMFM 1-7, *Supporting Arms in Amphibious Operations.*

Fire Support Requirements

LF requirements are developed by every subordinate tactical unit, approved and integrated at successive higher levels, and finally approved and consolidated at the LF level for submission to the CATF. Initially, fire support planning is general in nature, but it becomes more detailed and specific as tactical plans are refined, intelligence and target information is acquired, and fire support means are allocated.

Overall requirements are determined early in the planning sequence. These requirements consist of the number and type of aircraft, artillery units, NGFS ships, and respective munitions needed. The requirements are reviewed and revised as detailed planning progresses. Similarly, artillery requirements are submitted to the CLF by commanders of subordinate elements of the LF. The CLF submits his consolidated air and NGF requirements to the CATF and these are consolidated with the Navy requirements. The CATF compares the consolidated overall fire support requirements with the available fire support means. If requirements cannot be fulfilled or adjusted, additional air and NGFS means are requested by the CATF from Navy sources, and if necessary, additional artillery is requested by the CLF from FMF sources. If the requested additional fire support means cannot be made available by higher authority, the preliminary plans are adjusted by the CATF in consultation with the CLF. Accordingly, aircraft and NGFS ships are allocated as available.

Detailed requirements represent a refinement of the overall requirements prepared initially. Concurrent and parallel planning and continuous liaison between Navy and Marine staffs ensure sufficient information is developed on which to base the approval or modification of LF requirements and the allocation of necessary aviation and NGF units prior to completion of detailed fire support planning. The detailed requirements are similar to the overall requirements, but are more complete. Where appropriate, specific targets to be attacked are listed and described, ammunition expenditures for targets are estimated, and schedules for delivery of fire support recommended. Within the framework of fire support planning, air, artillery, and NGF plans are prepared with reference to the ATF target list. Where practicable, these plans are based on fire support requests received from subordinate echelons. Combined lists of targets received from subordinate echelons are integrated and augmented by other targets whose destruction or neutralization is vital to the success of the LF as a whole. This planning constitutes the basis for the detailed requirements submitted to the CATF and is divided into three phases—pre-D-day, D-day, and post-D-day.

Following the submission of the detailed LF fire support requirements to the CATF, the air and NGF requirements are incorporated in the ATF air and NGF plans, respectively, These plans, along with the nuclear and chemical requirements are incorporated in the applicable portions of the ATF fire support plan as tabs to the fire support appendix to the operations annex. They become a basis for similar tabs and appendixes to the operation plans of the LF and its organic elements.

LF fire plans for air, artillery, and NGF are published as separate supporting tabs to Appendix 12 (*Fire Support*) to the operations annex to the operation order. Chemical fire plans and the fire support coordination plan will

be included as separate tabs to Appendix 12. Nuclear plans will be included in Appendix 1 (*Nuclear Operations*) to the operations annex to the operation order.

Special Considerations

Because air and NGF ordinarily carry the burden of fire support until organic LF means are installed ashore, special consideration is rendered to the requirements for these arms in the initial phase of the amphibious assault. Other considerations which influence requirements are as follows:

Helicopterborne Assaults

Major dependence is placed on air support and helicopter-transported artillery to ensure continuous support of the attack if objectives are beyond the range of NGFS ships. This requires that plans be made for a greater number of aircraft and larger amounts of aviation ordnance and artillery ammunition over a longer period.

Limited Availability of NGFS Ships

In situations where other supporting arms are not available or when NGFS ships are insufficient to provide adequate support, the ATF may place major dependence on air support for prelanding bombardment.

Early Artillery Employment

In situations where artillery can be emplaced on offshore islands or landed with helicopterborne assault forces on objectives inland and within effective range of the landing beaches, it can assume an important role in providing fire support for the surface landing, thereby reducing air and NGF requirements.

Over-the-Horizon Assaults

The over-the-horizon assault is an operational concept for positioning amphibious forces further offshore in the execution of the ship-to-shore phase of an amphibious operation which is intended to enhance the survival of the ATF. The employment can increase the likelihood of achieving tactical surprise at the point of power projection ashore. In these situations, planners must be attentive to the ability to establish and maintain communications between elements of the ATF. The availability of fire support to the assault must be considered. Air will likely be available to support the assault element. NGF can provide fire support using Tomahawk missiles, and as ships are moved within range of the assault, using its guns. As artillery is landed, it too becomes available.

Coordination in Operations

The coordination of fires is continuous throughout the operation. The planning responsibility of the FSCC for fire support coordination extends through the execution of prearranged fires contained in fire plans to the unscheduled fires requested by tactical units. The coordinating responsibility includes the requirement to disseminate timely fire support information and to institute coordination measures as required. Such action is provided as a part of the planning of fires or it fulfills requirements arising from the tactical situation ashore.

The FSCC coordinates fires on targets of opportunity and planned targets that are beyond the coordination capability of the supporting arms control agencies; e.g., FAC/DASC, NGF spotter/combat information center, FO/FDC. This generally requires coordination and integration of the activities of two or more fire support agencies, troop elements, and adjacent units affected by the fires.

A target of opportunity (NATO) is a target which appears during combat and which can be reached by ground fire, naval fire, or aircraft fire, and against which fire has not been scheduled. (Joint Pub 1-02) Targets of opportunity which involve a single supporting arm, under positive control and cleared by a responsible agency, may not require specific clearance by the FSCC. Internal coordination exercised by supporting arms control agencies is generally sufficient to warrant immediate attack of targets of

opportunity, but battalion-level FSCCs monitoring supporting arms request nets can exercise the supported commander's prerogative to cancel or modify fire requests as necessary. These fires are not normally interrupted or interfered with except when additional coordination is necessary or when an emergency exists. If coordination is necessary, the FSCC delays the firing as necessary, while appropriate coordination is accomplished. The overriding principle relative to delaying fires is to anticipate requirements and establish standing operating procedures which keep delays to an absolute minimum.

In artillery and naval gunfire support, a planned target is a target on which fire is prearranged. Preplanned air support is air support in accordance with a program, planned in advance of operations. (Joint Pub 1-02) Targets are planned at all echelons. Targets may be planned by higher echelons and disseminated to subordinates along with taskings for the attack of critical targets. Lower echelons plan targets concurrently to meet their commander's requirements and submit these targets as refinements to the targets planned by the higher echelon. Preplanned air support, requests for GS fires, and special requirements are referred to the next higher echelon for further coordination and approval.

The battalion FSCCs have responsibility for the coordination of the majority of the fires in support of tactical operations. Since the majority of DS fires are delivered in the battalion and regimental zones by the fire support means available to those units, most of the coordination is accomplished without referring to higher echelons. Fires which endanger friendly troops or interfere with operations of adjacent or higher units must be coordinated with the headquarters concerned prior to execution.

During the early stages of the amphibious assault, control and coordination will be decentralized until higher echelon control elements are ashore and functioning. Communication plans should permit lower echelons to enter higher echelon nets when required during this period.

Fire Support Coordination Agencies

The fire support coordination center is a single location in which are centralized communications facilities and personnel incident to the coordination of all forms of fire support. (Joint Pub 1-02) Facilities, equipment, and material are provided by the headquarters to which the FSCC belongs. Supporting arms units provide representatives and equipment necessary for conducting coordination, targeting, and communications functions for their respective arms.

The FSCC functions under the general staff supervision of the G-3/S-3. Since the FSCC is an advisory and coordinating agency only, it is not vested with command functions. It is not charged with actual control or direction of fire support missions; however, these functions may be performed when required.

FSCCs are established at each echelon—MAGTF CE, division, regiment, and battalion. Companies do not have FSCCs as such. The company commander, assisted by his supporting arms representatives, performs the fire support planning and coordination necessary at the company level.

The FSC is the officer in charge of the FSCC. He is the direct representative of the commander for planning and coordination of all available fire support. The FSC is responsible for implementing the fire support coordination policies of the commander. The FSC's responsibility is only for the coordination of fire support plans and recommendations. The air, artillery, and NGFOs each have special staff functions with individual access to the commander and his staff; nevertheless, they operate under the direction and guidance of the FSC in accordance with proper staff functioning.

The MAGTF FSCC's effort is primarily in planning for the deep battle. The MAGTF FSCC gathers information, makes liaison with other elements of the MAGTF and external agencies as required, and coordinates those fire support matters influencing the MAGTF commander's mission accomplishment. In MAGTF FSCC operations, it is important to remember the principle of coordination at the lowest echelon. The MAGTF FSCC coordinates those matters that cannot be coordinated by the GCE FSCC(s), those matters that affect the MAGTF as a whole, and coordinates with higher, adjacent, and external commands. Examples of fire support coordination tasks of the MAGTF FSCC include targeting with emphasis on the deep battle, and interface with external agencies on such matters as fire support coordination measures and procedures for deconfliction of airspace for the deep battle.

The MAGTF FSCC allocates fire support assets to other elements of the MAGTF and assists these elements to obtain fire support; e.g., coordinating the provision of an Air Force airstrike for the GCE. The MAGTF FSCC works closely with the GCE(s)'s FSCC for transition of the deep to close battle. These functions complement and extend the fire support coordination efforts of other elements of the MAGTF. FMFM 2-7.1, *Fire Support Coordination by the MAGTF Command Element*, provides a detailed discussion of the MAGTF FSCC and its functions. As stated in chapter 1, the MAGTF FSCC is task-organized. The MAGTF commander designates his FSC.

At the division level, the FSC is the division artillery officer/ commanding officer of the artillery regiment. The senior artillery officer present (assistant FSC) performs the duties of the FSC when the artillery commander is required to be absent from the combat operation center or is occupied with the direction of his command. The division FSCC is staffed by personnel from the headquarter battery, artillery regiment, and from the headquarters battalion, Marine division. The division FSCC has a key role in targeting and plans and coordinates fires on targets of interest to the division. The division FSCC assists the regimental FSCCs in fire support coordination.

At the regiment level, the infantry commander is responsible for designating his FSC. The regimental FSCC is staffed by personnel from the headquarters company, infantry regiment, and from the headquarters battery, artillery battalion in DS. Regimental FSCCs play a key role in planning and using fire support. Regiments are usually the lowest echelon allotted enough fire support to influence the battle significantly with fire support. The regiment attempts to influence future operations, normally 24 to 48 hours in advance of the current battle. Regimental FSCCs assist battalion FSCCs in fire support coordination and clear fires which will impact in the regiment's zone of action beyond the battalions' zones.

The FSC for the infantry battalion is the weapons company commander, infantry battalion. The battalion FSCC is staffed by personnel from the weapons and headquarters and service companies, infantry battalion, and from an artillery battery of a DS artillery battalion. Most coordination in operations is performed in battalion FSCCs. Fire support planning efforts of the battalion FSCCs are relatively limited in comparison to the detailed and extensive planning of the regiment and division.

An overriding consideration for employing supporting arms representatives (e.g., FOs, LNOs) is cohesiveness in battle. Cohesive relationships can be achieved by habitually associating the same supporting arms representatives with the same supported unit in training and employing and keeping these personnel with the same supported unit throughout the battle. Such action may require that these personnel remain with the supported unit even though their parent artillery unit receives another tactical mission.

Fire Support Coordination Measures

When used properly, fire support coordination measures enable the commander to open up areas of the battlefield for rapid engagement of targets or to restrict and control fires. The use of fire support coordination measures is governed by the tactical situation and should not be rigidly applied. With the exception of boundaries, fire support coordination measures fall into two broad categories—permissive and restrictive. The following paragraphs present an overview of fire support coordination measures. For more detailed information about the usage of fire support coordination measures, see FMFM 6-18, *Techniques and Procedures for Fire Support Coordination.*

Boundaries

In land warfare, a boundary is a line by which areas of responsibility between adjacent units/formations are defined. (Joint Pub 1-02) Boundaries are used to designate the geographic limits of the zone of action of a unit. Unless otherwise restricted, a unit commander enjoys complete freedom of fire and maneuver within his own boundaries. No unit may fire across boundaries unless such fires are coordinated with the unit to whom the area is assigned, or unless such fires are beyond the coordinated fire line (CFL) or appropriate coordination measure of the affected unit. The restriction applies to both conventional and special ammunition and their effects. The attack of targets with conventional weapons requires that the commander, his FSCC, and/or the supporting arms control agency ensure that no more than negligible effects extend beyond the unit boundaries, unless approved by the commanders concerned.

In combined arms, boundaries aid the commander and his subordinates in structuring the battlefield to facilitate rapid, flexible, and opportunistic maneuver (movement in combination with fire). To achieve this, the establishment and subsequent adjustment of boundaries must receive deliberate and continuous attention by the establishing commander. If employed improperly, boundaries can impose a rigidity on operations which impede rather than facilitate rapid, flexible, and opportunistic maneuver.

Permissive Measures

The purpose of permissive measures is to facilitate the attack of targets. When established, permissive measures permit the engagement of targets beyond the line or into an area without further coordination.

Coordinated Fire Line

The CFL is a line beyond which conventional surface fire support means (mortars, artillery, and NGF) may fire at any time within the zone of the establishing headquarters without additional coordination.

Fire Support Coordination Line

The FSCL is a line established by the appropriate ground commander to ensure coordination of fire not under his control but which may affect current tactical operations. The fire support coordination line is used to coordinate fires of air, ground or sea weapons systems using any type of ammunition against surface targets. The fire support coordination line should follow well defined terrain features. The establishment of the fire support coordination line must be coordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the fire support coordination line, without prior coordination with the ground force commander, provided the attack will not produce adverse surface effects on, or to the rear of, the line. Attacks against surface targets behind this line must be coordinated with the appropriate ground force commander. (Joint Pub 1-02)

Free Fire Area

The free fire area (FFA) is a specific designated area into which any weapon system may fire

without additional coordination with the establishing headquarters.

Restrictive Measures

The primary purpose of restrictive measures is to provide safeguards for friendly forces. When established, a restrictive measure imposes certain requirements for specific coordination prior to the engagement of those targets affected by the measure.

Restrictive Fire Line

The restrictive fire line is a line established between converging friendly forces (one or both may be moving) that prohibits fires or effects from the fires across the line without coordination with the affected force.

Restrictive Fire Area

The restrictive fire area is an area in which specific firing restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters.

No-Fire Area

The no-fire area (NFA) is an area in which neither fires nor the effects of fires are allowed. Two exceptions include—

- When the establishing headquarters approves fires (temporarily) within the NFA on a mission basis.
- When an enemy force within the NFA engages a friendly force, the commander may engage the enemy to defend his force.

Airspace Coordination Area

The ACA is a three-dimensional block of airspace in which friendly aircraft are reasonably safe from friendly surface fires. The ACA acts as a safety measure for friendly aircraft while allowing the other supporting arms to continue fires in support of the maneuver force. ACAs can be prearranged or instituted as separation plans during the dynamics of the battle.

Fire Support Communications

Reliable communications are essential for effective control and coordination of supporting arms at all echelons within the MAGTF. Various means of communications are used, including radios, wire, digital and automated systems, and messengers. Detailed descriptions of the communication circuits and systems are contained in FMFM 3-30, *Communications*. In planning, the net composition required to meet the needs of the operation is determined.

Other Coordination Considerations

Coordination of nuclear, chemical, and conventional fires which involve troop safety and tactical considerations affecting adjacent or higher units is accomplished by the commanders concerned. The responsibilities of troop commanders involved extend to coordinating the effects of their organic and supporting weapons by personal or representative liaison and through their FSCCs. Some of the following considerations are necessary in coordinating fire support with other units:

- In the case of smoke and illumination fires extending into adjacent unit areas, the commander, his FSCC, and/or artillery FDC coordinate with adjacent and higher units prior to execution. The use of illumination should be coordinated with the use of night observation devices.
- The employment of chemical weapons is carefully coordinated with higher and adjacent units. Consideration is also given to the weather and the characteristics of the area of operations and their influence on the chemical weapon employment. In an amphibious operation, the CATF has responsibility for the employment of nuclear and chemical weapons.

- Nuclear and chemical warnings are issued prior to delivery of the weapon in order to provide time to implement normal protective measures.

- The observation requirements of the MAGTF and its subordinate elements must be coordinated.

- Rules of engagement must be fully understood by all personnel and incorporated into the fire support coordination process, as appropriate.

Appendix A

Glossary

Section I. Abbreviations and Acronyms

AAW ..... antiair warfare
ACA ..... airspace coordination area
ACE ..... aviation combat element
ANGLICO ..... air/naval gunfire liaison company
ATF ..... amphibious task force

Bn ..... battalion

C^2 ..... command and control
CAS ..... close air support
CATF ..... commander, amphibious task force
CE ..... command element
CFL ..... coordinated fire line
CIFS ..... close-in fire support
CLF ..... commander, landing force
COF ..... conduct of fire
CSS ..... combat service support
CSSE ..... combat service support element

DASC ..... direct air support center
DS ..... direct support

EW ..... electronic warfare

FAC ..... forward air controller
FAC(A) ..... forward air controller (airborne)
FDC ..... fire direction center
FMF ..... Fleet Marine Force
FO ..... forward observer
FPF ..... final protective fire
FPL ..... final protective line
FSA ..... fire support area
FSC ..... fire support coordinator
FSCC ..... fire support coordination center

GCE ..... ground combat element
GS ..... general support
GS-R ..... general support-reinforcing
GTL ..... gun-target line

HPT ..... high payoff target
HUMINT ..... human intelligence

IPB ..... intelligence preparation of the battlefield

JFC ..... joint force commander

LAI ..... light armored infantry
LF ..... landing force
LNO ..... liaison officer

MACCS .... Marine air command and control system
MAGTF ..... Marine Air-Ground Task Force
METT-T ..... mission, enemy, terrain and weather, troops and support available-time available
MEU ..... Marine expeditionary unit

NAO ..... naval aviation observer
NFA ..... no-fire area
NGF ..... naval gunfire
NGFO ..... naval gunfire officer
NGFS ..... naval gunfire support

OPCON ..... operational control

PCFF ..... priority in calls for fire
PDF ..... principal direction of fire
PE/R ..... probable error in range
POME ..... point of main effort

RABFAC..... radar beacon forward air controller
RAOC..... rear area operations center
RAS..... rear area security
RASC ..... rear area security coordinator
Rein ..... reinforced

SACC ..... supporting arms coordination center
SAW..... surface-to-air weapon
SEAD ..... suppression of enemy air defenses
SIGINT..... signals intelligence

TAC..... tactical air commander
TACC ..... tactical air command center (USMC)
TACC ..... tactical air control center (USAF/USN)
TARBUL ..... target bulletin
TVA ..... target value analysis

UAV..... unmanned aerial vehicle
USAF..... United States Air Force
USMCR..... United States Marine Corps Reserve

Section II. Definitions

A

administrative control—(DOD, NATO) Direction or exercise of authority over subordinate or other organizations in respect to administrative matters such as personnel management, supply, services, and other matters not included in the operational missions of the subordinate or other organizations. (Joint Pub 1-02)

air liaison officer—(DOD) An officer (aviator/pilot) attached to a ground unit who functions as the primary advisor to the ground commander on air operation matters. (Joint Pub 1-02)

air/naval gunfire liaison company—A Fleet Marine Force unit composed of Marine and naval personnel specifically qualified to provide ground control and liaison agencies for the planning and employment of naval gunfire and USN/USMC air support for allied or U.S. Army forces of division size or less operating alongside a MAGTF in joint or combined operations; or in other operations where forces other than a Fleet Marine Force are provided U.S. Fleet naval gunfire and naval air support, or for such other supporting arms control and liaison functions as the Fleet Marine Force commander may direct. The air/naval gunfire liaison company is comprised of a command element, an operational element (air/NGF teams), and a support element (e.g., administrative, supply, maintenance).

airspace control area—(DOD, NATO) Airspace which is laterally defined by the boundaries of the area of operations. The airspace control area may be subdivided into airspace control sub-areas. (Joint Pub 1-02)

artillery groupment—Temporary formations used when one unit must exercise greater control over another than is inherent in a reinforcing mission.

attach—(NATO) To place units or personnel in an organization where such placement is relatively temporary. Subject to limitations imposed in the attachment order, the commander of the formation, unit, or organization receiving the attachment will exercise the same degree of command and control thereover as he does over the units and persons organic to his command. However, the responsibility for transfer and promotion of personnel will normally be retained by the parent formation, unit, or organization. (excerpt from Joint Pub 1-02)

B

barrage fire—(DOD, NATO) Fire which is designed to fill a volume of space or area rather than aimed specifically at a given target. (Joint Pub 1-02)

boundary—(DOD, NATO) In land warfare, a line by which areas of responsibility between adjacent units/formations are defined. (Joint Pub 1-02)

C

close air support—(DOD, NATO) Air action against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces. (Joint Pub 1-02)

close-in fire support—Air action unique to attack helicopters against hostile targets which are normally in closer proximity to friendly forces. CIFS requires detailed integration with the fire and movement of friendly forces. (FMFM 5-4A)

coordinated fire line—A line beyond which conventional surface fire support means (mortars, field artillery, and naval gunfire ships) may fire at any time within the zone of the establishing headquarters without additional coordination. (FMFRP 0-14)

counterfire—(DOD, NATO) Fire intended to destroy or neutralize enemy weapons. (DOD) Includes counterbattery, counterbombardment, and countermortar fire. (Joint Pub 1-02)

D

defilade—(DOD, NATO) **1.** Protection from hostile observation and fire provided by an obstacle such as a hill, ridge, or bank. **2.** A vertical distance by which a

position is concealed from enemy observation. 3. To shield from enemy fire or observation by using natural or artificial obstacles. (Joint Pub 1-02)

destruction fire—(DOD) Fire delivered for the sole purpose of destroying material objects. (Joint Pub 1-02)

direct air support center—(DOD) A subordinate operational component of a tactical air control system designed for control and direction of close air support and other tactical air support operations, and normally collocated with fire-support coordination elements. (Joint Pub 1-02)

direct fire—(DOD) Gunfire delivered on a target, using the target itself as a point of aim for either the gun or the director. (NATO) Fire directed at a target which is visible to the aimer. (Joint Pub 1-02)

direct support—(DOD) A mission requiring a force to support another specific force and authorizing it to answer directly the supported force's request for assistance. (Joint Pub 1-02)

dispersion—(DOD, NATO) A scattered pattern of hits around the mean point of impact of bombs and projectiles dropped or fired under identical conditions. (excerpt from Joint Pub 1-02)

F

final protective fire—(DOD, NATO) An immediately available prearranged barrier of fire designed to impede enemy movement across defensive lines or areas. (Joint Pub 1-02)

fire plan—(DOD, NATO) A tactical plan for using the weapons of a unit or formation so that their fire will be coordinated. (Joint Pub 1-02)

fire support—Assistance to elements of the ground forces engaged with the enemy rendered by other firing units, including (but not limited to) artillery, mortars, naval gunfire, close air support, and close-in fire support.

fire support area—(DOD, NATO) An appropriate maneuver area assigned to fire support ships from which to deliver gunfire support of an amphibious operation. (Joint Pub 1-02)

fire support coordination—(DOD, NATO) The planning and executing of fire so that targets are adequately covered by a suitable weapon or group of weapons. (Joint Pub 1-02)

fire support coordination center—(DOD, NATO) A single location in which are centralized communications facilities and personnel incident to the coordination of all forms of fire support. (Joint Pub 1-02)

fire support coordination line—(DOD, NATO) A line established by the appropriate ground commander to ensure coordination of fire not under his control but which may affect current tactical operations. The fire support coordination line is used to coordinate fires of air, ground, or sea weapons systems using any type of ammunition against surface targets. The fire support coordination line should follow well defined terrain features. The establishment of the fire support coordination line must be coordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the fire support coordination line, without prior coordination with the ground force commander, provided the attack will not produce adverse surface effects on, or to the rear of, the line. Attacks against surface targets behind this line must be coordinated with the appropriate ground force commander. (Joint Pub 1-02)

fire support coordinator—The officer in charge of the fire support coordination center. He is the direct representative of the landing force commander for the planning and coordination of all available fire support. (FMFRP 0-14)

fire support group—(DOD, NATO) A temporary grouping of ships under a single commander charged with supporting troop operations ashore by naval gunfire. A fire support group may be further subdivided into fire support units and fire support elements. (Joint Pub 1-02)

fire support planning—The continuous and concurrent process of analyzing, allocating, and scheduling of fire support to integrate it with the maneuver forces to maximize combat power.

fire support station—(DOD) An exact location at sea within a fire support area from which a fire support ship delivers fire. (Joint Pub 1-02)

forward air controller—(DOD) An officer (aviator/pilot) member of the tactical air control party who, from a forward ground or airborne position, controls aircraft in close air support of ground troops. (Joint Pub 1-02)

forward observer—(DOD) An observer operating with front line troops and trained to adjust ground or naval gunfire and pass back battlefield information. In the absence of a forward air controller the observer may control close air support strikes. (Joint Pub 1-02)

free-fire area—A specifically designated area into which any weapons system may be fired without any additional coordination. (FMFRP 0-14).

G

general support—(DOD, NATO) That support which is given to the supported force as a whole and not to any particular subdivision thereof. (Joint Pub 1-02)

general support-reinforcing—(DOD) A tactical artillery mission. General support-reinforcing artillery has the mission of supporting the force as a whole and of providing reinforcing fires for another artillery unit. (Joint Pub 1-02)

group of targets—(DOD, NATO) Two or more targets on which fire is desired simultaneously. A group of targets is designated by a letter/number combination or a nickname. (Joint Pub 1-02)

H

harassing fire—(DOD, NATO) Fire designed to disturb the rest of the enemy troops, to curtail movement and, by threat of losses, to lower morale. (Joint Pub 1-02)

hardened site—(DOD, NATO) A site constructed to provide protection against the effects of conventional and nuclear explosions. It may also be equipped to provide protection against a chemical or biological attack. (Joint Pub 1-02)

I

illumination fire—(NATO) Fire designed to illuminate an area. (Joint Pub 1-02)

immediate air support—(DOD, NATO) Air support to meet specific requests which arise during the course of a battle and which by their nature cannot be planned in advance. (Joint Pub 1-02)

indirect fire—(DOD) Fire delivered on a target that is not itself used as a point of aim for the weapons or the director. (NATO) Fire delivered at a target which cannot be seen by the aimer. (Joint Pub 1-02)

intelligence preparation of the battlefield—A continuous, systematic approach to analyzing the enemy, weather, and terrain in a specific geographical area. Threat capabilities are evaluated and the enemy courses of action with respect to specific battlefield conditions are predicted. (FM-6-20-10)

interdiction fire—(NATO) Fire placed on an area or point to prevent the enemy from using the area or point. (Joint Pub 1-02)

L

landing force—(DOD, NATO) A task organization of troop units, aviation and ground, assigned to an amphibious assault. It is the highest troop echelon in the amphibious operation. (Joint Pub 1-02)

M

Marine air command and control system—(DOD) A US Marine Corps tactical air command and control system which provides the tactical air commander with the means to command, coordinate, and control all air operations within an assigned sector and to coordinate air operations with other Services. It is composed of command and control agencies with communications-electronics equipment that incorporates a capability from manual through semiautomatic control. (Joint Pub 1-02)

marking fire—(DOD, NATO) Fire placed on a target for the purpose of identification. (Joint Pub 1-02)

massed fire—(DOD) **1.** The fire of the batteries of two or more ships directed against a single target. **2.** Fire from a number of weapons directed at a single point or small area. (Joint Pub 1-02)

N

naval aviation observer—A specifically trained, qualified, and duly designated officer who, from an aircraft, performs utility and liaison, observation, and directs supporting fires to include artillery, naval gunfire, close air support, and close-in fire support. (FMFRP 0-14)

neutralization fire—(DOD) Fire which is delivered to render the target ineffective or unusable. (Joint Pub 1-02)

no-fire area—A designated area into which neither fires nor effects of fires will occur. Two exceptions occur: (a) the establishing headquarters asks for or

approves fire or (b) an enemy force takes refuge in the area, posing a major threat, and there is insufficient time to clear the fires needed to defend the friendly force. (FMFRP 0-14)

nonstandard tactical mission—A mission that amplifies, changes, or limits one or more of the inherent responsibilities of a standard tactical mission.

O

on-call target—(DOD, NATO) In artillery and naval gunfire support, a planned target other than a scheduled target on which fire is delivered when requested. (Joint Pub 1-02)

on-order missions—Missions that serve as warning orders to alert units of anticipated changes to their tactical mission. (FM 6-50)

operational control—(NATO) The authority delegated to a commander to direct forces assigned so that the commander may accomplish specific missions or tasks which are usually limited by function, time, or location; to deploy units concerned, and to retain or assign tactical control of those units. (excerpt from Joint Pub 1-02)

organic—(DOD) Assigned to and forming an essential part of a military organization. (excerpt from Joint Pub 1-02)

over-the-horizon—An operational concept for positioning amphibious forces further offshore in the execution of the ship-to-shore phase of an amphibious operation which is intended to enhance the survival of the amphibious task force. The employment can increase the likelihood of achieving tactical surprise at the point of power projection ashore. (FMFRP 0-14)

P

planned target—(DOD, NATO) In artillery and naval gunfire support, a target on which fire is prearranged. (Joint Pub 1-02)

prearranged fire—(DOD, NATO) Fire that is formally planned and executed against targets or target areas of known location. Such fire is usually planned well in advance and is executed at a predetermined time or during a predetermined period of time. (Joint Pub 1-02)

preparation fire—(DOD, NATO) Fire delivered on a target preparatory to an assault. (Joint Pub 1-02)

priority of fire—Guidance to a fire support planner to organize and employ fire support means in accordance with the relative importance of the maneuver unit's missions. (FMFRP 0-14)

priority target—Target on which delivery of fire takes precedence over all the fires for the designated firing element or unit.

procedural control—(DOD, NATO) A method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures. (Joint Pub 1-02)

R

reconnaissance by fire—(DOD, NATO) A method of reconnaissance in which fire is placed on a suspected enemy position to cause the enemy to disclose his presence by movement or return of fire. (Joint Pub 1-02)

reinforcing—(DOD, NATO) In artillery usage, tactical mission in which one artillery unit augments the fire of another artillery unit. (Joint Pub 1-02)

restrictive fire area—An area in which specific restrictions are imposed and into which fires that would exceed those restrictions will not be delivered without coordination with the establishing headquarters. The purpose of the restrictive fire area is to regulate fires into an area according to the stated restrictions. (FMFRP 0-14)

restrictive fire line—A line established between converging friendly forces that prohibits fires, or effects from fires, across the line without coordination with the affected force. The purpose of the restrictive fire line is to prevent interference between converging friendly forces. (FMFRP 0-14)

rules of engagement—(DOD) Directives issued by competent military authority which delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. (Joint Pub 1-02)

S

scheduled fire—(DOD, NATO) A type of prearranged fire executed at a predetermined time. (Joint Pub 1-02)

screening fire—Fire delivered to mask friendly maneuver elements and to conceal the nature of their operations.

supporting arms coordination center—(DOD) A single location on board an amphibious command ship in which all communication facilities incident to the coordination of fire support of the artillery, air, and naval gunfire are centralized. This is the naval counterpart to the fire support coordination center utilized by the landing force. (Joint Pub 1-02)

suppression of enemy air defenses—(DOD, NATO) That activity which neutralizes, destroys or temporarily degrades enemy air defenses in a specific area by physical attack and/or electronic warfare. (Joint Pub 1-02)

suppressive fire—(DOD) Fires on or about a weapons system to degrade its performance below the level needed to fulfill its mission objectives, during the conduct of the fire mission. (Joint Pub 1-02)

T

tactical air commander (ashore)—(DOD) The officer (aviator) responsible to the landing force commander for control and coordination of air operations within the landing force commander's area of responsibility when control of these operations is passed ashore. (Joint Pub 1-02)

tactical air control center—(DOD, NATO) The principal air operations installation (land or ship based) from which all aircraft and air warning functions of tactical air operations are controlled. (Joint Pub 1-02)

tactical air direction center—(DOD) An air operations installation under the overall control of the tactical air control center (afloat)/tactical air command center, from which aircraft and air warning service functions of tactical air operations in an area of responsibility are directed. (Joint Pub 1-02)

tactical fire direction—The control of one or more units in the selection of targets to attack, designation of the unit or units to fire, selection of the method of attack, and selection of the most suitable ammunition for the mission.

tactical mission—Defines the fire support responsibility of an artillery, naval gunfire, or mortar unit to a supported unit.

target bulletin—An information message, used by the commander responsible for maintaining the target list, to keep interested commanders informed of all changes in the target list. (NWP 22-2)

target of opportunity—(NATO) A target which appears during combat and which can be reached by ground fire, naval fire, or aircraft fire, and against which fire has not been scheduled. (Joint Pub 1-02)

target value analysis—A method for providing a systematic determination of which targets out of the entire target array should be attacked for the greatest tactical benefit. (FMFM 6-18)

Appendix B

References

Joint Publications

Joint Pub 1-02	DOD Dictionary of Military and Associated Terms
Joint Pub 2-0	Doctrine for Intelligence Support to Joint Operations
Joint Pub 3-0	Doctrine for Unified and Joint Operations
Joint Pub 3-01.4	JTTP for Joint Suppression of Enemy Air Defenses
Joint Pub 3-03	Doctrine for Joint Interdiction Operations
Joint Pub 3-05	Doctrine for Joint Special Operations
Joint Pub 3-09	Doctrine for Joint Fire Support
Joint Pub 3-09.1	Joint LASER Designation Procedures
Joint Pub 3-10	Doctrine for Joint Rear Area Operations
Joint Pub 3-11	Doctrine for Joint Chemical Operations
Joint Pub 3-12	Doctrine for Joint Nuclear Operations
Joint Pub 3-52	Doctrine for Joint Airspace Control in a Combat Zone
Joint Pub 3-55	Doctrine for Joint Reconnaissance, Surveillance, and Target Acquisition (RSTA)
Joint Pub 5-00.2	Joint Task Force (JTF) Planning Guidance and Procedures

Fleet Marine Force Manuals

FMFM 2-7.1	Fire Support Coordination by the MAGTF Command Element (under development)
FMFM 3-1	Command and Staff Action
FMFM 3-21	MAGTF Intelligence Operations
FMFM 3-30	Communications
FMFM 5	Marine Aviation
FMFM 5-1	Organization and Functions of Marine Aviation (under development)
FMFM 5-40	Offensive Air Support (under development)
FMFM 5-41	Close Air Support and Close-In Fire Support (under development)
FMFM 5-45	Suppression of Enemy Air Defenses
FMFM 5-60	Control of Aircraft and Missiles (under development)
FMFM 6-18	Techniques and Procedures for Fire Support Coordination
FMFM 7-4	Field Artillery Support (to be revised as FMFM 6-9, Marine Artillery Support)

Fleet Marine Force Reference Publications

FMFRP 5-43	Multi-Service Suppression of Enemy Air Defenses
FMFRP 5-44	Multi-Service Air Attack Team Operations
FMFRP 5-85	Aviation Equipment and Systems

Naval Warfare Publication

NWP 22-2 B/FMFM 1-7 Supporting Arms in Amphibious Operations

Allied Tactical Publication

ATP 37	Supporting Arms in Amphibious Operations

U.S. Army Field Manuals

FM 6-20	Fire Support in the AirLand Battle
FM 6-20-10	Tactics, Techniques, and Procedures for the Targeting Process
FM 6-20-30	Tactics, Techniques, and Procedures for Fire Support for Corps and Division Operations
FM 6-20-40	Tactics, Techniques, and Procedures for Fire Support for Brigade Operations (Heavy)
FM 6-20-50	Tactics, Techniques, and Procedures for Fire Support for Brigade Operations (Light)

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