MCWP 3-43.3

Marine Air-Ground Task Force Fires

US Marine Corps

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

PCN 143 000162 00

USMC

To Our Readers

Changes: Readers of this publication are encouraged to submit suggestions and changes through the Universal Need Statement (UNS) process. The UNS submission processs is delineated in Marine Corps Order 3900.15_, *Marine Corps Expeditionary Force Development System*, which can be obtained from the Marine Corps Publications Electronic Library Online (http://www.marines.mil/news/publications/Pages/Publications137.aspx).

The UNS recommendation should include the following information:

- Location of change
  - Publication number and title
  - Current page number
  - Paragraph number (if applicable)
  - Line number
  - Figure or table number (if applicable)
- Nature of change
  - Addition/deletion of text
  - Proposed new text

Additional copies: A printed copy of this publication may be obtained from Marine Corps Logistics Base, Albany, GA 31704-5001, by following the instructions in MCBul 5600, *Marine Corps Doctrinal Publications Status*. An electronic copy may be obtained from the MCCDC Doctrine World Wide Web home page: **https://www.doctrine.usmc.mil**.

Unless otherwise stated, whenever the masculine gender is used, both men and women are included.

DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
WASHINGTON, D.C. 20308-1775

3 June 2011

FOREWORD

Marine Corps Warfighting Publication (MCWP) 3-43.3, *Marine Air-Ground Task Force Fires*, sets forth the doctrine for fire support in Marine air-ground task force (MAGTF) operations. This publication applies to all MAGTFs; however, its focus is at the Marine expeditionary force level. Smaller MAGTFs will differ in scope and scale, but, regardless of size, MAGTFs plan and execute the function of fires using the same basic precepts provided in this publication.

This publication supersedes Fleet Marine Force Manual (FMFM) 2-7.1, *Fire Support Coordination by the MAGTF Command Element*, July 1992, and MCWP 3-43.3 (formerly FMFM 2-7), *Fire Support in Marine Air-Ground Task Force Operations*, September 1991.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

GEORGE J. FLYNN
Lieutenant General, U.S. Marine Corps
Deputy Commandant for Combat Development and Integration

Publication Control Number: 143 000162 00

Distribution A: Approved for public release; distribution is unlimited.

TABLE OF CONTENTS

Chapter 1. Fundamentals of Fire Support

Maneuver Warfare 1-1
Tenets of Maneuver Warfare 1-1
Fires in Maneuver Warfare 1-1
Combined Arms in Maneuver Warfare. 1-1
Fires as a Warfighting Function 1-2
Fires and the Single Battle Concept 1-2
Fires in Battlespace Organizations 1-2
Deep Operations 1-2
Close Operations. 1-2
Rear Operations 1-3
Battlespace Considerations 1-3
Joint Fires 1-3

Chapter 2. Organizing for Fire Support

Joint Force Commands 2-1
Joint Fires Element 2-1
Joint Targeting Steering Group. 2-1
Joint Targeting Coordination Board 2-2
Fire Support Organizations of Other Service Components 2-2
United States Air Force. 2-2
United States Army. 2-2
United States Navy 2-3
Functional Components 2-4
Joint Force Maritime Component Commander 2-4
Joint Force Air Component Commander 2-4
Joint Force Land Component Commander. 2-7
Joint Special Operations Task Force Commander 2-7
Joint Military Information Support Operations Task Force Commander. 2-7
The Marine Corps Component 2-8
Force Fires Coordination Center. 2-8
Information Operations Center 2-11
Air Naval Gunfire Liaison Company 2-11
Major Subordinate Units. 2-12
Aviation Combat Element 2-12
Ground Combat Element 2-13
Logistics Combat Element 2-13
Force Artillery. 2-13

Chapter 3. Fires Planning

The Planning Hierarchy 3-1
The Operational Planning Team 3-1
The Marine Corps Planning Process 3-1
Step 1: Problem Framing 3-2
Step 2: Course of Action Development 3-3
Step 3: Course of Action War Game 3-4
Step 4: Course of Action Comparison and Decision 3-6
Step 5: Orders Development 3-6
Step 6: Transition 3-7
Intelligence Support 3-8
Intelligence Preparation of the Battlespace 3-8
Intelligence Collection 3-9
Marine Corps Intelligence Agencies 3-10
The Targeting Process 3-10
Step 1: Decide 3-11
Step 2: Detect 3-11
Step 3: Deliver 3-11
Step 4: Assess 3-11
The Joint Targeting Cycle 3-12
Targeting Boards 3-12
The Marine Air-Ground Task Force Targeting Board 3-13
Joint Targeting Coordination Board 3-14
Fire Support Coordination Measures 3-15
Permissive Measures 3-15
Restrictive Measures 3-16
Selected Airspace Coordination Measures 3-17
Boundaries 3-18
Aviation Planning Products 3-19
Air Requests 3-19
Air Apportionment 3-19
Allocation 3-20
Allotment 3-20
Air Tasking Order 3-20

Chapter 4. Execution of Fires

Detecting Targets 4-1
Intelligence Support to Current Fires 4-1
Processing Feedback 4-2
Delivering Fires 4-2
Target Selection Standards 4-2
Attack Guidance Matrix 4-3
Reactive Attack Guidance Matrix 4-3
Battlespace Shaping Matrix 4-4
Time-Sensitive Targets 4-4
Reactive Targeting Process 4-5

Counterfire Execution 4-6
Counterfire Considerations 4-7
Assessing the Situation 4-7
Combat Assessment 4-7
Assessment Considerations 4-8
Execution Planning 4-9
Execution Considerations 4-9

Chapter 5. Amphibious Operations

Command Relationships 5-1
Organizations 5-1
Supporting Arms Coordination Center 5-1
Navy Tactical Air Control Center 5-2
Force Fires Coordination Center 5-3
Fire Support Coordination Center 5-3
Marine Corps Air Control Agencies Ashore 5-3
Fire Support Planning 5-5
Preparation of the Objective Area 5-5
Support of the Landing Force Subsequent to Landing 5-5
Fire Support Requirements 5-5
Fire Support Plan 5-6
Targeting 5-6
Commander, Amphibious Task Force 5-6
Air Defense Commander 5-7
Regional Air Defense Commander 5-7
Sector Air Defense Commander 5-7
Commander, Landing Force 5-7
Passage of Control Ashore 5-7
Control of Pre-D-Day Air Operations 5-8
Control Afloat 5-8
Transfer of Control Ashore 5-8

Chapter 6. Fires in Support of Counterinsurgency Operations

Atypical Requirements 6-1
Lines of Operations 6-1
Fires in Support 6-2
Fires Considerations 6-2
Targeting 6-3
Decide 6-3
Detect 6-4
Deliver 6-4
Assess 6-4

Chapter 7. Force Artillery

Concept of Employment 7-1
Command Relationships 7-1
Tactical Missions 7-1
Planning and Execution Considerations 7-3
Counterfire 7-3
Positioning 7-3
Intelligence 7-4
Target Acquisition 7-4
Liaison 7-4
Meteorological Support 7-4
Survey Support 7-4
Communications 7-5
Logistics 7-5

Appendices

A Outline of Appendix 19 to Annex C of the Operation Order/Operation Plan A-1
B Fire Support Reference Data. B-1
C Targeting Timeline Example C-1
D Worldwide Artillery, Mortar, and Rocket Systems D-1

Glossary

References

CHAPTER 1
FUNDAMENTALS OF FIRE SUPPORT

Fires is the use of weapon systems to create a specific lethal or nonlethal effect on a target. Weapon systems within the Marine air-ground task force (MAGTF) include direct and indirect fires, aviation and naval surface fires, and nonlethal capabilities. Nonlethal capabilities include electronic attack, directed energy, and military information support operations (MISO). Desired effects can range from physical destruction and psychological paralysis resulting from lethal fires to influencing the will of the people through nonlethal actions. Targets include inanimate objects, such as bridges, power grids, or artillery pieces. Targets can also be socially complex and adaptable, such as military units and civilian populations.

Maneuver Warfare

Marine Corps Doctrine Publication (MCDP) 1, *Warfighting*, defines maneuver warfare as a warfighting philosophy that seeks to shatter the adversary's cohesion through a variety of rapid, focused, and unexpected actions to create a turbulent and rapidly deteriorating situation with which the adversary cannot cope. The following subparagraphs discuss the tenets of maneuver warfare and how fires and combined arms support it.

Tenets of Maneuver Warfare

Among its many tenets, maneuver warfare—

- Views the adversary as a system of mental, moral, and physical forces.
- Recognizes and leverages the chaotic uncertainty of conflict through decentralized operations.
- Is based on the premise that warfare is a competition in time.

Fires in Maneuver Warfare

In support of maneuver warfare, fires can—

- Make the adversary more predictable by physically destroying its capabilities and limiting its options.
- Surprise the adversary, causing him to pause or withdraw to reassess the situation.
- Shape the outcome of an operation by interdicting the adversary's surface and air potential prior to its physical contact with MAGTF ground combat element (GCE) forces.
- Create a loss of will or physical ability for the adversary to continue.
- Ensure some portion of the MAGTF can always be in the offense, denying the adversary the initiative.
- Create disproportional results through psychological effects. While lethal fires may comprise a large part of an operation, the greatest effect of fires is generally not the amount of physical destruction, but the effect of that physical destruction on the adversary's moral strength.
- Influence adversary actions and populace behavior through nonlethal means, such as information operations.
- Counter the adversary's ability to use the information environment to attack the MAGTF through the use of information operations.

Combined Arms in Maneuver Warfare

Combined arms is a maneuver warfare tactic. Commanders employ complementary capabilities such that, to counter one, the adversary becomes more vulnerable and is placed in a no-win situation. The MAGTF is a combined arms force. Its success depends on the commander's ability to integrate fires with maneuver and sustainment

forces to create the effects necessary to defeat the adversary and accomplish the mission.

Fires as a Warfighting Function

Warfighting functions are a grouping of like activities into functional areas. The six warfighting functions—command and control, intelligence, fires, maneuver, logistics, and force protection—encompass all military activities that occur in the battlespace and serve as a model for understanding the complexities of military operations. The warfighting functions are the building blocks for all types of operations, such as prolonged, amphibious, distributed, information, maritime prepositioning force, or counterinsurgency (COIN).

Fires and the Single Battle Concept

The single battle concept is a unifying perspective of operations which holds that actions anywhere in the battlespace can affect actions elsewhere. For example, the success of early fires facilitates rapid maneuver, but places greater demands on combat service support (CSS) over limited lines of communication (LOCs).

Commanders *prepare* for a single battle effort during planning. Their intent guides and empowers subordinates to take action as the situation dictates, particularly when the unforeseen occurs, while remaining consistent with larger aims. Only in execution, though, can commanders *realize* a single battle through the bottom-up exercise of initiative and cooperation and the ability of all involved to operate within the framework of the commander's intent.

For fires, the single battle concept means that fires planners are an integral part of the overall planning effort. Targets, target priorities, and collection plans emerge as a result of and in concert with the larger plan. In execution, firing units don't strike targets just because they can; rather, they attack relevant targets to create specific effects based on how those actions contribute to the larger mission.

Fires in Battlespace Organizations

The specific battlespace framework the MAGTF commander uses depends on the mission and type of operation. In conventional combat operations where spatial reference applies, a deep, close, and rear construct may prove useful.

Deep Operations

Deep operations in conventional conflicts exist in both time and space. The MAGTF commander is normally responsible for deep operations, including the timing, priority, and desired effects of fires. Deep operations that use both lethal and nonlethal fires afford commanders an opportunity to shape or prevent future close battles by stripping away adversary capabilities, forcing an early culmination, and otherwise attacking the adversary system so friendly forces can assimilate what remains when the adversary forces become a part of the close battle.

Close Operations

Fire and maneuver conducted by combined arms forces from the GCE and the aviation combat element (ACE) dominate close operations. The proximity of forces both in time and space requires adaptability and timely responses. The role of MAGTF fires in close operations is to monitor and support, primarily through resource allocation in the form of time, battlespace, additional capabilities, priority of fires (POF), and apportionment decisions. Additionally, the MAGTF can employ its nonlethal fire support capabilities not organic to the GCE or ACE in support of the close fight.

Rear Operations

Fire support in the rear area is normally limited to those assets organic to the tactical combat force. The MAGTF commander may provide additional capabilities based on his analysis of the situation. Capabilities should include fire support command and control systems, fire support coordination personnel, and access to or an allocation of fire support. Furthermore, nonlethal fires can help stabilize the rear area by influencing the local populace.

Battlespace Considerations

Operations in places such as Somalia, Afghanistan, and Iraq challenge traditional notions of deep, close, and rear areas. Irregular warfare often involves noncontiguous areas of operations. In these locations, the deep, close, and rear areas could all share the same space, thereby compressing the time between tactical actions and strategic effects. Alternatively, commanders may choose a purpose-based view of the battlespace through decisive, shaping, and sustaining actions. Ideally, in the planning stages, planners envision the decisive actions first. Decisive actions determine the shaping actions, such as fires, directed at others to set the conditions for success. Similarly, sustaining actions, such as planning, logistics, rehearsals, and force protection, support friendly forces. During execution, the dynamic reverses with shaping and sustaining actions setting conditions for decisive actions.

The operational environment is a composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. Introduced by Joint Publication (JP) 3-0, *Joint Operations*, the term operational environment encourages a more thorough examination of the battlespace based on Operation Iraqi Freedom (OIF) and Operation Enduring Freedom lessons learned—understanding friendly and adversary forces is not enough. Other factors, such as culture, tribal affiliations, and human terrain, can be equally important. The term operational environment implies the need to study and learn as much as possible about a situation. In comparison, the term battlespace is more closely related to the physical parameters that describe areas of interest, areas of influence, and areas of operations. For MAGTFs, the battlespace can usually be further divided into deep, close, and rear areas when that construct applies. In other words, commanders analyze the operational environment in order to determine the physical dimensions of their battlespace. They must develop an appreciation of how conditions within the battlespace will impact friendly, adversary, and civilian actions. They must also consider how best to arrange friendly forces and actions within the battlespace to accomplish the mission.

Joint Fires

As defined in JP 3-09, *Joint Fire Support*, joint fires result from the employment of forces from two or more components in coordinated action toward a common objective. This definition recognizes the joint force commander's (JFC's) single battle and the need for components to share capabilities for the greater good, whether MAGTF aviation sorties are striking interdiction targets outside their area of operations in support of JFC-wide objectives or when the Army Tactical Missile System (ATACMS) is supporting MAGTF operations.

CHAPTER 2
ORGANIZING FOR FIRE SUPPORT

Fire support agencies exist at all command levels. Senior commands establish broad aims and objectives. Lower level fire support organizations develop the functional and detailed plans to accomplish those objectives in support of a campaign or operation.

Joint Force Commands

Combatant commands and joint task forces (JTFs) establish fire support agencies, elements, groups, or boards as required for conducting operations. They include the joint fires element (JFE), joint targeting steering group (JTSG), and the joint targeting coordination board (JTCB).

Joint Fires Element

The JFE is an optional staff element established by the JFC within the J-3 directorate for the planning and coordination of fires. The JFE duties should complement, not replace, the roles and responsibilities of the components. Specific JFE duties and functions may include—

- Preparing estimates of the situation and participating in developing courses of action (COAs).
- Developing the concept of fires, to include lethal and nonlethal fires. A concept of fires is a vision of actions that provides the broad aims and objectives for subsequent functional and detailed planning.
- Proposing targeting priorities and guidance for JFC approval.
- Developing the fires portions of planning directives and JFC-level combat assessments.
- Coordinating component tasking for time-sensitive targets (TSTs) that originate from JFC-level collection assets.
- Staffing collateral damage estimates that require JFC approval.
- Helping to develop the rules of engagement (ROE).
- Recommending, coordinating, reviewing, designating, disseminating, and updating fire support coordination measures (FSCMs).
- Maintaining munitions supply and key fire support asset readiness status.
- Sponsoring and hosting any JFC-level targeting groups or boards, such as the JTSG and the JTCB.

Joint Targeting Steering Group

The JTSG assists the combatant commander in developing broad targeting guidance and direction. If the combatant commander has more than one JTF operating in his theater that requires targeting support or resources, then the JTSG can assist him in deciding how to use limited assets and resources, such as missiles, aircraft, or personnel. The JTSG should have appropriate Service and functional component, national agency, and combatant command-level joint staff representatives to make recommendations regarding theater strategic or operational issues.

Joint Targeting Coordination Board

Typically, JFCs organize and define the role of a JTCB, which can be an integrating center for the targeting effort, a JFC-level review mechanism, or both. The JTCB consists of representatives from the joint force staff, all components, and, if necessary, their subordinate units. In conventional combat operations, the JTCB meets daily and is driven in large part by the air tasking order (ATO) process. Historically, the joint force air component commander (JFACC) is the most likely component, if one is designated, to exercise the duties of the JTCB for the JFC. Depending on its scope, JTCB duties may include—

- Developing and publishing the JFC's approved targeting guidance to the components.
- Reviewing component targeting products for compliance with JFC guidance and looking for gaps, redundancies, or conflicts.
- Forwarding component FSCM nominations that fit within deliberate planning timelines and require JFC approval with comments and recommendations. The current operations section will process immediate or time-sensitive requests.
- Approving a joint integrated prioritized target list (JIPTL) that includes component target nominations based on JFC priorities and is the result of a process conducted by a targeting working group (TWG) comprised of operations and intelligence personnel in support of the JTCB. In many cases, a resource cut line will appear on the JIPTL denoting the approximate number of targets that can be serviced with organic assets over a given period of time, assuming they can be found and validated. The cut line location is an estimate based on available capabilities, weather forecasts, target susceptibility to discovery and attack, and desired effects.

Components submit target nominations to the JTCB for any combination of the following reasons:

- Component requirements exceed available component capabilities.
- The target lies outside the component's area of operations.
- Either the joint force or another component possesses a more suitable capability to create the desired effect.
- A specific target is high on the JFC priority list.

Fire Support Organizations of Other Service Components

United States Air Force

The Air Force organizes into two principal fire support agencies—the air and space operations center (AOC) and the air support operations center.

Air and Space Operations Center

The AOC is the principal senior agency of the Air Force component commander from which he plans and executes aircraft and air warning functions in coordination with other components and Services. When designated as the JFACC, the Air Force AOC becomes a joint air operations center (JAOC), a jointly staffed facility established for planning, directing, and executing joint air operations in support of the JFC's operation or campaign objectives. In combined operations with allies or coalition forces, the AOC may also become a combined agency.

Air Support Operations Center

The air support operations center is the Air Force theater air control element responsible for the direction and control of air operations that directly support ground combat forces. It processes and coordinates requests for immediate air support and coordinates air missions requiring integration with other supporting arms and ground forces. It normally collocates with the Army tactical headquarters' senior fire support coordination center (FSCC).

United States Army

The Army organizes into three main fire support agencies—the fire support element (FSE), the operational fires support directorate (OFSD), and the battlefield coordination detachment (BCD).

Fire Support Element

The Army FSEs reside at every echelon, from maneuver companies to the corps level. They are sourced by the supporting field artillery command. These elements advise maneuver commanders on the capabilities and employment of fire support assets and assist with planning and coordinating fire support. The Army fire support coordinator (FSCOORD) directs and supervises this FSE.

At the Army division and corps levels, fire support planning, coordination, and execution normally involve representatives from various elements. Such elements include the FSE, Army aviation units, electronic warfare support elements, air defense artillery, an Air Force air liaison officer (ALO), and tactical air control party (TACP). When required, a naval gunfire liaison officer will coordinate naval surface fire support (NSFS) for ground forces down to the battalion level. He advises the FSCOORD on all matters pertaining to naval surface fires employment, including capabilities, limitations, status of fire support ships, and targets suitable for naval surface fires engagement.

The FSCOORD, typically the senior field artillery commander at each echelon, ensures the planning and integration of all available fire support means within the larger battle plan. He has dual responsibility for implementing the force commander's fire support concept, as well as the command and control of his field artillery organization. Assisted by FSE personnel, the FSCOORD's tasks are to—

- Develop, disseminate, and implement the approved fire support plan.
- Accommodate fire support requirements through the allocation of assets, assignment of missions, and positioning of delivery, target acquisition, and logistic assets.
- Advise the commander on fire support capabilities in support of committed maneuver units and expedite the processing of immediate fire support requests.
- Maintain the status of the command's available fire support means.
- Respond to requests for additional fire support from subordinate FSEs.

Operational Fires Support Directorate

The OFSD oversees the application of joint fire support for the Army service component commander. Its responsibilities include coordinating and synchronizing all aspects of operational fires with component commands, major subordinate commands (MSCs), government agencies, and multinational forces. The OFSD's primary focus is shaping the battlefield for the Army force's commander by integrating operational fires with the scheme of maneuver. Additionally, it monitors the execution of the deep battle and coordinates special targets. The OFSD may form at the numbered army, corps, or division level.

United States Army Battlefield Coordination Detachment

The BCD is an Army liaison element provided by the Army component commander to the AOC or to the component designated by the JFC to plan and coordinate air operations. The BCD processes Army requests for tactical air (TACAIR) support, monitors and interprets the land battle situation for the JAOC, and provides the necessary interface for the exchange of current intelligence and operational data. The BCD's mission is to establish a liaison with Army forces and coordinate with the JFACC. The BCD normally collocates with the JAOC.

United States Navy

The Navy organizes into two FSEs—the supporting arms coordination center (SACC) and the TACAIR control system.

Supporting Arms Coordination Center

The SACC operates aboard an amphibious ship configured with the communications facilities required to coordinate the employment of mortars, rockets, artillery, air, and naval surface fires. The SACC functions under the supervision of the supporting arms coordinator (SAC) and consists of a naval gunfire section, an air support section, and a target information center (TIC).

The SAC, with the advice of the landing force force fires coordinator (FFC), integrates the fires plans of the supporting arms to ensure their effective use in furthering the designated commander's concept of operations (CONOPS) and to support the landing force scheme of maneuver. During an amphibious operation, the SACC is the primary agency that coordinates all supporting fires for the designated commander to establish the landing force ashore. See chapter 5 for more information about fires and amphibious operations.

Tactical Air Control System

The Navy TACAIR control system is the principal air control system afloat. The senior control agency is the tactical air control center (Navy TACC), which is not to be confused with the tactical air command center (Marine TACC). During amphibious operations, but before control phases ashore, the Navy TACC coordinates all air operations within the amphibious objective area (AOA). Landing force aviation command and control personnel augment the Navy TACC.

Functional Components

The combatant commander may establish functional component commands to centralize selected functions and reduce his span of control by placing forces with similar capabilities under a single commander. The preponderance of force and ability to command and control drive the functional component selection process. The functional component commander must account for the organization, capabilities, and limitations of assigned or attached forces and the responsibilities retained by the Service component commander. Functional components are—

- The joint force maritime component commander (JFMCC).
- The JFACC.
- The joint force land component commander (JFLCC).
- The joint special operations task force (JSOTF) commander.
- The joint military information support operations task force (JMTF).

Joint Force Maritime Component Commander

The JFMCC, if designated, normally exercises operational control (OPCON) over assigned Navy forces and TACON of afloat forces from other Services. In other cases, a supported-supporting command and control relationship may exist between Marine and Navy forces. The MAGTF liaison officers (LNOs) to the JFMCC headquarters ensure a better understanding of MAGTF capabilities and operational procedures. Similarly, MAGTF fires planners must ensure that the LNOs understand the MAGTF's concept of fires, targeting objectives, and targeting priorities.

Frequently, MAGTF common source target nominations compete with other naval requirements at the JFMCC headquarters. The MAGTF liaison team must be able to clearly articulate the MAGTF commander's intent and targeting guidance in order to justify the need for common source supporting arms against those targets. While performing its duties, the MAGTF liaison team must also frequently distinguish between different fire support command and control systems.

Joint Force Air Component Commander

The JFACC is the commander within a unified command, subordinate unified command, or JTF responsible to the establishing commander for making recommendations on the proper employment of air forces assigned, attached, or made available for tasking; planning and coordinating air operations; or accomplishing assigned operational missions. The establishing commander provides the authority necessary for the JFACC to accomplish assigned tasks.

The JFACC is a functional component commander responsible for the overall coordination of the JFC-wide air effort. The JFC establishes

the authority and command relationships of the JFACC with the other components. Normally, the JFACC exercises tactical control (TACON) over other military forces or capabilities made available for tasking, as in when, in 1998, Marine Corps aviation squadrons operating from Aviano, Italy, were TACON to the JFACC for Operation Noble Anvil in Kosovo.

The JFACC normally serves additional duties as the airspace control authority (ACA) and area air defense commander (AADC). Though related, these duties are separate and distinct from the JFACC. The ACA is assigned by and reports to the JFC. While serving as the ACA, the JFACC develops policies and procedures for conducting airspace control within the JFC's operational area and produces an airspace control plan that includes instructions for coordinating user requirements. The ACA has three main objectives—

- **Access**. The ACA is responsible for optimizing airspace control measures to support all the components and their access to airspace when they need it.
- **Force protection**. The ACA is, in large part, a force protection measure that allows for integration while ensuring the deconfliction of friendly capabilities and the effects they create. The ACA can deconflict by time, space, or effects. Software applications within various command and control systems help automate this process during planning, but situational awareness at the point of attack will always be the best force protection measure.
- **Expeditious attack.** Decentralizing operations is critical to winning the tempo battle over the adversary. Accordingly, component air command and control agencies will coordinate the application of airpower in their respective operating areas. In support of the JFC's single battle, however, component air command and control agencies must view themselves as an extension of the ACA by contributing to and executing the tenets of the airspace control plan. The ACA must also work closely with surface commanders, since ground-based boundaries and FSCMs affect the character of the airspace above them.

The AADC, with the support and coordination of the Service and functional commanders, develops, integrates, and distributes a JFC-approved joint air defense plan. The AADC reports directly to the JFC on joint air defense matters. The joint air defense plan integrates the active air defense capabilities of the joint force's components to provide a responsive air defense system. The air defense plan reflects JFC-established priorities. Because they are inherently interrelated functions, the air defense plan and the airspace control plan should be developed concurrently to avoid conflicts.

The policy for the command and control of Marine Corps TACAIR during sustained operations ashore is found in JP 1, *Doctrine for the Armed Forces of the United States*. The policy established in JP 1, which follows, intends to meet the needs of the JFC while maintaining the tactical and operational integrity of the Service organizations. It recognizes the needs of the JFC and his single battle—

> *The Marine air-ground task force (MAGTF) commander will retain operational control (OPCON) of organic air assets. The primary mission of the MAGTF aviation combat element is the support of the MAGTF ground combat element. During joint operations, the MAGTF air assets normally will be in support of the MAGTF mission. The MAGTF commander will make sorties available to the joint force commander (JFC), for tasking through the joint force air component commander (JFACC), for air defense, long-range interdiction, and long-range reconnaissance. Sorties in excess of MAGTF direct support requirements will be provided to the JFC for tasking through the JFACC for the support of other components of the joint force or the joint force as a whole.*
>
> *Nothing herein shall infringe on the authority of the geographic combatant commander (GCC) or subordinate joint force commander (JFC) in the exer-*

cise of operational control (OPCON) to assign missions, redirect efforts (e.g., the reapportionment and/or reallocation of any Marine air-ground task force (MAGTF) tactical air (TACAIR) sorties when it has been determined by the JFC that they are required for higher priority missions), and direct coordination among the subordinate commanders to ensure unity of effort in accomplishment of the overall mission, or to maintain integrity of the force.

Note: Sorties provided for air defense, long-range interdiction, and long-range reconnaissance are not "excess" sorties and will be covered in the air tasking order. These sorties provide a distinct contribution to the overall joint force effort. The joint force commander (JFC) must exercise integrated control of air defense, long-range reconnaissance, and interdiction aspects of the joint operation or theater campaign. Excess sorties are in addition to these sorties.

Some JFACC considerations regarding MAGTF fires include the following:

- **Sorties versus targets.** Joint doctrine uses sorties as the benchmark for levels of aviation support; however, targets and their desired effects truly gauge support. Notwithstanding close air support (CAS) sortie pool allocations for emerging targets or defensive counterair requirements, the number of sorties cannot be calculated until targets and desired effects are determined. For example, in 1990, Operation Desert Shield planning evolved from the number of sorties the Marines would provide the JFC-wide effort to the targets the JFACC (in the name of the JFC) wanted the Marines to attack and the effect of those attacks. With targets identified, Marine aviation planners built strike packages to create the desired effects. In the end, targets drove support and tactics determined the sortie count.
- **Sortie categories.** In practice, there are three categories of sorties—off-the-top, direct support, and excess:
  - Air defense, long-range interdiction, and long-range reconnaissance sorties are often referred to as off-the-top sorties. The term implies a sequence for the identification or sourcing of sorties, but sortie requirements, both internal and external, emerge simultaneously, since everyone is working from the same targeting battle rhythm. Accordingly, fires planners have to concurrently weigh the need for direct support sorties in conjunction with JFC sortie requirements. In the event sorties required exceed sorties available, fires planners will need to address operational risk concerns to the MAGTF commander in the process of reconciling sortie shortfalls.
  - Direct support sorties refer to organic MAGTF aviation sorties committed inside the MAGTF area of operations. Direct support sorties also include any common-sourced sorties the JFACC allots to the MAGTF during the ATO process. See chapter 3 for a more detailed discussion of the ATO process.
  - Excess sorties refer to any sorties in excess of the other two categories. The MAGTF provides excess sorties to the JFC for tasking by the JFACC.
- **Long-range interdiction and long-range reconnaissance.** Normally, any sorties prefaced by the term "long-range" fall into the category of sorties provided for JFC-wide priorities. Prior operations and major joint exercises provide examples of what constitutes long-range—
  - Beyond the land component commander's forward boundary.
  - Beyond the fire support coordination line (FSCL) when its placement is so distant from friendly ground forces that it becomes a de facto forward boundary.
  - Those JFC areas in which the JFACC determines the target, timing, priority, and effects desired.

- Target locations are sufficiently deep in adversary territory that target area studies, rehearsals, and self-contained strike packages with dedicated fighter escort and tactical electronic warfare platforms are required.

- **Aviation relationship.** The MAGTF and its Marine Corps Service component have an aviation relationship with the JFACC, which is additive to any TACON command relationship that a JFMCC or JFLCC may exercise over a MAGTF. Accordingly, the JFMCC or JFLCC must coordinate any plans to employ MAGTF aviation outside the MAGTF area of operations with the JFACC.
- **Integration of TACAIR**. Marine Corps TACAIR squadrons that deploy as part of a carrier air group are not organic to the MAGTF. The Marine Corps Service component will continue to provide administrative and logistic support to embarked squadrons; however, their sorties count as direct support sorties for the MAGTF only if the JFACC allots them to the MAGTF during the ATO process.
- **Allocation requests.** As a TACAIR-capable component, Marines do not submit air support requests (AIRSUPREQs) to the JFACC. Marines identify external sortie support through the air allocation request (ALLOREQ). For more information on the ALLOREQ and related aviation planning products, see the discussion on the ACE in chapter 3.

Joint Force Land Component Commander

In many operations and deliberate plans, the MAGTF is TACON to the JFLCC. The MAGTF provides LNOs to the JFLCC headquarters, which is usually an Army staff that may have limited understanding of how the MAGTF employs its aviation. Frequently, MAGTF common source target nominations must compete with other corps or divisions at the JFLCC headquarters. The MAGTF liaison team must be thoroughly familiar with the MAGTF targeting process and be able to clearly articulate the connection between MAGTF target nominations and the MAGTF's CONOPS. The MAGTF liaison team must also frequently translate between different fire support command and control systems.

Joint Special Operations Task Force Commander

The JSOTF commander has two primary coordination and liaison organizations—the special operations command and control element (SOCCE) and the special operations liaison element. The SOCCE is the focal point for the coordination and integration of special operations forces (SOF) activities with conventional land force operations. It performs command and control or liaison functions according to mission requirements as directed by the JSOTF commander. The SOCCE normally employs when SOF conduct operations in support of or in the same area as a conventional joint or Service force, such as a JTF, Army corps, or a Marine expeditionary force (MEF). It collocates with the command post of the conventional force to coordinate special operations. The SOCCE also can receive and share SOF operational intelligence and target acquisition reports directly from deployed SOF elements.

Joint Military Information Support Operations Task Force Commander

A JMTF is a temporary joint agency established by the JFC to accomplish a specific mission or to control MISO forces in a specific theater of operations. The JMTF assists the JFC in developing strategic, operational, and tactical MISO plans for a theater campaign or other operations. A JMTF consists of MISO and other units from more than one Service and provides MISO in support of a JFC's campaign or other contingencies. The JMTF commander's staff may comprise staff officers from one or more Services.

The JMTF is normally in general support of the joint force to provide a centralized MISO theme. A JMTF commander normally plans, coordinates, and executes the theater MISO plan. In some cases, the JFC may elect to create separate MISO

task forces in direct support of maneuver elements of the components. The nature of the operation and the objectives ultimately determine specific command relationships.

The scale of an operation generally dictates the organization of MISO forces. The MISO organization may vary in size depending on the nature of the operation, the capability of available forces, and the supported commander's assessment of the MISO requirement.

The Marine Corps Component

The Marine Corps component commander helps set the conditions for assigned forces. Whether at the combatant command or JTF level, the Marine Corps component—

- Converts the JFC's intent into Marine Corps forces' actions.
- Accomplishes the missions or tasks assigned by the JFC. Operational missions are normally executed by the Marine Corps component commander's assigned forces.
- Informs the JFC regarding the Marine Corps component's readiness, situation, and progress.
- Provides Service-specific support regarding such functions as administrative, logistics, training, and intelligence to Marine Corps forces.
- Augments a joint force headquarters, functional component headquarters, or other joint agencies within the joint force; provides liaisons to appropriate higher, adjacent, and lower joint, component, and Service headquarters; and provides representatives to various joint boards, agencies, or committees as required.

The Marine Corps component does not have a designated fire support organization, such as a MAGTF force fires coordination center (FFCC) or a GCE-level FSCC. If a situation calls for one, the MAGTF normally performs those functions; otherwise, the Marine component commander will have to source personnel and equipment from assigned forces or from units external to the command. The Marine component commander exerts his greatest influence on fires primarily through representatives to the JFC's targeting board, normally a JTCB.

Though the MAGTF or one of its MSCs may source the senior Marine to the JTCB, that Marine represents the Marine component commander. His most critical task is to convey the larger context that gives priority to the component commander's target nominations. The component representative conveys the importance of the targets within the context of the CONOPS and how target effects support maneuver, force protection, the main effort, achieving an objective, or contributing to the purpose.

Force Fires Coordination Center

The FFCC serves as the MAGTF commander's principal staff section responsible for the overall planning, coordinating, and execution of fires throughout the MAGTF area of operations. The FFCC must—

- Monitor and support the MSCs through fires within their assigned areas of operations while planning, preparing, executing, and assessing fires in the deep fight or any area within the MAGTF's area of operations not specifically assigned to a subordinate commander.
- Guide, direct, and allocate resources to subordinate and supporting units with lethal and nonlethal weapon capability. Guidance and direction can come in the form of tasks, intent, desired effects, target priorities by category, other targeting board products, and, in some cases, individual targets. Resource allocation may refer to apportionment, priorities of intelligence collection, ground-based fires, logistics, changes in main effort, or allocation of communications bandwidth.
- Plan for fires as an integral element of the MAGTF's overall CONOPS, in conjunction with the other warfighting functions, to

promote a single battle and provide planning and execution direction to the MSCs.

- Sponsor and host targeting boards, working groups, and other meetings to confirm the staff's translation of the commander's guidance regarding apportionment, targeting priorities, and linkages to planned decisive actions, the main effort, and schemes of maneuver. The boards also serve to convert conceptual and functional planning into detailed executable plans, such as the ATO, needed for execution.
- Track and assess changes in the battlespace so the commander can continue to provide informed direction and relevant resource allocations.
- Validate targets located in areas outside subordinate areas of operations, select a capability, and, when tasking a subordinate or supporting unit, provide the priority and desired effects so the tasked unit will know whether to interrupt fire missions, divert sorties, or address the target in a subsequent cycle.
- Coordinate with higher, adjacent, subordinate, and supporting command and control centers to integrate and deconflict fires.
- Resolve fire support issues requiring MAGTF-level decisions.

The 1991 Force Structures Planning Group created an FFCC as part of a revised table of organization for a MEF command element. The FFCC replaced the supporting arms special staff, a small targeting cell in the MAGTF command element, based on lessons learned from Operations Desert Shield and Desert Storm. By table of organization, the FFCC is part of G-3 operations. To create synergy among related activities, address possible manpower shortfalls, or compensate for inexperienced personnel, MEFs have experimented with different staff organizations, such as combining the FFCC with the G-3 air center and, in some cases, including the information operations center.

Force fires and G-3 air share much in common, since the ACE is the predominant source of lethal fires at the MAGTF level; however, there are differences in their complementary roles. The FFCC focuses on targets and effects while the G-3 air center focuses on sorties, many of which, such as assault support, do not involve targets. Consistent with its sortie responsibilities, G-3 air normally briefs apportionment and allocation in support of each targeting board.

The FFCC and information operations center plan and execute lethal and nonlethal fires. Whether or not an information operations center combines with the FFCC, the MAGTF must provide, at a minimum, common forums for the integration of their planning and execution. Accordingly, the operational planning team (OPT) is the common forum for deliberate planning, targeting boards and working groups ensure continued integration during detailed execution planning, and unit command and control centers pursue integration during execution.

The FFCC consists of an officer in charge (OIC) and three sections—plans, current fires, and targeting information.

Plans

Personnel from the FFCC plans section are core members of the MAGTF's OPT. They provide representatives to any planning cell that involves fires (see table 2-1 on page 2-10). Chapter 3 provides a detailed discussion of the plans section's duties. Its general tasks are to—

- Develop a concept of fires for each COA.
- Conduct functional and detailed planning to translate each COA into executable tasks.
- Integrate fires with intelligence, information operations, and engineering operations during the target development process.
- Help war game each COA, providing staff estimates.
- Develop decision support tools for use during execution by the current fires section (CFS).
- Prepare the concept of fires for the basic order. Coordinate the writing and production of the tabs and exhibits for appendix 19 to annex C and any other appendices that may fall within the scope of the FFCC. (See app. A for a sample outline of appendix 19 to annex C.)

Table 2-1. Force Fires Plans Section Table of Organization.

Billet	Rank/Billet MOS
Plans officer	LtCol/0802
NSFS plans officer	LCDR/1110
NSFS plans officer	LCDR/1110
Plans officer	Maj/7503
Plans chief	MSgt/0861
Plans clerk	Cpl/0861
Legend Cpl-corporal (Marine Corps) LCDR-lieutenant commander (Navy) LtCol-lieutenant colonel (Marine Corps) Maj-major (Marine Corps) MOS-military occupational specialty MSgt-master sergeant (Marine Corps)	

Current Fires

Current fires (see table 2-2) operates in the MAGTF combat operations center (COC) in direct support of current operations. Conceptually, CFS duties are to track and assess fires-related changes in the battlespace, make or recommend decisions to exploit opportunities arising from change, and conduct MAGTF-level coordination to render decisions into timely action. Functionally, CFS personnel install, operate, and maintain appropriate command and control systems, such as the Advanced Field Artillery Tactical Data System (AFATDS), the Theater Battle Management Core System (TBMCS), the Joint Automated Deep Operations Control System (JADOCS), C2PC [command and control personal computer], and chat nets, to ensure bidirectional information flow that allows them to observe the battlespace and implement decisions. The CFS usually organizes into two 12-hour watches. Chapters 3 and 4 offer detailed discussions on the CFS.

Targeting Information

The targeting information section (see table 2-3) serves as the bridge between planning and the execution of fires. This section, through targeting boards and related events and activities, translates deliberate planning for fires into detailed targeting products that enable subordinate and supporting units to develop fires plans and the ATO. The targeting section is the FFCC's sponsor and host

Table 2-2. Current Fires Section Table of Organization.

Billet	Rank/Billet MOS	Billet	Rank/Billet MOS
Current fires officer	LtCol/0802	Assistant fires watch chief	SSgt/0861
Watch officer	Maj/0802	Journal clerk	Cpl/0861
Watch officer	Maj/0802	Journal clerk	Cpl/0861
NSFS officer	LCDR/1110	Aviation operations clerk	Cpl/7041
NSFS officer	LCDR/1110	Aviation operations clerk	Cpl/7041
Air fires officer	Maj/7503	AFATDS operator	Cpl/0861
Air fires officer	Maj/7503	AFATDS operator	LCpl/0861
Surface fires officer	Maj/0802	Plotter/driver	Cpl/0861
Surface fires officer	Maj/0802	Plotter/driver	LCpl/0861
Fires watch chief	GySgt/0861		
Legend Cpl-corporal (Marine Corps) GySgt-gunnery sergeant (Marine Corps) LCDR-lieutenant commander (Navy) LCpl-lance corporal (Marine Corps) LtCol-lieutenant colonel (Marine Corps) Maj-major (Marine Corps) MOS-military occupational specialty SSgt-staff sergeant (Marine Corps)			

of the targeting board. In support of the targeting board, the targeting section chairs a targeting guidance working group (TGWG). The TGWG is an action officer-level activity that develops proposed targeting products for review by the MAGTF targeting board and subsequent approval by the MAGTF commander. The time-driven joint targeting and ATO processes impel the targeting information section battle rhythm. Chapter 3 discusses the targeting section in greater detail.

Table 2-3. Targeting Information Section Table of Organization.

Billet	Rank/Billet MOS
Targeting officer	LtCol/7503
Assistant targeting officer	Maj/0802
Targeting chief	MSgt/0861
AFATDS operator	Sgt/0861
AFATDS operator	LCpl/0861
Legend LCpl-lance corporal (Marine Corps) LtCol-lieutenant colonel (Marine Corps) Maj-major (Marine Corps) MOS-military occupational specialty MSgt-master sergeant (Marine Corps) Sgt-sergeant (Marine Corps)	

Information Operations Center

Information operations is not a warfighting function. It is a type of operation composed of warfighting function activity that can include, for example, maneuver in support of deception, force protection, operations security, intelligence as in electronic warfare, and fires. Fires related to information operations can be lethal, nonlethal, or both. Lethal fires can involve attacks on leadership or command and control nodes, while nonlethal fires can include MISO leaflets or broadcasts and attacks on computer networks. The purpose of information operations is to create an advantage for the MAGTF by shaping information content and flow in the operational area and impacting adversary use of the information environment. The exact type of advantage varies by mission, but is typically associated with influencing adversary actions and populace behavior.

The information operations center is responsible for the timing, sequence, and effects of information operations-related targets as an integral part of the MAGTF CONOPS. In support of information operations, the FFCC will source capabilities, such as lethal and nonlethal fires, within its purview and match them to information operations targets based on the commander's intent, guidance, and target priorities. Information operations planners must be an integral part of the entire process to provide the MAGTF commander with expanded means and methods that include both lethal and nonlethal options. Personnel from information operations and the FFCC must work together to ensure a coordinated effort. For more information on information operations, see Marine Corps Warfighting Publication (MCWP) 3-40.4, *Marine Air-Ground Task Force Information Operations.*

Air Naval Gunfire Liaison Company

The air/naval gunfire liaison company (ANGLICO) provides the MAGTF commander a liaison capability to plan, coordinate, and conduct the terminal control of fires in support of joint, allied, and coalition forces operating within or adjacent to the MAGTF battlespace. There are six ANGLICO units in the Marine Corps—one assigned to each MEF and three in United States Marine Corps Forces Reserve. Each ANGLICO contains Marine and Navy personnel trained and qualified to plan, coordinate, and integrate all fire support assets available to the MAGTF as well as joint, allied, or coalition forces. At the supported company level, firepower control teams integrate, deconflict, and control mortar, artillery, rocket, naval surface fires, and close air and other aviation support for the supported maneuver commander. At the supported battalion/task force level, trained and equipped supporting arms liaison teams augment the FSCC. At the supported regimental/brigade and division level, the brigade platoon and ANGLICO company headquarters provide similar fires planning and liaison functions.

Major Subordinate Units

Aviation Combat Element

The ACE is the principal source of lethal fires at the MAGTF level. Due to its operational reach, speed, and flexibility in retasking sorties, the ACE provides the MAGTF with a tremendous capability. The ACE can shape future close battles through deep air support (DAS), extend the MAGTF's collection ability with its reconnaissance assets, serve as an extension of the MAGTF's command and control capability, and conduct combined arms with the GCE. While supported units can request sorties and provide local direction, the ACE commander assigns missions to aviation units and commands through the Marine air command and control system (MACCS). Within the MACCS there are three major centers that participate in the command and control of aviation assets—the Marine TACC, the tactical air operations center (TAOC), and the direct air support center (DASC).

Marine Tactical Air Command Center

The Marine TACC is the senior MACCS agency. It is the operational wing command post from which the ACE commander and his staff plan, supervise, coordinate, and execute MAGTF air operations, including the planning and execution of all ATOs and the execution of the current ACE operation order (OPORD) or fragmentary order (FRAGO). The Marine TACC is the MACCS agency from which the ACE commander exercises command. The Marine TACC integrates the six functions of Marine aviation—antiair warfare (AAW), electronic warfare, aerial reconnaissance, offensive air support (OAS), assault support, and control of aircraft and missiles—with the MAGTF command element through linkage with the MAGTF COC and the FFCC. The Marine TACC also provides the functional interface for employment of MAGTF aviation in joint and multinational operations. References to the TACC as the Marine TACC avoid confusion with the Navy TACC. The Navy TACC provides control, not command, of aircraft to facilitate the provisioning of support based on missions already assigned by the ACE commander. Due to its capabilities to command and control aircraft across the entire MAGTF area of operations, the Marine TACC is normally the alternate command post for the MAGTF command element. For further discussion of the roles, tasks, and organization of the Marine TACC, refer to MCWP 3-25.4, *Marine Tactical Air Command Center Handbook.*

Tactical Air Operations Center

The TAOC is the principal MACCS air defense agency that conducts airspace control and management. The Marine air control squadron of the Marine air control group (MACG) provides the personnel and equipment for the TAOC. Through radar input from its organic sensors and data links from other military radar units, the TAOC generates an air picture that allows for real-time surveillance, positive control, and navigational assistance to friendly aircraft. The TAOC conducts its primary function of AAW through the direction, coordination, and employment of various air defense weapon systems, which include interceptor aircraft and ground-based air defense weapons. The TAOC is normally the alternate command post for the ACE commander. For further information, refer to MCWP 3-25.7, *Tactical Air Operations Center Handbook.*

Direct Air Support Center

The DASC is the principal MACCS air control agency responsible for the direction of air operations that directly support ground forces. The Marine air support squadron provides the personnel and equipment for the DASC, which reports administratively to the MACG and tactically to the Marine TACC (or Navy TACC during selected phases of amphibious operations). The DASC's principal roles are to provide air support to the GCE and feedback to the appropriate TACC regarding the GCE situation. During

amphibious operations, the DASC is normally the first MACCS agency ashore and usually lands in the same scheduled or on-call wave as the GCE's senior FSCC.

In the event of multiple GCEs within the MAGTF, the DASC may collocate with the designated senior GCE FSCC, at the MAGTF command element, or at a location that offers the best connectivity for the provision of air support. When supporting multiple GCEs, the DASC will provide either an air support element or an air support liaison team to each GCE to coordinate with the DASC for air support.

The DASC processes immediate requests for air support; coordinates aircraft employment with other supporting arms; manages terminal control assets supporting GCE forces; and controls assigned aircraft, unmanned aerial vehicles, and other aircraft moving through DASC-controlled airspace. The DASC controls and directs air support activities affecting the GCE commander's operations and those air missions requiring close coordination with the ground combat forces, such as CAS, assault support, and designated air reconnaissance. The DASC does not normally control aircraft conducting DAS missions as detailed coordination of these missions is not required with ground forces. In those cases when DAS occurs inside the supported GCE commander's area of operations, however, the DASC will provide battle damage assessment (BDA) and mission reports from DAS missions to the GCE's senior FSCC. For more detailed information, refer to MCWP 3-25.5, *Direct Air Support Center Handbook.*

Ground Combat Element

The GCE plans, integrates, and coordinates all fire support within the GCE's area of operations. It plans fires, conducts targeting, and integrates fires with maneuver in close operations. The GCE plans and coordinates the delivery of its organic fire support and the delivery of fire support provided by other means, which include aviation, NSFS, and other assets capable of contributing to a combined arms effort, such as electronic attack or electronic warfare support. The GCE, through its FSCC, coordinates with other elements of the MAGTF as necessary and with adjacent forces on fire support matters. The FSCC is a single location comprising communications and the personnel who are responsible for the coordination of all forms of fire support. An FSCC exists at each echelon of the GCE from division to infantry battalion. The Marine Corps fire support coordinator (FSC) organizes and supervises the FSCC under the staff cognizance of the G-3/S-3. The FSCC is collocated with the COC. For further information on the FSCC, refer to MCWP 3-16, *Fire Support Coordination in the Ground Combat Element.*

Logistics Combat Element

A fires element, if assigned, collocates with the logistics combat element's (LCE's) COC. The COC is the LCE commander's agency for the control and coordination of day-to-day operations.

Normally, the LCE conducts sustainment activity within the areas of operations of other commands. As the principal sustainment agent with the MAGTF, the LCE does not have an organic fires element; however, if the MAGTF assigns an area of operations to the LCE commander, then he becomes responsible for the integration of all warfighting function activities. Accordingly, the MAGTF must resource the LCE for success to include appropriate fire support capabilities commensurate with the threat. A tactical combat force, if assigned, may bring all the necessary capabilities; otherwise, the LCE will likely need fire support weapon systems or access to them, FSCs, fire support command and control systems, operators and bandwidth, an entry point to the MACCS, and a priority for fires consistent with the threat.

Force Artillery

The mission of the force artillery is to provide cannon, rocket, and missile fire support to the MAGTF and MSCs. The force artillery commander controls only those ground indirect

fires assets not assigned or attached to the GCE. His mission includes command and control of assigned and attached cannon, rocket, and missile assets as well as survey, meteorological, and counterbattery radar (CBR) to support the force artillery and the entire MAGTF. During operations, the force artillery will provide a liaison team to the FFCC and additional teams to attached Army and combined forces' rocket, cannon, or missile artillery commands. See chapter 7 for more information about force artillery.

CHAPTER 3
FIRES PLANNING

Fires planning is the continuous process of analyzing, allocating, and scheduling fire support to effectively integrate fires into the commander's CONOPS.

The Planning Hierarchy

Fires planning occurs in three stages—conceptual, functional, and detailed. Conceptual planning establishes aims, objectives, and intentions and involves developing broad concepts for action. Conceptual planning is primarily the province of the commander and corresponds to the *art* of war. The commander may provide a concept of fires as part of his guidance. Otherwise, fires planners will recommend the concept of fires for each COA based on the commander's intent; vision of decisive, sustaining, and shaping actions; and any targeting guidance and priorities.

The commander and his staff perform functional planning, which is a combination of the *art* and *science* of war. Fires planners develop supporting functional plans for artillery, aviation, NSFS, and all nonlethal capabilities that fall within the purview of the FFCC.

Detailed planning encompasses the specifics of implementation and corresponds to the *science* of war. It does not establish objectives; rather, it prescribes the actions or tasks that accomplish the objectives. Detailed planning for fires includes targeting, scheduling, FSCMs, rehearsals, battle drills, and coordination with higher, adjacent, supporting, and subordinate units to promote an integrated effort.

The Operational Planning Team

The OPT is a task-organized planning cell consisting of planners from future operations or future plans augmented by representatives from the principal and special staff, as well as from subordinate, adjacent, and supporting headquarters, and subject matter experts (SMEs). Normally, at the MEF level, members of the fires plans section of the FFCC, the MAGTF G-3 air center, the information operations center, and an ACE representative provide full-time fires planning representation to the OPT.

The Marine Corps Planning Process

The Marine Corps Planning Process (MCPP) is a six-step learning process that promotes understanding and a practical solution necessary for execution (see MCWP 5-1, *Marine Corps Planning Process*). It aids the commander and staff by—

- Determining the nature of the problem through a study of the operational environment and an analysis of assigned tasks.
- Developing options for the commander within the context of a broad operational approach.
- Wargaming COAs against possible adversary actions.
- Comparing friendly COAs to one another and selecting the one that best satisfies the requirement.
- Producing the plan or order.
- Transitioning the plan to subordinate commands and the current operations section for execution.

The following planning steps discuss force fires personnel, their duties, and how fires planning evolves as a subset of the overall command planning.

Step 1: Problem Framing

The purpose of problem framing is to gain understanding of the environment and the nature of the problem as a basis for potential solutions. Problem framing involves three iterative activities: design, task analysis, and staff actions. Design is the conception and articulation of a framework for solving a problem. It is primarily conceptual planning dominated by synthesis, which leverages dialogue—the basic mechanism of design—to mirror the nonlinear nature of complex problems. Task analysis informs the design effort, which, in turn, enables planners to determine the most essential among the specified and implied tasks as a basis for the mission statement. It promotes a deeper understanding of the problem. Staff actions involve functional and detailed planning primarily by analysis, which provides information for the design discourse and develops products critical to a sustained planning effort. Problem framing products include commander's intent, development of a mission statement, and guidance (broad operational approach; i.e., the commander's concept). Problem framing will involve all three sections of the FFCC: fires plans, tactical information section (TIS), and CFS.

Fires Plans Section

During problem framing, the fires plans section will normally participate in the design dialogue while coordinating with the G-2/G-3/G-5 planners to develop initial products. Fires planners learn everything they can about the operational environment as it relates to the mission, threat, and the higher headquarters (HHQ) concept of fires to determine any fires-related specified or implied tasks or limitations. Other factors that influence fires planning include—

- Existing boundaries; maneuver control measures; FSCMs and boundaries that depict the current/future MAGTF area of operations; and any theater-specific tactics, techniques, and procedures (TTP) that pertain to fires planning, coordination, or execution.
- Status of higher, adjacent, and supporting units that may require or augment MAGTF fires capabilities.
- Identification or refinement of friendly and adversary COGs and critical vulnerabilities.
- Known or predicted events or time-driven actions that influence shaping actions and the concept of fires.
- The most likely and most dangerous adversary COAs.
- Current and projected status, including location, mission readiness, and munitions, of organic fire support systems.
- Intelligence preparation of the battlespace (IPB) products, including—
  - Modified combined obstacle overlay (MCOO).
  - Doctrinal, event, and situation templates to determine potential targets and possible threats to friendly fire support assets.
- An understanding of how the battlespace affects targeting acquisition, delivery, and fires assets, such as maneuver, positioning, and logistics.
- The effects of the information environment, terrain, and weather on operations.

In addition to developing a detailed understanding of the battlespace, fires planners may also perform the following actions during problem framing:

- Assist with the identification of the commanders critical information requirements (CCIRs).
- Align targeting, named areas of interest (NAIs), and target areas of interest (TAIs) with CCIRs.
- Begin to look for indicators that would determine when to best engage adversary critical vulnerabilities to achieve the desired effects on the adversary COG.
- Identify any fires assumptions and submit as requests for intelligence.
- Begin to identify fire support tasks for fire support.
- Develop fires products for the problem framing brief. Assist in the briefing if required.

- Identify tasks—specified, implied, and essential—associated with fires.
- Assist in the development of the warning order (include appropriate fires information).

Problem framing outputs subject to further refinement by the fires planners during the subsequent planning steps can include—

- The fires portion of the problem framing brief.
- Fires related specified and implied tasks.
- Resource and SME shortfalls.
- Identified ROE as they apply to constraints for fires.
- Recommended fire support tasks and targeting priorities.

Target Information Section

The TIS, in coordination with fires planners, provides fires-related information for the design discourse and reviews HHQ and component standing operating procedures (SOPs) and directives for battle rhythm timelines or targeting cycles. It determines HHQ software applications, versions, and formats for electronic submissions of target nominations and target list updates. The TIS also maintains the MEF target list and submits updates to HHQ for additions or deletions to the JFC's master target database.

Current Fires Section

The CFS provides feedback to fires planners on changes in the battlespace as a result of execution that could affect fires planning. It also, if possible, participates in OPT deliberations.

Step 2: Course of Action Development

The OPT develops COAs to accomplish assigned tasks based on the commander's intent and guidance. If the OPT develops more than one COA, each must be sufficiently distinct from the others to constitute a truly different approach to solving the problem. All COAs must express the following:

- A complete thought by addressing the warfighting functions.
- Decisive, shaping, and sustaining actions.
- Main and supporting efforts.
- Actions in the deep, close, and rear if that battlespace framework is used.
- Types of offense or defense.
- Forms of maneuver.
- Attack mediums, such as land, sea, air, electromagnetic, and psychological.

Every COA will normally involve some combination of lethal or nonlethal fires. Fires planners recommend ways to integrate fires with each COA. Two techniques for developing fires recommendations are essential fire support tasks (EFSTs) and ends, ways, and means. During COA development, fires planners validate HVTs.

Essential Fire Support Tasks

Fires planners identify and prioritize any fires-related specified and implied tasks. These tasks become EFSTs. Fires planners deconstruct each EFST, which can include both lethal and nonlethal means, for understanding and then reconstruct them into a solution using a task, purpose, method, and effects framework. Depending on the number of COAs and time available, this level of detail may not be possible during COA development. Once the commander approves a COA, this level of detail is necessary to properly task subordinate and supporting units, coordinate efforts, and populate the tabs and exhibits of the fires appendix with enough information regarding the command's implementation of fires during execution.

Ends, Ways, and Means

Another technique for developing the fires portion of each COA is to establish targeting objectives (ends), desired effects of fires (ways), and an appropriate capability (means) to create the desired effects based on the mission, intent, commander's guidance, and the specifics of the COA. To be effective, planners must be consistent in the application of these terms and not confuse them due to levels of effort and resourcing implications. To accomplish the targeting objective, whether to disrupt, delay, limit, persuade, or

influence, planners determine the effects of fires (suppress, neutralize, or destroy) and the means or attack option (artillery, aviation, NSFS, nonlethal, or direct action). For example, if the OPT wants to delay a specific unit from crossing a river, force fires and ACE planners may determine that to achieve this targeting objective they need to suppress that unit's air defenses and destroy its bridging assets.

High-Value Targets

The adversary commander requires HVTs to successfully complete the mission. They are a subset of the joint target list (JTL), which includes selected targets considered to have military significance in the combatant commander's area of responsibility.

The specifics of each COA determine if a significant military target should be considered of high value within the context of the MAGTF mission. A friendly COA could render an adversary's strength irrelevant, giving it no value within the context of the COA. Once the OPT starts developing COAs, fires planners can validate HVTs based on the planned interaction of friendly capabilities with selected aspects of the battlespace or the potential of any adversary capability, such as maneuver or fires, to impact the success of the friendly COA.

In concert with G-2/S-2 personnel, fires planners working in the OPT identify specific adversary formations, capabilities, or other elements within the battlespace. These elements can be addressed by lethal or nonlethal fires as part of each COA.

In determining HVTs, fires planners have the following responsibilities:

- Develop an initial concept of fires and coordinate with MSC fires representatives and G-2 personnel as required. Develop a rough concept of fires by phase with associated EFSTs, including their purpose and effect. Refinements to the method portion occur once COA comparison and decision have been made.
- Explore potential adversary critical vulnerabilities that indicate ways to employ fires to limit the adversary's options, gain an advantage, and seize the initiative.
- Examine shaping actions from a fires perspective to determine if there is an adversary strength that is vulnerable to attack. Ensure that shaping fires help to set conditions for decisive action.
- Support the commander's CONOPS with deliberate and reactive lethal and nonlethal fires.
- Develop FSCMs for each COA.
- Coordinate with other planners to determine appropriate maneuver and airspace control measures.
- Formulate a counterfire plan, if required, that identifies agency and MSC responsibilities for coordinating strikes against adversary artillery.
- Review and provide input on ROE.
- Plan fires to protect the force. Begin coordination with G-2 for NAI, TAI, and decision point requirements.
- Assess adversary capabilities, including all fire support assets—numbers and type, lethality, range, employment methods, and logistic considerations.
- Compare adversary capabilities with available friendly fire support assets; focus on strengths and weaknesses, advantages, and potential opportunities for exploitation.
- Coordinate collection planning with fires planning to detect, track, and validate targets and provide combat assessment.
- Refine the concept of fires for each COA.
- Develop the fires staff estimate for each COA.
- Develop the fires portion of the COA development brief.

Step 3: Course of Action War Game

The COA war game pits friendly COAs against potential adversary COAs in an iterative process of action, reaction, and counteraction. These war games enhance situational understanding and test

each COA to ensure it will accomplish the assigned mission and commander's intent.

War games at the small unit level or in a compressed planning schedule can be a "what if" session between the commander and his operations officer. At the MAGTF level, COA war games normally involve a red cell to expose the OPT to adversary capabilities and unexpected intentions. The OPT may also use a green cell to consider the reactions of the local populace and non-Department of Defense agencies to a COA. They can also incorporate modeling and simulation applications as part of a robust command post exercise. War games identify the strengths, weaknesses, and resource shortfalls for each COA and produce the following outcomes:

- A better understanding of battlespace dynamics.
- Advantages and disadvantages of each friendly COA.
- Refinement and improvement of friendly COAs. Potential branch and sequel plans for each COA. Validation of friendly and adversary COGs.
- Validation of the commander's decisive action.
- Decision points, NAIs, and TAIs.
- Decision support template (DST) and decision support matrix (DSM).
- Synchronization matrix that serves to integrate and balance workloads for the efficient application of complementary capabilities, not to script a detailed plan based on an expectation that the battlespace will evolve exactly as planners envisioned.

A COA war game enables the participants to see how all the elements of the operation can interact. From this experience, fires planners can begin to identify those targets that are critical to MAGTF mission success. Target determination is not a linear process; it can involve multiple factors that will interact with each other and change over time. As a result, high-payoff targets (HPTs) require continual refinement and revision throughout planning and execution.

In determining HPTs, fires planners have the following responsibilities:

- Validate and refine fires-related tasks.
- Select HPTs and determine the timing and sequence of attack, the desired effects, and the capabilities required.
- Help develop the DST and DSM by identifying fires-related NAIs, TAIs, and associated decision points.
- Populate the synchronization matrix with fires activities and requirements to integrate and identify resource shortfalls. The matrix should include POF, lethal and nonlethal capabilities, FSCM, EFST, and shaping requirements by phase, liaison requirements, and TAIs. It should also provide any additional information required to effectively execute fires throughout all phases.
- Help develop branches and sequels that emerge from the war games.
- Determine advantages and disadvantages of each friendly COA.
- Develop products for a war game brief and participate as required.

In addition to the fires planners, the current fires section and TIS have their own considerations. The CFS should, if possible, participate in the COA war games and continue to provide execution feedback that could influence ongoing planning. The TIS continues to refine MAGTF fires and targeting battle rhythms to align with that of the HHQ and to schedule TWGs and targeting boards, accordingly. This section should also establish and maintain system capability, interoperability, and workarounds with higher, adjacent, subordinate, supporting, allied, and coalition forces when processing targeting information.

Wargaming COAs can not account for every possible outcome. Branches and sequels address the more critical options the adversary could adopt. Instead, COA wargaming promotes tempo through planning by generating situational understanding that mitigates surprise and facilitates timely and relevant decisionmaking.

Step 4: Course of Action Comparison and Decision

In this step, the commander selects the COA that the MAGTF OPT will develop into a CONOPS for execution. By comparing friendly COAs with each other using the commander's evaluation criteria, OPT members can assess the merits of each COA. The commander then selects the COA that best accomplishes the mission. This step involves the commander, his subordinate commanders, and their staffs. With a decision by the commander, detailed planning can accelerate now that all efforts are focused on one COA.

The fires representatives complete staff estimates, which focus on how effectively fires can support each COA. They assess the effectiveness of the fires with regard to time, terrain, projected loss of friendly assets, and the likelihood of creating the desired effects on the intended targets. The fires plan for an approved COA populates the fires support appendix of the planning directive. (See app. B for fire support reference data.)

During this step, fires planners must—

- Complete the concept of fires—lethal and nonlethal—for each COA.
- Provide estimates of supportability for artillery, aviation, NSFS, electronic warfare, and nonlethal fires.
- Use commander's evaluation criteria to rank each COA from a fires perspective. Plan the fires portion of any emerging branches or sequels.
- Complete the fires portion of the synchronization matrix to integrate fire support with the other warfighting functions in time, space, and purpose.
- Develop a draft of the battlespace shaping matrix (BSM), if used.

The TIS must—

- Schedule the MEF TWG and targeting board.
- Develop a proposed MEF prioritized target list for consideration at the targeting board based on targeting objectives, targeting priorities by category, MSC target nominations, and any HPTs identified during the war games.
- Continue to work with G-2 intelligence collections to schedule reconnaissance, surveillance, and target acquisition (RSTA) assets to detect, identify, and validate desired targets in concert with NAIs and TAIs.
- Develop and publish the MAGTF target numbering system if it is different from the SOPs.

Step 5: Orders Development

After COA selection, the MAGTF staff and OPT members develop the OPORD, which is the manifestation of the commander's solution to the problem. Planners must write orders for those who will execute them. The order directs actions and focuses subordinate activities toward accomplishing the mission. The FFCC develops the fire support plan that addresses the conceptual, functional, and detailed levels of fires planning. In the base OPORD, the concept of fires paragraph (paragraph 3.b.2) provides the conceptual plan for fires and includes targeting objectives, while the functional and detailed levels of planning appear in appendix 19 to annex C.

In the orders development stage, fires planners must—

- Write the concept of fires for the basic order.
- Draft fires tasks for paragraph 3 of the basic order for subordinate units and agencies.
- Write the fire support appendix (appendix 19 to annex C). Coordinate with the information operations center for its portion of appendix 19.
- Confirm battlespace geometry, FSCMs, and maneuver control measures with the future operations section.
- Complete all fires-related planning and execution tools, such as the DST, DSM, BSM, attack guidance matrix (AGM), and a target selection standard (TSS) for use by the CFS in execution.
- Confirm that the fires tasks to subordinates reflect a balance between the best system to achieve asymmetrical advantage and MSC workloads.

- Ensure accurate and consistent terminology when drafting tasks or establishing goals.
- Ensure conditions, phases, and desired targeting effects are understandable, achievable, and measurable in order to assist the assessment effort. If not measurable, develop measures of performance (MOPs) and measures of effectiveness (MOEs). See chapter 4 for more discussion on assessment.
- Conduct orders reconciliation with the staff using the basic order and the annexes to ensure the concept of fires is supported by all relevant functional areas (such as target acquisition from intelligence, ammunition from logistics, or command and control systems from communications) and supports the MAGTF commander's single battle.
- Conduct an orders crosswalk of the MAGTF order with higher and adjacent orders to identify and resolve any conflicts and ensure consistency.

The TIS must —

- Assist the fires planners in writing their portion of the order.
- Assist the fires planners in developing or updating the BSM and other execution tools, including a daily update of the reactive attack guidance matrix (RAGM).
- Translate targeting guidance, objectives, and target sets into specific target nominations for upcoming targeting boards.
- Process target nominations from subordinate commands.

Step 6: Transition

At the MEF level, the scope and complexity of operations usually require separate planners and executors. The transition step involves the transfer of knowledge and understanding gained in planning to current operations personnel who will oversee the execution of the plan. This step is also the time for finalizing all the detailed plans, such as the ATO, which commit capabilities to interactions with selected elements of the battlespace. In the transition stage, fires planners must —

- Transition fires plans to CFS personnel using briefs, rehearsal of concept drills, and fire support rehearsals.
- Provide any fires-related planning and execution tools developed in planning, such as the DST, DSM, AGM, and BSM, to the CFS.
- Participate in the targeting boards.

The TIS must —

- Develop and disseminate the target cycle summary to ensure targeting board timelines align with HHQ battle rhythms.
- Receive apportionment recommendations from the ACE and other subordinate commands.
- Monitor GCE requests for preplanned CAS. Validated requests affect the apportionment decision.
- Conduct a TWG with action officers from the MSCs and MAGTF staff sections. The TWG will normally occur daily for major combat operations. For stability operations, the TWG's meetings could be weekly, monthly, event driven, or nonexistent, depending on the situation.
- Rank target nominations based on targeting priorities and designation of the main effort.
- Provide the ACE a copy of the prioritized target list so it can estimate a resource cut line based on desired effects and sorties available.
- Nominate targets that do not make the MAGTF cut line for joint attack.
- Request additional external capabilities to address MAGTF targets.
- Review sortie allotment messages (SORTIEALOTs) with MAGTF equities in mind.
- Prepare briefing slides with appropriate graphics for the MAGTF targeting board.
- Coordinate the conduct of the MAGTF targeting board in accordance with the MAGTF's battle rhythm and SOP.

- Review published ATOs to verify that sorties and targets are consistent with MAGTF and joint targeting board deliberations.
- Provide a daily brief to MAGTF and Marine Corps component representatives to the joint targeting board so they can convey the rationale behind the MAGTF's target selection and its linkage to the MAGTF's CONOPS.

The CFS must—

- Participate in the transition brief. Ensure all members are familiar with the execution tools provided by the OPT.
- Conduct execution drills using the CCIR and planning and execution tools, such as DST, DSM, AGM, RAGM, and BSM.
- Set up appropriate maps, screens, monitors, and electronic journals and verify voice and data net connectivity.
- Verify contact information, such as phone numbers, e-mail addresses, Web sites, or chat groups for key personnel.
- Conduct communications checks with all appropriate fire support agencies.
- Verify availability and functionality of command and control support equipment, such as AFATDS.

Intelligence Support

Intelligence supports fires-related decisions and actions through focused observations and assessments of the battlespace that are subsequently conveyed through a variety of products. Many of these products are directly related to the IPB, which is an operations function, since the process culminates in decisions and actions; however, the intelligence community does a lot of work before those IPB decisions and actions can occur.

Intelligence Preparation of the Battlespace

The IPB assists in developing targeting objectives and guidance by identifying significant military, economic, and political systems important to the MAGTF. The IPB process evaluates an adversary's capabilities, vulnerabilities, doctrinal principles, preferred TTP, and observed patterns and activities. From an analysis of this information, the IPB process develops products that form the foundation of fires planning and execution. These products include the MCOO and threat models.

Modified Combined Obstacle Overlay

The MCOO is a graphic portrayal of the battlespace's effects on military operations. It is normally a terrain overlay depicting all obstacles to mobility. The overlay can depict numerous additional factors, including cross-country mobility classifications, objectives, mobility corridors, avenues of approach by unit size, likely obstacles, defensible battlespace, likely engagement areas, key terrain, built-up areas, and civilian infrastructure.

Threat Models

A threat model depicts how adversary forces conduct operations under different sets of conditions. Threat models result from a detailed study of the adversary force and consist of three parts—a doctrinal template, a situation template, and an event template and matrix:

- **Doctrinal template.** Doctrinal templates are diagrams of adversary formations based on postulated adversary doctrine and tactics that illustrate the disposition and activity of adversary forces conducting a particular operation arrayed on ideal terrain. Doctrinal templates depict the adversary's nominal organization, frontages, depths, boundaries, and control measures for combat.
- **Situation template.** A situation template is a doctrinal template that accounts for the effects of the battlespace and the pursuit of a particular COA. Situation templates incorporate the adversary's current situation with respect to the terrain, training and experience levels, logistic status, losses, and dispositions. Normally, the situation template depicts adversary units two levels down and critical points in the COA. The IPB process may develop more than one situation template to depict locations and

formations at various times. At a minimum, a situation template depicts the most likely and the most dangerous adversary COAs, although separate situation templates can be developed for each potential adversary COA.

- **Event template and matrix.** The event template evolves from the situation template and depicts NAIs and time phase lines, which postulate adversary force rates of movement. The event template is a guide for intelligence collection planning and the baseline for COA wargaming that results in a DST. The event matrix depicts types of activity expected in each NAI, when the NAI is expected to be active, and any additional information to aid in collection planning. Like the situation template, the event template and matrix are developed for the most likely and most dangerous adversary COAs.

From these basic products, IPB can help develop targets. During the construction of situation templates, HVTs are identified for a specific battlespace and adversary COA. These HVTs can include command and control nodes, types of equipment, airfields and refueling points, and critical LOCs, such as ports or airfields, ammunition storage sites or distribution points, or regimental or division artillery groups. Concurrent with the development of the situation template, the adversary commander's decision cycle and decision points associated with each potential COA are examined and critical targets begin to emerge.

During COA wargaming, selected HVTs may become HPTs based on their critical role in the outcome of the friendly COA. Once the commander has approved a target, the G-2/S-2 should develop target and objective studies to support mission planning. Target and objective studies are focused, detailed intelligence products that aid in the application of fires or the maneuver of forces against a specific target set or area. These studies use many of the graphics derived during the IPB process. One such product is a target folder, which, depending on the specific mission, may contain orientation and time-distance graphics, weather and hydrographic forecasts, astronomical data, intelligence briefing notes for the mission, and a graphic intelligence summary.

Intelligence Collection

Intelligence collection helps observers make sense of the constantly changing environment as it relates to the mission and make timely, informed decisions that help them adapt faster than the adversary. Without the ability to observe, decisions risk relevancy and mission failure. Intelligence collection focuses on the adversary, weather, terrain, and other selected aspects of the battlespace, such as the populace in COIN operations. Because collection resources are limited and the resulting reporting can easily inundate the MAGTF commander and staff with more data than can be processed, IPB products help focus the limited resources on those elements of the battlespace that are critical to the selected COA.

The situation template depicts all confirmed adversary locations to include those identified as targets in the IPB analysis. Unlocated targets are doctrinally templated as a basis for collection. Together, the event template and event matrix provide a description of the adversary indicators and activity expected to occur in NAIs and TAIs. The intelligence collection manager uses NAIs to acquire previously unlocated adversary assets and confirm the location of previously acquired targets within the battlespace.

The DST and synchronization matrix determine where and how to acquire targets, allowing war game participants to record their assessment of sensor and attack systems so they can acquire and attack targets at a critical event or phase of the battle. The collection manager uses the requirements contained in the DST and synchronization matrix to plan where and when collection assets can detect and locate targets. Depending on the situation, the intelligence collection manager may arrange for the direct dissemination of targeting data from the collection platform to the FSCC or the attack asset to shorten the reaction time between sensor and shooter. The collection manager should pass the same information simultaneously to the G-2/S-2 for additional analysis to confirm or change previous IPB products.

Marine Corps Intelligence Agencies

The IPB process and target intelligence analysis are conducted from both within and outside the MAGTF. Generally, time-sensitive tactical analysis is conducted by those agencies internal to the MAGTF, while operational and strategic analysis that require more time are conducted by external agencies. The MEF intelligence section in the MEF command element, supported by the red cell and the intelligence battalion, focuses on IPB studies and target intelligence operations and analysis.

The intelligence section supports the commander, FFCC, OPT, and the entire command by maintaining an updated image of the battlespace and adversary situation. It produces and disseminates target analysis and target intelligence products. The intelligence section also directs the collection and analysis of BDA information to assist the combat assessment process. The target intelligence officer will usually lead this effort. During the OPT process, the intelligence planner works closely with the fires planner to ensure correct identification of HPTs and to ensure a coordinated collections and targeting effort. During OIF, the MEF (Forward), as Multinational Force-West, formed a tactical fusion cell to perform these functions.

The red cell assists the commander in assessing his COAs against a thinking adversary. It develops various adversary COAs that are most likely, most dangerous, or most advantageous. A red cell can range in size from just the intelligence officer to a task-organized group of SMEs. Using IPB products, the red cell refines the adversary COAs for COA wargaming and develops adversary planning support tools, such as a synchronization matrix. The red cell may also participate in the analysis of adversary COGs. In addition to using IPB products, the red cell provides the OPT with additional detailed IPB analysis that is tailored to the planning needs of the OPT.

The target analysis and BDA teams focus on detailed analysis of targets identified by the MAGTF commander, his staff, and MSCs, which are not destined for the ATO. For example, the ACE's G-2 section generally manages target and BDA analysis and intelligence support for ATO-nominated targets. These teams provide the full range of target development and analysis to support the deliberate and reactive targeting efforts of the MAGTF. The BDA element prepares the BDA reports that support the MAGTF's combat assessment effort.

The Targeting Process

Targeting is the process of selecting and prioritizing targets and matching the appropriate response to them. It involves analyzing adversary situations relative to the commander's mission, objectives, and capabilities at his disposal. This analysis assists target planners with identifying and nominating specific vulnerabilities that, if exploited, will accomplish the commander's purpose.

There are two targeting processes—the decide, detect, deliver, and assess (D3A) methodology and the joint targetinng cycle.

The D3A method is the doctrinal targeting process for the Army and the Marine Corps. The joint targeting cycle, sometimes referred to as the "Joint 6-step," is a variation of an Air Force ATO model; it is part of the joint targeting process, which is detailed in JP 3-60, *Joint Targeting*. While the two planning methods differ in terminology and number of steps, both address the same basic functions needed for targeting.

Since MAGTF fires are a subset of the overall joint effort, MAGTF fires planners must understand how the two processes interact in order to leverage the joint process for external support. For example, fires planners may need to inject a

D3A target nomination into the joint process when external capabilities are better suited for creating the desired effects on a MAGTF target or target system.

The D3A targeting process (see fig. 3-1) refers to the specifics of implementation—detailed planning (decide), execution (detect, deliver), and assessment—in pursuit of objectives established during conceptual and functional planning. Like any cyclical process, once underway it has no beginning or end. Each element operates interdependently, informing the others throughout the operation.

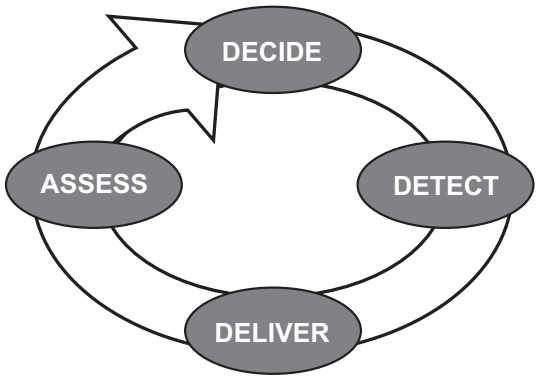

Figure 3-1. The Decide, Detect, Deliver, and Assess Targeting Process.

Step 1: Decide

The OPT fires planners use D3A within the broader framework of the MCPP to decide—

- With what aspects of the battlespace, such as adversary capabilities, functions, formations, or individuals, do we need to interact to create favorable conditions for friendly COAs?
- Have we located these targets accurately enough to successfully attack them? If not, where should we look for them? What collection asset has the necessary accuracy? What level of production effort is required to develop the needed target intelligence?
- When will we attack these targets? As they are detected? At a specific time in the operation? In a particular sequence?
- What fire support capability is best suited to achieve the desired effects?
- How will we assess the results of the attack?
- What impact will the attack of the targets have on the battlespace?
- What is the impact on the friendly COA if we do not achieve the desired effect and, if necessary, how will we attack the target again and evaluate the effectiveness of that attack?

This step requires planners to determine which targets to attack, when, where, to what effect, by what capability, and how to assess the results. Once the deliberate decisions are made, the other steps occur in execution.

Step 2: Detect

Located targets need to be validated and passed to the operators for a decision. See chapter 4 for more information about this step.

Step 3: Deliver

During execution, friendly forces will deliver fires on many of the targets previously located and validated. For emerging targets, execution tools, such as the AGM and BSM, help the CFS decide how to best proceed, since a competition for resources is likely. Both the AGM and BSM provide guidance relative to priority and weapon system selection. Priority options include—

- Drop everything (divert) and attack this target now.
- Retask a subsequent fires mission.
- Incorporate the target into the subsequent planning cycle.

See chapter 4 for more information about this step.

Step 4: Assess

The hierarchical layering of task and purpose inherent in Marine Corps operations creates a natural framework for assessment. Fires

planners add structure to that framework by identifying targeting objectives and EFSTs, both lethal and nonlethal means, which include the desired effects of fires. All of these goals established during planning provide a basis for comparison with the situation as an operation unfolds during execution.

To further aid the assessment effort, fires planners can define criteria of success through the use of MOPs and MOEs. An MOP tracks the quality of friendly actions in pursuit of a task, objective, or desired effect. An MOE reports on the impact of friendly actions with the other elements in the battlespace. The assessment of previous and ongoing operations forms the basis for decisions and the cycle begins again. See chapter 4 for more discussion on assessment.

The Joint Targeting Cycle

The joint targeting cycle (see fig. 3-2) consists of six steps—

- End state and commander's objectives.
- Target development and prioritization.
- Capabilities analysis.
- Commander's decision and force assignment.
- Mission planning and force execution.
- Assessment.

The joint targeting cycle determines the employment of military forces to achieve the JFC's objectives. Both operations and intelligence share this function. The joint targeting cycle includes the steps by which target intelligence and target materials are produced and applied to operational decisionmaking and force employment. Though it is a sequentially phased cycle, the joint cycle operates as a series of closely related, interacting, and interdependent functions. It provides for a logical progression in the development of targeting solutions proceeding from the definition of the problem to an assessment of the solution. The cycle allows the targeting officer to test multiple solutions and refine both the understanding of the problem and the proposed solutions.

Compared to the event-driven MCPP, the targeting process is time driven. Force fires coordinators serve as the interface between the targeting and planning processes to maintain the proper perspective between the two. For Marines, the ATO is a schedule of events that supports a plan. (See app. C for an example of a targeting timeline.)

Targeting Boards

The targeting board is an extension of the planning effort; it translates conceptual and functional planning into the detailed plans needed for execution by serving as—

- A confirmation brief that reflects the staff's translation of the commander's guidance into functional and detailed plans.
- A decision brief, since the commander approves the results of the targeting board, subject to modifications, for implementation during execution.

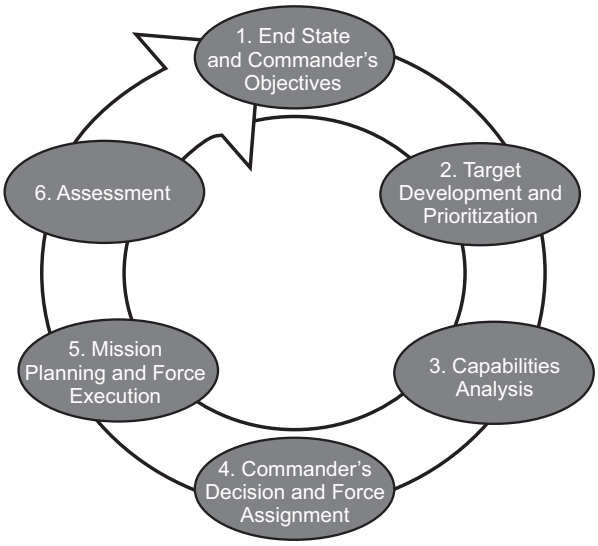

Figure 3-2. Joint Targeting Cycle.

- A guidance session, since the commander provides targeting guidance for subsequent targeting cycles.
- A MAGTF coordination and integration event, since all MAGTF equities normally participate at each board.

The Marine Air-Ground Task Force Targeting Board

The MAGTF targeting board is the forum for members to present and discuss targeting objectives, desired effects, target priorities by category, recommended air apportionment, and other asset apportionments. The board also develops an integrated, prioritized target list of individual targets and recommended guidance for the commander's approval. It consists of representatives from each of the MSCs within the MAGTF and the staff sections. Theater- and national-level agencies may send representatives to the targeting board depending upon the nature and scope of operations. Typically, the deputy commander chairs the MAGTF targeting board, acting as the commander's executive agent.

The targeting board usually convenes daily during conventional combat operations preceded by a daily TWG. The TWG is an action officer meeting during which unit and functional representatives present their input on subjects, such as air apportionment recommendations, target nominations, and FSCM changes. The information for these briefs is usually transmitted electronically ahead of time. The TWG discusses MSC concerns for the operational day being planned. Staff principals typically address unresolved TWG issues at the targeting board. In some cases, MSC commanders may brief the MAGTF commander prior to the targeting board. The targeting board presents the results of the TWG to the MAGTF commander or his designee for approval. Typical products of a targeting board are—

- Apportionment decision and subsequent allocation of sorties, including any off-the-top sorties made available in support of known JFC-wide requirements.
- MAGTF direct support targets, which are targets inside the existing or planned MAGTF area of operations. They come from the MAGTF integrated prioritized target list and include HPTs.
- Target nominations for HHQ sourcing either due to organic capability shortfalls or due to other components in the joint force possessing a more suitable capability.

  Note: The preceding three products collectively form the MAGTF direct support plan. Though some of the sorties could be common sourced by HHQs, once allotted, they become a part of the direct support plan—a key point relative to discussions at the HHQ targeting board. The MAGTF direct support plan is not separate lists of sorties and targets to be pooled and paired at the next level; rather, the direct support plan represents targets and capabilities linked to other planned MAGTF actions.

- External target nominations. These are targets outside the MAGTF area of operations for HHQ sourcing in support of the MAGTF's shaping operations.
- Restricted, limited, and protected targets including those the MAGTF commander can approve and ones that the TIS will forward for HHQ approval.
- Recommended FSCMs for approval at the appropriate level.
- Guidance for the next targeting cycle.

In a COIN or civil-military operations (CMO) environment, nonlethal targets and target sets, along with related guidance, apportionment, and nonlethal means—to include the application of money—will likely dominate targeting board deliberations. See chapter 6 for more discussion on COIN.

All the foregoing products are forwarded to the HHQ's targeting board to inform them of planned operations so coordination, deconfliction, and integration can occur across the joint force. Figure 3-3, on page 3-14, gives an example of a MEF targeting board agenda in briefing order.

Intelligence
- Brief the weather forecast and the effect weather will have on planned operations for the time under consideration—usually 96 hours.
- Review/update the adversary situation and most likely, most dangerous, and most advantageous adversary COAs.
- In stability operations, include discussion of tribal/clan/village organizations and ethnic or religious organizations as appropriate. Focus on their disposition, activities, and possible reaction to friendly actions.
- Discuss BDA from previous operations and responses to various COIN projects.

Current Operations
- Provide a current operations update, since emerging changes in the situation can have a profound effect on planned operations.

Future Operations
- Review/brief existing plans and commander's guidance as a basis for targeting relevancy.

G-3 Air Center
- Brief the ACE's apportionment recommendation and associated allocation.
- Open the floor for comments from other MSCs and staff sections.
- Brief sorties scheduled/flown from previous ATO(s).

Assessment
- Brief the operational and combat assessment results and any MOE or MOP adjustments.

Engineer
- Describe the barrier/obstacle plan showing NAI and TAI coverage and linkages to fire support.

G-4
- Brief ammunition/ordnance status, particularly any high demand/low density items, such as precision-guided munitions.
- Recommend protected or limited targets, such as bridges, that will be needed for subsequent operations.

Information Operations Center
- Brief the situation in the information environment and the status of information operations.
- Show how, through prior coordination, information operations targets are integrated and deconflicted with force fires targets.

Public Affairs
- Brief the public affairs officer that introduces and reinforces messages associated with planned fires.

Civil-Military Operations
- Brief planned CMO activities for friendly and adversary areas.

Target Information Officer
- Brief the updated HPTL.
- Brief the MAGTF integrated prioritized target list.
- Brief the resource cut line (based on weather, sortie availability, desired effects, and external help).
- Brief the BSM.
- Recommend any FSCM changes.
- In coordination with the target intelligence officer from the G-2, use the MAGTF commander's guidance and targeting objectives to develop recommended target priorities.

Collections Officer
- Brief the sensor coverage.

Staff Judge Advocate
- Address, as required, ROE and law of armed conflict implications.

Force Fires Coordinator
- Summarize CONOPS, highlighting target linkages to intent.

Major Subordinate Commands and Other Representatives
- Give concurrence or discuss concerns.

Chairman (MAGTF commander or deputy commander)
- Make the decisions.
- Provide guidance for subsequent targeting cycles.

Figure 3- 3. Example of Marine Expeditionary Force Targeting Board Membership and Agenda.

Joint Targeting Coordination Board

At the joint force level, the targeting board becomes a JTCB. Representatives from the Services and functional components constitute JTCB membership. The JTCB coordinates targeting information, recommends targeting priorities to the JFC, and prepares and refines the JTL. Normally, JTCB meetings occur daily to disseminate JFC targeting guidance and objectives, monitor

effectiveness of targeting efforts through combat assessment, coordinate and deconflict all joint targeting operations, validate no-fire areas (NFAs), and approve new targeting nominations for inclusion in the JTL. The JTCB deconflicts planned operations among the components. It also ensures that the components support each other and the JFC's campaign strategy. The JTCB's decisions result in JFC direction.

Fire Support Coordination Measures

The FSCMs facilitate the rapid engagement of targets while protecting friendly forces. These measures indicate that once fire missions fitting specific criteria have been coordinated, only limited coordination need be made with other appropriate agencies regarding their execution. All FSCMs affect coordination by setting parameters on the ground or in the air that separate friendly capabilities in both space and time. Planners apply FSCMs during COA development and refine them based on the results of COA wargaming. There are two types of FSCMs, permissive and restrictive.

Permissive Measures

Permissive FSCMs facilitate the attack of targets, allowing their engagement beyond the measure or into the area described by the measure without additional coordination with the headquarters establishing the measure. There are five types of permissive measures—FSCL, battlefield coordination line (BCL), coordinated fire line (CFL), free-fire area, and kill boxes. Figure 3-4 is an example of how permissive FSCMs such as the FSCL, BCL, and CFL might appear in a tactical overlay.

Fire Support Coordination Line

The FSCL (see fig. 3-5) is a measure established and adjusted by the appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and SOF. For example, artillery missions fired beyond the FSCL should be coordinated with the senior air control agency to deconflict ground-based fires with friendly aircraft activities. Another example would be coordinating to prevent friendly OAS from attacking special operations elements operating beyond the FSCL. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the FSCL; however, failure to do so may increase the risk of fratricide and could waste limited resources. For instance, if a time-sensitive HPT is identified beyond the FSCL, consideration must be given to the risk posed to

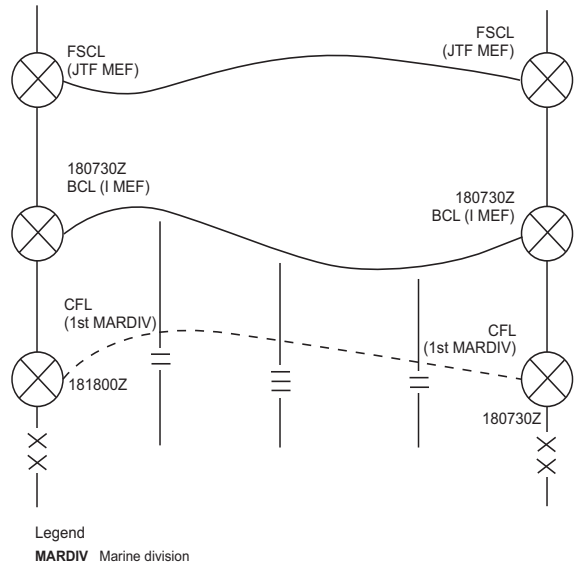

Figure 3-4. Example of Permissive Fire Support Coordination Measure.

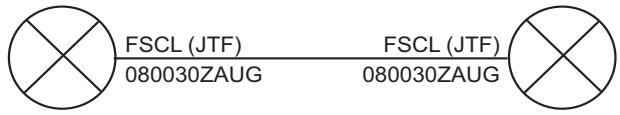

Figure 3-5. Fire Support Coordination Line.

SOF that may be operating near the target relative to the operational advantaged gained by attacking that target.

Battlefield Coordination Line

The BCL facilitates the expeditious attack of surface targets of opportunity between the BCL and the FSCL (see fig. 3-6). When established, the primary purpose is to allow MAGTF aviation to attack surface targets without further approval of the commander in whose area the targets are located. The FSCs will establish either a formal or informal airspace coordination area over the area between the BCL and FSCL.

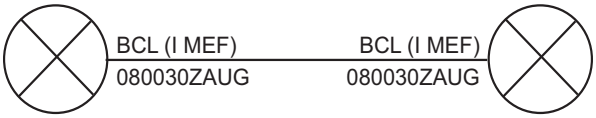

Figure 3-6. Battlefield Coordination Line.

Ground commanders may attack targets between the BCL and FSCL without further coordination if they do not violate the airspace coordination area. Like the FSCL, the BCL should follow well-defined terrain. The Marine Corps is the only Service that uses the BCL.

Coordinated Fire Line

The CFL (see fig. 3-7) is a line beyond which conventional surface fire support means, such as artillery, mortars, and NSFS, may fire at any time within the zone of the establishing headquarters without additional coordination.

Within the MAGTF, the GCE typically establishes the CFL, which can occur simultaneously at the division, regiment, and battalion levels.

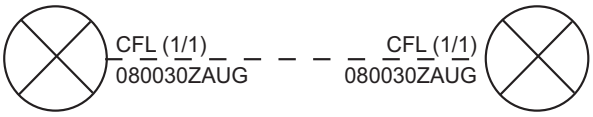

Figure 3-7. Coordinated Fire Line.

Free-Fire Area

The free-fire area (see fig. 3-8) is a designated area into which any weapon system may be fired or ordnance delivered without additional coordination with the establishing headquarters. Normally, it is established on identifiable terrain by a GCE or MAGTF command element.

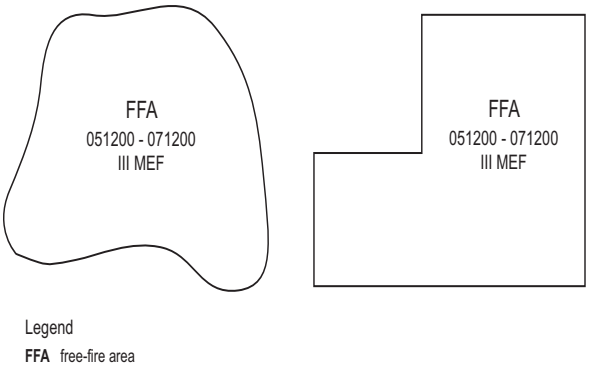

Figure 3-8. Examples of Free-Fire Areas.

Kill Boxes

Marine Corps Reference Publication (MCRP) 3-25H, *Multi-Service Tactics, Techniques, and Procedures for Kill Box Employment*, describes kill boxes as a permissive FSCM. Kill boxes are designed to facilitate air-to-ground and surface-to-surface interdiction fires in areas away from ground forces. It is three-dimensional, incorporating airspace above the targeted terrain. While the kill box technique is a common practice, specific procedures vary by theater. Accordingly, JFCs must select a common geographic reference system, a naming convention, and a theater origin point for participating forces.

Restrictive Measures

Restrictive FSCMs safeguard friendly forces. A restrictive FSCM imposes coordination requirements prior to the engagement of those targets affected by the measure. Those requirements include a restrictive fire line (RFL), a restrictive fire area (RFA), and an NFA.

Restrictive Fire Line

The RFL (see fig. 3-9) facilitates fire support between converging friendly forces. It prohibits fires or their effects across the line without coordinating with the affected force. The common commander of the converging forces establishes the RFL.

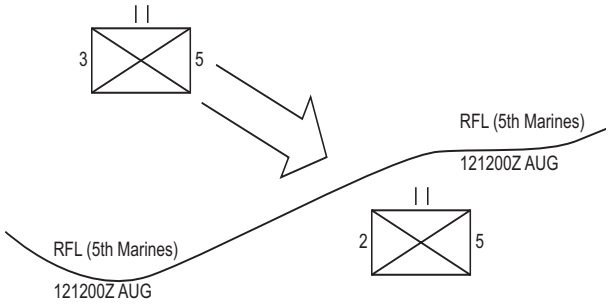

Figure 3-9. Restrictive Fire Line.

Restrictive Fire Area

An RFA (see fig. 3-10) imposes specific firing restrictions. Fires that exceed those restrictions will not be delivered without coordinating with the establishing headquarters.

Any ground unit commander, normally at the battalion level and above, can establish an RFA within his own zone. To facilitate rapidly changing maneuver areas, on-call RFAs may be used. Dimensions, location, and restrictions of the on-call RFAs are prearranged. The RFA is activated and deactivated when requested by the maneuvering unit or scheduled by time or event. It may be on recognizable terrain or expressed by grid coordinates or by radius from a point.

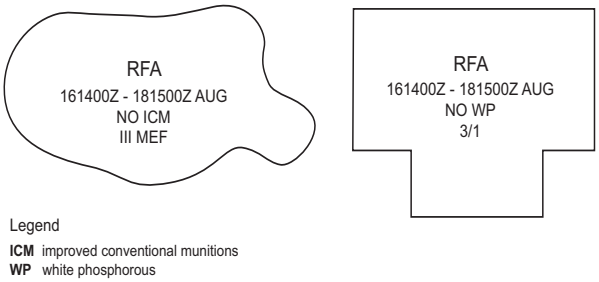

Figure 3-10. Examples of Restrictive Fire Areas.

No-Fire Area

An NFA (see fig. 3-11) is an area in which fires or their effects are not allowed, with two exceptions—when the establishing headquarters, depending on the mission, temporarily approves fires within the NFA and when an adversary force within the NFA engages a friendly force and fires are deemed necessary to defend friendly forces.

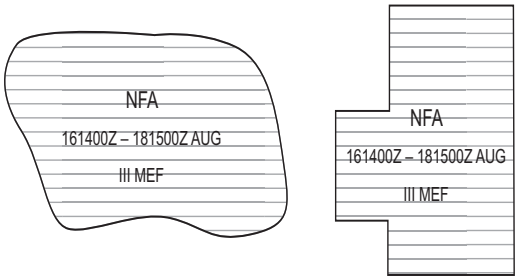

Figure 3-11. Examples of No-Fire Areas.

Selected Airspace Coordination Measures

Selected airspace coordination measures, such as the airspace coordination area and the restricted operations zone (ROZ), are first and foremost force protection measures.

Airspace Coordination Area

An airspace coordination area (see fig. 3-12 on page 3-18) is a restrictive FSCM that acts as a safeguard for friendly aircraft while allowing other supporting arms to continue to fire. Formal airspace coordination areas are three-dimensional blocks of airspace in which friendly aircraft may operate with reasonable assurance that friendly fires will not pass through or detonate in the airspace coordination area.

Informal airspace coordination areas provide for a safe separation between the passage and impact of surface-to-surface fires and friendly aircraft.

This separation may be as simple as designating a terrain feature as the limit of surface fires or designating a maximum ordinate and azimuth of fire for surface-to-surface fires which aircraft then

ACA
1st MARDIV
MIN ALT: 500
MAX ALT: 3,000
GRID NK2313 to NK3013 to
NK2320 to NK3022
EFF 281400-281800Z AUG

Legend

ACA	airspace coordination area
ALT	altitude
EFF	effective
MARDIV	Marine division
MAX	maximum
MIN	minimum

Figure 3-12. Example of an Informal Airspace Coordination Area.

avoid. Informal airspace coordination areas are often preferred as they are easier to plan, implement, and follow.

Restricted Operations Zone

Restricted operations zone is an airspace coordination measure with defined dimensions within which the operation of one or more airspace users is restricted. Unlike an airspace coordination area, a ROZ describes a volume of airspace set aside for a specific operational mission or requirement. It prevents fratricide and aids airspace deconfliction. A ROZ supports many types of operations. Typical use includes restricting air operations over Multiple Launch Rocket System (MLRS)/High Mobility Artillery Rocket System (HIMARS) launch and target areas as well as launch and re-covery areas for unmanned aircraft systems (UASs). The ACA approves all ROZs and includes them in the airspace control order for awareness. For further information regarding airspace coordination measures, see MCWP 3-25, *Control of Aircraft and Missiles.*

Boundaries

A boundary is a line that delineates surface areas for the purpose of facilitating coordination and deconfliction of operations between adjacent units, formations, or areas. Although technically not an FSCM, boundaries have fires-related responsibilities. Boundaries designate the geographic limits of a zone of action for a unit. Unless otherwise restricted, a unit commander has complete freedom to fire and maneuver within his own boundaries. No unit may fire across a boundary unless such fires are coordinated with the unit to which the area is assigned or unless such fires are beyond the CFL or other coordinating measures imposed by the affected unit. It is important not to use FSCMs in place of boundaries. Boundaries clearly define the responsibilities of command, while FSCMs address only fires.

Air capable components, such as the Air Force, Marine Corps, and Navy, prefer the FSCL closer to friendly lines, offense or defense notwithstanding, to free TACAIR for interdiction consistent with the definition of the FSCL as a permissive measure that facilitates the expeditious attack of targets. Nevertheless, operations and major exercises over the last decade reflect a tendency to place the FSCL so far from friendly lines that the measure has lost much of its value as an indicator of coordination requirements due to the proximity of friendly forces. As a result, Marine Corps forces adopted the BCL as a MAGTF internal FSCL.

While ground commanders can establish the FSCL within their boundaries, in most theaters the JFC will establish and approve changes to the FSCL based on ground commander recommendations and input from other affected components. When establishing or recommending an FSCL within the MAGTF area of operations, the GCE nominates, the ACE and LCE comment, and the MAGTF approves. Factors that can affect FSCL placement include—

- Proximity to friendly ground forces; hence, the GCE's lead for FSCL nominations.
- Type of operations—placement is closer in the defense and farther out for the offense especially when pursuit and exploitation are anticipated.

- Well-defined terrain features; however, in US-only operations the increasing numbers of aircraft with upgraded avionics enables aircrews to depict the FSCL on a moving map display reducing the requirement for distinctive terrain features.

Aviation Planning Products

The ACE commander is the MAGTF commander's senior aviation adviser. His input is critical to the development of the aviation estimate of supportability, the air plan, and the air operations annex to the MAGTF OPORD. The ACE conducts the detailed planning that supports the MAGTF commander's broad concept for employment of aviation assets. The ACE commander's responsibilities include—

- Providing planners to the MAGTF OPT.
- Developing intelligence requirements.
- Coordinating air operations with the GCE and LCE.
- Developing the MAGTF direct support ATO.
- Providing input to the MAGTF list of targets.
- Recommending target priorities and apportionment to the MAGTF commander.
- Submitting external support requirements requests to the MAGTF commander.
- Recommending, together with the GCE and LCE commanders, air defense priorities to the MAGTF commander.

One of the most critical and challenging responsibilities of the ACE commander is producing the MAGTF ATO, also known as the direct support ATO. It reflects the MAGTF commander's priorities and allocates capabilities for specific tasking. Specific aviation planning products include air requests, air apportionment, allocation, allotment, and ATOs.

Air Requests

Elements of the MAGTF use the joint tactical air strike request (JTAR) or an assault support request (ASR) to request MAGTF aviation support, such as preplanned and immediate CAS, air interdiction, air reconnaissance, surveillance, escort, or battlefield illumination. As an air capable (TACAIR) component, MAGTF requirements for joint air capabilities are identified in an ALLOREQ message to the JFACC. Components that are not air capable, such as the Army or SOF, use the AIRSUPREQ form. Execution day requests for air support go directly to the ACE either through the DASC for the GCE or through the Marine or Navy TACC for other supported elements. Armed with the MAGTF commander's guidance, intent, designation of main effort, POF, and any other contributing information, the ACE commander will source execution day requests for air support.

Air Apportionment

Air apportionment is determining and assigning the total expected air effort by percentage and priority that should be devoted to the various air operations or geographic areas for a given period of time. The ACE commander develops the apportionment recommendation based on the MAGTF commander's guidance; assigned tasks; known requirements, such as preplanned CAS; and his understanding of the situation. During apportionment planning, the ACE commander—

- Identifies the sorties to be made available to the JFC for tasking through the JFACC for air defense, long-range interdiction, and long-range reconnaissance.
- Quantifies the number of sorties needed for preplanned air requests.
- Assesses the needs of the MAGTF based on planned operations.
- Identifies the total number of sorties available for MAGTF use.

The apportionment decision is predicated on planned actions that rarely match execution results. The G-3 air officers and ACE personnel should track the apportionment that occurs to gain insights on the nature of operations. Since

the ACE commander commits sorties to emergent requests during ATO execution day, he needs to keep the MAGTF commander informed when his decisions change the apportionment percentages so the MAGTF can assess its long term impact.

Allocation

Allocation is the translation of the air apportionment decision into the total numbers of sorties available by aircraft type for each operation or task. With an apportionment decision by the MAGTF commander, the ACE develops its allocation plan. This process begins by determining the total number of sorties required for direct support of MAGTF operations, which are then combined with the MAGTF sorties in support of JFC-wide priorities. The difference between the total sorties required and total sorties available becomes the excess or shortage. The MAGTF offers any excess sorties to the JFC for tasking by the JFACC in support of the joint force or its components.

The ACE then prepares the ALLOREQ message that lists the following by mission type:

- Agreed upon sorties that are made available to the JFC.
- The planned use of ACE and other sorties in direct support of the MAGTF.
- Joint sorties for specific capabilities or MAGTF sortie shortfalls.
- Excess sorties.

Upon approval of the MAGTF commander, the ACE transmits the ALLOREQ to the JFC. The JFC subsequently releases a SORTIEALOT that approves or alters the ALLOREQ to meet his intent and priorities.

Allotment

Allotment is the assignment of sorties to specific units by type, so supported commands can integrate allotted sorties into their CONOPS and make subsequent distribution of the sorties to their subordinate units. In MAGTFs with multiple GCEs, one technique is to pool all the GCE-allotted sorties, except for approved preplanned requests, at the ACE level. This way, the MAGTF commander, through the ACE commander, can commit sorties based on the unfolding situation in order to concentrate combat power and shape events.

Air Tasking Order

The ACE commander initiates the MAGTF air tasking cycle after he receives his guidance from the MAGTF commander. Tasking is the process of translating the allotment decision into orders, and then passing these orders to the units involved. The MAGTF direct support ATO provides instructions that allow executing units to accomplish their missions. The ATO is prepared by the ACE commander and should include the following information:

- Mission number.
- Tasked unit.
- Supported unit.
- Request number, such as JTAR or ASR.
- Priority.
- Mission type.
- Mission times, such as time on/off target, time on station, or pick up/drop off times.
- Alert status.
- Location of mission, target, and pick up/drop off zones, including coordinates.
- Cargo/passengers, including size, weight, and number.
- Call sign.
- Number and type of aircraft.
- Number and type of ordnance.
- Identification friend or foe/selective identification feature mode and code.
- Call sign/frequency of control agency, controller, terminal controller, and landing zone control.
- Amplifying notes and special instructions.
- The ACE transmits the MAGTF direct support ATO to the JFACC for integration into the joint ATO. When posted to the JFACC's designated Web site, the joint ATO confirms all prior planning and agreements for sortie support. Sourcing and requesting units can access the daily ATO electronically through various command and control systems.

The MAGTF ATO assigns missions to specific squadrons. Upon receipt of the ATO, aircraft squadrons complete the scheduling process by assigning individual aircrews and aircraft to specific mission numbers and issuing squadron flight schedules.

CHAPTER 4
EXECUTION OF FIRES

The principal roles of the MAGTF force fires center in execution are target development and resource allocation. Examples include shifting POF, assigning capabilities to a target, moving sorties from DAS to CAS, and adjusting FSCMs in an effort to weight the fight, focus combat power, and achieve a decision.

Detecting Targets

At the MAGTF level, detecting targets focuses on observing the operation to gather fires-related information as a basis for decisionmaking. Since the CFS of the MAGTF force fires center is both geographically and hierarchically removed from the scene of the action, it must gather information about the operation primarily through feedback from collection platforms and higher, adjacent, subordinate, and supporting units.

Intelligence Support to Current Fires

The surveillance and reconnaissance center (SARC) plans and supervises the execution of organic, attached, and direct support intelligence collection and reconnaissance operations for the MAGTF. The SARC supports the execution of fires by coordinating, monitoring, and maintaining the status of all ongoing intelligence-collection efforts. Its responsibilities include—

- Conducting detailed intelligence-collection planning and coordination with the MSCs and planners from external intelligence organizations, ensuring understanding of the collection plan and specified intelligence reporting criteria.
- Ensuring other MAGTF command and control nodes, such as the COC or FFCC, know about ongoing intelligence collection and reconnaissance operations.
- Receiving routine and time-sensitive intelligence reports from deployed collection elements, fusing collected intelligence as appropriate, and rapidly disseminating reports to MAGTF command and control nodes and others according to current intelligence requirements, intelligence reporting criteria, dissemination plans, and the current tactical situation.

The operations control and analysis center (OCAC) is the main node for the overall coordination of MAGTF signals intelligence (SIGINT) operations. The OCAC performs SIGINT processing, analysis, exploitation, production, and reporting. The OCAC also coordinates with other intelligence nodes to plan, direct, and integrate SIGINT with other intelligence and reconnaissance operations. The OCAC supports the execution of fires by providing key operational intelligence and current locations of adversary command and control operations and facilities, weapon systems, and force composition and dispositions. Information provided through SIGINT can identify, help locate, and develop attack options for HPTs. The OCAC can support all-source intelligence assessments of the impact of fires on adversary targets. It can also direct the ground-based electronic warfare nonlethal activities of the radio battalion.

Subordinate commands, especially units in contact with the adversary, are among the most reliable sources of target intelligence. The artillery regiment's CBR platoon can detect the location of adversary indirect fire units. The ability of aviation units to observe the battlespace and report in near real-time gives the MAGTF commander a multi-dimensional capability. These units can view the entire area of operations in depth, supporting the early identification and location of HPTs. The LCEs can

provide information on adversary targets located in the MAGTF's rear area.

Processing Feedback

Feedback comes from all directions and in varying forms of maturity. Normally, most reported information travels over chat nets in command and control systems, such as the intelligence analysis system (IAS), AFATDS, JADOCS, TBMCS, or Microsoft™ internet relay chat. Unit SOPs tailored to theater-specific requirements should detail specific procedures for chat net use to include archiving instructions to enhance shared situational awareness. In today's collaborative environment, much of the intelligence reporting is available to the MAGTF and its MSCs at the same time. How that information is processed and eventually exploited depends on assigned responsibilities. If a sensor reports on a target in the GCE's area of operations, the CFS can ensure the GCE is aware of the report. Otherwise, the GCE is free to act on the information as it sees fit.

Delivering Fires

Using the CONOPS, POF, main effort, and commander's intent, the MSCs exercise subordinate initiative in the prosecution of fires. The CFS monitors and supports the MSCs within their areas of operations. The MAGTF commander provides updated guidance, direction, and resource allocation when the situation dictates. The CFS uses the execution tools in table 4-1 to help guide decisionmaking when developing targets.

Target Selection Standards

The CFS uses TSSs to classify an adversary activity as a target or a suspected target. For instance,

Table 4-1. Sample Target Selection Standards.

HPTL	ATTACK SYSTEM	TARGET LOCATION ERROR/TIME
Artillery (122 /152-mm)	Aviation (F/A-18)	500 m/30 min
FROG	Artillery (HIMARS)	500 m/30 min
RSTA	Artillery (155-mm)	150 m/30 min
SAM/AAA	Artillery (155-mm)	500 m/15 min
Corps/DIV HQ	EA	1000 m/3 hrs
CSS/Depots	Artillery (HIMARS)	1 km/6 hrs
Mech/Armor	Aviation (AH-1)	300 m/30 min

Legend
AAA-antiaircraft artillery
AH-attack helicopter (AH-1 Cobra)
DIV-division
EA-electronic attack
FROG-free rocket over ground (unguided artillery rocket)
hrs-hours
HQ-headquarters
m-meters
mech-mechanized
min-minutes
SAM-surface-to-air missile

ground sensor platoon (headquarters company, intelligence battalion) sensors can identify suspected targets, but further validation is required to identify the type of unit and classify it as a target. In comparison, CBR acquisitions are more likely to be targets as they identify the type of adversary fire support system and can provide an accurate target location. All TSSs are based on reliability and target location error (TLE) of the sensor, the accuracy and responsiveness of the attacking system, and timeliness of the report. For example, in table 4-1, the adversary's artillery (122/152-mm) is part of the HPTL. The target is only valid if the TLE is estimated to be 500 meters or fewer. Additionally, the target location must be reported to the designated delivery system (see table 4-2) within 30 minutes—the assumption is that adversary artillery units will move upon firing and those targets must be re-acquired after a certain time to ensure the effectiveness of the attack.

Attack Guidance Matrix

The CFS uses the AGM (see table 4-2) to determine how to attack targets that meet the TSS. It includes when and how to attack and the desired-effects. *When* could be any time from the next planning cycle or ATO to an immediate requirement at the expense of other ongoing operations. *How* identifies the best attack system and a backup, if available or capable. The *desired effects* are what the commander wants done to the target and might include such effects as suppress, neutralize, or destroy.

Reactive Attack Guidance Matrix

Some MEFs have developed a variant of the AGM called the RAGM (see table 4-3 on page 4-4) in an effort to work inside normal targeting cycle timelines and to provide the most current information based on execution results. While battle rhythms

Table 4-2. Sample Attack Guidance Matrix.

EVENT OR PHASE: Attack to Secure Objective C						
Priority	Category	HPTs	When	How	Effect	Comments
1	Air defense	S/A-8, S/A-11, S/A-15	P	Aviation	N/EW	Coordinate with EA/EP
2	Fire support	Artillery CP MRL, C/B weapons	I	Artillery	N/EW	Coordinate with EA/EP
3	Engineer	Bridging units, pontoons	A	Artillery	N	
4	C3	MRR, MRD CP	P	Aviation	N/EW	Coordinate with EA/EP
5	Maneuver	1st echelon/lead division	P	Artillery	N	
6	RSTA	Forward intercept DF nodes	A	Aviation	N	
7	NBC		A	Aviation	D	Need BDA
8	Class III (POL)		P	Artillery	N	

Legend
A-as acquired
C3-command, control, and communications
C/B-counterbattery
CP-command post
D-destroy
DF-direction finding
EA-electronic attack
EP-electronic protection
EW-electronic warfare
I-immediate
MRD-motorized rifle division
MRL-multiple rocket launcher
MRR-motorized rifle regiment
N-neutralize
NBC-nuclear, biological, and chemical
P-planned
POL-petroleum, oils, and lubricants
S/A-surface to air

Table 4-3. Sample Reactive Attack Guidance Matrix.

Area	Port City	Northwest mountains MSR	Eastern approach to Port City	Capital to Port City MSR
Target category priority	FS-MRL/LR coastal COM-corps/DIV defense MVR-mec/ARM	COM-corps/DIV FS-MRL/LR MOB/CM MVR-mech/AVRV/aviation	COM-corps/DIV FS-MRL/LR MVR-mech/ARM	FS-MRL/LR MVR-mech/ARM
Unit priority	20th Arty BDE 15th Corps HQ	5th Div HQ 22nd Arty BDE	3d Army CE 4th BDE	42nd BDE
Intent	Defeat ground force in vicinity of Port City to set conditions for force entry operations.	Prevent lont-range artillery from interdicting I MEF forces.	Prevent remnant forces, special operations, and bypassed units from interfering with I MEF rear area operations.	Prevent forces from disrupting planned I MEF river crossings.

Legend
ARM-armored
Arty-artillery
ARV-armored reconnaissance vehicle
BDE-brigade
CE-command element
CM-countermobility
COM-command and control, communications system, and intelligence
DIV-division
FS-fire support (artillery)
HQ- headquarters
LR-long range
mech-mechanized
MOB-mobility
MRL-multiple rocket launcher
MVR-maneuver

can vary, normally the FFCC develops the RAGM each night following the targeting board and broadcasts it to all fire support agencies for use with the start of the next ATO cycle.

Battlespace Shaping Matrix

Some of the MEF FFCCs have used the BSM to consolidate the HPTL, TSS, and AGM into one document. The BSM identifies the targeting objectives and target priorities across all categories and the desired effects for each target (see table 4-4).

Time-Sensitive Targets

All TSTs require immediate response due to their fleeting nature and imminent danger to friendly forces. These high priority targets may appear on the MAGTF integrated priority target list. All TSTs have limited engagement windows, usually due to short dwell times or limited acquisition or tracking times. As a result, other targets may have a higher priority, but the small window for striking a TST may trump other considerations. The JFC commander will establish guidance and priorities and may delegate prosecution authority as he sees fit.

Battle drills and rehearsals will improve the chances of the MAGTF successfully engaging TSTs. For TSTs identified by the JFC, the MAGTF could very well be tasked to—

- Divert capabilities immediately to attack a TST, particularly if located in the MAGTF area of operations.
- Provide supporting capabilities (such as fighter escort, suppression of adversary air defenses aircraft, or security forces) for other joint capabilities entering the MAGTF area of operations.
- Conduct the necessary coordination for immediate attack by joint capabilities.

Table 4-4. Sample Battlespace Shaping Matrix.

Time	H-6 to H+4		After PL A Crossed		After PL B Crossed		Continuous	
PRI	TGT Obj "A" PREVENT adversary forces from disrupting planned MAGTF river crossing in the vicinity of Smallville. 7th ARM, 1st ID, 11th Mech, 2nd ID, 3rd ID and 9th ARM		TGT Obj "B" PROTECT III Corps' eastern flank. 5th ID		TGT Obj "C" PREVENT 6th ARM DIV escape to the north or entering Capitl City. 12th ARM Brigade		TGT Obj "D" AISOLATE adversary in the vicinity of Haven in preparation for next phase.	
1	FS	MRL (N) FROG (D) DIV Arty (N)	FS	MRL (N) FROG (D) DIV Arty (N)	MN	HETS (N) Trucks (D) Mech (N) ARM (N)	MN	Mech (N) Armor (N) Mobiity (N)
2	MN	Mech (N) ARM (N) Mobiity (N)	MN	Mech (N) ARM (N) Mobiity (N)	COM	Corps/DIV HQs (N) CSS (N)	FS	MRL (N) FROG (D) DIV Arty (N)
3	COM	Corps/DIV HQs (N) RSTA (N) CSS (N) FS (N)	COM	Corps/DIV HQs (N) RSTA (N) CSS (N) FS (N)	CSS	POL (N) CSS LOCs (N) SD (N)	CSS	FS (N) ARM (N) LOCs (N)
4	AD	SAM (N) ARM (N) LOCs (N)	AD	SAM (N) ARM (N) LOCs (N)	FS	SAM (N) AAA (N)	AD	Corps/DIV HQs (N) RSTA (N) CSS (N) FS (N)
5	CSS	FS (N) ARM (N) LOCs (N)	CSS	FS (N) ARM (N) LOCs (N)	AD	SAM (N) AAA (N)	COM	Corps/DIV HQs (N) RSTA (N) CSS (N) FS (N)

Legend
AAA-antiaircraft artillery
AD-air defense
ARM-armored
ARTY-artillery
COM-command and control, communications system, and intelligence
D-destroy
DIV-division
FROG-free rocket over ground (unguided artillery rocket)
FS-fire support
HETS-heavy equipment transporters
HQ-headquarters
ID-infrantry division
mech-mechanized
MN-maneuver
MRL-multiple rocket launcher
N-neutralize
Obj-objective
PL-phase line
POL-petroleum, oils, and lubricants
PRI-priority
SAM-surface-to-air missle
SD-supply depot
TGT-target

Reactive Targeting Process

Reactive targeting is the MAGTF's near real-time decision and execution of lethal and nonlethal fires on targets that fall inside the normal ATO planning cycle. Reactive targeting starts with target generation, normally by the reactive targeting cell (RTC) in the intelligence operations center (IOC), and is followed by target prosecution in the CFS.

The primary source of MAGTF targets is the RTC located in the IOC. The RTC and CFS evaluate targets according to the TST list, HPTL, BSM/RAGM, and TSSs. Once the RTC validates the target and the current fires watch officer verifies it, the RTC inputs the target in JADOCS and gives it to the fires manager as a fire mission. Current fires tracks the execution of the mission to its completion to include potential collection and assessment.

Counterfire Execution

Enemy fire support assets can jeopardize the MAGTF commander's freedom of action and ability to establish and maintain momentum if the adversary is not rapidly and efficiently engaged and defeated. The MAGTF must plan for and execute counterfire to rapidly engage and defeat the adversary's fire support capability.

Counterfire intends to destroy or neutralize adversary weapons and includes counterbattery, counterpreparation, countermortar, counterrocket, and countermissile fires (see app. D for a description of worldwide fire systems). Counterfire also includes fires executed throughout the battlespace that attack the adversary's total fire support system. The MAGTF uses all available assets, including aviation, artillery, NSFS, electronic warfare, and maneuver forces in the conduct of counterfire.

The MAGTF commander may decide to organize the counterfire effort within his staff or delegate the authority to another commander, such as the force artillery, ACE, or GCE commander. The force artillery may combine cannon and rocket artillery with other fire support capabilities to conduct both close- and long-range counterfire.

There are two types of counterfire—proactive and reactive. Proactive counterfire identifies, locates, and engages adversary fire support systems before they attack friendly forces. Reactive counterfire attacks adversary fire support systems after the adversary has attacked friendly forces.

Proactive Counterfire

Proactive counterfire at the MAGTF level is an essential part of the MAGTF commander's overall concept of shaping. The MAGTF scheme of maneuver may depend on the successful proactive attack of adversary fire support systems. For instance, the MAGTF commander may have to disrupt adversary medium and heavy artillery capable of ranging planned breaches before initiating ground maneuver.

Assets of the MAGTF, primarily aviation and rocket fires, attack HPTs that comprise the adversary's fire support system. These HPTs are not limited to artillery batteries and rocket or missile launchers, but can include command and control nodes, target acquisition systems, and logistic capabilities that resupply, repair, or transport fire support assets.

Reactive Counterfire

In reactive counterfire, MAGTF fire support assets respond primarily to adversary missiles, rocket or cannon artillery, and heavy mortar fires. Reactive counterfire protects the force from continued attack. Although this type of counterfire is reactive, the commander and his fire support personnel must anticipate what effect adversary fire support can have on friendly forces during critical stages in the operation and develop plans accordingly.

The counterfire plan must address how the MAGTF will conduct reactive counterfire. It should specify the linkages among collection assets, counterfire targets, and MAGTF units that will engage these targets. Intelligence preparation of the battlespace information can help the MAGTF anticipate where the adversary may try to employ fires.

Fire support assets tasked with conducting reactive counterfire must be capable of rapidly responding to adversary fires. The counterfire plan may direct the use of dedicated communications and data channels, such as direct sensor-to-shooter links to speed the attack of reactive counterfire targets.

Counterfire Considerations

As reinforced by Operation Desert Storm and OIF I experiences, one of the most effective counterfire capabilities is ground maneuver forces that uncover adversary fire support assets during periods of rapid advance. While it would be risky to assume this outcome, fires planners must be ready to shift preplanned assets to other missions whenever ground maneuver does play a critical role in the counterfire fight.

Assessing the Situation

Assessment is the continuous monitoring and evaluation of the current situation and progress of an operation. It allows for adaptation to a situation, keeping in mind the overall purpose and emerging opportunities.

Assessment is comparing the current situation with planned goals. The difference between the two is a catalyst for decisions and subsequent actions. Assessment has four functions—

- Compare goals, objectives, tasks, mission, and purpose typically developed during planning.
- Provide feedback, allowing planners to approximate a current situation.
- Contrast the current and projected situations and analyze their causes.
- Recommend change, if warranted.

Commanders assess the effects of their units' actions toward the accomplishment of the mission. Fires personnel use combat assessment to contribute to the commander's overall operational assessment.

Combat Assessment

Combat assessment allows planners to determine the overall effectiveness of force employment during military operations and has three components—BDA, munitions effectiveness assessment (MEA), and reattack recommendation. Combat assessment is generally viewed as the legacy process for assessing lethal fires. It is a subset of the overall operational assessment of the command's operations.

Battle Damage Assessment

A BDA evaluates damage resulting from the application of military force, either lethal or nonlethal, against a predetermined target. Although BDA is primarily an intelligence responsibility, the process requires input and coordination from operations personnel. A BDA has three phases—physical damage assessment, functional damage assessment, and target system assessment.

- **Phase I: physical damage assessment.** A physical damage assessment is an estimate of the extent of physical damage based primarily on visual observation of the target. Some representative sources for data needed to make a physical damage assessment include—
  - Mission reports, imagery, and weapon system video.
  - Visual reports from ground spotters, controllers, and observers.
  - Artillery target surveillance reports, SIGINT, human intelligence, and imagery intelligence.

  An example of a physical damage assessment would be the following:

  Visual observation and imagery of an enemy multiple rocket launcher (MRL) battalion indicates that 6 of 18 BM-21 MRLs are destroyed and 3 are damaged. Thirty percent of all other transportation assets are destroyed. Two command and signal vans appear damaged but are probably mobile.

- **Phase II: functional damage assessment.** A functional damage assessment reviews all first-phase damage assessment, amplifies the initial analysis by drawing on all-source intelligence and operational data, and estimates the extent and duration of the effects of the fires. It also assesses the remaining functional or operational capability of the targeted facility or object, including estimates of the recuperation or replacement time required for the target to resume normal operations. This all-source

analysis is typically conducted at the MAGTF level in conjunction with theater- and national-level support. Then, BDA analysts compare the original objective for the attack with the current status of the target to determine if the desired effects of the fires have been met. An example of a functional damage assessment would be the following:

Physical damage to the nine rocket launchers limits the enemy battalion's ability to perform fire missions in support of the division commander. Three rocket launchers may be able to provide limited support. Damage to the MRL transportation assets will inhibit the battalion's ability to displace and conduct resupply. Damage to the battalion command and control will prevent timely response to calls for fire. The enemy is capable of reconstituting the battalion (all 18 systems operational within 48 hours).

- **Phase III: target system assessment.** A target system assessment is an estimate of the overall impact of force employment against an adversary target system. The MAGTF fuses all BDA reporting on functional damage to targets within a target system and assesses the overall impact on that system's capabilities. Phase III BDA often requires a degree of expertise and analysis that may not be resident within the MAGTF. Accordingly, theater-level or higher analysts generate phase III assessments, which lay the groundwork for future recommendations for military operations in support of operational objectives. An example of a target system assessment would be the following:

  The enemy's fire support system is known to include 21 artillery battalions, 2 of which are MRL battalions. Partial destruction of one MRL battalion has an insignificant short-term impact on the effectiveness and capability of the enemy's overall fire support system.

Munitions Effectiveness Assessment

The MEA occurs concurrently and interactively with BDA, since the same visual signatures used to determine the level of physical damage also give clues to the munitions' effectiveness. The MEA is primarily an operational responsibility with input and coordination from the intelligence section. The purpose of the MEA is to identify, through trend analysis, any deficiencies in weapon systems, munitions performance, or combat tactics. Targeting and imagery analysts, mission planners, and operators use a variety of input to report on munitions effectiveness. These reports include details on weapon performance against specified target types. The MAGTF targeting board considers the MEA when making targeting decisions.

Reattack Recommendations

Reattack recommendations answer the question, "What can be done to address shortfalls identified by the BDA and the MEA?" Recommendations can come in many forms, such as to reattack the target with the same tactics and munitions, use a different weapon system and munitions, change procedures, or modify target system priorities.

Assessment Considerations

Spot reports and situation reports from units at the scene of the action are some of the most important sources of assessment information. In the course of operations, such as direct fire engagements, artillery fire missions, CAS missions, or patrols, forward units can provide accurate and timely assessments of the effects of fires. These reports often provide information that is not available from any intelligence source to include the adversary's use of decoys to draw the friendly focus away from critical targets.

Fires personnel can use MOPs and MOEs as indicators of success to help assess the results of fires. An MOP is a criterion to assess friendly actions, such as tactics, techniques, weapon systems, and munitions effectiveness, that is tied to measuring task accomplishment. An MOE is a criterion used to assess changes in system behavior, capability, or the battlespace that is tied to the attainment of

an objective or creation of an effect. To be meaningful, MOPs and MOEs need to be observable and measurable. Such quantifiable characteristics are particularly helpful assessing the more subjective goals of the command.

An example of how effectiveness and performance was measured occurred during the early stages of Operation Desert Storm. United States Marine Corps Forces, Central Command (MARCENT) planners realized that there were insufficient sorties, ordnance, collection assets, and time to achieve the objective of 50 percent destruction of armor and artillery prior to ground operations. One of MARCENT's major concerns was the Iraqi artillery that could range the obstacle belts during the initial ground assault. The solution was to alter the behavior of the adversary artillery units through a series of artillery raids supported by 3d Marine Aircraft Wing. Initial Iraqi counterfire was heavy, but, over time, the Iraqis learned that returning fire came at great personal risk as Marine aviation delivered immediate and effective air strikes on the firing batteries. Since altering behavior is a subjective goal, MARCENT planners used the decreasing volume of Iraqi counterfire as an MOE to determine the success of their efforts.

Words matter when developing orders and planning for assessment. Tactical tasks have precise definitions that describe what is to be accomplished. Some tactical tasks have major resource implications. One of the most costly in terms of time, resources, and risk to friendly forces is the tactical task *destroy*. Before committing finite resources to, for example, destroying 50 percent of all artillery in zone, planners should seek alternative solutions. Such solutions may be electronic attack, MISO, or a different tactical task that can still contribute to the commander's intent without obligating an inordinate amount of the command's capabilities. See MCDP 1-0, *Marine Corps Operations*, for more information on tactical tasks.

Staffs can over-engineer the assessment effort, leading to an inward focus on the process, and can overwhelm the collection effort, causing staff exhaustion. In the end, assessment is a qualitative event requiring commanders to balance the science of quantifiable information with the art of intuition and judgment to arrive at an understanding of the situation that fosters timely and relevant decisions.

While lethal fires can comprise a large and very important part of tactical operations, the greatest effect of fires is generally not the amount of physical destruction they cause, but the effect of that destruction on the adversary's moral strength. Because it is difficult to quantify mental and moral forces, it is tempting to exclude them from the assessment effort; however, any assessment process that neglects these factors ignores the greater part of the nature of war.

Execution Planning

Assessment allows the commander to continue to provide relevant guidance and direction to his forces. Many of his decisions can be sufficiently complex to require some degree of planning by the staff. If necessary, the commander can refer a current operations problem to future operations; however, current operations personnel, including the CFS, will conduct execution planning for events that occur or terminate within the command-defined current operations time/event horizon. Generally, FRAGOs are the vehicles for broadcasting change throughout the command. For example, the current operations section generates FRAGOs to update FSCMs or change the POF.

Execution Considerations

MAGTF action officers are often surprised by how little control they actually have during an operation. The extent to which the CFS or other MAGTF command element agencies can control operations is directly dependent on subordinate

feedback about the changing situation. Marine Corps warfighting philosophy recognizes that conflicts are, foremost, a competition in time; therefore, any efforts to centralize MAGTF fires execution and to exert complete control by a single decisionmaker are inconsistent with the intrinsically complex and distributed nature of war. A single decisionmaker can create a bottleneck that risks passivity among subordinate units while they await permission to attack targets.

CHAPTER 5
AMPHIBIOUS OPERATIONS

An amphibious operation is a military operation launched from the sea by an amphibious force embarked in ships or craft with the primary purpose of introducing a landing force ashore to accomplish the assigned mission. Amphibious operations seek to exploit the element of surprise and capitalize on adversary weakness by projecting and applying combat power at the most advantageous location and time.

Command Relationships

Amphibious operations are normally part of a joint operation. The JFC ensures unity of effort in achieving the objectives of the amphibious operation by establishing unity of command over the amphibious force. The JFC will organize the amphibious force to optimize success. The JFC establishes command relationships within the amphibious force in accordance with JP 1 and JP 3-02, *Joint Doctrine for Amphibious Operations*. The order or establishing directive initiating amphibious operations will contain those command relationships. The JFC has three options—

- Retain OPCON over the Service or functional component commands executing the amphibious operation.
- Delegate OPCON or TACON over the amphibious force to a Service or functional component commander.
- Establish a supported/supporting relationship between the Navy component commander and the Service component commander of the landing force.

The terms commander, landing force (CLF) and commander, amphibious task force (CATF) do not connote titles or command relationships. Rather, they refer to those commanders who are instrumental to the conduct of amphibious operations in a joint environment. Per JP 1, the establishing authority may choose from a variety of command relationship options between the CATF, CLF, and other designated commanders involved in amphibious operations.

Regardless of the command relationship, commanders designated in the order initiating the amphibious operation are coequal in planning matters and decisions. All decisions must be reached with a common understanding of the mission, objectives, and procedures and with a free exchange of information. Any differences between commanders that cannot be resolved are referred to the establishing authority.

Organizations

The establishing directive or the order initiating the amphibious operation identifies responsibilities for fire support planning and coordination among the commanders of the amphibious force. Amphibious operations generally involve the following fires-related organizations: SACC, Navy TACC, FFCC, FSCC, and MACCS.

Supporting Arms Coordination Center

The designated commander exercises his responsibility for the overall coordination of fires through the SACC. The SACC plans, coordinates, and controls all organic and nonorganic fires within the area of operations. Working from an amphibious ship, or other ships configured with the requisite command and control facilities, the SACC coordinates all forms of supporting fires, whether land, air, or sea based. The designated commander may choose either the amphibious task force's (ATF's) SAC or the landing force's FFC to supervise the SACC. In

either case, fire support personnel from the ATF and landing force operate the SACC. Coordination of supporting fires by the SACC or later by the senior FSCC is characterized by supervision rather than the detailed coordination accomplished at lower echelons. Direct involvement only occurs when lower-level fire support coordination agencies are unable to perform the necessary coordination.

Although normally only one SACC is active at any one time, advance force operations may require another fire support agency to coordinate fires. The advance force SACC must maintain situational awareness on the insertions and extractions of teams, locations of teams ashore, and mine warfare operations within the area, including sea and air assets. Upon its arrival in the operational area, the amphibious force SACC assumes responsibility as the primary fire support agency from the advance force SACC.

Functionally, the organization of the SACC is generally the same for an amphibious operation of any size. A typical SACC organization includes an NSFS, an air support section, and a TIC.

Naval Surface Fire Support Section

The ATF, a Navy task organization, staffs the NSFS section, which monitors the naval gunfire control net, support net, and other gunfire nets as appropriate. The landing force staff provides liaison to the section.

Air Support Section

Depending on the size of the operation, members of a TACAIR control squadron or TACAIR control group staff this section. The air support coordinator, who reports to the TACAIR officer, is in charge. It functions as a part of the Navy TACC, but is usually located in the SACC, controlling supporting aircraft or transferring control to subsidiary tactical air direction centers (TADCs) ashore or afloat. This section also coordinates with the Navy TACC to assist in the deconfliction of air missions, routes, and requests for fire. The air support coordinator, who reports to the TACAIR officer, directs this section and members of the landing force staff perform advisory or liaison duties to it.

Target Information Center

The TIC is responsible for targeting information and intelligence. The TIC's staff includes the ATF target intelligence officer, ATF air intelligence officer, landing force target information officer, and other personnel of the landing force FFCC TIS. Members will normally work in SACC-assigned spaces. The ATF target intelligence officer supervises the TIC and maintains close liaison with ATF and landing force intelligence and operations staffs. Although the TIC dissolves when the landing force headquarters displaces ashore, it resumes operations if required.

Navy Tactical Air Control Center

The Navy TACC, the senior Navy amphibious air control agency, normally controls all air operations within the allocated airspace regardless of mission or origin, including air-delivered fires. During amphibious operations, the Navy TACC coordinates the implementation of airspace control measures and controls all air operations until a land-based air control agency establishes ashore. Once a land-based air control agency can control landing force air operations, the Navy TACC becomes a supporting TADC. Ideally, the Navy TACC is collocated with the SACC. The Navy TACC has five sections, four of which control and integrate aircraft and are discussed here—the air traffic control section; the air support control section (ASCS); the air defense section; and the plans, execution, and support section.

Air Traffic Control Section

The air traffic control section resides in the Navy TACC and provides initial safe passage, radar control, and surveillance for aircraft in the operational area. The air traffic control section also controls and routes assault support aircraft and

coordinates with individual shipboard helicopter direction centers during amphibious operations.

Air Support Control Section

The primary task of the ASCS is to satisfy requests from the landing force for CAS. The ASCS—

- Coordinates with the MAGTF air officer, ACE, FSCC, and the SACC for OAS, air support, and air reconnaissance missions.
- Provides TACAIR direction of assigned aircraft.
- Provides aircrews with current intelligence and target briefs.

The ASCS has the authority to respond to changing mission requirements by diverting preplanned sorties, launching strip-alert sorties, tasking airborne on-call sorties, or coordinating additional sorties from supporting aviation resources. Personnel from the DASC should integrate operations with the ASCS prior to any landing as part of amphibious operations and coordinate with the ASCS once the DASC is ashore.

Air Defense Section

The air defense section provides liaison with air defense commanders. It also provides early detection, identification, and warning of adversary aircraft, missiles, and UAS.

Plans, Execution, and Support Section

The plans, execution, and support section participates in the targeting effort through the targeting board as air operations SMEs. The section's planning coincides with the ATO process. The section forwards excess air sorties to the establishing authority for tasking and allocation.

Force Fires Coordination Center

When the responsibility for fire support planning and coordination passes ashore, the FFCC is the MAGTF's senior fire support agency and is responsible for the planning, execution, and coordination of all organic and nonorganic fires within the operational area. Prior to control passing ashore, the FFCC incrementally assumes responsibility for fire support planning and coordination from the SACC. The FFCC is organized and supervised at the MAGTF level by the FFC, who is responsible to the CLF for MAGTF fires. In consultation with the ATF, the FFCC may assume the lead for SACC duties while afloat.

Fire Support Coordination Center

The FSCC is the fire support coordination agency within the landing force GCE. It resides at the battalion, regiment, and division level. The FSCC plans, executes, and coordinates all forms of fire support within the GCE's area of operations and is subordinate to the SACC and then to the FFCC once established ashore.

Marine Corps Air Control Agencies Ashore

The CLF controls air operations through the MACCS. The MACCS elements are the Marine TACC/TADC, DASC, TAOC, early warning and control center, and TACPs. These elements gradually phase ashore and, as their capabilities and situational awareness improve, assume increasing responsibilities until the MAGTF controls all aspects of Marine air operations. Information on the MACCS is detailed in MCWP 3-25.3, *Marine Air Command and Control System Handbook*.

Marine Tactical Air Command Center

The Marine TACC is the senior agency of the MACCS. It provides the facilities for the ACE commander to command, supervise, and direct MAGTF air operations. It integrates the six functions of Marine aviation with COC/FFCC and provides the interface for the employment of MAGTF aviation in joint and multinational operations. The Marine TACC maintains information on the friendly situation, including the status of air and ground forces, an air picture, and ground combat information essential to the air effort. It also maintains and disseminates critical adversary

air and ground information. The Marine TACC manages all aircraft and surface-to-air weapons in the MAGTF's area of operations to ensure an integrated use of assets.

Until control of air operations passes to the CLF ashore, the Marine TACC operates as a TADC under the overall supervision of the Navy TACC and accomplishes air control functions as assigned. As the primary landing force air control agency, whether operating as a TACC or a TADC, the Marine TACC requires current intelligence on the ground and air situation, a means to display current situation and intelligence that will promote decisionmaking, and communications equipment to rapidly shift air power to meet emerging requirements. The Marine TACC is normally the MAGTF commander's alternate COC.

Tactical Air Direction Center

The TADC is an air operations installation that provides aviation support under the overall control of the Marine TACC or Navy TACC. A TADC may—

- Coordinate MAGTF aviation activities within a specific area.
- Perform specific functions as directed by its senior agency or the ACE commander.
- Mirror the Marine TACC's functions as an alternate Marine TACC in preparation for assuming sector airspace management functions.

Depending on the TADC's role, it may task-organize to perform senior supervisory planning and coordination functions normally provided by a Marine TACC.

Direct Air Support Center

The DASC is the principal MACCS air control agency responsible for the provisioning of aviation support to the GCE. It normally collocates with the senior FSCC within the GCE and is subordinate to the Marine TACC. The DASC—

- Processes immediate air requests.
- Coordinates aircraft employment with other supporting arms.
- Manages terminal control assets that support ground combat and logistic combat forces.
- Uses procedural controls to move assigned aircraft that are transiting through its area of responsibility.
- Adjusts preplanned schedules and diverts airborne assets, if delegated the authority to do so by the ACE.
- Coordinates changes with the FSCC.
- Coordinates the execution of direct air support missions with other supporting arms through the appropriate FSCC and as required with the appropriate MACCS agencies.
- Advises the ACE commander regarding the GCE situation.

Tactical Air Operations Center

The TAOC is responsible for airspace control and management. It detects, identifies, and controls the interception of hostile aircraft and missiles and provides navigational assistance to friendly aircraft. It is subordinate to the Marine TACC. The TAOC provides real-time surveillance of assigned airspace and direction, positive control, and navigational assistance for friendly aircraft. It performs real-time direction and control of AAW operations involving aircraft and surface-to-air weapons. By collecting and displaying information from its own sensors, which are other Marine Corps and external sources, the TAOC controls assigned airspace and directs and controls the fires of assigned air defense assets. It can enhance the ability of the Marine TACC to prosecute the ACE's support of the MAGTF's deep operations. The TAOC normally serves as the ACE commander's alternate command post.

Early Warning and Control Center

The early warning and control center provides extended radar coverage and aids in controlling AAW aircraft and air defense missiles. Subordinate to the TAOC, it may perform some

of the TAOC functions as MACCS agencies transition ashore.

Tactical Air Control Party

The TACPs are agencies through which ground commanders can control aircraft. They establish and maintain the necessary communications with other elements of the MACCS, advise ground unit commanders on the integration of aviation capabilities, transmit requests for direct air support, and give local direction to aircraft providing CAS and other air support.

Fire Support Planning

Fire support planning is the continuous and concurrent process of analyzing, allocating, and scheduling fire support as an integral element of the MAGTF's single battle. Fire support planning in preparation for an amphibious operation is more centralized than for subsequent operations ashore. For example, in preparation for an amphibious operation, fire support requirements are integrated and coordinated at each echelon and then forwarded to the next echelon for approval and further integration and coordination.

Fire support planning for an amphibious operation has two distinct but related aspects: the preparation of the objective area, including supporting, advance force, and preassault operations; and the provision of fire support means to the landing force and its combat elements subsequent to landing. For each phase in the amphibious operation, the CLF coordinates his fire support requirements with the CATF. These requirements result in a tentative allocation of aircraft and fire support ships as a basis for planning and eventually appear in the fire support plan.

Preparation of the Objective Area

Preparation of the objective area involves determining targets for attack, the general timing of attack, the selection of fire support means, and the desired effects. Planners for supporting, advance force, and preassault operations must consider the time needed to prepare the objective area and the fire support means available. Preassault operations normally consist of neutralization and suppressive fires in the vicinity of the landing areas. Planning is not limited to confirmed targets but may include suspected targets or areas that, if occupied, will present a threat to the ship-to-shore movement and initial operations ashore.

Support of the Landing Force Subsequent to Landing

Support of the landing force after landing involves the assignment of adequate fire support means to committed maneuver elements and to other elements or echelons requiring fire support. Such assignment of fire support increases the combat power of supported units on an on-call basis.

Fire Support Requirements

Overall fire support requirements consist of the number and type of aircraft, fire support ships, artillery units, and the respective munitions needed to support each operational phase—pre-D-day, D-day, and post-D-day operations ashore. The CLF submits his air and NSFS requirements for each operational phase to the designated commander, who has the command authority to plan and coordinate fires. The CLF submits his requirements either for the entire amphibious operation or a particular phase of it as the basis for a tentative allocation of fire support means for planning. The CLF reviews and revises the requirements as detailed planning progresses. Commanders of subordinate landing force echelons submit fire support requirements to the CLF. In estimating the number and type of aircraft, NSFS ships, and artillery units for any operational phase, fire support planners consider the mission, the scheme of maneuver, and the requirement for coordination among the three arms.

The CLF recommends specific, detailed fire support requirements to the designated

commander concerning the use of available fire support means to prepare the objective area and to provide fire support to the landing force subsequent to landing. These recommendations become the basis for the landing force's fire support plans and include, as appropriate, specific targets for attack, the delivery means, ammunition expenditure, delivery schedules, specific landing force elements to be supported, and the types of support required. Fires planners should submit requirements in sufficient detail as to require only approval and implementation by the designated commander.

Fire Support Plan

The air, NSFS, and artillery representatives, under the supervision of the FSC, prepare the fire support plan together while accommodating the fire support requests of subordinate units. Close and continuous coordination among supporting arms representatives and with corresponding staff representatives of the ATF and other components ensure that landing force requirements are compatible and coordinated with overall amphibious force requirements.

Targeting

The designated commander is responsible for the preparation and promulgation of the integrated target list through the amphibious force integrated targeting board. The target intelligence cell collects and provides all available target data to the SAC, who prepares the integrated target list. The CLF and TACAIR officer provide lists of targets that require attack and assist the SAC in preparing the integrated target list. The SAC assigns classification and recommends target priorities. The designated commander approves the integrated target list. During advance force operations, the advance force commander will initially control the integrated target list before passing it to the CLF as the operation ashore progresses.

The supported commander has final approval authority over the fire support plan and integrated target list. Between CATF and CLF, they will assign targets to subordinate units within the amphibious force. They will nominate targets identified for attack by nonorganic capabilities to the next higher level targeting board for sourcing. The amphibious force will provide, at a minimum, representatives to the HHQ's targeting board at the component level and may provide LNOs to the senior joint targeting board, such as the JFC's JTCB, if established. Targeting timelines for the amphibious force must align with the JFC's targeting timelines.

The amphibious force may conduct shaping operations in its designated, but not yet activated, area of operations prior to the arrival of amphibious forces through target nominations for attack by other components' forces. Nominations can include restrictions on targets, such as specific adversary communications sites or bridges, if the designated amphibious force commander desires to exploit them at a future time.

Target selection is the prerogative of the supported commander. Selecting and allocating fire support assets to deliver the desired fire support are functions of the designated commander. Selecting and allocating artillery units and Marine Corps sorties are CLF functions.

Commander, Amphibious Task Force

The CATF is the Navy officer designated by the order initiating the amphibious operation or establishing directive as the commander of the ATF. This order or directive should identify fire support planning and coordination responsibilities among the various commanders assigned to the amphibious force and will usually identify the commander responsible to plan and coordinate fires for the entire amphibious operation or for a particular phase of the operation. Normally, the

CATF is responsible for the planning and preparation of the overall NSFS plan, based on CLF and Navy requirements. The planning includes allocating NSFS ships and determining fire support areas (FSAs).

The Navy TACC, normally aboard the ATF flagship, is usually responsible for coordinating the conduct of all air operations to include the delivery of air fires within the AOA or area of operations of the amphibious force. The Navy TACC establishes airspace control measures and coordinates air operations until the landing force or joint air control agencies are established ashore. It then becomes a TADC supporting the landing force or joint air control agencies when control of air operations passes ashore.

Air Defense Commander

The CATF normally coordinates active air defense of the ATF with the AADC unless otherwise specified in the initiating order or establishing directive. The CATF usually assigns an air defense commander, normally the commander of the most capable air defense platform, to actually conduct air defense operations. The air defense commander communicates with the Navy TACC to maintain the current air situation and coordinate air defense operations.

Regional Air Defense Commander

While the AADC has overall responsibility for air defense in the joint operations area, he may designate a regional air defense commander (RADC) for specific geographic areas to accomplish the joint force mission. A RADC's command is normally established within the amphibious force. The RADC is responsible for the airspace allocated for the amphibious operation, including the AOA if established.

Sector Air Defense Commander

Sector air defense commanders are subordinate to a RADC. The CATF is normally responsible for the seaward sector of the area of operations. The CLF will coordinate with CATF to pass the landward sector of the area of operations once sufficient air defense assets get ashore and obtain enough situational awareness to conduct operations.

Commander, Landing Force

The CLF is a Marine, Army, or allied officer designated in the initiating order or establishing directive as the commander of the landing force. He determines the landing force's requirements for NSFS and provides input to the designated commander on all fire support and targeting issues and decisions that affect the landing force. The CLF establishes a fire support coordination agency at each appropriate level of the landing force to accomplish landing force fire support coordination responsibilities during planning and execution of the operation. The CLF may also use his FFC to supervise the SACC and provide personnel to assist in the operation of the SACC.

Passage of Control Ashore

In an amphibious assault, combat power needs to build ashore as rapidly as the tactical situation allows. Due to their proximity to the action and related situational awareness, forces ashore must take control of operations as soon as possible. One of the key challenges for amphibious planners is combining the right mix of weapons platforms with their respective command and control systems that allow commanders to eventually assume control ashore. The echeloning of assault waves necessitates an incremental assumption of control by functional capability. The senior FSCC and selected

MACCS agencies are typically among the first to go ashore following the initial combat forces. With weapons platforms and requisite command and control systems ashore coupled with situational awareness, the designated commander shifts control of selected functions to the CLF.

Control of Pre-D-Day Air Operations

The advance force commander is responsible for pre-D-day NSFS and air operations in the assigned area. A TADC, located in the flagship of the advance force commander, controls air operations while an advance force SACC controls fires. The designated commander assumes control of all air operations and NSFS upon arrival in the objective area, which he delegates to the Navy TACC for air operations and the SACC for supporting fires. Subordinate TADCs, designated in advance, monitor air control circuits to assume all or part of the duties of the Navy TACC, if required.

Control Afloat

Control of all supporting arms rests with the commander designated in the initiating order or establishing directive. Normally, that commander would be the CATF or the supported commander for air, NSFS, and artillery in support of the initial landing (as opposed to artillery ashore controlled by the landing force). The CATF or supported commander can pass control of air, NSFS, and artillery used to support the initial landing to the CLF after the required control agencies establish ashore.

When subordinate amphibious task groups form for operations in widely separated landing areas, the designated commander normally delegates each attack group commander authority over air support in his respective landing area. The attack group commander exercises control through a TADC in his flagship. The CATF retains overall control, which includes daily planning and execution of air operations exercised through the Navy TACC.

Transfer of Control Ashore

The DASC and FSCC ashore establish communications with the Navy TACC and SACC, respectively. The process of passing control of supporting arms ashore begins. The control agencies ashore are initially in a standby status, monitoring all air control circuits. Phasing control of air operations ashore typically occurs at the discretion of the designated commander and upon recommendation of the CLF when the CLF has the capability to control operations. The passage of control may be incremental; for example, control of direct air support may pass ashore before control of other aspects of air operations. After passage of any or all control to the CLF, the Navy control centers afloat continue to monitor appropriate circuits, ready to resume control if necessary.

Until the TACPs land with their respective assault units, CAS missions are under the direction of the tactical air coordinator (airborne) (TAC[A]) or forward air controller (airborne). Once ashore, TACPs request CAS from the TAC(A), DASC, TADC, or the Navy TACC afloat. These agencies assign aircraft to missions as requests are sourced. As the landing progresses, landing force air control elements prepare to operate shore-based facilities for control of air operations.

The landing force air support control agencies operate ashore initially under the Navy TACC, which assigns aircraft to CAS missions. All TACP requests are monitored by the SACC, FFCC, or FSCC. When the designated commander passes control of air operations to the CLF, the CLF exercises control of air operations through his Marine TACC.

On order of the CLF or appropriate subordinate commander, the FFCC or FSCC displaces ashore, leaving sufficient personnel in the SACC to provide continuity of coordination until the landing force fire support agencies are functioning ashore. When the CLF establishes the necessary control facilities ashore, control of NSFS may pass to him. He then has the authority to assign

NSFS missions directly to the NSFS ships. The CATF, or his designated subordinate, retains responsibility for the allocation of available NSFS ships, logistic support of NSFS ships, and OPCON over the NSFS ships for functions other than fire support.

Upon termination of the amphibious operation, the amphibious force will dissolve. Air control and air defense responsibilities will pass to the appropriate commander as directed by the establishing authority.

CHAPTER 6
FIRES IN SUPPORT OF COUNTERINSURGENCY OPERATIONS

Atypical Requirements

One of the paradoxes of COIN is that some of the best weapons for engaging insurgents don't shoot. There are times when lethal fires are appropriate; however, just killing insurgents—while sometimes necessary—cannot defeat an insurgency. In fact, some capabilities required for conventional success, such as the ability to mass firepower, are of limited utility and can be counterproductive in COIN operations.

The military forces that successfully defeat insurgencies are usually those able to overcome their institutional inclination to wage conventional war against insurgents. In conventional operations, the focus is on the adversary. Civilian concerns typically occupy a relatively small portion of the planning time; however, COIN inverts the dynamics of the battlespace, requiring a different approach to the conflict. In COIN, the insurgents are the adversary, but they are no longer the primary objective—the people are, because they determine the winner by their acceptance of the legitimacy of one side's claim to political power. Therefore, the people define the purpose for all MAGTF actions, lethal or nonlethal. Actions are people-based, not threat-based. In such an environment, violence, such as lethal COIN fires, is complementary, not controlling.

Counterinsurgency campaigns can be long and difficult. Progress can be hard to measure and the adversary may appear to have many advantages. Effective insurgents rapidly adapt to changing circumstances and can make COIN more difficult by—

- Adding complexity by avoiding the use of conventional military weapons, such as artillery, tanks, aircraft, and massed formations that friendly systems can find and attack.
- Organizing into groups with common objectives but different motivations and no central controlling body, which promotes insurgent tempo while avoiding predictable hierarchies susceptible to targeting.
- Using the Internet, which provides selective anonymity and speed of message, to virtually link allied groups throughout a state, region, or across the globe.
- Attacking elements under civil control that are typically beyond the military's ability to affect.
- Prolonging the conflict to attack the will of the populace.
- Leveraging the information environment through the media and propaganda.

Lines of Operations

The publication MCWP 3-33.5, *Counterinsurgency*, organizes COIN actions into six lines of operations (LOOs). These LOOs provide a frame of reference that offers clarity and purpose and links interrelated activities. Since positional reference to adversary forces often has little relevance in COIN, these purpose-based LOOs provide a conceptual framework within which the host nation government and COIN force commander can attack the insurgent strategy. The six LOOs are—

- Combat/civil security operations.
- Host nation security forces.
- Essential services.
- Governance.
- Economic development.
- Information operations.

Given the prolonged nature of COIN, phasing or staging the operation is likely. The goal of the initial stage of COIN operations is to protect the population, break the insurgent's initiative, shape expectations through information operations, and otherwise set the conditions for further engagement.

The second or middle stage is characterized by efforts to achieve stability. The goal is to develop and build resident capability and capacity in the host nation government and security forces. As civil security is assured, focus expands to include governance, provision of essential services, and stimulation of economic development. As a result, personal relationships with host nation counterparts, security forces, and the local populace improve, increasing the flow of human and other types of intelligence.

The third and final stage is characterized by the expansion of stability operations into contested regions, ideally using host nation forces. Quick reaction forces and fire support capabilities may still be needed, but host nation forces should be performing most of the functions along the LOOs with low-key assistance from multinational advisers.

Fires in Support

Lethal and nonlethal fire support requirements could be significant during the initial stages of COIN, while establishing security and seizing the initiative. Similarly, when expanding influence into contested areas during the final stages, fire support, preferably conducted by host nation forces, could enable the host nation. In addition to accuracy, lethality, and technical advantages, lethal fires can convey a message of inevitability regarding the futility of insurgent tactics, thereby limiting their options. Lethal fire support as a force protection measure is also a likely requirement throughout the COIN campaign. Regardless of the type of fires, all fire support missions should provide explicit and implicit messages to win the decisive battle for the people's minds. During COIN, all lethal fires should have an accompanying message designed to shape the perceptions of the adversary and the populace regarding MAGTF operations.

In COIN, tactical operations occur predominantly at the small unit level and are characterized by meeting engagements, ambushes, insurgent attacks on outposts, cordon and search/knock, and the discovery of HVT personalities, who, due to their typical fleeting nature, become TSTs. Accordingly, MAGTF fire support responsibilities are to—

- Ensure the availability of responsive fire support.
- Aid the timely decisionmaking of junior leaders by working with the chain of command to develop ROEs that are clearly understood; are consistent with the threat and the mission; and provide the leeway for subordinate initiative in the interest of time, public safety, and mission success.
- Streamline the collateral damage approval process to facilitate the timely application of fires through battle drills, SOPs, communication protocols, and prior coordination with HHQs.
- Retain the targeting board as a periodic venue and mechanism to integrate all types of COIN projects in addition to targets.
- Conduct fire support training for host nation security forces.

Fires Considerations

Due to the emphasis on nonlethal effects and the targeting board's association with lethal fires, the conduct of daily targeting boards may not be viewed as useful in COIN operations. For example, in 2004, OIF targeting boards occurred twice a month and used a single spreadsheet to address a short list of HVTs. As an extension of the planning effort, however, targeting boards regularly translate the visions of deliberate planning into practical, executable plans and can integrate all MAGTF activities. In COIN operations, commanders should

consider expanding the scope of the targeting board beyond traditional targets to include other LOO activities or projects. Without regular targeting boards, MAGTF commanders should consider other venues, such as targeting "huddles," to account for the impact of execution results on deliberate plans.

In COIN operations, there is a natural tension between responsive fire support and collateral damage/ROE considerations where the approval process can involve many layers in the chain of command depending on the accuracy and burst radius of the weapon, TLE of the sensor, and proximity to civilians. When troops are in contact, on-scene commanders have more leeway; however, for fires planners, COIN-related TSS and AGM products will be much more restrictive than their conventional counterparts. Fortunately, improvements in sensor TLEs, lower yield payloads on legacy precision-guided munitions, and the GPS-INS [global positioning system-inertial navigation system]-coupled guided rockets for MLRS and HIMARS systems provide commanders more options in overcoming the inherent obstacles associated with fire support in a COIN environment. Additionally, long-range precision artillery munitions can provide accurate, first round fire for effect capability while limiting collateral damage.

Targeting

The targeting process focuses operations to maximize limited assets and time. Commanders and staffs use the targeting process to achieve effects that support the LOOs in a COIN campaign plan. It is important to understand that targeting is done for all operations, not just attacks against insurgents. The targeting process can support information operations, CMO, and even meetings between a commander and host nation leaders (key leader engagement), depending on the commander's desires. The targeting process occurs in the targeting cell of the appropriate command post.

Targeting in a COIN environment requires a targeting board or working group at all echelons. The intelligence cell provides a representative to the targeting board or working group to integrate targeting with intelligence, surveillance, and reconnaissance operations. The goal is to prioritize targets and determine the means of engaging them that best supports the commander's intent and the operations plan.

The targeting focus is on people, both insurgents and indigenous populations. There are several different approaches to targeting in COIN. For example, all of the following are potential targets:

- Insurgents, such as leaders, combatants, political cadre, auxiliaries, and the mass population base.
- Insurgent internal support structure, such as bases of operations, finance base, LOCs, and population.
- Insurgent external support systems, such as sanctuaries, media, and LOCs.
- Legitimate government and functions, such as essential services, promotion of governance, development of security forces and institutions.
- Local populace groups and leaders who are critical to adversary and friendly mission success.

Targeting for COIN also uses the D3A process.

Decide

Commanders issue targeting guidance during the decide activity, and their guidance drives subsequent targeting-process activities. The decide activity draws on a detailed IPB and a continuous assessment of the situation. Intelligence personnel provide information on the relative importance of different target personalities and areas and the projected effects of lethal and nonlethal engagements. Specifically, the intelligence analysts need to identify individuals and groups to engage either as potential COIN supporters, targets to isolate from the population, or targets to eliminate. During the decide activity, the targeting board produces a prioritized list of targets and a recommended COA associated with each. Targeting decisions may result in a

FRAGO tasking subordinate or supporting units with the required capabilities.

Detect

Actions during the detect activity may give commanders the intelligence needed to refine their guidance. With execution, the detect activity is continuous. Intelligence analysts rely on all-source reporting to determine the following:

- Threat validity.
- Actual importance of potential targets.
- Best means to engage the target.
- Expected effects of the engagement, which will guide actions to mitigate negative effects.

Target exploitation in a COIN environment is similar to that of law enforcement. An exploitation plan not only facilitates gathering evidence, but also may lead to follow-on targets if personnel have a detailed understanding of social networks, insurgent networks, insurgent actions, and the community's attitude toward counterinsurgents. Intelligence regarding the perceptions and interests of the populace is crucial to information operations and CMO targeting; it is also important for developing political, social, and economic programs.

Deliver

The deliver activity involves executing the missions approved by the commander. Delivery comes in the form of a commitment of friendly capabilities to interactions with selected aspects of the battlespace. The results of these interactions will cause change—some of it intentional, some unintentional. Notwithstanding certain lethal strikes, results from most COIN-related LOO activities take longer to occur and are more difficult to observe and discern. Delivery mechanisms for COIN LOO activities include security patrols that provide stability and engineering projects that provide/restore sewers, running water, or electrical services. Other capabilities to exert influence include engagement venues with local leaders to ascertain grievances, share in local problems, or provide money to influence behavior. In COIN operations, these types of activities will often have a much more lasting effect than applications of lethal fires.

Assess

Assessment occurs continuously throughout an operation. Combat assessment will have a relatively smaller role in COIN; whereas, operational assessment will be critical to determining how to move forward. One of the more difficult challenges assessing COIN-related activities is the amount of time it takes to see progress. Most insurgencies take years or decades to develop; similarly, solutions can be generational in taking effect. Relevant reporting can come from any intelligence discipline, open sources, or operational reporting. Commanders adapt to the changing situation based on the results of execution. Assessment metrics in COIN often include the following:

- Changes in local attitudes (toward US and host nation personnel).
- Changes in public perceptions.
- Changes in media reporting.
- Changes in the quantity or quality of local populace-provided information.
- Changes in the economic or political situation.
- Changes in insurgent patterns.
- Captured equipment and documents.
- Captured or killed insurgents.
- Progression in skill/quantity of political leaders.
- Progression in skill/quantity of civil/military forces.
- Growth in economic development, essential services, and the judicial systems.

CHAPTER 7
FORCE ARTILLERY

In large-scale, conventional operations, MAGTF commanders may augment their forces with additional Marine Corps cannon and rocket artillery capabilities. If they do so, they must decide how to task-organize the additional capabilities. One option is to further assign all or portions of augmenting units, such as cannon battalions, to the GCE. The most likely option, however, is to form a force artillery MSE under the MAGTF command element with the firing units reporting to a force artillery headquarters (FAHQ). In the latter case, force artillery provides the MAGTF commander an all-weather, surface-to-surface fires capability to—

- Weight the main effort.
- Reinforce close operations.
- Conduct MAGTF-level ground based counterfire.
- Complement ACE fires in support of shaping and deep operations.
- Command and control all assigned or attached artillery not assigned to the GCE.

Concept of Employment

An artillery regimental headquarters will typically form the nucleus of an FAHQ. Depending on operational commitments, this regiment could be formed from an active duty or Reserve regiment.

Force artillery must be capable of—

- Providing OPCON or TACON for attached US or multinational artillery assets, such as cannon, rocket, or target acquisition.
- Providing liaison to the MAGTF to facilitate FFCC information flow; providing input/briefing as required in MAGTF updates and targeting boards; participating in OPTs; and coordinating logistic, intelligence, and personnel requirements.
- Augmenting the FFCC.
- Providing the MAGTF commander with a radar employment plan that supports the single battle concept. Force artillery does not control the organic GCE radars of the artillery regiments, but does coordinate the complete radar employment plan in the MAGTF zone by covering gaps in the GCE, joint, and multinational zones. This ability enables force artillery commanders to focus long-range radars on adversary indirect fire assets.
- Positioning the counterfire target processing center where it facilitates counterfire and enhances communication with the force artillery fire direction center, the FFCC, GCE FSCCs, and Marine TACC.
- Coordinating target acquisition/collection management.
- Leading the counterfire fight.
- Establishing liaison teams with adjacent or attached Army and multinational artillery units.
- Planning for and coordinating logistical support for all force artillery attached units.

Command Relationships

The gaining MEF will specify command relationships in the appropriate directives or terms of reference. Typically, the force artillery will be in general support of the MEF. The MEF's plans will also establish force artillery relationships with other elements within the command, most notably through tactical mission assignments.

Tactical Missions

Like the GCE, MAGTF commanders can assign force artillery units one of four standard tactical missions or a nonstandard mission. Each tactical

mission includes inherent responsibilities that guide force artillery decisions and actions. These responsibilities address priority in calls for fire, zone of fire, sourcing forward observers, providing liaisons, establishing communication, positioning firing units, and planning for fires as shown in table 7-1.

Commanders create nonstandard tactical missions by changing, modifying, or amplifying one or more of the seven inherent responsibilities or by identifying contingencies not covered by the inherent responsibilities.

The four standard tactical missions are direct support, reinforcing, general support-reinforcing, and general support. These missions are normally assigned to Marine Corps artillery battalions.

Direct support is the most decentralized of the tactical missions. An artillery unit in direct support of a maneuver unit, such as infantry, mechanized, armor, or light armored reconnaissance, is concerned primarily with the fire support needs of that unit. An artillery unit can only be in direct support to one maneuver unit at a time and a maneuver unit can have only one direct support artillery unit at a time. The direct support artillery commander plans and coordinates fires to support the maneuver commander's intent and positions his unit where it can best support the maneuver commander's CONOPS. An artillery unit should habitually support the same maneuver force to enhance coordination and training. In table 7-1, the direct support mission does not preclude that artillery unit from answering calls for fire from HHQ. Instead, the table establishes priorities of support to adjudicate simultaneous requests for support and the allocation of ammunition in favor of the supported unit.

Table 7-1. Inherent Responsibilities of Tactical Missions.

TACTICAL MISSIONS	INHERENT RESPONSIBILITIES OF TACTICAL MISSIONS						
Artillery unit with mission of—	Answers calls for fire in priority from—	Has as its zone of fire—	Furnishes forward observers—	Establishes liaison with—	Establishes communications with—	Is positioned by—	Has its fires planned by—
DIRECT SUPPORT	Supported unit Own observers Artillery HHQ	Zone of supported unit	To each company-sized maneuver element of supported unit	Supported unit (down to battalion level)	Supported unit	Unit commander as deemed necessary or ordered by artillery HHQ	Develops own fire plan
REINFORCING	Reinforced unit Own observers Artillery HHQ	Zone of fire of reinforced unit	No requirement	Reinforced unit	Reinforced unit	Reinforced unit as ordered by artillery HHQ	Reinforced unit
GENERAL SUPPORT-REINFORCING	Artillery HHQ Reinforced unit Own observers	Zone of supported unit to include zone of fire of reinforced unit	No requirement	Reinforced unit	Reinforced unit	Artillery HHQ or reinforced unit subject to prior approval by artillery HHQ	Artillery HHQ
GENERAL SUPPORT	Artillery HHQ	Zone of supported unit	No inherent responsibility	No inherent responsibility	No inherent responsibility	Artillery HHQ	Artillery HHQ

Reinforcing requires an artillery unit to augment the fires of another artillery unit. When a direct support unit needs additional fires to meet the needs of the maneuver commander, another artillery unit may be assigned the reinforcing mission. Because of difficulties in controlling the fires and positioning reinforcing units, direct support units are not reinforced by more than two units of the same size as the direct support unit.

A *general support-reinforcing* mission requires an artillery unit to provide fires to the force as a whole and then to reinforce the fires of another artillery unit as a second priority. The general support-reinforcing unit remains under the control of its parent artillery headquarters. The general support-reinforcing mission offers the commander the flexibility to meet the requirements of a variety of tactical situations.

A *general support* mission requires an artillery unit to support the force as a whole. The general support unit remains under the control of its parent artillery headquarters. These general support missions make artillery immediately responsive to the needs of the force commander and are the most centralized of the standard tactical missions.

Planning and Execution Considerations

Counterfire

The FAHQ will normally be in charge of the overall MEF counterfire fight. The GCE will conduct counterfire inside its area of operations, while the ACE and force artillery support the GCE and provide the preponderance of counterfire outside the GCE's area of operations.

With the FAHQ in charge of counterfire, its counterfire coordination center (CFCC) will coordinate the MEF's counterfire functions. The CFCC normally collocates with the FAHQ to coordinate reactive counterfires in response to CBR acquisitions and comprises the following:

- **Target processing center.** The target processing center employs all organic CBR assets and processes all CBR acquisitions. The target processing center validates acquisitions and, if directed, generates a fire mission to the CFCC.
- **Target intelligence cell.** Consisting of the force artillery S-2 section, the target intelligence cell is a component of the CFCC. The target intelligence cell compares the CBR acquisitions with known or suspected targets, recommends engagement, and templates the CBR acquisitions to provide the MEF G-2 with an analysis of the adversary's indirect fire threat.
- **Counterfire coordination cell.** The CFCC receives target processing center fire missions; determines the appropriate supporting arms platform(s) to engage these reactive counterfire targets; coordinates and deconflicts surface or air fires with other elements of the MEF, such as GCE, ACE, and LCE; and updates the MEF FFCC on the status of the counterfire fight.

The CFCC develops and validates the daily counterfire execution plan. It consists of an analysis that defines the counterfire threat; a counterfire collection plan, which is a description of sensors that covers the expected counterfire target locations; and a counterfire matrix that specifies attack responsibilities based on sensor source, target location, and supporting arms resources.

Positioning

Ideally, force artillery units operate from positions inside the areas of operations of the MSCs in order to accomplish their missions. Usually, force artillery units will position well forward in the GCE's area of operations to facilitate long-range fires or to augment the GCE's artillery. While the GCE has priority of positioning within its area of operations, the commanders and staffs of both force artillery and GCE artillery units must closely coordinate firing position assignments. Cooperation between the force artillery and the GCE in positioning the force artillery will enhance support to the MAGTF as a whole, reduce movement control concerns within the GCE area of operations, and facilitate force

protection by managing the electronic signature of related antenna farms and radar sites.

Intelligence

The force artillery intelligence section fuses the targeting data produced by the target processing center with the intelligence information generated by MAGTF assets. The primary tool for processing intelligence is the IAS, which is under the supervision of the MAGTF G-2. The coordination of efforts among the fire direction center, the target processing center, and the intelligence sections within the IOC is crucial to the timely planning and execution of the counterfire mission. One of the key functions of intelligence personnel is the templating of adversary fire support assets based on the information they acquire and the insights they can extract from it.

Target Acquisition

The force artillery has organic radars and may have attached artillery target acquisition systems. Force artillery positions its organic/attached weapons-locating radar and artillery observation teams to support the target acquisition requirements of the MAGTF. Depending on the situation, the CBR officer and all target processing center assets either collocate with the force artillery liaison team at the MAGTF or at the force artillery COC. Force artillery coordinates the employment of all radars in the MAGTF zone to include establishing radar zones and queuing schedules and publishing the MAGTF radar employment plan in appendix 19 to annex C of the OPLAN/OPORD.

Liaison

Force artillery provides liaisons to the MAGTF, ACE, GCE FSCC, GCE artillery forces, and other area commanders or coordinators, when appropriate. Additional liaisons may collocate with artillery units adjacent to the MAGTF. Liaison teams must bring adequate communications so as not to burden the gaining headquarters. Depending on the tactical mission, operating tempo, and personnel requirements, the force artillery may task its organic battalions to provide liaison teams to fulfill force artillery liaison requirements. These requirements may include a force artillery liaison team attached to an Army or multinational unit in addition to any ANGLICO support. Force artillery liaison teams ensure—

- Mutual cooperation and understanding between commanders and staffs of different headquarters.
- Coordination on tactical matters to achieve mutual support and unity of effort in action.
- Coordination and monitoring the execution of force artillery missions.
- Coordination of the counterfire efforts of the MAGTF.
- Participation in MAGTF planning to include membership in MAGTF OPTs.
- Awareness of force artillery capabilities and limitations.

Meteorological Support

All meteorological operations for the force artillery will be in accordance with MCWP 3-16.5, *Tactics, Techniques, and Procedures for Field Artillery Meteorology*. In addition to providing meteorological support to organic and attached units of force artillery, the force artillery meteorological section integrates and coordinates meteorological support operations with the GCE artillery meteorological sections.

Survey Support

The force artillery survey section provides survey support to all organic and attached units of the force artillery. Additionally, the force artillery survey officer may exercise survey control within the MAGTF area of operations and integrate or coordinate survey support with GCE artillery survey operations. For more information on survey support, see MCWP 3-16.7, *Marine Artillery Survey Operations*.

Communications

Force artillery responsibilities to communicate with organic or assigned battalions, liaison sections, and supported GCE units may span the MAGTF's entire battlespace. The distances involved could be well beyond those contemplated for the GCE's artillery. The MAGTF is responsible for providing communications assets to augment force artillery organic capabilities to accomplish this task.

Logistics

Force artillery logistics may differ from traditional artillery regiments in two ways. First, force artillery may have to support two or more divisions. Consequently, resupply distances could be significantly greater. Second, the MAGTF normally will provide, through appropriate agreements, common item support to any assigned or attached multinational or Army artillery units; however, those same units will likely use different ammunition and operate unique types of support equipment. Force artillery logistic planners and the MAGTF G-4 need to facilitate nation- or Service-unique logistic support. Specifically, they need to coordinate with the appropriate movement control centers to facilitate ground-based transportation into and within the MAGTF area of operations.

APPENDIX A
OUTLINE OF APPENDIX 19 TO ANNEX C OF THE OPERATION ORDER/OPERATION PLAN

Tab A. Aviation Support (Air Officer)

Exhibit A-1. Common Geographic Reference System/Global Area Reference System (Kill Box Procedures)

Exhibit A-2. Killbox Overlay

Tab B.Artillery Support Plan (Plans Officer)

Exhibit B-1. Artillery Overlay

Tab C. Naval Surface Fire Support

Exhibit C-1. NSFS Procedures

Exhibit C-2. NSFS Liaison Organization

Exhibit C-3. FSAs and Overlay

Exhibit C-4. NSFS Systems Plan

Tab D. Current Fire Support Operations (Current Fires Officer)

Exhibit D-1. Reactive Targeting

Exhibit D-2. Damage Criteria Matrix

Exhibit D-3. RAGM

Tab E. Targeting (Targeting Officer)

Exhibit E-1. Targeting Board Participants

Exhibit E-2. Target Board Agenda

Exhibit E-3. Target Information Report

Exhibit E-4. Target Bulletin Message

Exhibit E-5. Target Nomination Process and Format

Exhibit E-6. Targeting Decision Message

Exhibit E-7. Targeting Guidance Message

Exhibit E-8. TST, HPTL, and TSS

Tab F. Fire Support Coordination Plan (Plans Officer)

Exhibit F-1. Fire Support Coordination Overlay

Tab G. Fire Support System Plan (Current Fires Officer)

Exhibit G-1. Digital Communications Guard Chart

Exhibit G-2. Internet Protocol Address and Subscriber Table

Exhibit G-3. AFATDS Initial Database and Guidance

Exhibit G-4. Initial Geometry

Exhibit G-5. Initial Unit Location

Exhibit G-6. AFATDS Joint Master Unit List Changes

Exhibit G-7. Data Distribution

Exhibit G-8. JADOCS Overview

Exhibit G-9. JADOCS System Administration Information

Tab H. Reports (Current Fires Officer)

Tab I.Coalition Fire Support Plan (as required)

Tab J.Counterfire Plan (Plans or Current Fires Officer)

Exhibit J-1. Target Acquisition Plan

Exhibit J-2. Radar Queuing Plan

Tab K. Liaison Plan (Plans Officer)

Exhibit K-1. ANGLICO Plan

APPENDIX B
FIRE SUPPORT REFERENCE DATA

The MAGTF principally employs fire support provided by the GCE, ACE, and force artillery, if established. However, it may also receive external fire support from other joint or multinational forces.

Mortars, Artillery, and Rockets

Mortars provide responsive, close indirect fires to support company- and battalion-level maneuver. For more information, see table B-1 and MCWP 3-15.2, *Tactical Employment of Mortars*.

Artillery neutralizes, destroys, or suppresses targets that threaten the success of the supported unit. Artillery conducts three tasks—

- Provides timely, close, accurate, and continuous fire support.
- Provides depth by attacking reserves, restricting movement, providing long-range support for reconnaissance forces, disrupting adversary command and control systems and logistic installations, or shaping the battlefield.
- Delivers counterfire and suppression of adversary air defenses to ensure freedom of action for ground and aviation forces.

Table B-1. Mortar Characteristics.

Caliber	60 mm	81 mm	120 mm
Model	M224	M252	M285[1]
Ammunition	HE, WP, ILLUM, IR, MAPAM, TP	HE, WP, ILLUM, IR, MAPAM, RP, TP	HE, WP, ILLUM, IR, TP, (MAPAM being developed)
Fuzes	MO	MO	MO
Maximum Range (m)	3,490[2]	5,935[3]	Rifled: 8135m Smoothbore: 6700m
Maximum Range (m)	56 with MAPAM 70 with HE	80	Rifled: 1100m Smoothbore: 500m
Maximum Rate of Fire (rounds)	30 for 40 minutes	30 for 2 minutes	6 for 3 minutes
Sustained Rate of Fire (rounds)	20	15	4
Illumination Time (seconds)	40	60	60
Effective Casualty Radius for 1 Round (m)	28	40	75
Final Protective Fire (m)	60 x 30 (2 tubes)	100 x 40 (4 tubes)	120 x 60 (2 tubes) 240 x 60 (4 tubes)

Notes
[1]The expeditionary fire support system mortar
[2]With M720 HE ammunition
[3]With M889A2 HE ammuntion

Legend
HE-high exploseive
ILLUM-illumination
IR-infrared
m-meters
MAPAM-mortar, antipersonnel, antimaterial
MAO-multi-option fuzes (variable time, point detonating, delayed)
RP-red phosphorus
TP-training practace
WP-white phosphorus

For more information, see MCWP 3-16.1, *Artillery Operations.*

Army MLRS units attached or having OPCON over Marine Corps force artillery or artillery regimental headquarters are capable of firing guided and unguided projectiles with a range of 42 km. Updated munitions, such as ATACMS, are capable of reaching 300 km with the projectile reaching a maximum altitude of 50 km.

A HIMARS is a wheeled version of the MLRS designed to meet the Marine Corps expeditionary maneuver warfare requirements. It provides ground-based, deep operations fire support and counterbattery capabilities and can fire all current MLRS munitions. The HIMARS launcher loader module holds one rocket or missile pod. It can roll on and off a C-130 transport aircraft and, when carried with a combat load of six rockets, will be ready to operate within 15 minutes of landing. Table B-2 provides additional weapon characteristics of field artillery. The MCIP 3-16.02, *Marine Rocket Battery Operations*, illustrates doctrinal procedures used by HIMARS units.

Aviation

Marine aviation extends the operational reach of the MAGTF, giving the MAGTF the ability to deliver fires, facilitate integrated command and control, enhance mobility and maneuver, provide force protection, collect intelligence, and sustain combat power. The ACE is a major provider of fire support through OAS, electronic warfare, and UAS operations.

Table B-3, on page B-4, includes information on aircraft from all the Services that could provide fire support to the MAGTF. For more detailed information on aircraft capabilities, see individual aircraft tactical manuals.

Tables B-4, on page B-7, and B-5, on page B-8, detail associated families of weapons and preferred types of ordnance for targets. For detailed information on weapon capabilities, see the Army Field Manual 101-50-1, *Joint Munitions Effectiveness Manual: Air-to-Surface: Weapon Effectiveness, Selection and Requirements (BASIC JMEM), Air-Delivered Non-Nuclear* and the individual aircraft tactical manuals.

Naval Surface Fire Support

Naval surface fire support plays a vital role in supporting MAGTF units during amphibious operations and comprises Tomahawk land attack missiles and naval gunfire. Tomahawk land attack missiles normally strike JFC-directed strategic- and operational-level targets. There are currently two naval gunfire weapon systems capable of supporting the MAGTF in service: 5-inch/54 and 5-inch/62 caliber guns. They are found only on cruisers and destroyers. See tables B-6 and B-7 on page B-9.

Table B-2. Field Artillery Weapon Characteristics.

Caliber	105-mm	155-mm	227-mm
Model	M119A2	M777A2 M109A2[1]	M142 HIMARS M227 MLRS[1]
Ammunition	APER-T, HE, HC, WP, ILLUM, DPICM	X982, HE, HC, WP, ILLUM, APICM, DPICM, FASCAM (AP/AT)	DPICM, ER DPICM, GMLRS, APAM, ATACMS
Fuzes	ET, CP, DEL, MOFA, PD, VT	ET, CP, DEL, MOFA, PD, VT	ET, PD, VT
Maximum Range (m)	11,500 with chg 7 14,000 with chg 8	18,000 (MACS 4H) 22,500 (MACS 5H)	70,000 GMLRS 165,000 ATACMS 300,000 1A ATACHMS
Range of RAP (m)	20,000	30,000	N/A
Range of DPICM (m)	14,100	18,200 (MACS 4H) 27,700 (ER-DPICM with 5H)	32,000 DPICM 65,000 ER DPICM
Minimum Range (m)	1,500	1,500	10,000 13,000
Maximum Rate of fire	8 for 3 minutes	4 for 4 minutes (M777) 4 for 3 minutes (M109)	1 per 4.5 seconds
Sustained Rate of fire (rounds)	3 per minute for 30 seconds	1 per minute	1 per 4.5 seconds
ILLUM Time (seconds)	60	120	N/A
Effective Casualty Radius for 1 round (m)	35	50	100
Final Protective Fire (m)	105 x3 5 (3 guns) 210 x 35 (6 guns)	200 x 50 (4 guns) 300 x 50 (6 guns)	N/A

Note
[1] US Army weapons

Legend
AP-antipersonnel
APAM-antipersonnel/antimaterial
APER-T-antipersonnel, tracer (beehive). Not in service with USMC.
APICM-antipersonnel improved conventional munitions
AT-antitank
ATACMS-Army Tactical Advanced Conventional Muntions System
chg 7-charge 7 (seven of eight increments of a 155-mm propelling charge)
chg 8-charge 8 (seven of eight increments of a 155-mm propelling charge)
CP-concrete piercing
DEL-delay
DPICM-dual purpose improved conventional munitions
ER-extended range
ET-electronic time (fuze)
FASCAM-family of scatterable mines
GMLRS-guided multiple launcher rocket system. Not in service with USMC.
HC-smoke (hexacholoroethane-zinc)
HE-high explosive
ILLUM-illumination
m-meters
MACS-Modular Artillery Charge System (M231 - zones 1L & 2L / M232 and A1 - zones 3H - 5H)
N/A-not applicable
PD-point detonating (fuze)
RAP-rocket assisted projectile
VT-variable time
WP-white phosphorus

Table B-3. Aircraft Capabilities.

Aircraft	Service	Ordnance	Laser Tracker	Laser Designator	GPS	Marking Capability	Other Systems	Communi-cations
AV-8B	USMC	GBU[1] GP bombs CBU AGM-65 IR and laser Maverick 2.75-in rockets and 5-in rockets 25-mm cannon LLU-1/-2 flares LLU-5/-6 flares	Yes[2]	Yes[3]	Yes	IR[3] rockets	FLIR NVG Radar[4]	UHF/VHF
A/OA-10A	USAF	GBU[1] GP bombs CBU GATOR AGM-65 IR and laser Maverick 2.75-in rockets 30-mm cannon LLU-1/-2 flares LLU-5/-6 flares	Yes	No	No	Rockets	NVG	UHF/VHF
AC-130H/U	USAF	105-mm howitzer 40-mm cannon 20-mm cannon	No	Yes[5]	Yes	GLINT 105-mm WP 105-mm HE 40-mm LTD	Beacon FLIR LLLTV Radar	UHF/VHF HF SATCOM
B-1B	USAF	GP bombs	No	No	No	None	Radar	UHF/VHF HF SATCOM
B-52H	USAF	GP bombs AGM-65 CBU Aerial mines TALCOM AGM-84 Harpoon	No	No	Yes	None	Beacon FLIR LLLTV Radar	UHF/VHF HF SATCOM
F-14	USN	GB GP bombs CBU 20-mm cannon LLU-2 flares	No	Yes	No	Laser Rockets	FLIR NVG Radar	UHF/VHF
F-15E	USAF	GBU GP bombs CBU AGM-65 IR Maverick AGM-130 AGM-154 JSOW 20-mm cannon	No	Yes	Yes	Laser	FLIR Radar	UHF/VHF
F-16 C/D and C/J	USAF	GATOR GBU[6] GP bombs CBU AGM-65 IR and laser Maverick AGM-154 JSOW	Yes	Yes[8]	Yes[9]	Laser Rockets	LANTRIN NVG Radar	UHF/VHF

Table B-3. Aircraft Capabilities. (Continued)

F/A- 18A/C/D	USN USMC	GBU GP bombs CBU-99 AGM-65 IR[10] and laser Maverick AGM-84D Harpoon AGM-88 HARM AGM-154 JSOW[10] GBU-31 JDAM[11] 2.75-in and 5-in rockets GATOR 20-mm cannon LLU-2 flares LLU-19 flares	Yes	Yes	Yes	IR pointer Laser Rockets	FLIR NVG Radar	UHF/VHF
S-3B	USN	GP bombs CBU AGM-84D Harpoon 2.75-in and 5-in rockets Aerial mines LLU-2 flares	No	No	No	Rockets	FLIR Radar	UHF/VHF
UH-1N	USMC	2.75-in rockets .50-cal machine gun 7.62-mm machine gun	No	No	Yes	IR pointer Rockets	FLIR LRF Radar	UHF/VHF
AH-1F	USA	BGM-71 TOW 2.75-in rockets 20-mm cannon	No	No	No	Rockets	NVG	UHF/VHF
AH-1W	USMC	BGM-71 TOW AGM-114 HELLFIRE 2.75-in and 5-in rockets 20-mm cannon LLU-2 flares	No	Yes[12]	Yes	Laser Rockets	CCCD-TV FLIR NVG	UHF/VHF
AH-64A/D	USA	AGM-114 HELLFIRE 2.75-in rockets 30-mm cannon	Yes	Yes[13]	Yes	Laser Rockets	DTV FLIR IDM NVG Radar[14]	UHF/VHF
OH-58D	USA	AGM-114 HELLFIRE	Yes	Yes	No	Laser Rockets	FLIR NVG TVS	UHF/VHF HF

Table B-3. Aircraft Capabilities. (Continued)

Notes:
[1]Though these aircraft can carry and release GBUs, only AV-8Bs with Litening II have an onboard designation capability for terminal guidance.
[2]Only AV-8B Night Attack have this capability.
[3]Only AV-8B with Litening II capability.
[4]Only AV-8B with radar upgrade has this capability.
[5]AC-130H can only designate laser code 1688.
[6]F-16 without LANTIRN capability requires off-board designation for terminal guidance.
[7]Only F-16 with HARM targeting system.
[8]Only F-16 with LANTIRN capability.
[9]GPS on some aircraft (Block 40/41; 50–52).
[10]Only F/A-18 Lot 11 and above have this capability.
[11]Some F/A-18 Lot 16 and all Lot 17 and above have this capability.
[12]AH-1W can designate codes 1111–1788, but has maximum effectiveness from 1111–1488.
[13]AH-64 cannot designate codes 1711–1788.
[14]AH-64A does not have a radar capability.

Legend
BGM-ballistic guided missile
CBU-cluster bomb unit
CCD-TV-charge coupled device television
cal-caliber
DTV-digital television
FLIR-forward-looking infrared
GATOR-a scatterable mine system
GBU-guided bomb units
GLINT-gated laser intensifier for night television
GP-general purpose
GPS-global positioning system
HARM-high-speed antiradiation missile
HE-high explosive
HF-high frequency
IDM-improved data modem
IR-infrared
JDAM-joint direct attack munitions
JSOW-joint standoff weapon
LANTRIN-low altitude navigation and targeting information for night
LLLTV-low light level television
LLU-low light unit
LRF-laser range finder
LTD-laser target designator
NVG-night vision goggle
SATCOM-satellite communications
TALCM- tactical air launched cruise missile
TOW-tube launched, optically tracked, wire guided antitank missile
TVS-television sensor
UHF-ultra high frequency
USA-United States Army
USAF-United States Air Force
USMC-United States Marine Corps
USN-United States Navy
VHF-very high frequency
WP-white phosphorus

Table B-4. Families of Weapons.

Aerial mines	MK-52 MK-55 MK-56
ARM	AGM-88 HARM
CBU	MK-20 Rockeye CBU-78 GATOR AGM-154A/B JSOW (cluster versions)
GP bombs	MK-82, -83, -84
Incendiary bombs	FAE
Rockets and guns	2.75" and 5" rockets 20-, 25-, 30-, 40-, and 105-mm cannons
PGM	AGM-65 IR and Laser Maverick AGM-84D Harpoon AGM-84E SLAM AGM-114 HELLFIRE AGM-154A/B/C JSOW (C model is unitary version) BGM-71 TOW CALCM GBU-10, -12, -16, -24 GBU-31 JDAM

Legend
ARM-antiradiation missile
BGM-ballistic guided missile
CALCM-conventional air launched cruise missile
CBU-cluster bomb unit
FAE-uel air explosives
GATOR-a scatterable mine system
GBU-guided bomb unit
GP-general purpose
HARM-high speed antiradiation missile
JDAM-joint direct attack munitions
JSOW-joint standoff weapon
PGM-precision-guided munitions
SLAM-stand-off land attack missile
TOW-tube launched, optically tracked, wire guided antitank missile

Table B-5. Preferred Types of Ordnance for Targets.

Target	Preferred Ordnance
Personnel	CBU ,GP bombs, guns, rockets, mines
Armored vehicles	PGM, CBU, GBU, mines
Field artillery	PGM, GP bombs, CBU
Composite ground forces, such as CP, vehicles, fuel supply, ammunition, or support vehicles	PGM, CBU, guns, rockets
Rockets and surface-to-surface missiles	PGM, GP bombs, CBU
Antiaircraft artillery (fixed-sites)	PGM, GP bombs, CBU
Antiaircraft artillery (mobile)	PGM, GP bombs, CBU
Runways	GP bombs
Aircraft in the open and revetted	PGM, GP bombs, CBU, guns, rockets
Aircraft shelters and bunkers	PGM with penetrating warheads, GP bombs, CBU
Air-launched missile support facilities	PGM, GP bombs
Fortified fighting positions and concrete pillboxes	PGM, GP bombs with penetration capability
Simple log bunkers	PGM, GP bombs with penetration capability
Hardened underground targets	PGM with penetrating warheads
Bridges	PGM, GP bombs
Dams	PGM, GP bombs with penetration capability
Locks	PGM, GP bombs
Trucks and tracked prime movers	PGM, GP bombs, CBU
Route segments (highway and railroad)	PGM, GP bombs for cratering
Railroad equipment and rail yards	PGM, GP bombs
Tunnels	PGM with penetrating warheads
Ships	ARM, Harpoon, PGM, CBU
SAM systems (with central guidance radars)	PGM, GP bombs, CBU, ARM
SAM systems (with standalone radars)	PGM, GP bombs, CBU, ARM
SAM support facilities	PGM, GP bombs
Radar sites	PGM, GP bombs, CBU, ARM
Communications facilities (above ground)	PGM, GP bombs
Communications vans and vehicles	PGM, GP bombs, CBU
Antennas	PGM, GP bombs, guns, rockets
Supply and POL facilities (supply storage)	GP bombs, CBU with incendiary capability, guns, rockets
Supply and POL facilities (in the open/buildings)	GP bombs, CBU with incendiary capability, guns, rockets
Supply and POL facilities (POL storage)	PGM, GP bombs, guns, rockets
POL refineries and pumping stations	PGM, GP bombs, guns, rockets
Ports and naval bases	PGM, GP bombs
Ammunition production installations	PGM, GP bombs
Light manufacturing and repair installations	PGM, GP bombs
Above ground buildings	PGM, GP bombs
Power plants	PGM, GP bombs, CBU
Legend ARM-antiradiation missile CBU-cluster bomb unit CP-concrete piercing GBU-guided bomb unit GP-general purpose PGM-precision-guided munitions POL-petroleum, oils, and lubricants SAM-surface-to-air missile	

Table B-6. Naval Gunfire Platforms.

Ship Class	Armament	Magazine Capacity
Ticonderoga (CG-47)	2 x 5"/54	950–1,000
Arleigh Burke (DDG-51-80)	1 x 5"/54	475–500
Arleigh Burke (DDG-81-112)	1 x 5"/62	600

Table B-7. Naval Gunfire Capabilities.

Weapon	Maximum Range (meters) Full Charge	Maximum Range (meters) Reduced Charge	Rate of Fire Per Tube (Maximum/Sustained)	Ammunition	Fuzes
5"/62	23,100	18,520	10/5	HE	Q, MT, CVT, VT, DEL
5"/54	23,100	12,200	20/16	HE, HC, ILLUM, WP, ERGM, ICM (MK 172)	Q, MT, CVT, VT, DEL

Legend

CVT-controlled variable time (fuze)
DEL-delay
ERGM-extended range guided munitions
HC-smoke (hexachloroethane-zinc)
HE-high explosive
ICM-improved conventional munitions
ILLUM-illumination
MT-mechanical time
VT-variable time
Q-quick
WP-white phosphorus

APPENDIX C
TARGETING TIMELINE EXAMPLE

DAY	HOUR	TIME	ATO*	EVENT	DESCRIPTION
D-4	H-92	1000	A	JFC targeting guidance issued	JFACC approves 4- to 10-day strategy Components begin target selection process
D-3	H-71	0700	A	MSC targeting objectives due	Broad MSC targeting objectives due (basis for draft BSM)
D-3	H-70	0800	A	Target guidance working group	Representative from MSCs and attachments attend Develop targeting guidance and objectives Refine draft BSM Review DSM produced by target intelligence
D-3	H-69	0900	A	Draft BSM to MSCs for final review	Initiates preliminary target selection by MSCs Ensures MSCs and TGWG are coordinated
D-3	H-67	1100	A	Air support estimates due from MSCs	Estimates MSC air requirements for ATO cycle
D-3	H-66	1200	A	Daily air/ground reconnais-sance due from MSCs	Input due from MSCs to MAGTF air and ACE
D-3	H-64	1400	A	BSM and target nominations due from MSCs	MSCs submit target and limited/protected nominations ACE submits requirements for additional deep strike assets Identify all engineer and information operations requirements
D-3	H-61	1700	A	Apportionment recommenda-tions due from MSCs	Based on target objective, CONOPS, target guidance, and assets Provides recommendation to supported commander Determines how information operations requirements will be serviced
D-3	H-58	2000	A	All targeting and collection board briefing products and collections input due	Obtain weather, intelligence, future operations, and information oper-attions products Integrate collections portion into decision brief
D-3	H-56	2200	A	Targeting and collections board	Obtain approval on target objectives, prioritization, limited/protected assets, air apportionment, and collections Obtain guidance for next ATO cycle
D-3	H-56	2200	A	Synchronization working group	Ensure targets are synchronized with CONOPS, collection assets, sourcing assets, and BDA Target intelligence submits target nominations (Single Prioritized Integrated Target List) to ACE for sourcing
D-2	H-52	0200	A	ACE common sourced target nominations due	Single Prioritized Integrated Target List due back from ACE with cut line for direct support, common sourced target servicing
D-2	H-48	0600	A	Common sourced target nominations due to Marine Corps forces/JFLCC	Target effects team at H-44 and joint targeting board/joint effects board at H-38
D-2	H-44	1000	A	ACE ALLOREQ due to JFACC	Reviewed by MAGTF at H-43 Identifies excess ACE sorties for JFACC tasking Requests additional support beyond ACE capabilities
D-2	H-39	1500	A	MSCs submit AIRSUPREQs	Formalized estimates JTARs to MAGTF air UAS tracks submitted to MAGTF
D-2	H-38	1600	A	JIPTL approved by JFACC	Common sourcing for MAGTF target nominations
D-2	H-36	1800	A	MAGTF prioritizes ASRs	MAGTF air sends prioritized JTARs to ACE for sourcing

DAY	HOUR	TIME	ATO*	EVENT	DESCRIPTION
D-1	H-20	1000	A	SORTIEALOT from JFACC	Response to ALLOREQ; revisions to ALLOREQ and approval/disapproval of requests Depicts allotment of all coalition/component sorties
D-1	H-19	1100	A	Direct support ATO due to Combined Forces Air Component Commander for merge into ATO	ACE submits direct support ATO to JFACC
D-1	H-12	1800	A	ATO A published	Published by JFACC
D-1	H-8	2200	A	RAGM working group	Chaired by current fires, transition plan to current operations Update BSM based on current intelligence situation and CONOPS
D	H-4	0200	A	RAGM published	RAGM produced and distributed by force fires
D	H HOUR	0600	A	Execute ATO A	Execute

*The ATO is given a letter designation rather than a number.

APPENDIX D
WORLDWIDE ARTILLERY, MORTAR, AND ROCKET SYSTEMS

This table provides the characteristics of artillery, mortar, and rocket systems that are in service worldwide.

MANUFACTURER/ WEAPON	BASIC RANGE (METERS)	BB/ERGM RANGE (METERS)	RATE OF FIRE		COUNTRIES POSSESSING	REMARKS
			MAX	SUSTAINED		
AUSTRIA						
M-109, 155-mm	30,300	39,600	7/min	2/min	Iran, Iraq, Thailand	None
BRAZIL						
ASTROS II, MRS	_	30,000 60,000	32/min 4/min	Reload Reload	Saudi Arabia, Iran, Qatar	None
CHINA						
WS-1, 320-mm MRS	_	80,000	4/min	Reload	None	None
Type 83, 273-mm MRS	_	40,000	4/min	Reload	None	None
Type 71, 180-mm MRS	_	20,000	10/min	Reload	None	None
WA 021, 155-mm towed	30,000	39,000	5/min	2/min	None	None
Type 83, 152-mm towed	30,400	38,000	4/min	2/min	Iraq	None
Type 82/85, 130-mm MRL	_	15,000	60/5 min	Reload	Thailand	None
Type 59-1FG, 130-mm towed	27,500	38,000	10/min	10/min	Iran, Iraq, Oman, North Korea, Egypt, Lebanon	None
FRANCE						
GCT, 155-mm SPG	23,000	29,000	6/min	2/min	Iraq, Kuwait, Saudi Arabia	None
GCT, Caesar, 155-mm towed	24,000	32,000	3/18 sec	6/min	Cyprus	None
MkF3, 155-mm SP	20,000	25,000	3/min	1/min	Iraq, Kuwait, UAE	None
GERMANY						
PzH 2000, 155-mm SP	30,000	40,000	3/10 sec	9/min	None	None
IRAN						
Falaq, 333-mm MRS	_	150,000	1/min	2/hour	None	None
IRAQ						
Sajeel 300-mm MRS	_	100,000	4/min	Reload	None	None
Ababeel, 262-mm MRS	_	50,000	12/min	Reload	Former Yugoslavia, Bosnia Serb Army, Croatia	None
ISRAEL						
M114, 155-mm towed	24,000	39,000	5/min	2/min	None	None
M71, 155-mm GH towed	23,500	30,000	5/min	2/min	Singapore, Thailand, South Africa	None
ITALY						
M109, 155-mm SPH	24,700	30,000	3/20 sec	4/min	Libya, Nigeria	None

MANUFACTURER/ WEAPON	BASIC RANGE (METERS)	BB/ERGM RANGE (METERS)	RATE OF FIRE		COUNTRIES POSSESSING	REMARKS
			MAX	SUSTAINED		
NORTH KOREA						
M1991, 240-mm MRS	_	43,000	12/min	Reload	Iran	CHEM
M1977, 152-mm SP	40,000	_	N/A	N/A	Iran, Iraq	None
M1992, 130-mm SP	27,000	_	6/min	1.1/min	None	None
M1991, 122-mm MRL	_	20,500	30/min	Reload	Palestinian Liberation Organization, Syria, Iran, Iraq, Uganda	None
M1981m 122-mm SPG	23,900	_	N/A	N/A	None	None
M1992, 120-mm SPG mortar	8,700	_	N/A	N/A	None	None
RUSSIA/CIS						
FROG-7, ARS	_	70,000	1/min	1/hour	Former Warsaw Pact, Afghanistan, Algeria, Cuba, Egypt, Iraq, North Korea, Libya, Syria, Yemen	NUKE, CHEM
SMERCH, 300-mm MRSL	_	70,000	12/min	Reload	Kuwait, United Arab Emirates	None
2S4, 240-mm SP mortar	9,600	18,000	1/min	40/hour	Iraq, Czech Republic	NUKE, LGM
M240, 240-mm towed mortar	9,700	18,000	1/min	38/hour	Iran, Iraq, North Korea, Egypt, Oman, Lebanon	NUKE, LGM
BM 27, 220-mm MRS	_	35,000	16/min	Reload	Afghanistan, Syria	CHEM, SCATMINES
2S7, 203-mm SPH	37,500	47,000	2/min	2/min	Czech Republic, Poland, Slovakia	None
2S3, 180-mm towed	30,400	43,800	1/min	1/2 min	India, Iraq, Egypt, Syria	None
2S3, 152-mm SPG	20,600	24,000	4/min	1/min	Hungary, Iraq, Libya, Syria	None
2S19, 152-mm SPGH	24,700	30,000	8/min	8/min	None	LGM
2S5, 152-mm SP	28,400	37,000	5/min	5/min	None	None
2A36, 152-mm towed	28,400	37,000	5/min	1/min	Finland	None
D-20, 152-mm towed	17,230	30,000	5/min	1/min	Algeria, China, Cuba, Egypt, Vietnam, Former Yugoslavia	None
M 1976, 122-mm MRS	_	9,800	16/min	Reload	Algeria, Afghanistan, Cambodia, China, Egypt, Syria, North Korea, Vietnam	CHEM
BM 21, 140-mm MRL	_	20,400	40/min	Reload	China, Egypt, India, Iran, Iraq, North Korea	CHEM, SCATMINES
2S1, 122-mm SP	15,300	22,000	8/min	1.1/min	None	None
D-30, 122-mm towed	15,300	22,000	8/min	1.1/min	China, Egypt, India, Iran, Iraq, North Korea	None
2S9, 120-mm SP mortar H	8,900	13,000	6/min	6/min	Afghanistan	LGM
2S23, 120-mm SP mortar H	8,900	12,900	10 min	10 min	None	LGM
2BTR, 82-mm SP/T mortar	4,300	_	120/min		Hungary, Russia	None
SOUTH AFRICA						
G-6, 155-mm SPG	30,800	39,600	3/21 sec	4/min	UAE, Oman	None
G-5, 155-mm towed	30,200	39,000	3/min	3/min	None	None

MANUFACTURER/ WEAPON	BASIC RANGE (METERS)	BB/ERGM RANGE (METERS)	RATE OF FIRE		COUNTRIES POSSESSING	REMARKS
			MAX	SUSTAINED		
UNITED KINGDOM						
FH 70, 155-mm towed	24,700	31,500	3/13 sec	2/min	Germany, Italy, Japan, Saudi Arabia	None
FORMER YUGOSLAVIA						
M-77, 128-mm MRS	_	20,600	32/min	Reload	Bosnia, Bosnian Serb Army, Croatia, Iraq, Serbia, Montenegro	None

Legend
ARS-artillery rocket system
BB-base bleed
CHEM-chemical munitions capable
CIS-Commonwealth of Independent States (former states of the Soviet Union)
FG-field gun
FH-field Howitzer
FROG-free rocket over ground (unguided artillery rocket)
GCT-high rate of fire (English translation of French term)
GH-gun Howitzer
H-Howitzer
LGM-laser-guided munitions capable
MAX-maximum
min-minute
MRL-multiple rocket launcher
MRS-multiple rocket system
MRSL-multiple rocket system launcher
N/A-not applicable
NUKE-nuclear munitions capable
SCATMINES-scatterable mines
sec-second
SMERCH-Russian 300-mm extended range MRL
SP-self-propelled
SPG-self propelled gun
SPGH-self propelled gun Howitzer (a Russian army term)
SPH-self propelled Howitzer
SP/T-self propelled/towed
UAE-United Arab Emirates

GLOSSARY
SECTION I. ACRONYMS

AADC . . . . . .area air defense commander
AAW. . . . . antiair warfare
ACA . . . . . .airspace control authority
ACE . . . . . aviation combat element
AFATDS. . . . . Advanced Field Artillery Tactical Data System
AGM . . . . . .attack guidance matrix
AIRSUPREQ . . . . . air support request
ALLOREQ . . . . . air allocation request
ALO . . . . . air liaison officer
ANGLICO . . . air/naval gunfire liaison company
AOA . . . . . amphibious objective area
AOC . . . . . air and space operations center
ASCS . . . . . air support control section
ASR. . . . . .assault support request
ATACMS . . . . . .Army Tactical Missile System
ATF. . . . . amphibious task force
ATO . . . . . air tasking order

BCD . . . . . .battlefield coordination detachment
BCL. . . . . .battlefield coordination line
BDA . . . . . battle damage assessment
BSM . . . . . .battlespace shaping matrix

CAS. . . . . .close air support
CATF . . . . . commander, amphibious task force
CBR . . . . . .counterbattery radar
CCIR. . . . . .commander's critical information requirement
CFCC . . . . . counterfire coordination center
CFL. . . . . .coordinated fire line
CFS . . . . . current fires section
CLF. . . . . commander, landing force
CMO . . . . . .civil-military operations
COA . . . . . course of action
COC . . . . . combat operations center
COG . . . . . .center of gravity
COIN. . . . . counterinsurgency
CONOPS. . . . . .concept of operations
CSS . . . . . combat service support

D3A. . . . . decide, detect, deliver, and assess
DAS . . . . . .deep air support (USMC)
DASC . . . . . direct air support center
DSM . . . . . decision support matrix
DST. . . . . decision support template

EFST . . . . . .essential fire support task

FAHQ . . . . . force artillery headquarters
FFC . . . . . force fires coordinator
FFCC. . . . . force fires coordination center
FRAGO. . . . . .fragmentary order
FSA . . . . . fire support area
FSC . . . . fire support coordinator (Marine Corps)
FSCC. . . . . .fire support coordination center
FSCL. . . . . .fire support coordination line
FSCM . . . . . fire support coordination measure
FSCOORD . . . . .fire support coordinator (Army)
FSE . . . . . fire support element
ft . . . . . foot/feet

G-2 . . . . . assistant chief of staff, intelligence
G-3 . . . . . assistant chief of staff, operations
G-4 . . . . . .assistant chief of staff, logistics
G-5 . . . . . assistant chief of staff, plans
G-6 . . . . . assistant chief of staff, communications system
GCE . . . . . ground combat element

HHQ . . . . . higher headquarters
HIMARS. . . . . .High Mobility Artillery Rocket System
HPT. . . . . .high-payoff target
HPTL . . . . . .high-payoff target list
HVT . . . . . high-value target

IAS . . . . . .intelligence analysis system
IOC . . . . . .intelligence operations center
IPB . . . . . intelligence preparation of the battlespace

J-3 . . . . . operations directorate of a joint staff
JADOCSJoint Automated Deep Operations Control System
JAOC . . . . . .joint air operations center
JFACC . . . . . joint force air component commander

JFC . . . . . joint force commander
JFE . . . . . joint fires element
JFLCC. . joint force land component commander
JFMCC . . . . . joint force maritime component commander
JIPTL . . . . . joint integrated prioritized target list
JMTF. . . . . joint military information support operations task force
JSOTF . . . . . joint special operations task force
JTAR. . . . . joint tactical air strike request
JTCB . . . . . joint targeting coordination board
JTF . . . . . joint task force
JTL . . . . . joint target list
JTSG . . . . . joint targeting steering group

km . . . . . kilometer

LCE. . . . . logistics combat element
LNO . . . . . liaison officer
LOC . . . . . line of communications
LOO . . . . . line of operations

MACCS . . . . . Marine air command and control system
MACG . . . . . Marine air control group
MAGTF . . . . . Marine air-ground task force
MARCENT. . . . . United States Marine Corps Forces, Central Command
MCDP . . . . . Marine Corps doctrine publication
MCOO . . . . modified combined obstacle overlay
MCPP . . . . . Marine Corps Planning Process
MCRP . . . . . Marine Corps reference publication
MCWP . . . Marine Corps warfighting publication
MEA . . . . . munitions effectiveness assessment
MEF . . . . . Marine expeditionary force
MISO . . . . . military information support operations
MLRS . . . . . Multiple Launch Rocket System
mm . . . . . millimeter
MOE . . . . . measure of effectiveness
MOP . . . . . measure of performance
MRL . . . . . multiple rocket launcher
MSC . . . . . major subordinate command

NAI . . . . . named area of interest
NFA . . . . . no-fire area
NSFS. . . . . naval surface fire support

OAS . . . . . offensive air support
OCAC . . . . operations control and analysis center
OFSD . . . . . operational fires support directorate
OIC . . . . . officer in charge
OIF . . . . . Operation Iraqi Freedom
OPCON. . . . . operational control
OPLAN . . . . . operation plan
OPORD. . . . . operation order
OPT. . . . . operational planning team

POF . . . . . priority of fires

RADC . . . . . regional air defense commander
RAGM . . . . . reactive attack guidance matrix
RFA. . . . . restrictive fire area
RFL . . . . . restrictive fire line
ROE . . . . . rules of engagement
ROZ . . . . . restricted operations zone
RSTA . . . . . reconnaissance, surveillance, and target acquisition
RTC. . . . . reactive targeting cell

S-2. . . . . intelligence officer
S-3. . . . . operations officer
SAC. . . . . supporting arms coordinator
SACC . . . . . supporting arms coordination center
SARC . . . . . surveillance and reconnaissance center
SIGINT . . . . . signals intelligence
SME . . . . . subject matter expert
SOCCE . . . . . special operations command and control element
SOF . . . . . special operations forces
SOP . . . . . standing operating procedure
SORTIEALOT . . . . . sortie allotment message

TAC(A). . . . . tactical air coordinator (airborne)
TACAIR . . . . . tactical air
TACC . . . . tactical air command center (USMC)
TACC . . . . . tactical air control center (USN)
TACON. . . . . tactical control
TACP . . . . . tactical air control party
TADC . . . . . tactical air direction center
TAI . . . . . target area of interest
TAOC . . . . tactical air operations center (USMC)
TBMCS. . . . . Theater Battle Management Core System

TGWG . . . . . targeting guidance working group
TIC . . . . . target information center
TIS . . . . . target information section
TLE . . . . . target location error
TSS . . . . . .target selection standard
TST . . . . . .time-sensitive target
TTP . . . . . tactics, techniques, and procedures
TWG . . . . . .targeting working group

UAS . . . . . unmanned aircraft system
US . . . . . United States

SECTION II. DEFINITIONS

amphibious objective area—A geographical area (delineated for command and control purposes in the order initiating the amphibious operation) within which is located the objective(s) to be secured by the amphibious force. This area must be of sufficient size to ensure accomplishment of the amphibious force's mission and must provide sufficient area for conducting necessary sea, air, and land operations. Also called **AOA**. (JP 1-02)

amphibious operation—A military operation launched from the sea by an amphibious force, embarked in ships or craft with the primary purpose of introducing a landing force ashore to accomplish the assigned mission. (JP 1-02)

apportionment (air)—The determination and assignment of the total expected effort by percentage and/or by priority that should be devoted to the various air operations for a given period of time. Also called **air apportionment.** (JP 1-02)

area of operations—An operational area defined by the joint force commander for land and maritime forces. Areas of operation do not typically encompass the entire operational area of the joint force commander, but should be large enough for component commanders to accomplish their missions and protect their forces. Also called **AO**. (JP 1-02)

assessment—Analysis of the security, effectiveness, and potential of an existing or planned intelligence activity. (Part 3 of a 4-part definition.) (JP 1-02)

asymmetry—Unconventional, unexpected, innovative, or disproportional means used to gain advantage over an enemy. (MCRP 5-12C)

battle damage assessment—The estimate of damage resulting from the application of lethal or nonlethal military force. Battle damage assessment is composed of physical damage assessment, functional damage assessment, and target system assessment. Also called **BDA**. (JP 1-02)

battlespace—The environment, factors, and conditions that must be understood to successfully apply combat power, protect the force, or complete the mission. This includes the air, land, sea, space, and the included enemy and friendly forces; facilities; weather; terrain; the electromagnetic spectrum; and the information environment within the operational areas and areas of interest. (Proposed for inclusion in the next edition of MCRP 5-12C.)

boundary—A line that delineates surface areas for the purpose of facilitating coordination and deconfliction of operations between adjacent units, formations, or areas. (JP 1-02)

campaign plan—A joint operation plan for a series of related major operations aimed at achieving strategic or operational objectives within a given time and space. (JP 1-02)

center of gravity—The source of power that provides moral or physical strength, freedom of action, or will to act. Also called **COG**. (JP 1-02)

close operations—Military actions conducted to project power decisively against enemy forces that pose an immediate or near term threat to the success of current battles or engagements. These military actions are conducted by committed forces and their readily available tactical reserves, using maneuver and combined arms. (MCRP 5-12C)

combat assessment—The determination of the overall effectiveness of force employment during military operations. Combat assessment is composed of three major components: (a) battle damage assessment; (b) munitions effectiveness

assessment; and (c) reattack recommendation. Also called **CA**. (JP 1-02)

combat power—The total means of destructive and/or disruptive force which a military unit/formation can apply against the opponent at a given time. (JP 1-02)

combined arms—The full integration of combat arms in such a way that to counteract one, the enemy must become more vulnerable to another. (Part 1 of a 2-part definition.) (MCRP 5-12C)

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

critical vulnerability—An aspect of a center of gravity that, if exploited, will do the most significant damage to an enemy's ability to resist. A vulnerability cannot be critical unless it undermines a key strength. Also called **CV**. (MCRP 5-12C)

cut line—In targeting, a list of prioritized targets most likely to be attacked based on available air capabilities and the ability to affect the targets on the list. (Proposed for inclusion in the next edition of MCRP 5-12C.)

deep operations—Military actions conducted against enemy capabilities that pose a potential threat to friendly forces. These military actions are designed to isolate, shape, and dominate the battlespace and influence future operations. (MCRP 5-12C)

delay—A form of retrograde in which a force under pressure trades space for time by slowing the enemy's momentum and inflicting maximum damage on the enemy without, in principle, becoming decisively engaged. (MCRP 5-12A)

design—The conception and articulation of a framework for solving a problem. (This term and its definition are proposed for inclusion in the next edition of MCRP 5-12C.)

destroy—A tactical mission task that physically renders an enemy force combat ineffective until it is reconstituted. (Part 1 of a 2-part definition.) (MCRP 5-12C)

disrupt—A tactical mission task in which a commander integrates direct and indirect fires, terrain, and obstacles to upset an enemy's formation or tempo, interrupt his timetable, or cause his forces to commit prematurely or attack in piecemeal fashion. (Part 1 of a 3-part definition.) (MCRP 5-12A).

fires—The use of weapon systems to create a specific lethal or nonlethal effect on a target. (JP 1-02)

fire support—Fires that directly support land, maritime, amphibious, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives. (JP 1-02) Assistance to elements of the Marine air-ground task force engaged with the enemy rendered by other firing units, including (but not limited to) artillery, mortars, naval surface fire support, and offensive air support. (MCRP 5-12C)

fire support area—An appropriate maneuver area assigned to fire support ships by the naval force commander from which they can deliver gunfire support to an amphibious operation. Also called **FSA**. (JP 1-02)

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

fire support coordination line—A fire support coordination measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines facilitate the expeditious attack of surface targets of opportunity beyond the coordinating

measure. A fire support coordination line does not divide an area of operations by defining a boundary between close and deep operations or a zone for close air support. The fire support coordination line applies to all fires of air, land, and sea-based weapon systems using any type of ammunition. Forces attacking targets beyond a fire support coordination line must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the fire support coordination line must ensure that the attack will not produce adverse effects on, or to the rear of, the line. Short of a fire support coordination line, all air-to-ground and surface-to-surface attack operations are controlled by the appropriate land or amphibious force commander. The fire support coordination line should follow well-defined terrain features. Coordination of attacks beyond the fire support coordination line is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the fire support coordination line. However, failure to do so may increase the risk of fratricide and could waste limited resources. Also called **FSCL**. (JP 1-02)

fire support coordination measure—A measure employed by land or amphibious commanders to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces. Also called **FSCM**. (JP 1-02)

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

functional component command—A command normally, but not necessarily, composed of forces of two or more Military Departments which may be established across the range of military operations to perform particular operational missions that may be of short duration or may extend over a period of time. (JP 1-02)

high-payoff target—A target whose loss to the enemy will significantly contribute to the success of the friendly course of action. High-payoff targets are those high-value targets that must be acquired and successfully attacked for the success of the friendly commander's mission. Also called **HPT**. (JP 1-02)

high-value target—A target the enemy commander requires for the successful completion of the mission. The loss of high-value targets would be expected to seriously degrade important enemy functions throughout the friendly commander's area of interest. Also called **HVT**. (JP 1-02)

information operations—The integrated employment of the core capabilities of electronic warfare, computer network operations, psychological operations, military deception, and operations security, in concert with specified supporting and related capabilities, to influence, disrupt, corrupt or usurp adversarial human and automated decision making while protecting our own. Also called **IO**. (JP 1-02)

joint fires—Fires delivered during the employment of forces from two or more components in coordinated action to produce desired effects in support of a common objective. (JP 1-02)

joint fires element—An optional staff element that provides recommendations to the operations directorate to accomplish fires planning and synchronization. Also called **JFE**. (JP 1-02)

joint fire support—Joint fires that assist air, land, maritime, and special operations forces to move, maneuver, and control territory, populations, airspace, and key waters. (JP 1-02)

joint force air component commander—The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of assigned, attached, and/or made available for

tasking air forces; planning and coordinating air operations; or accomplishing such operational missions as may be assigned. The joint force air component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. Also called **JFACC**. (JP 1-02)

joint force commander—A general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called **JFC**. (JP 1-02)

joint force land component commander—The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of assigned, attached, and/or made available for tasking land forces; planning and coordinating land operations; or accomplishing such operational missions as may be assigned. The joint force land component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. Also called **JFLCC**. (JP 1-02)

joint force maritime component commander—The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of assigned, attached, and/or made available for tasking maritime forces and assets; planning and coordinating maritime operations; or accomplishing such operational missions as may be assigned. The joint force maritime component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. Also called **JFMCC**. (JP 1-02)

joint targeting coordination board—A group formed by the joint force commander to accomplish broad targeting oversight functions that may include but are not limited to coordinating targeting information, providing targeting guidance and priorities, and refining the joint integrated prioritized target list. The board is normally comprised of representatives from the joint force staff, all components, and if required, component subordinate units. Also called **JTCB**. (JP 1-02)

joint task force—A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a subunified commander, or an existing joint task force commander. Also called **JTF**. (JP 1-02)

landing force—A Marine Corps or Army task organization formed to conduct amphibious operations. The landing force, together with the amphibious task force and other forces, constitute the amphibious force. Also called **LF**. (JP 1-02)

limit—In targeting, to reduce options or courses of action available to the enemy. (Proposed for inclusion in the next edition of MCRP 5-12C.)

maneuver warfare—A warfighting philosophy that seeks to shatter the enemy's cohesion through a variety of rapid, focused, and unexpected actions that create a turbulent and rapidly deteriorating situation with which the enemy cannot cope. (MCRP 5-12C)

Marine air-ground task force—The Marine Corps' principal organization for all missions across the range of military operations, composed of forces task-organized under a single commander capable of responding rapidly to a contingency anywhere in the world. The types of forces in the Marine air-ground task force (MAGTF) are functionally grouped into four core elements: a command element, an aviation combat element, a ground combat element, and a logistics combat element. The four core elements are categories of forces, not formal commands. The basic structure of the MAGTF never varies, though the number, size, and type of Marine Corps units comprising each of its four elements will always be mission dependent. The flexibility of the organizational

structure allows for one or more subordinate MAGTFs to be assigned. In a joint or multinational environment, other Service or multinational forces may be assigned or attached. Also called **MAGTF**. (MCRP 5-12C)

Marine expeditionary force—The largest Marine air-ground task force (MAGTF) and the Marine Corps' principal warfighting organization, particularly for larger crises or contingencies. It is task-organized around a permanent command element and normally contains one or more Marine divisions, Marine aircraft wings, and Marine logistics groups. The Marine expeditionary force is capable of missions across the range of military operations, including amphibious assault and sustained operations ashore in any environment. It can operate from a sea base, a land base, or both. In a joint or multinational environment, it may also contain other Service or multinational forces assigned or attached to the MAGTF. Also called **MEF**. (MCRP 5-12C)

named area of interest—The geospatial area or systems node or link against which information that will satisfy a specific information requirement can be collected. Named areas of interest are usually selected to capture indications of enemy courses of action, but also may be related to conditions of the operational environment. Also called **NAI**. (JP 1-02)

operational control—Command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority) and may be delegated within the command. Operational control is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions; it does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training. Also called **OPCON**. (JP 1-02)

rear operations—Military actions conducted to support and permit force sustainment and to provide security for such actions. (MCRP 5-12C)

rules of engagement—Directives issued by competent military authority that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. Also called **ROE**. (JP 1-02)

Service component command—A command consisting of the Service component commander and all those Service forces, such as individuals, units, detachments, organizations, and installations under that command, including the support forces that have been assigned to a combatant command or further assigned to a subordinate unified command or joint task force. (JP 1-02)

sortie—In air operations, an operational flight by one aircraft. (JP 1-02)

stability operations—An overarching term encompassing various military missions, tasks, and activities conducted outside the United States in coordination with other instruments of national power to maintain or reestablish a safe and secure

environment, provide essential governmental services, emergency infrastructure reconstruction, and humanitarian relief. (JP 1-02)

suppression—Temporary or transient degradation by an opposing force of the performance of a weapons system below the level needed to fulfill its mission objectives. (JP 1-02)

sustainment—The provision of logistics and personnel services required to maintain and prolong operations until successful mission accomplishment. (JP 1-02)

tactical control—Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. Tactical control is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command. Tactical control provides sufficient authority for controlling and directing the application of force or tactical use of combat support assets within the assigned mission or task. Also called **TACON**. (JP 1-02)

target acquisition—The detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. Also called **TA**. (JP 1-02)

target area of interest—The geographical area where high-value targets can be acquired and engaged by friendly forces. Not all target areas of interest will form part of the friendly course of action; only target areas of interest associated with high priority targets are of interest to the staff. These are identified during staff planning and wargaming. Target areas of interest differ-from engagement areas in degree. Engagement areas plan for the use of all available weapons; target areas of interest might be engaged by a single weapon. Also called **TAI**. (JP 1-02)

targeting—The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. (JP 1-02)

time-sensitive target—A joint force commander designated target requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces. Also called **TST**. (JP 1-02)

warfighting functions—The six mutually supporting military activities integrated in the conduct of all military operations (command and control, maneuver, fires, intelligence, logistics, and force protection). Also called **WF**. (MCRP 5-12C)

REFERENCES

Joint Publications

1 Doctrine for the Armed Forces of the United States
3-0 Joint Operations
3-02 Joint Doctrine for Amphibious Operations
3-09 Joint Fire Support
3-60 Joint Targeting

Army Field Manual

101-50-1 Joint Munitions Effectiveness Manual: Air-to-Surface: Weapon Effectiveness, Selection and Requirements (BASIC JMEM), Air-Delivered Non-Nuclear

Marine Corps Publications

Marine Corps Doctrine Publication
1 Warfighting
1-0 Marine Corps Operations

Marine Corps Warfighting Publication
3-15.2 Tactical Employment of Mortars
3-16 Fire Support Coordination in the Ground Combat Element
3-16.1 Artillery Operations
3-16.5 Tactics, Techniques, and Procedures for Field Artillery Meteorology
3-16.7 Marine Artillery Survey Operations
3-25 Control of Aircraft and Missiles
3-25.3 Marine Air Command and Control System Handbook
3-25.4 Marine Tactical Air Command Center Handbook
3-25.7 Tactical Air Operations Center Handbook
3-33.5 Counterinsurgency
3-40.4 Marine Air-Ground Task Force Information Operations
5-1 Marine Corps Planning Process

Marine Corps Reference Publication
3-25H Multi-Service Tactics, Techniques, and Procedures for Kill Box Employment

Marine Corps Interim Publication
3-16.02 Marine Rocket Battery Operations

USMC
USMC