MCWP 3-31

Marine Air-Ground Task Force Fires and Effects

U.S. Marine Corps

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FOREWORD

Marine Corps Warfighting Publication (MCWP) 3-31, *Marine Air-Ground Task Force Fires and Effects*, sets forth the doctrine for fires and effects in Marine air-ground task force (MAGTF) operations. It applies to all Fleet Marine Forces (FMF), but its focus is at the Marine expeditionary force level. Other MAGTFs will differ in scope and scale and FMF may be tasked to conduct operations outside the MAGTF construct. Regardless of size or task organization, FMF plan and execute the fires warfighting function using the basic precepts provided in this publication.

This publication addresses integrating and synchronizing MAGTF capabilities to create lethal and nonlethal effects. It defines the new fires and effects coordination center's roles and responsibilities and incorporates a holistic approach to integrating fires and effects throughout the competition continuum. The MAGTF fires and effects integration methodology provides a systematic approach to planning, integrating, executing, and assessing fires and information activities used to shape enemy, adversary, neutral, and friendly entities and systems in the battlespace. This publication also provides considerations for integrating United States Marine Corps fires and effects into a maritime force.

This publication supersedes MCWP 3-31, *Marine Air-Ground Task Force Fires,* dated 3 June 2011, erratum dated 2 May 2016, and change one dated 4 April 2018.

Reviewed and approved this date.

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CHAPTER 1.
FIRES AND EFFECTS FUNDAMENTALS

Marine air-ground task force (MAGTF) fires and effects is the coordinated and collective employment of fires, information activities, and systems to create desired effects throughout the battlespace to achieve objectives. Under the single battle concept, Marines coordinate MAGTF fires and effects with maneuver during operations to shape the battlespace, setting conditions for decisive action and successful mission execution. Commanders employ fires and information activities while considering the requirements and costs to project and sustain the units that produce desired effects.

Fires are "those means used to delay, disrupt, degrade, or destroy enemy capabilities, forces, or facilities as well as affect the enemy's will to fight" (*Marine Corps Supplement to the DoD Dictionary of Military and Associated Terms*, hereafter referred to as the *USMC Dictionary)*. An effect is "the physical or behavioral state of a system that results from an action, a set of actions, or another effect; the result, outcome, or consequence of an action; a change to a condition, behavior, or degree of freedom" *(DoD Dictionary of Military and Associated Terms* hereafter referred to as the *DoD Dictionary*).

The use of effects in planning helps battle staffs determine actions required to achieve objectives. In simple terms, the use of effects joins objectives to actions; it is in no way deterministic or predictive. Military operations and actions are nonlinear and interactively complex. Unforeseen circumstances and unintended consequences occur. Because the human element, friction, and the fog of war can never be eliminated, relevant actor or adversary actions influence the operational environment.

A desired effect can be thought of as a condition that supports achieving an objective, while an undesired effect is a condition that can inhibit progress toward an objective. A condition is a physical or behavioral state of a system that is necessary for the achievement of an objective. Direct effects are immediate, first-order consequence of a military action and are usually immediate and easily recognizable. Indirect effects are the second-, third-, and higher-order consequences of action, often delayed or displaced. Indirect effects can be physical or behavioral in nature and can be difficult to recognize or observe. Effects can also be imposed sequentially or in parallel. Effects imposed in series, one after another over time, are sequential. Those imposed near-simultaneously are parallel effects, which can place greater stress upon systems and require faster adaptation. Effects tend to cumulate or compound, such that the ultimate result of a number of direct or indirect effects often combine to produce greater outcomes than the sum of their individual impacts. Effects can cascade or ripple through a system, often influencing other systems, typically through nodes and links that are common and critical to related systems.

Effects can create unintended consequences, which could be counterproductive, or may create opportunities. For example, a persistent series of strikes killing a large number of enemy combatants (first-order effect) can have the nonlethal effect of demoralizing enemy fighters (second-order effect) and might lead to mass surrender or defection, diminishing the capacity and capability of the enemy force (third-order effect).

The tenets in this publication apply throughout the competition continuum. While fires and effects considerations vary throughout the competition continuum, the methodology Marines use to plan, employ, and assess fires and information activities should remain consistent. Marines should use the MAGTF fires and effects integration methodology during cooperation, competition, and armed conflict, as the methodology's six-phase construct and objective-to-task approach applies to all operations and activities conducted throughout the competition continuum. This methodology is discussed in Chapter 4.

FIRES WARFIGHTING FUNCTION

All military activities that occur within the battlespace involve one or more of the seven warfighting functions (i.e., command and control [C2], maneuver, fires, intelligence, logistics, force protection, and information). Warfighting functions are the building blocks for all military operations that occur in the battlespace. The fires warfighting function integrates and synchronizes numerous tasks, missions, and processes. Marines coordinate MAGTF fires and effects by effectively integrating the fires and effects tasks, which include the following:

- Targeting.
- Fire Support.
- Interdiction.
- Counterfire.
- Countering air and missile threats.
- Integrating information.
- Assessing fires and effects.

> **NOTE:** Joint doctrine includes *conduct strategic attack* as a joint fires task. While Fleet Marine Forces (FMF) can provide forces and capabilities that support or facilitate strategic attack in a joint environment, this task is not included as a MAGTF fires and effects task (MAGTFs are unlikely to plan, coordinate, and lead execution of a strategic attack).

FIRES AND EFFECTS TASKS

Marines execute fires and effects tasks using unique tactics, techniques, and procedures (TTP). For example, Marines typically execute close air support (CAS) TTP during actions associated with the fire support task and strike coordination and reconnaissance (SCAR), and they execute

armed reconnaissance and air interdiction TTP during actions associated with interdiction and targeting tasks. Often, fires and effects tasks overlap, requiring process and procedure integration. For example, proactive counterfire requires integrating the processes and procedures for counterfire, interdiction, and targeting.

In simple terms, each fires and effects task can be thought of as a part of, or a subset of MAGTF fires and effects. The following sections discuss various fires and effects tasks.

Targeting

Targeting requires a continuous, analytic process to identify, develop, and affect targets to meet the commander's objectives. Planners use targeting information, supported by analytical reasoning to link targets with desired effects. Targeting helps planners integrate and synchronize fires with other warfighting functions.

Targeting requires Marines to deconflict target nominations duplicated by different echelons within in the same force, and to integrate attacks on those targets with other joint force components. Targeting requires coordinated planning and interaction within the MAGTF, and among the MAGTF, external commands, and other agencies. A MAGTF can employ targeting processes that are integrated with and contribute to joint targeting processes (see Chapter 8 for more information on joint operations). However, MAGTF targeting procedures differ from joint targeting procedures. In general, joint targeting focuses efforts on the operational environment, while MAGTF targeting focuses efforts in the MAGTF battlespace and assigned area of operations.

Targeting encompasses many processes that continuously analyze, identify, develop, validate, assess, and prioritize targets for engagement. The MAGTF fires and effects integration methodology uses a six-phase targeting-cycle construct similar to the one used by the joint force (see Chapter 4 for more information on the MAGTF fires and effects integration methodology).

Targets. A target is an entity or object that performs a function for the enemy or adversary and is considered for possible engagement or other action. A target system is a broad set of interrelated components that produce a common output or have a shared mission that contributes to adversarial capabilities.

Targets fall into one of five categories:

- Facility. A physical structure, group of structures, or area that performs one or more functions that contributes to a threat capability.
- Individual. A person who provides one or more functions that contribute to a threat capability.
- Virtual. A collection of programs, files, or code dependent on each other to perform a function for the threat.
- Equipment. An object made up of any number of devices and components, integrated and codependent, upon which engagement of one-component results in an effect upon the whole.
- Organization. A group or unit that provides a function that contributes to a threat capability. For example, a front company (an entity) that ships lethal aid (a function) for the terrorist network (the threat) would be a target. Target elements of an organization could include facilities, individuals, equipment, and virtual entities; however, facilities and individuals will most often be associated targets instead of elements.

Target Characteristics. Every target has characteristics that form the basis for target detection, location, identification, and classification for ongoing and future surveillance, reconnaissance, analysis, engagement, and assessment. Categories that help define the characteristics of a target include the following:

- Physical Characteristics. Physical characteristics are generally discernible to the five senses or through sensor-derived signatures and can shape or influence the selection of the type and number of weapons, the weapon systems, and the methods or tactics employed against the target.
- Functional Characteristics. These characteristics describe what the target does and how it operates. They describe the target's function within a greater target system, its activity level, its functionality status, and, in some cases, its significance. Functional characteristics are often difficult to discern because of varying factors. Marines must carefully review known facts and use deductive and inductive reasoning to effectively assess functional characteristics.
- Cognitive, Control, and Information Characteristics. These characteristics refer to where and how individuals or groups process, perceive, judge, and make decisions. In cases where the entity is an individual or group, cognitive characteristics describe their reasoning patterns or how their will and decisions could be influenced. If a target is virtual, cognitive characteristics describe data storage, transmission, information processing, virtual capabilities, and system vulnerabilities. Cognitive and information characteristics are particularly important to properly assess the critical nodes in a target system, since nearly every target system possesses some central control function. Neutralizing control functions can be crucial in creating desired changes in behavior.
- Environmental Characteristics. These characteristics describe the environmental effect on the target. These characteristics can also affect the methods used to engage or observe them.
- Temporal Characteristics. Time, as a characteristic of a target, describes the target's vulnerability to detection, attack, or other engagement in relation to the time available. This characteristic can help determine when and how to find or engage a target. The window of opportunity for a particular target might be fleeting; however, taking it out could be critical to accomplish friendly operations.

Targeting Guidance. The MAGTF engages targets in compliance with the law of war and rules of engagement (ROE), using specific target development, approval, and engagement processes consistent with US and Department of Defense (DoD) policy and TTP established in joint and Service publications. The law of war regulates the conduct of armed conflicts as established by international law. Rules of engagement are directives issued by a military authority that define the circumstances and limitation placed on US forces to initiation or continue combat with other forces. Standing rules of engagement establish fundamental policies and procedures for US commanders and their forces during military operations and contingencies outside the US and its territories, including the seas and airspace. Combatant commanders and joint force commanders (JFCs) vet and validate potential targets to ensure targets meet the commander's objectives and comply with the law of war and ROE. Once validated, targets are placed on appropriate target lists (such as a joint target list [JTL] or restricted target list [RTL]) and can subsequently be nominated for engagement.

Friendly or neutral entities in the operational environment that do not meet the criteria for joint targets typically require alternate development, approval, and engagement processes consistent with US and DoD policy. Policies, directives, or ROE can limit or restrict activities or certain engagement capabilities based on entity type. In general, engaging neutral and friendly entities is limited to specific information activities such as influencing or informing relevant actors. Engaging US domestic audiences is limited to informing activities.

Deliberate Targeting. Deliberate (or planned) targeting entails planned targets known to exist in the battlespace with engagement actions scheduled against them. Deliberate targeting is conducted during all three planning horizons (future plans, future operations [FOPS], and current operations [COPS]).

Planned targets can be further divided into scheduled targets and on-call targets. Marines prosecute scheduled targets at specific times. On-call targets have actions planned, but not for a specific delivery time. On-call targets are unique in that engagements are planned using deliberate targeting but are engaged using dynamic targeting procedures.

Dynamic Targeting. Marines use dynamic targeting because the nature and time frame of COPS typically require more responsiveness than deliberate targeting. Dynamic targeting prosecutes targets of opportunity that include unscheduled and unanticipated targets:

- Unscheduled targets are known targets and are included on a target list, but not selected for engagement because the target was not nominated, was nominated but did not make the integrated prioritized target list, or was not expected to be available for engagement within the target cycle.
- Unanticipated targets are unknown or not expected to be present in the operational environment. These targets are not included on a target list and an evaluation of the target is needed to determine engagement requirements and timing.

Targets of opportunity are targets meeting the criteria to achieve objectives but are not selected for deliberate targeting during the current joint targeting cycle. However, when targets of opportunity are detected or located, they can be processed using dynamic targeting.

Timing and the type of target ultimately determine whether deliberate or dynamic targeting will support operational requirements. All scheduled, on-call, and unscheduled targets should flow from deliberate targeting; planners should deliberately plan to dynamically target. See Chapter 5 for more information on dynamic targeting.

Target Prioritization. Specific target prioritization is factored into plans, orders, or ROE along the following lines:

- *Sensitive targets* refer to those targets for which planned actions warrant Presidential or Secretary of Defense review and approval. Sensitive targets incur high probability of collateral damage, adverse political or diplomatic ramifications (e.g., near the territory of surrounding states), environmental harm or hazard (e.g., water contamination, CBRN [chemical, biological, radiological, and nuclear] hazards), or adverse public sentiment.
- Some individual targets are classified as *high-value individuals*, which warrant unique targeting considerations.

- A *time-sensitive target* (TST) is a target or set of targets as validated by the JFC, that require immediate response. A TST either poses (or will soon pose) a danger to friendly forces or is a highly lucrative, fleeting target of opportunity. Time-sensitive targets present such a significant threat or are of such high importance to the JFC's mission and objectives, that the JFC dedicates intelligence assets and fires, or diverts them from other targets to engage them.

  NOTE: In some planning documents, TSTs are occasionally referred to as "joint force commander-critical targets," or JFC-CTs.

- *Component-critical targets* (CCTs) and *component high-priority targets* might require dynamic targeting with cross-component coordination and assistance in a timely manner to facilitate synchronized execution with other targets. The JFC and component commanders identify these targets within the joint targeting cycle, provide clear guidance to develop and approve the appropriate priority of asset allocation (e.g., intelligence requirements, exploitation, and fires), and provide rapid cross-component coordination to minimize confusion and facilitate execution.

Fire Support

Fire support is the coordinated interaction of various elements of the fire support system. It includes fires that directly support land, maritime, amphibious, space, cyberspace, and special operations forces (SOF) to engage enemy forces, combat formations, and facilities. Within MAGTF operations, fire support is the assistance rendered by other firing units to MAGTF elements engaged with the enemy. Fire support includes artillery, mortars, naval surface fire support (NSFS), and offensive air support in pursuit of tactical and operational objectives. Using the fire support plan, planners integrate, synchronize, and employ MAGTF fire support, thereby creating conditions that provide ground forces freedom of action (See Chapter 3 for more information on the fire support plan.)

Interdiction

Interdiction is an action to divert, disrupt, delay, or destroy the enemy's military surface capability before it can be used effectively against friendly forces or to achieve enemy objectives. Interdiction operations prevent enemies from employing surface capabilities and from reinforcing units at a time and place of their choosing. Air interdiction are "air operations to perform interdiction conducted at such distances from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required" (*DoD Dictionary*).

Counterfire

Counterfire are those fires used to destroy or neutralize enemy weapons. Marine air-ground task force counterfire focuses on engaging enemy rocket, artillery, and mortar indirect surface fire weapons and systems. Enemy indirect surface fire assets can jeopardize the MAGTF commander's freedom of action and ability to establish and maintain momentum if not rapidly and effectively engaged and defeated. A MAGTF employs various assets and capabilities during counterfire operations to include aviation; artillery; NSFS; counterbattery radar (CBR) assets; intelligence, surveillance, and reconnaissance (ISR); information capabilities; and maneuver forces. There are two types of counterfire: proactive and dynamic (also called reactive counterfire). Proactive counterfire identifies, locates, and engages enemy fires systems before they attack friendly forces. Dynamic counterfire provides immediate fires and effects to neutralize, destroy, and suppress enemy indirect fire (IDF) weapons. Dynamic counterfire protects the force from continued attack.

Countering Air and Missile Threats

Countering air and missile threats requires Marines to integrate offensive and defensive operations and capabilities to achieve and maintain freedom of action and force protection. These operations destroy or negate enemy manned and unmanned aircraft and missiles, both before and after launch. Countering air and missile threats consists of a combination of counterair and integrated air and missile defense (IAMD).Integrated air and missile defense defends the homeland and US national interests, protects the joint force, and enables freedom of action by integrating capabilities and overlapping operations to negate an enemy's air and missile capabilities and their effects. At the Service level, antiair warfare (AAW)—a Marine aviation function—integrates all offensive and defensive actions against enemy aircraft, surface-to-air weapons, and theater missiles into a singular, indivisible set of operations to destroy or reduce to an acceptable level the enemy air and missile threat.

Force protection considerations are critical during MAGTF operations. Surface-to-air weapons provide the ground-based air defense of the MAGTF's integrated air defense system. Marines can employ ground-based air defenses in forward combat areas, rear areas, installations, and vital areas. Point defenses are usually located in the MAGTF's rear area.

MAGTF ground-based air defense weapons include short-range surface-to-air missile systems and the Marine air defense integrated system family of systems. Stinger missiles provide close-in, low-altitude air defense (LAAD) of forward combat areas, installations, and vital areas. The Marine air defense integrated system family of systems includes lethal and nonlethal defeat options against unmanned aircraft system, and fixed- and rotary-wing aircraft. The LAAD units provide ground-based air defense weapons, which can be assigned in general support of the MAGTF or in direct support of a specific unit. Depending on its size, a LAAD unit can provide both general support and direct support close-in air defense by task-organizing its assets. When providing general support, LAAD units typically receive tasking from the MAGTF commander via the aviation combat element (ACE) commander and are positioned to provide close-in, point defense of MAGTF vital areas or designated maneuver elements. When providing direct support, LAAD units provide defense of those resources designated by the supported unit commander.

Integrating Information

Integrating information involves planning and employing information capabilities and activities to create desired effects and achieve objectives. In the context of fires and effects, integrating information refers to informing, influencing, deceiving, attacking, or exploiting relevant actors to achieve objectives. According to Marine Corps Doctrinal Publication (MCDP) 8, *Information*, the *information environment* refers to "the global competitive space that spans the warfighting domains, where all operations depend on information. It includes information itself and all relevant social, cultural, psychological, technical, and physical factors that affect the employment of forces and bear on commanders' decision making."

An information capability refers to the means or ability to conduct information activities. An information activity refers to using those information capabilities to create exploitable advantages or desired effects. Marines conduct information activities to engage enemy, adversary, neutral, or friendly entities. MAGTF fires and effects planners integrate information activities with other MAGTF actions to achieve objectives. Marines conduct information activities throughout the operational environment through the four functions of information (generate, preserve, deny, and project). These activities focus on protecting friendly information, information networks, and

information systems; attacking and exploiting relevant actor information, information networks, and information systems; informing audiences; and influencing or deceiving foreign target audiences to achieve an information advantage. Employing information activities is an integral part of the MAGTF fires and effects integration methodology, which is addressed in Chapter 4.

The MAGTF integrates, coordinates, and synchronizes information capabilities to achieve a unified effort. For each information activity, planners must understand the different authorities and permissions, coordination requirements, intelligence requirements, and account for the lead time necessary to satisfy these requirements prior to execution. Information capabilities that are integrated into fires and effects include the following:

- Key leader engagement.
- Communication strategy and operations.
- Civil-military operations.
- Military deception.
- Military information support operations (MISO).
- Electromagnetic spectrum operations.
- Space operations.
- Special technical operations.
- Cyberspace operations.

Information activities that create desired effects in support of fires and effects objectives are coordinated through the fires and effects coordination center (FECC). Other information activities enable and protect command and control of MAGTF forces, such as operations security, information assurance, electromagnetic protection, signature management, Department of Defense information network operations, etc. These information activities fall outside FECC purview and typically are not coordinated through the FECC. The Marine expeditionary force information group (MIG) and information coordination center (ICC), in coordination with the G-3 and other MAGTF agencies, are responsible for planning and coordinating information activities that enable and protect MAGTF command and control.

Assessing Fires and Effects

Assessments help identify the status of dynamic systems in the operational environment and can help anticipate the future status. In general, assessment consists of the following three activities:

- Monitoring. Monitoring battlespace conditions in relation to actions (*What happened?*).
- Evaluating. Analyzing how actions affect progress toward achieving objectives, creating desired effects, and performing tasks (*Why do we think it happened? What are the likely future opportunities and risks?*).
- Recommending or Directing Action. Identifying and adjusting tasks to improve shaping actions (*What do we need to do?*).

MAGTF planners should research higher headquarters (HHQ) operational assessments processes and associated reporting requirements and integrate MAGTF processes with HHQ processes. During operations, MAGTFs can be tasked to report combat assessment information to HHQ.

Typically, MAGTFs operate at the tactical level of warfare; subsequently, MAGTF assessments are focused on the tactical level. Specifically, MAGTF operation assessments are oriented towards achieving MAGTF objectives and end states.

Assessment occurs at all levels of warfare during joint operations. Each level of warfare may have a specific focus; however, together they form an interrelated and interdependent hierarchical structure through which assessments interact (see Figure 1-1).

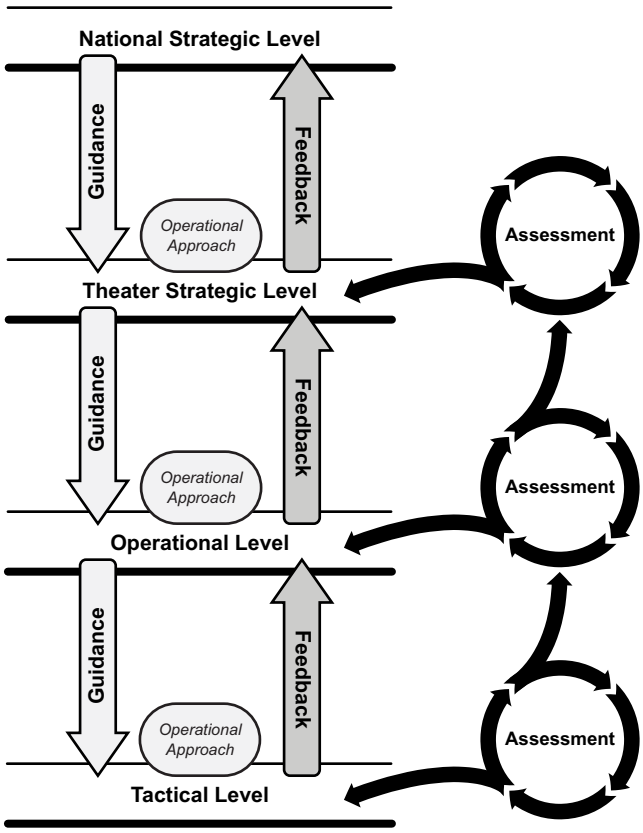

Figure 1-1. Assessment Interaction.

For more information about operation assessment, see Joint Publication (JP) 5-0, *Joint Planning*, and Marine Corps Reference Publication (MCRP) 5-10.1, *Multi-Service Tactics, Techniques, and Procedures for Operation Assessment.*

Assessment criteria consist of measures of effectiveness (MOEs), measures of performance (MOPs), and indicators. Measures of effectiveness are tied to measuring the achievement of objectives, or creation of desired effects or conditions (*Are we doing the right things?*). Measures of performance are criteria used to assess task accomplishment (*Are we doing things right?*). Indicators are items of information (e.g., fact, observed data, or judgment) that provides insight into an MOE or MOP. Figure 1-2 depicts the relationship between end state, objectives, and tasks.

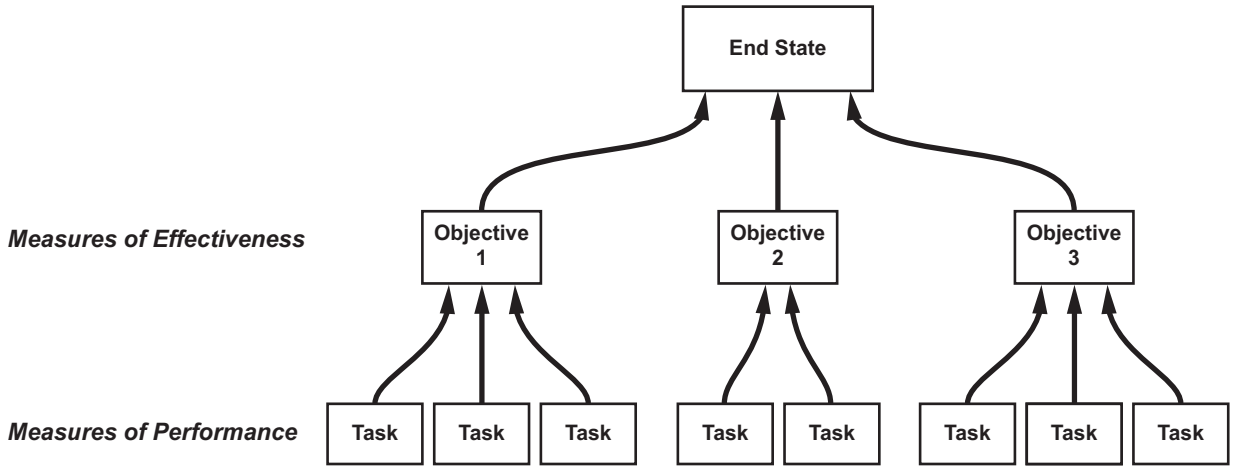

Figure 1-2. Relationships Between End State, Objectives, and Tasks.

MAGTF fires and effects assessment focuses on measuring progress towards achieving fires and effects objectives. Fires and effects assessments contribute to MAGTF operational assessments. Fires and effects assessment is a continuous process, initiated during the Marine Corps Planning Process (MCPP), and conducted and refined during battle rhythm activities. The FECC, in coordination with the intelligence operations center (IOC) and ICC, is responsible for conducting MAGTF fires and effects assessments.

A MAGTF conducts fires and effects assessments from a holistic perspective. Fires and effects assessments are typically based on progress toward achieving fires and effects objectives and executing fires and effects tasking. Another method to facilitate MAGTF fires and effects assessments is to implement assessment criteria for each fires and effects task. For example, an MOE to assess counterfire could be "percentage of enemy IDF assets engaged within a specified time period (XX minutes) after detection." For more information about fires and effects assessment, see Chapter 3.

Combat Assessment. Marines use a combat assessment to determine the overall effectiveness of force employment during military operations. Combat assessment is composed of three related components: battle damage assessment (BDA), collateral damage assessment, and munitions effectiveness assessment (MEA). Completing some or all three components of combat assessment can result in the need to recommend a reattack against a target. The reattack recommendation process considers the target's remaining capability, capacity, as well as the potential for recuperation. Marines coordinate reattack decisions through target collaboration, which enables smooth transfer of Phase One BDA information and facilitates targeting decisions. MAGTF Marines conduct targeting collaboration using several systems and software (e.g., Joint Automated Deep Operations Coordination System [JADOCS], Advanced Field Artillery Tactical Data System [AFATDS], and Internet relay chat). Multiple MAGTF fires and effects agencies use these collaboration tools to simultaneously coordinate and provide targeting input and recommendations. The FECC considers the input, and subsequently coordinates targeting decisions (reattacks and associated changes to targeting plans) via targeting collaboration.

Combat assessment is an intelligence function with required inputs and coordination with operations. Chapter 4 addresses the myriad coordination links between targets and objectives, transition criteria, and desired effects. Within the construct of the fires and effects integration methodology, combat assessment is a collaborative MAGTF effort. The MAGTF operation order (OPORD) should delineate combat assessment processes and procedures specific to an operation.

Detailed combat assessment procedures facilitate timely and effective BDA reporting. MAGTFs implement detailed Phase One BDA collection, tracking, and reporting procedures. During battle rhythm activities, MAGTFs must properly integrate combat assessment processes into the targeting, intelligence, information, and air tasking cycles. Marines coordinate combat assessment planning details and BDA collection requirements during several battle rhythm activities (see Chapter 3 for more information about battle rhythm).

Fires and intelligence planners coordinate to ensure combat assessment contributes to shaping assessment. The IOC develops and maintains BDA tracking tools, which directly contribute to shaping assessments. The targeting intelligence officer leverages these tools and coordinates with the FECC to ensure execution of the deliberate targeting plan is tracked and the Marine air-ground task force integrated prioritized target list (MIPTL) is continuously updated. The FECC and target intelligence coordinate BDA tracking of MIPTL critical target elements (CTEs) to determine whether desired effects were created or reattack is required. See Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3162.02, *Methodology for Combat Assessment*, and JP 3-60, *Joint Targeting* for additional information about combat assessment.

Battle Damage Assessment. A BDA provides timely and accurate estimates of the damage from the application of military force to include estimates of physical damage to a particular target, functional damage to that target, and the capability of the entire system to continue its operations. Battle damage assessment consists of Phase One BDA (physical damage and change assessment), Phase Two BDA (functional damage and change assessment), and Phase Three BDA (target system damage assessment). Collateral damage is also assessed and reported during BDA.

Phase One BDA is an estimate of the quantitative extent of physical damage (through munitions blast, fragmentation, fire damage, etc.) to a target element based on observed or interpreted damage. Phase One BDA is particularly important as MAGTFs typically operate at the tactical level of warfare. Initial BDA reports that contribute to physical damage assessment are often based on visual observation of the target and usually derived from a single source. Phase One BDA reporting must be a coordinated MAGTF effort among combat units, major subordinate commands (MSCs), and the IOC. Major subordinate command and command element intelligence agencies consolidate and forward Phase One BDA reports to the IOC during established time periods. The IOC consolidates and validates various sources of BDA, conducts further analysis based on supplemental reports, and develops consolidated MAGTF BDA assessments. The IOC conducts a more detailed assessment over time to assess target functional damage or change assessment (Phase Two BDA). Marines conduct Phase Three BDA assessments at the combatant command (CCMD) or national level by fusing all Phase One and Two BDA reporting on targets within a target system.

Collateral Damage Assessment. Collateral damage assessment evaluates collateral damage resulting from targeting operations. Marines use it to assess the unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time. Pre-strike collateral damage estimation (CDE) informs collateral damage assessment. Battle damage assessment analysts report identified collateral damage in accordance with established processes and procedures.

Munitions Effectiveness Assessment. An MEA evaluates military force applied in terms of the weapons system and munitions effectiveness to determine and recommend any required changes to the methodology, tactics, weapon system, munitions, fusing, and weapon delivery parameters to increase force effectiveness. Marines use MEAs to compare the actual effectiveness of the engagement to the anticipated effectiveness calculated during Phase Three capability analysis of the targeting cycle. Marines conduct an MEA concurrently and interactively with BDA. Throughout the battle rhythm activities, FECC personnel coordinate with MSCs and other agencies assigned to execute tasks to ensure weaponeering and MEA is properly conducted.

CHAPTER 2.
FIRES AND EFFECTS COMMAND AND CONTROL

Fires organizations and agencies exist at all command echelons. Senior commands establish broad aims and objectives while lower echelon fires organizations develop and execute functional and detailed plans to achieve objectives in support of an operation. Fleet Marine Forces typically operate alongside US joint or multinational forces, and must be prepared to plan, coordinate, and execute fires and effects into joint or combined processes and C2 architectures.

MARINE AIR-GROUND TASK FORCE FIRES AND EFFECTS ORGANIZATIONS

A MAGTF consists of a command element and MSCs or major subordinate elements (MSEs). The MAGTF organizations that coordinate fires and effects include the following:

- Command element:
  - Combat operations center (COC).
  - FECC.
  - Air center.
  - ICC.
  - Rear area operations center (RAOC). An RAOC can integrate a fire support coordinator, fire support coordination center (FSCC), or an air cell as required.
  - Intelligence command and control:
    - IOC.
    - Radio battalion.
    - Intelligence battalion.
    - Force reconnaissance company.
    - Operations control and analysis center (OCAC).
    - Reconnaissance operations center.
    - Surveillance and reconnaissance coordination center (SARCC).
- Ground combat element (GCE):
  - FSCC.
  - Tactical air control party (TACP).
  - Shore fire control party.
- ACE:
  - Marine tactical air command center (Marine TACC).
  - Tactical air operations center (TAOC).

  - Direct air support center (DASC).
  - Air combat intelligence (ACI).
- Force artillery headquarters (FAHQ) (see Chapter 6 for more detail on FAHQ).

See MCWP 3-30, *Marine Air-Ground Task Force Command and Control*, for additional information about MAGTF fires and effects C2 organizations.

Marine Air-Ground Task Force Liaison Agencies

Commanders analyze the mission to determine liaison requirements. Two common MAGTF liaison agencies that facilitate fires and effects integration include the air-naval gunfire liaison company (ANGLICO) and Marine liaison element (MARLE).

Air-Naval Gunfire Liaison Company. The ANGLICO provides the MAGTF commander with a liaison capability to plan, coordinate, employ, and conduct control of fires in support of joint, allied, and multinational forces. Typically, an ANGLICO, which is subordinate to the MIG, is tasked to consult with the MAGTF G-3. An ANGLICO is organized to support MAGTF, joint, allied, or multinational forces up to the division level. The level of support required is determined by the capability of the supported unit. An ANGLICO consists of a headquarters section, multiple brigade platoons, supporting arms liaison teams, and firepower control teams. The headquarters platoon is designed to co-locate with the supported division headquarters, and brigade platoons are organized to support brigade-or regiment-sized units. A supporting arms liaison team supports battalion-sized units, while firepower control teams support company-sized units within the supported battalion.

Marine Liaison Element. A MAGTF commander or a Marine Corps component command within a CCMD establishes a MARLE within appropriate joint air operations centers (JAOCs) to act as the Marine Corps representative to a joint force air component commander (JFACC) on matters pertaining to Marine Corps operations. The MARLE works with various JAOC directorates and cross-functional teams to provide feedback to the JAOC regarding the integration of MAGTF fires and effects, maneuver, and air operations with joint operations. The MARLE provides information on MAGTF commander's intent and concept of operations (CONOPS) (e.g., guidance, intentions, schemes of maneuver, direct support aviation plan) for each air operations directive (AOD) and ensures MAGTF requirements are understood and accurately reflected in the airspace control plan, air tasking order (ATO), daily special instructions (SPINS), and other instructions. The MARLE participates in the JAOC targeting effects team (also referred to as TET) and ATO development processes. The MARLE can coordinate the following matters with the JAOC:

- The allocation request (ALLOREQ) process to include MAGTF requests for external air support.
- Targeting and effects.
- Master air attack plan (MAAP).
- ATO development.
- Information.
- Airspace coordination and control.
- Medical and theater patient movement.

- Air mobility.
- Joint personnel recovery.
- Air defense.
- Space.
- Special technical operations.
- ISR support.
- Electromagnetic warfare.
- CAS.

For more information about MARLE operations, see MCRP 3-20F.2, *Marine Tactical Air Command Center Handbook*; the *Marine Corps Aviation Primer*; and Air Force Tactics, Techniques, and Procedures 3-3.AOC, *Combat Fundamentals Air Operations Center (AOC)*.

Fires and Effects Coordination Center

The FECC is the principal MAGTF agency responsible for coordinating the overall planning, integration, direction, and assessment of fires and effects throughout the battlespace. The principle of unity of command requires integrating capabilities through the simplest means and at the headquarters that is best staffed, equipped, and positioned to do so, which is typically the MAGTF headquarters. Though subordinate commanders might be responsible for employing most fires and effects capabilities within a given domain, the MAGTF commander typically retains authority and responsibility for integrating the array of MAGTF capabilities throughout the physical domains, the information environment, and the electromagnetic operational environment. This is affected by the MAGTF commander's staff, principally under the direction of the operations officer and through the agency of a FECC or cell, depending upon the specific task organization and scope of the MAGTF.

In a standing Marine expeditionary force (MEF), the G-3 fires and effects coordinator (FEC) serves as the MEF commander's principal fires and effects integrator responsible for coordinating the overall planning, integration, direction, and assessment of fires and effects throughout the MEF battlespace. The MEF staffs its FECC with subject matter experts (SMEs) from fires, intelligence, aviation, and information disciplines, and can be task-organized into cells appropriate for a given mission, battlespace, and battle rhythm. These cells should correspond to disciplines, planning horizons, or other suitable distinguishing characteristics. Fires and effects coordination center responsibilities include—

- Planning for fires and effects as an integral element of the MAGTF's overall CONOPS, in conjunction with the other warfighting functions, to promote a single battle and provide fires and effects direction to the MSCs and MSEs.
- Coordinating MAGTF fires and effects integration and synchronization to achieve objectives.
- Planning, coordinating, and directing the MAGTF fires and effects integration methodology and counterfire activities.
- Assessing effectiveness and performance of MAGTF fires and effects and coordinating adjustments required to achieve objectives.

- Sponsoring and hosting fires and effects boards, working groups, and other forums to plan and coordinate MAGTF fires and effects throughout the battle rhythm.
- Coordinating with higher, adjacent, subordinate, and supporting agencies to integrate MAGTF fires and effects.
- Coordinating requests for external fires and effects support to address MAGTF shortfalls.
- Coordinating fires C2 systems planning and monitor system status during execution.
- Monitoring and supporting MSC fires and effects within their assigned boundaries.
- Resolving fires and effects issues requiring MAGTF-level decisions.

The FECC is typically collocated with or embedded within the MAGTF COC. The FECC's size, scope, and organization varies based on MAGTF type and mission requirements. To facilitate coordination of fires and effects and cross-functional integration, MAGTFs can tailor the FECC organization or MAGTF COC layout based on battlespace considerations and mission requirements. For example, MAGTF air personnel might be embedded within the FECC; however, the MAGTF air center coordinates functions with other organizations that are not fires and effects related. One option is to maintain integrity of the FECC and air center as distinct agencies under the staff cognizance of the G-3, and physically locate the air center near the FECC in the MAGTF COC. MAGTFs should carefully consider and plan the MAGTF COC layout, organization options, and forums that facilitate cross-functional fires and effects planning, integration, direction, and assessment. High-tempo, 24-hour operations might require additional augmentation for the FECC beyond the planned organic structure. The FECC provides personnel to coordinate and integrate fires and effects with MAGTF operations across the three planning horizons. See Chapter 3 for more information about the planning horizons. For more information about Marine Corps components, see MCRP 1-10.1, *Organization of the United States Marine Corps*.

Strike Coordination and Reconnaissance Aircrew and Kill Box Coordinator

The SCAR aircrew refers to an aircrew tasked to perform SCAR mission responsibilities. The kill box coordinator (KBC) is the asset or agency assigned responsibility for deconflicting aircraft and airspace within a kill box. A SCAR mission is flown to detect targets and coordinate or perform an attack or reconnaissance on those targets. The missions are flown in a specific geographic area and are an element of the C2 interface that allocates flights and assets, properly matches weapons effects with targets to engage per commander's priorities and provides BDA. The SCAR aircrew and KBC serve as links between armed reconnaissance and air interdiction assets and MAGTF air C2 agencies. The ATO or C2 element establishes target priority for the SCAR aircrew and KBC. For additional information, see MCRP 3-20D.1, *Multi-Service Tactics, Techniques, and Procedures for Strike Coordination and Reconnaissance*, and MCRP 3-31.4, *Multi-Service Tactics, Techniques, and Procedures for Kill Box Planning and Employment*.

CHAPTER 3.
FIRES AND EFFECTS PLANNING

MARINE AIR-GROUND TASK FORCE PLANNING

Fires and effects planning encompasses the continuous process of analyzing, allocating, integrating, and scheduling fires and other actions into the commander's CONOPS.

> **NOTE:** As MAGTF fires and effects planning is a collaborative effort, the term *fires and effects planners* refers to personnel from multiple agencies and echelons, with varied levels of subject matter expertise (primarily with fires, information, intelligence, and aviation).

Marines actively coordinate with joint forces to ensure their fires and effects capabilities and activities are integrated into joint plans. Fires and effects planners should be familiar with respective threats, CCMD and Service component plans, and theater-specific fires and effects processes, procedures, and C2 systems. Fires and effects planners participate in various joint force activities such as exercises, operational planning teams (OPTs), targeting processes, and battle rhythm activities. For example, fires and effects planners maintain and update intelligence preparation of the battlespace (IPB) products associated with joint plans on a continuous basis; submit target development nominations (TDNs) for target entities or systems associated with their part in the plan; and participate in or conduct OPTs to update associated support plans.

Fleet Marine Forces maneuver in the operational environment and engage relevant actors and systems to gain an advantage. Integrating fires and effects is central to enabling the success of maneuver warfare. During execution, MAGTF fires is employed to diminish the enemy's physical strength and to engage targets throughout the battlespace in a unified manner, creating desired effects in support of the commander's objectives. Fleet Marine Forces concentrate strength against enemy critical vulnerabilities, striking quickly and boldly where, when, and in ways that will, to the greatest extent, diminish the enemy's ability and will to fight. Maneuver warfare often involves focusing combat power against enemy weaknesses to inflict high attrition. Fleet Marine Forces seek to infiltrate the enemy system and disrupt it from within to overcome information disadvantages and achieve and exploit information advantages.

A MAGTF plans, executes, and assesses operations from a single-battle perspective that emphasizes unity of effort. The single-battle concept is a unifying concept recognizing that operations or events in one part of the battlespace have profound and consequential effects on other areas and events. The MAGTF staff integrates operations and activities of the ACE, GCE, and logistics combat element (LCE) along with command element capabilities to attain a level of effectiveness independently unachievable by any one element. Fires and effects tasks and associated procedures are synchronized among all elements of the MAGTF to ensure capabilities

and activities are employed at the right points and the right times in support of the MAGTF CONOPS. See MCDP 5, *Planning*, and MCWP 5-10, *Marine Corps Planning Process* for more information about Marine Corps planning.

Battlespace

Commanders analyze the battlespace to determine how best to arrange friendly forces and actions within the battlespace to accomplish the mission. The battlespace framework provides the commander and staff with a means to ensure they consider all essential elements of military operations while planning and executing missions. The battlespace is "the environment, factors, and conditions that must be understood to successfully apply combat power, protect the force, and accomplish the mission. It includes the air, land, maritime, and space domains; the information environment and cyberspace domain; the electromagnetic spectrum; and other factors to include the friendly, enemy, adversary, and neutral entities contained within or having an effect on the operational areas, areas of interest, and areas of influence" *(USMC Dictionary*).

Battlespace planning must consider complex and varied factors to integrate fires and effects with the other warfighting functions. Battlespace planning considers areas of interest, influence, and operations. The physical size and location of a MAGTF operational area (if assigned) and associated airspace must be carefully planned and coordinated to facilitate mission accomplishment and force protection. Effective battlespace planning requires a holistic approach by planners from all MAGTF elements that incorporates fire support coordination measure (FSCMs), maneuver control measures (MCMs), and airspace coordinating measures (ACMs).

The operational area has a significant effect on fires and effects planning and execution. The term *operational area* is an overarching term encompassing more descriptive terms—such as area of responsibility and joint operations area (JOA)—for geographic areas in which military operations are conducted. Operational areas have physical dimensions comprising air, land, maritime, and space domains. The JFCs define these areas with geographical boundaries, which help commanders and staffs coordinate, integrate, and deconflict joint operations among joint force components and supporting commands. The size of these operational areas and the types of forces employed within them depend on the scope and nature of the mission and the projected duration of operations. The JFC specifies authorities and responsibilities within an operational area.

Typically, land and maritime surface force commanders are designated as supported commanders within their designated area of operations, and have the authority to designate target priority, effects, and timing of fires within that area. Surface force commanders can subdivide some or all an assigned area of operations or establish maneuver space for subordinate elements.

A MAGTF can be assigned an area of operations or an amphibious objective area. The physical size and location of the MAGTF area of operations and associated airspace must be carefully planned. Planners ensure that fires and effects, maneuver, intelligence, information, force protection, and sustainment activities are synchronized during battlespace planning. Planners consider that MAGTF battlespace requirements could change during an operation. As haphazard battlespace planning can lead to execution problems, battlespace planning must be an integrated effort between the MAGTF staff and MSCs and MSEs. A best practice is to conduct dedicated

OPT battlespace planning session(s) where MAGTF command element, MSC, and MSE planners mutually determine and refine the MAGTF area of operations and integrate coordination and control measures in support of MAGTF CONOPS.

When assigned an area of operations or designated a supported command, the MAGTF focuses its battle rhythm on achieving MAGTF objectives. The MAGTF defines fires and effects objectives, decides apportionment, allocates organic assets, and coordinates and controls fires and effects to support MAGTF objectives within the MAGTF area of operations.

When not assigned an area of operations, the MAGTF commander and battle staff advises, assists, and coordinates with the supported commander to integrate MAGTF fires and effects into the supported commander's effort. The MAGTF still conducts fires and effects-related battle rhythm events, however, these events focus on contributing to the supported command's objectives.

Planners simultaneously consider multiple factors when planning MAGTF battlespace to include—

- Time. Operation phasing, lines of operation (LOOs) and lines of effort (LOEs), etc., and integration with higher and adjacent headquarters plans.
- Space. Physical location of entities and systems in the operational environment relevant to the MAGTF mission and battlespace or area of operations.
- Event and Purpose. Shaping, decisive, and sustaining actions; main and supporting efforts; reserve forces; security forces; etc.

Fires and effects planners consider many factors including the ability to control, deliver, and sustain fires and effects in deep, close, and rear areas; airspace and air defense requirements; collection requirements; etc. Fires and effects planners consider fires and effects tasks during battlespace planning as each task has unique considerations. For example, when planning air defense (countering air and missile threats), a MAGTF can choose to focus on point defense or request to assume a sector air defense commander (SADC) role (requiring significantly more assets and effort) pending enemy air and missile threat capabilities. In addition, planners consider factors that originate from outside the MAGTF's area of operations, such as enemy or adversary cyberspace operations and other activities that affect MAGTF operations.

Because of the lack of physical boundaries in the information environment, information activities often create effects in and throughout the information environment, beyond the intended area or relevant actor. Some of these effects affect other commanders' areas of operation and objectives or have strategic effects. Coordinating information plans and activities with HHQ and other mission partners helps identify potential effects beyond those intended and helps planners avoid or mitigate unintended and undesired effects.

Battlespace Framework. The battlespace framework is a tool with which the commander and staff can ensure they have considered all essential elements of military operations while planning and executing missions. Typically, MAGTF commanders choose to use either a purpose-based (decisive, shaping, sustaining actions), or a spatial-based (deep, close, rear) battlespace framework.

Purpose-Based Battlespace Framework. Purpose-based battlespace frameworks focus on arranging operations, forces, and resources in terms of time and purpose. Purpose-based battlespace frameworks are useful when the best way to approach the problem, mission, and situation is through actions, events, conditions, and effects. For example, the commander can plan the battlespace through activities such as decisive, shaping, and sustaining actions. When this construct is used, the decisive action is envisioned first, allowing planners to determine the shaping and sustaining actions needed to set conditions for success.

Spatial-Based Battlespace Framework. Spatial-based battlespace frameworks focus on arranging operations, forces, and resources in terms of time and space. Most often associated with aspects of traditional warfare, spatial-based battlespace frameworks are useful when the tactical problem, mission, and situation are primarily based on ground objectives, the enemy's physical capabilities, and the corresponding deployment of friendly forces. A spatial-based battlespace framework consists of envisioned deep, close, and rear operations.

Deep operations afford commanders an opportunity to shape or prevent future close battles. Deep operations can preemptively strip away enemy capabilities, force an early culmination, or attack the enemy system so friendly forces can handle what remains when the enemy forces become a part of the close battle. By conducting deep operations, the commander can seize the initiative, create windows of opportunity for decisive action, restrict the enemy's freedom of action, and disrupt the cohesion and tempo of enemy operations. Deep operations focus on the enemy's follow-on and supporting forces, C2 nodes, and key lines of communication (LOCs). National, theater, and MAGTF organic ISR contribute to the conduct of deep operations. Deep operations often require joint force coordination and integration in the following areas:

- Interdiction through fire and maneuver.
- Targeting.
- ISR and target acquisition.
- Integrating information.
- AAW.

Because of operational reach and survivability considerations, MAGTF deep fires are primarily supported by tactical air (TACAIR), long-range ground-based precision surface fires, and information activities. Planners consider mission requirements and focus on integrating FSCMs and ACMs to maximize effectiveness of MAGTF deep-area fires and effects capabilities. The deep battlespace plan and associated choice of FSCMs and ACMs directly affects the conduct of fire processes and associated TTP. Specific FSCMs and TTP should be complementary. For example, the kill box is the preferred FSCM for SCAR and armed reconnaissance missions and associated TTP.

Close operations project power against enemy forces in immediate contact. These operations require speed and mobility to rapidly concentrate overwhelming combat power at the critical time and place. Fire and maneuver conducted by combined arms forces from the GCE and the ACE supported by the LCE dominate close operations. Combined arms forces maneuver to enhance the effects of fires and conduct fire support operations to enhance their ability to maneuver.

Commanders weight the main effort and focus combat power to create effects that lead to a decision. In close operations, MAGTF fires monitor and support additional capabilities, priority of fires, and apportionment decisions.

The MAGTF close area is the area assigned to its GCE. Fire and maneuver, conducted by combined arms forces from the GCE and supported by the rest of the MAGTF, dominate close operations. Planners consider many factors (friendly ground scheme of maneuver; fire support assets, locations, and associated engagement ranges; enemy order of battle, disposition, and capabilities; etc.) during close-area battlespace planning.

Rear area operations include those functions of security and sustainment required to maintain continuity of operations by the entire force. Rear area operations protect the sustainment effort and deny use of the rear area to the enemy. A MAGTF can establish a tactical combat force to quickly respond to enemy threats in the rear area. The tactical combat force should be capable of controlling ground and air fires and coordinating its actions with other Marine Corps, joint, or host-nation forces. The MAGTF commander can provide additional fires capabilities based on analysis of the situation. Furthermore, information activities can help stabilize the rear area by influencing the local populace. The rear area plan should integrate appropriate fire support capabilities and personnel (e.g., incorporate fires and air personnel into the RAOC or rear area command post, as required).

Contiguous, Noncontiguous, Linear, Nonlinear Operations. Some situations challenge the traditional battlespace framework. The nature of a mission may mean organizing into contiguous or noncontiguous deep, close, and rear areas. For example, irregular warfare missions often involve nonlinear operations or noncontiguous areas of operations. When faced with such situations, MAGTFs consider factors such as ability to concentrate combat power; risk to units operating out of mutual support range; providing all-around security, etc. In such scenarios, commanders may choose to use a purpose-based battlespace framework.

Operational areas can be contiguous or noncontiguous, linear or nonlinear, or a combination based on various factors to include nature of the mission and enemy or adversary disposition. When MAGTF operations are contiguous, boundaries separate subordinate units in its area of operations. In some operations, a MAGTF could have such a large area of operations that subordinate units operate in a noncontiguous manner, widely distributed, and beyond mutually supporting range. When subordinate commands do not share a boundary, the MAGTF command element retains responsibility for the unassigned portion of its area of operations. In these cases, commanders should consider options where fires capabilities can be pushed to lower levels and placed under control of units that can employ them effectively.

In linear operations, the MAGTF commander directs and sustains combat power toward enemy forces in concert with adjacent units. Linearity refers primarily to the conduct of operations with identified forward lines of own troops. In linear operations, emphasis is placed on maintaining position of and in relation to other, adjacent friendly forces. The security of rear areas, particularly LOCs between sustainment bases and fighting forces, is inherent in linear operations. A linear area of operations organization might work best for some operations or certain phases of an operation. Linear operations are appropriate against a deeply arrayed, echeloned enemy force or when the threat to LOCs reduces friendly force freedom of action. In nonlinear operations, forces

orient on objectives without geographic reference to adjacent forces. Nonlinear operations often focus on multiple decisive points. Nonlinear operations emphasize simultaneous operations along multiple LOOs from selected bases (ashore or afloat).

Coordination and Control Measures. Coordination and control measures are directives to subordinate commanders to assign responsibilities, coordinate actions, and control operations. Commands establish various coordination and control measures (primarily FSCMs, MCMs, and ACMs) to facilitate effective military operations. Commands use these measures consistent with the location of friendly forces, the CONOPS, anticipated enemy actions, and in consultation with higher, subordinate, supporting, and affected commanders. Marine air-ground task force planners develop and employ coordination and control measures in a coordinated manner to integrate fires and effects in the battlespace. Planners holistically consider the MAGTF CONOPS when developing coordination and control measures. Marine air-ground task force coordination and control measures should be coordinated with subordinate, adjacent, and higher headquarters. See JP 3-09, *Joint Fire Support*, and MCRP 3-20F.4, *Multi-Service Tactics, Techniques, and Procedures for Airspace Control* for additional information on coordination and control measures.

Fire Support Coordination Measures. Fire support coordination measures are used to deconflict and synchronize fires and other military operations in an operational area. Locations and implementation instructions for FSCMs are electronically disseminated by message, database update, and overlay through both command and joint fire support channels to higher, subordinate, and adjacent maneuver and supporting units. Fire support coordination measures are disseminated to each level of command, to include the establishing command and all concerned joint fire support agencies. The FECC coordinates all MAGTF FSCMs with HHQ (joint fires element [JFE] or applicable component fires agency), adjacent, and subordinate fires agencies.

Planning deep battlespace operations requires careful consideration of how to employ and integrate the three permissive FSCMs: the fire support coordination line (FSCL), established by the land or amphibious force commander; the battlefield coordination line (BCL); and the kill box.

Surface force commanders establish the FSCL to support common objectives within an operational area. Commanders must coordinate all fires beyond the FSCL and short of the line prior to engagement. A BCL is an FSCM that facilitates the expeditious attack of surface targets of opportunity between the measure (the BCL) and the FSCL. To facilitate air-delivered fires and deconflict air and surface fires, appropriate coordination measures, such as airspace coordination areas and kill boxes, may typically be established in the area between the BCL and the FSCL. The optimum FSCL and BCL placement varies with specific operational area circumstances, but considerations include ground force positions and anticipated scheme of maneuver; maneuver element IDF system range limits (i.e., where most lethal effects typically shifts from the ground component to the air component); offensive and defense operations (FSCL and BCL is typically positioned closer to the forward line of own troops in the defense than in the offense). In high-tempo maneuver operations, the FSCL and BCL can frequently change and a series of pre-disseminated on-order FSCLs or BCLs serves to accelerate required coordination. In operations where a single FSCL is employed, MAGTF fires planners should coordinate with the establishing command (the land force or amphibious force commander) to ensure MAGTF input is considered. For example, a MAGTF might request a noncontiguous FSCL to reflect varying capabilities of subordinate commands, which eliminate the need for BCLs.

Kill boxes can be used in conjunction with other existing FSCMs and can be established anywhere in a JOA where expeditious target engagement is required. Kill boxes reduce coordination requirements between forces and facilitate the attack of targets. The kill box is particularly useful in the following situations:

- In operational areas where an FSCL is not established.
- To facilitate air interdiction of mobile targets (e.g., SCAR, armed reconnaissance, or air interdiction missions).
- To facilitate engagement of targets in areas where target locations are imprecise or unknown.
- To focus shaping fires.
- To facilitate engagement of targets in areas short of the FSCL.
- To facilitate suppression of enemy air defenses (also referred to as SEAD).

The MAGTF should carefully consider FSCL, BCL, and kill box options, and conduct integrated planning with MSCs, MSEs, and higher and adjacent headquarters. Figure 3-1 depicts an example MAGTF battlespace using deep, close, and rear areas and a FSCL and BCL construct.

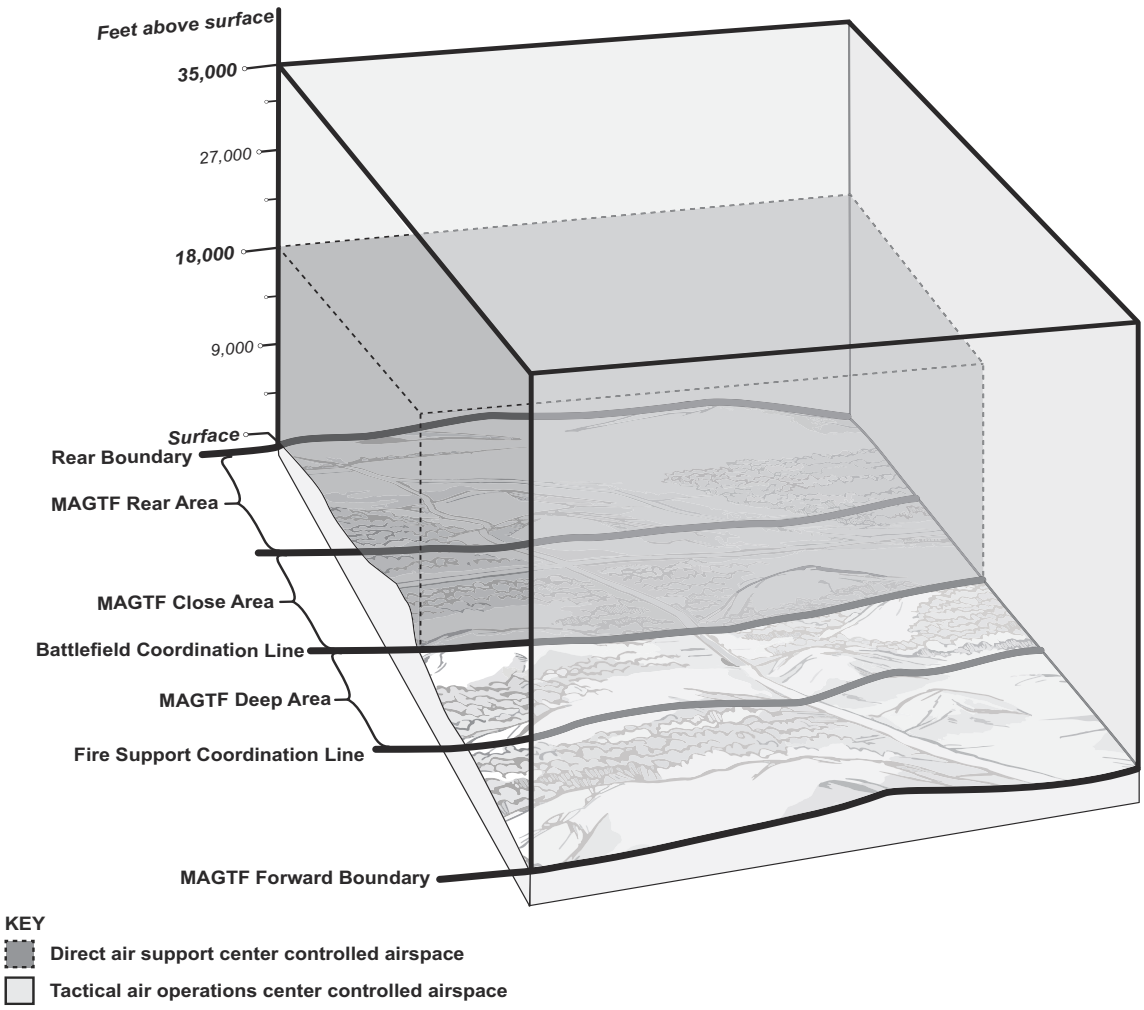

Figure 3-1. Example Marine Air-Ground Task Force Battlespace.

Maneuver Control Measures. Area of operations commanders establish MCMs, such as boundaries and phase lines, to define lines of responsibility in support of movement and maneuver of friendly forces. Boundaries designate the area of operations' geographical limits and facilitate coordination and deconfliction of operations between adjacent units, formations, or areas. Within a unit's boundaries, units can execute fire and maneuver without close coordination with adjacent units unless otherwise restricted. Units do not fire across boundaries unless they coordinate fires with the adjacent unit, or the fires are beyond an appropriate FSCM. Land forces use phase lines on recognizable terrain extending across the zone of action to control and coordinate military operations. Phase lines can be used to control and coordinate military operations, usually along terrain features, to support maneuver and coordination of fires. The MAGTF G-3 coordinates MCMs within the MAGTF and with HHQ.

Airspace Coordinating Measures. MAGTFs use ACMs to facilitate the efficient use of airspace to integrate air operations and fires for mission accomplishment, and simultaneously provide safeguards for friendly forces. Subordinate headquarters nominate ACMs through component command headquarters and forward the nominations to the airspace control authority (typically the JFACC), in accordance with the airspace control plan. The airspace control authority consolidates and coordinates airspace requirements of the components and publishes the ACMs in the airspace control order (ACO). The airspace control authority can approve, amend, or disapprove airspace requests for the designated operational area in accordance with the JFC's guidance and objectives. Planners from the FECC, MAGTF air center, ACE, MSCs, and MARLE coordinate with the airspace control authority to request airspace and integrate MAGTF ACMs into the ACO. See JP 3-52, *Joint Airspace Control*, for more information.

Airspace Control. The MAGTF must request and coordinate airspace control with the airspace control authority (assignment of an area of operations does not typically include airspace). The airspace control authority develops and synchronizes ACMS with FSCMs and MCMs to support MAGTF fires and effects tasks. The air control and communications plan must be designed to integrate appropriate ACE agencies—such as the Marine TACC deep battle cell, ACI, and TAOC deep air operations section— into MAGTF fires and effects tasks. Airspace planning for MAGTF rear, close, and deep areas have unique considerations. For example, MAGTF operations in the deep battlespace are often complex and require detailed, integrated planning to facilitate employment of MAGTF and joint air capabilities. The deep airspace plan is designed to integrate TTP such as SCAR, armed reconnaissance, counterfire, quick-fire, and dynamic suppression of enemy air defenses. For additional information on airspace control, see JP 3-52 and MCRP 3-20F.4.

Employing long-range surface fires (e.g., High Mobility Artillery Rocket System [HIMARS]) presents unique airspace planning and coordination considerations because of the munition ordinate and trajectory factors. Fires and aviation planners should coordinate to ensure ACMs and FSCMs are included into the ACO for preplanned long-range surface fires employment. In addition, planners should develop and coordinate detailed dynamic long-range surface fires airspace coordination procedures with Marine air command and control system (MACCS) and appropriate external airspace coordination agencies.

Integrating and synchronizing fires and airspace is a task inherent to employing fires. Commanders require freedom to use airspace to achieve objectives and maximum flexibility to employ organic and joint assets. Airspace control is enabled by responsive airspace C2 systems,

standardization of airspace practices, minimal restrictions, and continuous integration and coordination among all airspace users. Fires and airspace planners coordinate to ensure surface fires and air operations are synchronized and integrated. Detailed planning and correct employment of coordination and control measures can prevent friendly fire incidents and duplication of effort while increasing effectiveness of air-to-ground and ground-to-ground ordnance. For additional information about fires and airspace integration, see JP 3-09; JP 30, *Joint Air Operations*; JP 3-52; and MCRP 3-20.1, *Multi-Service Tactics, Techniques, and Procedures for Theater Air-Ground System*.

Commander's Decision Cycle

The commander's decision cycle is a process that depicts how command and staff elements determine required actions, codify them in directives, execute them, and monitor their results. In the planning portion of the commander's decision cycle, the commander and staff develop new plans and adjust the current plan with the purpose of successful mission accomplishment. Decision making is central to command and control, and all planning activities must ultimately contribute to effective command decision making.

Battle Staff Organization

When assigned a mission, the commander requires an organization that promotes staff collaboration and integration focused on mission accomplishment. During operations, the MAGTF command element adopts a nonlinear organizational structure to integrate and synchronize general staff (also referred to as G-code) functional management with cross-functional organizations. For more information about MAGTF command element organization and responsibilities, see MCWP 3-30.

The MAGTF command element battle staff consists of the command group, general staff, designated special staff, and personal staff. To synchronize battle staff activities, MAGTFs integrate cross-functional organizations to plan, coordinate, and direct mission activities. The MAGTF cross-functional organizations include OPTs, boards, working groups, centers, cells, and elements. The battle staff uses the cross-functional approach to quickly share and disseminate information, and the entire staff participates throughout all stages of the commander's decision cycle. The battle staff integrates planning with higher, adjacent, and subordinate commands across the planning horizons.

Planning Horizons

To facilitate the commander's decision cycle and staff planning, the MAGTF command element organizes to operate in three planning horizons (also called event horizons):

- Future plans.
- FOPS.
- COPS.

Future plans conducts long-term planning, typically beyond 120 hours (up to 6 months) prior to execution. Future plans focuses on the next battle, phase of operations, and potential sequels (addressing "what's next"). Typically, FOPS conducts near-term planning (between 24 and 120 hours prior to execution) and focuses on battle rhythm and branch planning during the current

phase of operations (addressing "what if"). Current operations planning focuses on directing execution of activities, typically within 24 hours of execution (addressing "what is"). During operations, timeframes associated with planning horizons are situation-dependent and flexible.

The FECC is organized to operate in the three planning horizons providing members to participate in MAGTF future plans, FOPS, and COPS planning activities (see Figure 3-2).

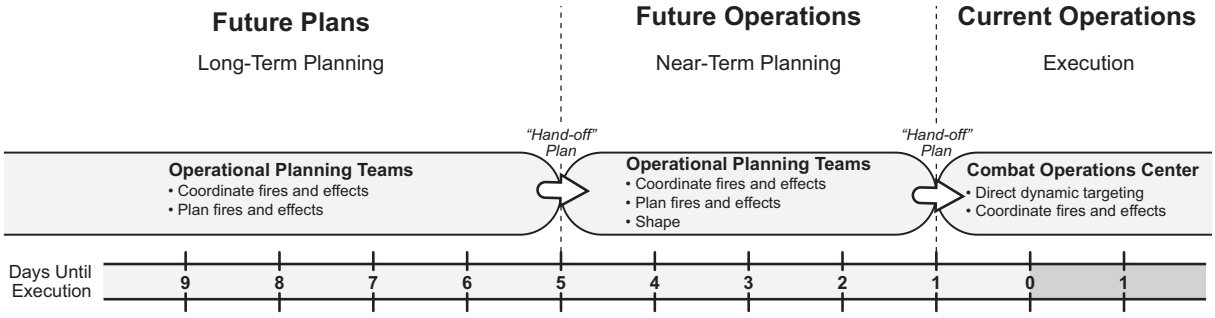

Figure 3-2. Fires and Effects Integration Across Planning Horizons.

Future Plans. The FECC provides core fires and effects planners to MAGTF OPTs. Fires and effects planners use the MCPP for initial plans, future phases (sequels), and branch plans in support of current and ongoing operations. Responsibilities include—

- Participating in MAGTF OPTs.
- Conducting functional and detailed fires and effects planning using the MCPP.
- Coordinating MAGTF fires and effects with higher, adjacent, and subordinate agencies.
- Integrating and synchronizing fires with maneuver, intelligence, aviation, information, force protection, engineering, and sustainment operations.
- Developing decision support tools and fires products.
- Preparing fires and effects objectives and the concept of fires for the MAGTF base order.
- Coordinating writing and producing Appendix 17 (Fire Support) to Annex C (Operations) of the MAGTF OPORD.
- Providing input to other OPORD or fragmentary order (FRAGO) annexes and appendices where fires and effects applies.
- Conducting detailed handover briefs as part of the battle rhythm.

Future Operations. Future operations FECC planners conduct near-term fires and effects planning associated with the battle rhythm. These planners refine future plans products and produce detailed plans and products that facilitate fires and effects execution. Future operations FECC members use the MAGTF fires and effects integration methodology to integrate and synchronize fires, aviation, intelligence, and information activities. Fires and effects planners participate in, or lead, certain MAGTF fires and effects battle rhythm events. Responsibilities include—

- Facilitating the integration and synchronization of MAGTF fires and information activities to achieve fires and effects objectives.
- Facilitating coordination and synchronization of daily MAGTF targeting, aviation, collection, and information plans.

- Coordinating MAGTF fires and effects requirements into executable plans.
- Coordinating production and approval of the MIPTL and other targeting products.
- Disseminating revised or new fires and effects and targeting guidance.
- Submitting MAGTF target nominations to HHQ.
- Coordinating requests for external fires and effects support to address MAGTF shortfalls.
- Integrating MAGTF fires and effects with higher, adjacent, and subordinate agencies.
- Facilitating MAGTF fires and effects assessment.
- Hosting appropriate MAGTF fires and effects battle rhythm activities.
- Conducting handover briefs with COPS and future plans FECC members as part of the daily battle rhythm.

See Chapter 4 for more detail on MAGTF fires integration.

Current Operations. The FECC provides watch officers in the MAGTF COC to support COPS planning. Typically, FECC COPS members are organized into two 12-hour, split-shift watches. Responsibilities include—

- Coordinating and facilitating execution of daily targeting, aviation, collection, and information plans with higher, adjacent, and subordinate agencies.
- Directing MAGTF dynamic targeting and counterfire operations.
- Operating fires C2 systems.
- Tracking and assessing fires and effects-related changes in the battlespace and making decisions to exploit opportunities arising from change.
- Coordinating MAGTF immediate requests for external sourced fires.
- Monitoring and supporting MSC fires within their assigned boundaries.
- Resolving fires and effects issues requiring MAGTF-level decisions.
- Conducting handover briefs with the FOPS FECC personnel as part of the daily battle rhythm.

OPERATIONAL PLANNING TEAMS

An OPT is a dynamic, task-organized team typically formed by either the MAGTF future plans or future operations section (FOS) to conduct integrated planning. Operational planning teams integrate plans officers from other sections; warfighting function representatives; higher, adjacent, and subordinate unit representatives; and SMEs into the planning process. Typically, OPTs focus on a problem set in a single planning horizon, and transition ("hand off") their part of the plan after completing the assigned task.

Fires and effects planners produce a concept of fires and a concept of information during the course of action (COA) development step of the MCPP. These products are integral parts of the MAGTF CONOPS that summarize how the commander visualizes fires and effects will synchronize to achieve objectives. The concepts of fires and information describe how fires and

information activities will be synchronized to accomplish specific tasks that support the commander's objectives. When developing the concepts, planners consider enemy and adversary centers of gravity (COGs), critical factors, as well as anticipated critical actions, times, and places that would serve as triggers for friendly action. Fires and effects planners recommend concepts of fires and information for each COA based on commander's guidance. Planners develop the concepts of fires and information collaborative manner per MAGTF fires and effects integration methodology principles described in Chapter 4. They can include appropriate fires and effects actions into a single section (e.g., a "concept of fires and effects") or the concept(s) can be a single paragraph or divided into two or more paragraphs depending upon the complexity of the operation. When an operation involves various phases or stages, the concepts should be delineated by each phase or stage via sub-paragraphs.

Planners use staff estimates and estimates of supportability to develop, analyze, and recommend COAs. Planners develop initial these estimates during the problem framing step and continue to refine them throughout the MCPP. These estimates denote a realistic appraisal of the fires effort required to support the operation. Fires and effects staff estimates and estimates of supportability include the following:

- Friendly forces and fires and information capabilities and resources.
- Enemy and adversary fires and information capabilities, resources, and probable fires plans.
- Facts, limitations, and assumptions.
- Information requirements (priority intelligence requirements, friendly force information requirements, and recommended commander's critical information requirements [CCIRs]).
- Specified and implied tasks.
- Identification of relevant actors (to include high-value targets [HVTs], high-payoff targets [HPTs], target audiences, and audiences), desired effects, fires and effects objectives, and fires and effects tasking (see Chapter 4).
- Decision points.
- Fires sustainment and consumption factors.
- Fires and effects resource shortfalls.

Fires and effects planners develop and transform conceptual plans (concepts of fires, information support, staff estimates, estimates of supportability, etc.) into a complete and executable plan focusing on functional and detailed planning. Fires and effects planners then develop orders in a coordinated manner (integrated planning). Fires and effects planners develop products that facilitate execution and assessment. These products are refined throughout the battle rhythm and execution. Fires and effects related products include, but are not limited to, the following:

- Target lists (e.g., the MIPTL).
- Predictive tools (predict fires capacity, munitions effectiveness, etc.).
- BDA tracking tools.
- Relative combat power analysis and assessment tools.
- Target-weapon paring matrices.
- Fires and effects synchronization matrices.
- Assessment metrics.

Once orders and products are complete, fires and effects planners participate in the final step of MCPP—transition. Transition involves various briefs, drills, or rehearsals to ensure a successful shift from planning to execution.

BATTLE RHYTHM

The battle rhythm is commander-centric and focused to support the commander's decision cycle. It establishes a deliberate schedule for command, staff, and unit activities that enables the staff to efficiently coordinate, synchronize, and share information throughout the operation. The battle rhythm integrates decision making across planning horizons, accounting for battle rhythms of higher and adjacent commands and stakeholders, all while supporting subordinate commands with timely direction and guidance. Subordinate commanders are responsible for linking their command's planning, decision, and operating cycles to the HHQ's cycles and synchronizing their unit's battle rhythm with HHQ. The MAGTF operational battle rhythm consists of a series of daily meetings, report requirements, and other activities logically arranged to ensure the sequential flow of inputs and outputs between cross-functional organizations. There are typically many MAGTF battle rhythm events conducted during near-term planning.

Fires and Effects Battle Rhythm Activities

MAGTF staff synchronize their battle rhythm activities with the HHQ battle rhythm to ensure MAGTF fires and effects capabilities and activities are developed and integrated with the joint force in a timely manner. Fires and effects planners use battle rhythm activities to coordinate aspects of multiple MAGTF plans (targeting, information, air, and collection plans) and develop integrated MAGTF fires and effects plans to be presented at a board for commander's approval. Fires and effects battle rhythm working groups are forums for action officers to plan, coordinate, and synchronize MAGTF plans and associated fires and effects tasking. See Figure 3-3 for a notional timeline of joint and MAGTF battle rhythm activities.

The MAGTF battle rhythm working groups help planners develop the fires and effects picture. Some working groups coordinate actions not directly associated with fires and effects (e.g., the air plan coordinates assault support actions that supports MAGTF sustaining actions). The name, purpose, agenda, and conduct of fires and effects battle rhythm events vary by MAGTF and mission requirements.

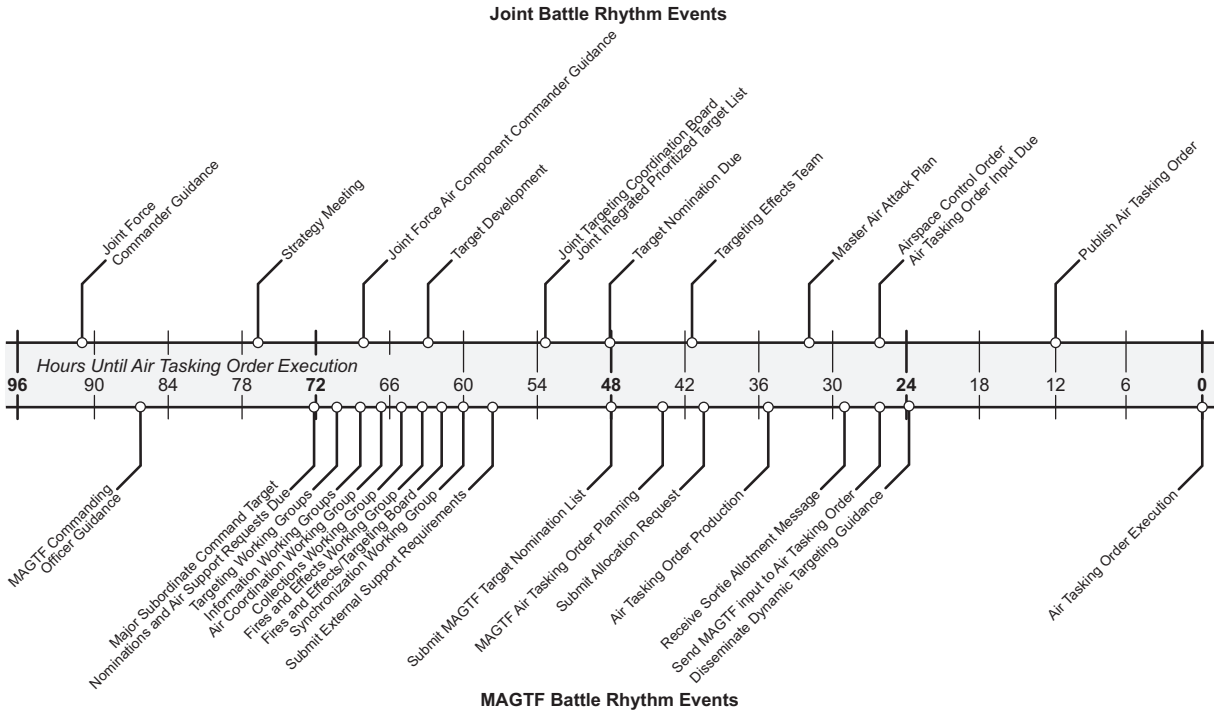

Figure 3-3. Notional Joint and MAGTF Fires and Effects Battle Rhythm.

Targeting and Fires Activities Working Groups. A MAGTF can conduct several working groups to coordinate MAGTF targeting and fires activities. The FECC hosts targeting working groups, led by the FEC or designated representative. Two common targeting working groups include the following.

Target Development Working Groups. The target development working group coordinates MAGTF target development activities. The IOC or FECC hosts the working group, which is led by the designated representative. The working group performs the following actions:

- Share MAGTF target intelligence products.
- Coordinate and consolidate MSC and MSE TDNs.
- Coordinate MAGTF target development activities and products.
- Coordinate submission of MAGTF TDNs to HHQ.

Targeting Working Groups. The targeting working group coordinates MAGTF targeting or other fires activities. The FECC hosts the working group, which is led by the targeting officer or another designated representative. The working group performs the following actions:

- Review and refine combat assessment.
- Validate MAGTF targeting objectives and propose changes as required.
- Consolidate MSC and MSE target nominations.
- Prioritize MAGTF targets.
- Conduct capabilities analysis.

- Synchronize targeting tasking.
- Coordinate other fires activities as required.
- Produce targeting and fires products for approval (e.g., draft MIPTL, FSCM changes, targeting guidance).
- Identify external targeting and fires support requirements. Coordinate targeting and fires inputs to HHQ (e.g., MAGTF target nomination list [TNL], input to AOD).

Information Working Groups. The information working groups plan, coordinate, and synchronize the employment of information activities and capabilities throughout the battlespace and information environment in support of commander's objectives. The ICC or FECC hosts information working groups, which are led by appropriate designated representatives. Information working groups perform the following actions:

- Identify relevant actors (targets, target audience, and audiences).
- Assess effectiveness of information activities.
- Refine assessment criteria and measures.
- Conduct capabilities analysis to determine appropriate information activities to create desired effects.
- Coordinate and synchronize MAGTF information tasking.
- Facilitate coordination with senior, subordinate, adjacent, or supporting commands.
- Address possible negative consequences resulting from crisis events or incidents.

Air Coordination Working Group. The air coordination working group coordinates aviation activities in support of the MAGTF. The MAGTF air center hosts the air coordination working group, which is led by the MAGTF air officer or another designated representative. The air coordination working group performs the following actions:

- Determine MAGTF aviation requirements and prioritize aviation support based on commander's guidance.
- Consolidate, validate, and prioritize MSC and MSE air support requests (e.g., tactical air strike requests and assault support requests).
- Coordinate MAGTF airspace requirements. Propose changes to ACMs as required.
- Coordinate other MAGTF aviation issues as required.
- Facilitate coordination with the ACE and MARLE to support ATO development.

Collections Working Group. The collections working group develops and coordinates the MAGTF collection plan to satisfy MAGTF information requirements. The MAGTF IOC hosts the collections working group, which is led by the MAGTF collection management and dissemination officer or designated representative. The collections working group—

- Determines MAGTF intelligence collection requirements.
- Prioritizes collection capabilities and support based on commander's guidance.
- Coordinates and integrates all available collections capabilities.

- Integrates fires and effects acquisition and assessment requirements and target areas of interest (TAIs) into the collection plan.
- Identifies ISR requirements that exceed organic MAGTF capabilities and facilitate requests for external ISR support.

Fires and Effects Working Groups. The fires and effects working group consolidates outputs from other working groups and develops integrated MAGTF fires and effects plans for commander's approval. The working group uses the MAGTF fires and effects integration methodology to coordinate and synchronize fires and effects activities associated with MAGTF targeting, information, air, and collection plans. This is typically the last fires and effects working group prior to the MAGTF fires and effects board. The FECC hosts the fires and effects working group, which is led by the FEC or another designated representative. See Figure 3-4 for an example fires and effects working group agenda.

Agenda

1. Review current and projected (24-96 hours out) battlespace conditions (weather; relevant actors; friendly force and threat force compositions, dispositions, and locations; other salient battlespace factors).
2. Assess MAGTF fires and effects in relation to current and projected battlespace conditions. Determine if the MAGTF is making progress to achieving fires and effects objectives as planned per MOEs and indicators. Determine required changes.
3. Review approved commander's fires and effects and targeting guidance, objectives, desired effects, and priorities from previous day's board.
4. Determine MAGTF fire support and targeting requirements.
5. Review draft MIPTL and refine targeting priorities as required.
6. Review other relevant actors and refine neutral and friendly engagement priorities as required.
7. Conduct capabilities analysis. Consider commander's guidance, effects, ROE and restrictions.
8. Integrate and synchronize fires and effects tasking.
9. Ensure fires and effects ISR requirements are included in collection plan (TAIs, assessment requirements, etc.).
10. Determine coordination and control measure change requirements.
11. Determine apportionment recommendation(s) (air, collections, other as required).
12. Consolidate and coordinate MAGTF requests to HHQ for external fires and effects support.
13. Develop fires and effects and targeting guidance recommendation (96-120 hours out).
14. Develop dynamic targeting guidance recommendation (tomorrow's ATO period).
15. Coordinate fires and effects aspects of MAGTF targeting and fires, air, collection, and information plans (throughout working group).

Figure 3-4. Example Fires and Effects Working Group Agenda.

Fires and Effects Board. A MAGTF can conduct one or more boards to approve MAGTF fires and effects plans. For example, a MAGTF can conduct separate targeting, collections, or effects boards or combine into a single board. The MAGTF commander or designated representative chairs fires and effects board(s), which are led by the FEC or another designated representative.

Battle Rhythm Coordination

Integrating and synchronizing fires and information capabilities requires significant coordination, which is critical for effective near-term planning. A MAGTF often establishes unique cross-functional organizations to meet mission requirements. The FEC is responsible for supervising overall MAGTF fires and effects coordination throughout the operational battle rhythm. As a best practice, the FECC disseminates fires and effects and targeting guidance (decided at the previous fires and effects or targeting board) early in the battle rhythm agenda to ensure unity of effort. For example, the FEC may host a fires and effects steering meeting to provide guidance and focus to individual fires and effects working groups. In addition, MAGTF Marines can form a dedicated cell (consisting of fires and effects planners from the FECC, ICC, IOC, and air center or ACE) to facilitate coordination and synchronization of MAGTF fires and effects.

Interrelated planning efforts and cycles (see Chapter 4) facilitate fires and effects coordination. In addition to coordination that occurs during battle rhythm activities and planning cycles, fires and effects planners at all echelons continuously coordinate between events. Fires and effects planning coordination activities include the following:

- FECC—aviation planner coordination:
  - Determine aviation capabilities and firepower capacity.
  - Determine MAGTF fire support and targeting requirements in relation to organic aviation fires capacity.
  - Facilitate air apportionment recommendations and decisions.
  - Conduct capabilities analysis.
  - Facilitate integrating fires and effects tasking (e.g., offensive air support, aviation electromagnetic warfare, ISR, messaging) into the ATO.
  - Adjust and synchronize ACMs and FSCMs.
  - Determine external air support requirements; coordinate the ALLOREQ process.
- FECC—intelligence planner coordination:
  - Submit target list input to HHQ (includes TDNs) as required.
  - Determine and integrate fires and effects ISR requirements into the MAGTF collection plan.
  - Analyze relevant actor information, conduct relevant actor analysis and development, conduct capabilities analysis, and refine HPTs and CTEs.
  - Facilitate CDE and target coordinate mensuration processes.
  - Assess MAGTF fires and effects.
  - Coordinate combat assessment and BDA.
- FECC—information planner coordination:
  - Conduct capabilities analysis.
  - Develop and synchronize information tasking detail.
  - Determine and coordinate external information support requirements.
  - Facilitate fires and effects assessment.

Battle Rhythm Considerations

There is no single solution regarding the number, types, and sequencing of fires and effects battle rhythm activities; however, there are best practices MAGTFs should consider. The battle rhythm should be sequenced with a logical flow of inputs and outputs between events that ultimately support command decision requirements. In general, targeting, air coordination, information, and collections working group outputs are integrated and synchronized at the fires and effects working group and briefed at the fires and effects board for decision.

Fires and effects-related battle rhythm activities other than those listed above are conducted based on mission requirements and command preferences. For example, a MAGTF might schedule a fires and effects synchronization working group after the fires and effects board to account for plan changes (commander's decisions) and facilitate fires and effects tasking. A MAGTF can schedule multiple information working group based on requirements. A MAGTF can elect to conduct combat assessment or fires and effects assessment working group. On the other hand, the MAGTF battle rhythm should not include an excessive number of battle rhythm activities. The battle rhythm should ensure sufficient time to facilitate detailed work, coordination, circulation, and participation requirements at other battle rhythm events.

Agenda overlap naturally occurs between fires and effects battle rhythm activities as fires and effects planning efforts and cycles are interrelated. For example, the targeting and fires and effects working groups can coordinate aviation targeting and deep air support (DAS) requirements and the collections working group can coordinate organic aviation ISR requirements. Aviation fires and ISR requirements can influence the air coordination working group agenda; however, the air coordination working group typically focuses on tasks other than coordinating aviation fires, ISR requirements, or details. Planners should coordinate and refine fires and effects battle rhythm activities to avoid duplicating efforts.

Information flow is essential throughout the battle rhythm as the fires and effects methodology must be synchronized across the planning horizons. The future plans section, FOS, and FECC must coordinate to ensure the fires and effects methodology is properly integrated with branch and sequel plans, changes to MAGTF objectives or operational approach, etc. The FOS and future plans personnel should attend fires and effects working group and boards, and FECC personnel should attend MAGTF FOS and future plans battle rhythm activities. Fires and effects battle rhythm activities often provide outputs to other MAGTF battle rhythm activities. For example, fires and effects assessment provides essential information (inputs) to MAGTF operation assessment.

THE MARINE CORPS PLANNING PROCESS

The MCPP is a six-step process that helps organize commander's and staff's thought processes throughout the planning of military operations. For further information on the MCPP, refer to MCWP 5-10.

Step 1: Problem Framing

During problem framing, fires and effects planners learn everything they can about the battlespace as it relates to the mission, threat, and HHQ concepts of fires and information support to determine fires and effects related specified or implied tasks or limitations. Fires and effects

planners focus on the battlespace conditions that need to be changed and obstacles that impede progress toward creating desired conditions. Factors that influence fires and effects planning include the following:

- Current and desired condition (end state) within the battlespace or operational environment.
- The effects of the physical and information environments on operations.
- An understanding of how battlespace conditions affect enemy, friendly, and neutral systems.
- An understanding of how the battlespace affects ISR and asset employment.
- Friendly, enemy, and adversary COGs and critical vulnerabilities.
- The most likely and most dangerous enemy or adversary COAs.
- Known or predicted events or time-driven actions that influence fires and effects activities and concepts of fires and information.
- IPB products, which include the following:
  - Modified combined obstacle overlay.
  - Adversary, event, and situation templates to determine potential targets and possible threats to friendly assets.
  - Intelligence preparation of the information environment; target audience analysis (TAA); combined information overlay.
  - Civil preparation of the battlespace.
- JOA coordination and control measures (FSCMs, MCMs, and ACMs).
- Theater-and operation-specific processes and procedures that pertain to fires and effects planning, coordination, and execution.
- Status of higher, adjacent, and supporting units that may require or augment MAGTF fires and effects capabilities.
- Current and projected status (including location, mission readiness, and munitions) of organic fires systems.

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

- Assist with identifying CCIRs.
- Assess enemy and adversary fires and information capabilities, including assets (numbers and type, lethality, range, employment methods, logistic considerations, etc.).
- Begin to look for indicators that would determine when to best engage enemy or adversary critical vulnerabilities to achieve objectives.
- Identify any fires assumptions and submit appropriate requests for intelligence.
- Identify fires and information tasks (specified, implied, and essential).
- Identify resource and SME shortfalls.
- Review theater or operation ROE, rules for the use of force, etc., as they apply to fires and effects constraints.
- Begin development of the concepts of fires and information support and the fires and information staff estimates.

- Develop fires products for the problem framing brief. Assist in the briefing if required.
- Assist in the development of the warning order (include appropriate fires information).
- Identify HHQ and theater fires and effects software applications, versions, and formats.
- Identify HHQ targeting, air tasking, intelligence, and information cycles and associated battle rhythm timelines.
- Begin development of MAGTF fires and effects objectives.
- Provide TDNs and MAGTF input to JFC target lists.
- Solicit feedback on battlespace changes that could affect fires and effects planning.

Step 2: Course of Action Development

Planners consider many factors associated with each COA (ground scheme of maneuver, force protection requirements, fires and effects requirements, etc.). Planners develop fires and effects objectives, desired effects, and transition criteria for each COA (by phase, stage, part, or step if phased). Fires and effects planners identify potential targets and relevant actors and determine military importance, priority of engagement, and capabilities required to create desired effects. Fires and effects planners then focus on developing tasks required to create desired effects. Finally, planners focus on developing assessment measures (such as MOEs and MOPs and indicators) to assess achievement of objectives or creation of desired conditions and effects.

During COA development, fires and effects planners validate HVTs and identify HPTs for each COA. Once the OPT starts developing COAs, planners validate HVTs based on the planned interaction of friendly capabilities with potential enemy or adversary capabilities that affect the success of the friendly COA. Planners then identify HPTs (from the list of HVTs) as well as relevant actors within the battlespace consistent with each envisioned COA CONOPS.

The OPT members develop fires and effects objectives and desired effects in a collaborative manner. These objectives and desired effects provide the basis for developing fires and effects tasking. Depending on the number of COAs and time available, developing specific fires and effects tasking detail might not be possible during COA development. As such, fires and effects planners can develop general fires and effects tasking during COA development and refine tasking over the course of the MCPP.

Fires and effects planners perform the following actions during COA development:

- Determine desired conditions and transition criteria (if phased) for each COA.
- Analyze potential enemy or adversary critical vulnerabilities, validate HVTs, and identify HPTs and relevant actors for each COA.
- Identify MAGTF options to engage HPTs and relevant actors.
- Develop concepts of fires and information (to include associated fires and effects objectives and desired effects) for each COA, setting conditions for decisive action, and protecting the force.
- Develop fires and effects tasking for each COA.
- Develop fires and effects assessment criteria and measures.
- Coordinate MAGTF fires and effects planning with MSC representatives.

- Coordinate with other planners to determine appropriate FSCMs, MCMs, and ACMs for each COA.
- Formulate a counterfire plan (if required) that identifies agency, MSC, and MSE responsibilities to include ground radar employment.
- Review ROE and provide input as required.
- Begin development of collection (TAIs, assessment, etc.) and decision point requirements.
- Develop fires and information staff estimates for each COA.
- Develop the fires portion of the COA development brief. Assist in the briefing if required.

Step 3: Course of Action War Game

During COA wargaming, fires and effects planners refine relevant actors that are critical to MAGTF mission success. Target and relevant actor determination is not a linear process; it can involve multiple factors and change over time. As a result, identifying HPTs and relevant actors require continual refinement and revision throughout planning and execution.

Fires and effects planners perform the following actions during COA wargaming:

- Refine fires and effects objectives and desired effects. Refine HPTs and relevant actors and determine the sequence of engagement and the capabilities required to achieve fires and effects objectives and desired effects.
- Validate and refine fires and effects tasking. Fires and effects tasking to subordinates must reflect a balance between the best engagement capability to achieve objectives and MSC and MSE workloads.
- Refine fires and effects assessment criteria and measures.
- Help develop the decision support template and decision support matrix (also called DSM).
- Refine fires and effects collection requirements and associated decision points.
- Populate the synchronization matrix with fires and information actions. The matrix should identify coordination and control measures, fires and effects requirements and tasks by phase, liaison requirements, and TAIs. It should also provide any additional information required to execute fires and effects throughout all phases.
- Help develop branches and sequels that emerge.
- Determine advantages and disadvantages of each friendly COA.
- Develop fires and effects input to the war game brief and participate as required.

Step 4: Course of Action Comparison and Decision

Fires and effects planners complete the fires and information staff estimates, assessing the effectiveness of the fires and effects regarding time, terrain, projected loss of friendly assets, and the likelihood of creating desired effects on intended targets or relevant actors. Planners ensure fires and effects objectives and desired effects are understandable, achievable, and measurable.

Fires and effects planners typically perform the following during COA comparison and decision:

- Complete the concept of fires, information, and estimates of supportability for each COA.
- Use commander's evaluation criteria to rank each COA from a fires and effects perspective.

- Plan the fires and effects portion of any emerging branches or sequels.
- Complete the fires and effects portion of the synchronization matrix to integrate MAGTF fires and effects with the other warfighting functions in time, space, and purpose.
- Continue to refine fires and effects planning detail.

Step 5: Orders Development

The FECC develops the MAGTF fires plan that addresses conceptual, functional, and detailed planning. In the base OPORD, the concepts of fires and information support provide the conceptual fires and effects plan to include fires and effects objectives. Functional and detailed levels of fires and effects planning appear in other portions of the OPORD (notably Appendix 17 [Fire Support] to Annex C [Operations] and Annex I [Information]).

Fires and effects planners perform the following during orders development:

- Complete fires and effects conceptual, functional, and detailed plans.
- Write the concept of fires and information for the base order. Incorporate MAGTF fires and effects objectives into the base order or Annex C (Operations).
- Draft fires and effects tasking for paragraph 3 of the base order for subordinate units and agencies.
- Ensure accurate and consistent terminology when drafting objectives and tasks.
- Confirm battlespace geometry, FSCMs, ACMs, and MCMs with the operations section.
- Complete fires and effects-related planning and execution tools for use by MAGTF agencies.
- Write Appendix 17 (Fire Support) to Annex C (Operations) of the MAGTF OPORD. Provide input to other portions of the OPORD where fires and effects information applies that can include, but is not limited to—
  - Annex B (Intelligence).
  - Annex C (Operations).
- Ensure fires and effects information in the OPORD are coordinated. Conduct orders reconciliation with the staff using the base order and the annexes to ensure the concepts of fires and information support are coordinated with all relevant functional areas (such as ISR support to targeting from intelligence, ammunition from logistics, C2 systems from communications, etc.) and supports the MAGTF commander's single–battle concept.
- Conduct an orders crosswalk of the MAGTF order with higher, adjacent, and subordinate orders to identify and resolve any conflicts and ensure consistency.

Step 6: Transition

The transition step involves the transfer of knowledge and understanding gained in planning to operations personnel who oversee the plan's execution. This step is also the time for finalizing all the detailed plans which commit capabilities to interactions with selected elements of the battlespace. During MCPP step 6, planners facilitate the transition of fires and effects plans to personnel using briefs, rehearsal of concept drills, or rehearsals.

Other Planning Actions

In addition to the above actions, FECC personnel conduct the following during planning:

- Ensure MAGTF events align with the HHQ fires and effects battle rhythm. Refine MAGTF fires and effects battle rhythm event content (timed preparation drills) and schedule events with the chief of staff accordingly.
- Develop and maintain the MIPTL based on fires and effects objectives, target nominations, HPTs, and priorities identified during MCPP.
- Develop and publish the MAGTF target numbering system.
- Coordinate ISR fires and effects requirements with G-2 intelligence.
- Establish and maintain fires C2 systems connectivity and interoperability with higher, adjacent, subordinate, supporting, and multinational forces.
- Verify contact information, such as phone numbers, e-mail addresses, websites, or chat groups for key fires and effects personnel. Conduct communications checks with all appropriate fires and effects agencies.
- Set up appropriate maps, systems, screens, monitors, and electronic journals in the current fires watch section of the MAGTF COC.
- Ensure all members are familiar with fires and effects products.
- Conduct execution and battle drills.

Throughout planning, MAGTF fires and effects planners coordinate to ensure MAGTF and HHQ orders are nested. Annexes of a joint OPORD relevant to fires and effects include the following:

- Annex B (Intelligence).
- Annex C (Operations).
- Annex F (Public Affairs).
- Annex G (Civil-Military Operations).
- Annex K (Command, Control, Communications, and Computer Systems).
- Annex N (Assessments).
- Annex S (Special Technical Operations).

AVIATION PLANNING

Aviation planning translates the MAGTF commander's concept for employment of aviation into a plan of action for the ACE. Two major aspects of aviation planning include the MAGTF air plan and the ATO. Refer to MCWP 3-20, *Aviation Operations*, for further information on aviation planning.

Aviation planning is a collaborative MAGTF effort. As aviation activities contribute to the MAGTF warfighting functions, MAGTF command element, ACE, GCE, and LCE planners all provide input to air planning. The MAGTF air plan contains many elements directly related to

MAGTF fires and effects; therefore, it is essential that aviation and fires and effects planners coordinate closely to properly nest air operations into the MAGTF OPORD. The MAGTF air center and ACE battle staff play key roles in aviation planning.

The MAGTF air center provides the MAGTF commander with aviation expertise and an essential interface between the MAGTF commander, the ACE, the JFACC or airspace control authority, and other air-capable commands as required. The air center coordinates with appropriate agencies across the planning horizons to integrate and synchronize the six functions of aviation with the MAGTF CONOPS. The MAGTF air center, ACE, and MARLE personnel coordinate and liaise with higher and adjacent aviation coordination agencies to facilitate MAGTF aviation integration with joint or combined air operations. The MAGTF air center is responsible for producing Annex W (Aviation Operations) to the MAGTF OPORD.

The ACE staff concurrently plans air operations in support of the MAGTF. The ACE commander and battle staff provides critical input to the aviation estimate of supportability and the air plan. The ACE commander's responsibilities include the following:

- Provide planners to the MAGTF OPT.
- Develop intelligence requirements.
- In conjunction with MAGTF air center, coordinate air operations with the GCE, LCE, and HHQ.
- Provide target nominations and input to the MIPTL.
- Recommend target priorities and air apportionment to the MAGTF commander.
- Submit external support requirements requests to the MAGTF commander.
- Recommend, together with the GCE and LCE commanders, air defense priorities to the MAGTF commander.
- Develop the MAGTF input to the ATO.

Planners conduct MAGTF air planning during the MCPP and refine it during battle rhythm activities (detailed execution planning). MAGTF Marines plan and produce input to the ATO, which is developed and produced daily during battle rhythm activities.

Air Apportionment and Allocation

Air apportionment determines and assigns the percentage or priority of the total expected effort that should be devoted to the various air operation for a specific period. Air apportionment includes priority or percentage of effort devoted to assigned mission-type orders, objectives, or other categories significant to the operation. The air apportionment decision is then translated into air allocation, which is the total number of available sorties by aircraft for each operation or task. Joint, air-capable component, and MAGTF commanders use the air apportionment and allocation process to ensure priority of air effort is consistent with operational phases and objectives.

Air apportionment decisions are among the most important decisions made, from a MAGTF command perspective. Aviation contributes to all warfighting functions and directly affects MAGTF operations. Employing aviation capabilities in an efficient and effective manner is critical as there are finite MAGTF aviation assets.

Air apportionment within the MAGTF identifies the total level of effort that should be dedicated to aviation tasks to accomplish the assigned mission. MAGTF apportionment is expressed as a percentage of the total aviation effort and helps ensure the efficient use of limited aviation resources. In simple terms, air apportionment can be thought of as how the MAGTF commander prioritizes aviation capabilities. In general, the air apportionment decision is focused on areas where there are competing operational requirements for MAGTF aviation capabilities (where demand exceeds supply). A MAGTF air apportionment decision might not be required when organic aviation capabilities (supply) meet or exceed requirements (demand).

The focus of air apportionment varies by MAGTF mission requirements as there are unique air apportionment considerations applicable to every mission. Air apportionment can be determined by different criteria as applicable to the mission and situation (as percentage or priority; focus on specific aircraft type(s); focus on geographic areas, etc.). Air apportionment may include prioritizing aviation ISR capabilities when there are competing collection requirements.

In the context of fires and effects, the air apportionment decision directly affects MAGTF targeting, fire support, and air defense plans during combat operations. For example, particularly when there are competing requirements for aviation strike assets to fulfill MAGTF targeting (i.e., DAS), fire support (i.e., CAS), and air defense requirements. Marine fixed-wing aviation strike-capable assets often provide most MAGTF organic fires support because of range, ordnance, and survivability capabilities. As such, the air apportionment decision might focus on the fixed-wing asset DAS and CAS missions versus air defense missions percentages during combat operations.

Air apportionment changes over the course of an operation and during different operational phases and steps. During battle rhythm activities, air apportionment is typically reviewed and revised daily to meet current situational requirements. Fires and effects planners facilitate the air apportionment process by providing relevant information and subjective analysis to decision makers. Planners from the FECC, MAGTF air center, IOC, and ACE FOS collaborate to gather objective information and conduct analysis, ultimately developing apportionment recommendations. For example, planners might first determine MAGTF CAS, DAS, and air defense requirements in relation to available organic aviation firepower capacity to support these requirements. Planners might—

- Quantify the number of sorties required to fulfill MAGTF fire support and air defense requirements (associated with preplanned CAS air requests and air defense requirements).
- Quantify the number of sorties required to fulfill MAGTF targeting requirements (associated with MIPTL and targeting requirements).
- Quantify the total number of sorties available for MAGTF use (associated with the planned ATO flow of CAS, DAS, and air defense capable platforms).

Planners then analyze objective information in relation to overall MAGTF mission requirements (ground scheme of maneuver, force protection requirements, targeting timeline requirements, etc.). The ACE commander, MAGTF air officer, and FEC collaborate to develop air apportionment recommendation(s). The MAGTF commander considers apportionment recommendations and makes the MAGTF air apportionment decision during the fires and effects board.

After receiving the commander's apportionment decision, the ACE develops its allocation plan. This process begins by determining the total number of MAGTF direct support sorties required. The ACE receives and processes all aviation requirements (fires and effects requirements from the FECC, air requests from the MAGTF air center, collection requirements from the IOC, etc.). Once allocation is complete, sorties are planned, or allotted, to support the MAGTF and its elements.

The allocation decision is based on planned actions; however, planners must track actual execution of the air plan and refine allocations as required. Planners from the FECC, MAGTF air center, and ACE must subsequently track actual execution of the air plan. Since aviation assets may be diverted to emergent requirements during ATO execution, the MAGTF staff must be informed when divergences from the air plan occur, assess the subsequent effect, and adjust as required.

Daily Air Planning

As part of the battle rhythm, the ACE develops daily air plans as part of the ATO planning cycle. The Marine TACC ATO planning cell produces the daily air plan by determining air capacity (available sorties), establishing planned aircraft flow, and sequencing apportioned air assets to support MAGTF requirements. The daily air plan serves several functions to include the following:

- Synchronize aviation mission planning to support MAGTF requirements.
- Integrate collection and fires and effects tasking with aviation capabilities.
- Provide a standardized briefing format to decision makers.
- Facilitate production of the ATO.

The daily air plan typically includes a graphic depiction of the ACE allocation and allotment plan for a given period (such as a specific ATO day). The daily air plan and the MAGTF MAAP are produced in a coordinated manner and can be combined. The daily air plan is briefed to the ACE commander in detail, with relevant portions briefed to MAGTF commander at the fires and effects board.

MAGTF Marines conduct a similar daily MAAP process to synchronize fires and effects, ISR, and other relevant actions into the air plan. During MAAP development, planners review the MAGTF commander's guidance, planned MIPTL targets, available aviation capabilities and forces, and apportionment and allocation for the period or ATO day. The completed MAGTF MAAP provides a graphic depiction of how Marines should employ aviation fires and effects capabilities for a specific ATO day. The MAAP typically displays planned number of MAGTF attack sorties by mission type (interdiction, armed reconnaissance, reconnaissance, CAS, etc.) planned to be employed in geographic areas (TAIs, kill boxes, close and rear areas, etc.). The MAAP includes preplanned and on-call sorties (airborne and ground alert). The MAGTF MAAP can also include air refueling requirements, suppression of enemy air defenses requirements, air defense, ISR, and other information that facilitates organic air mission ATO planning and production. As part of the battle rhythm, the ACE produces the MAGTF MAAP with input from and coordination with MARLE, air center, FECC, ICC, and IOC planners. Relevant portions of the MAGTF MAAP and daily air plan are briefed to the MAGTF commander at the fires and effects board.

Air Requests

The MAGTF uses an organic air request process, which provides essential information to fires and effects planners (requests for air support defines fires and effects requirements to a large degree). During the MCPP, air request processes are codified in the MAGTF OPORD. MAGTF Marines coordinate air requests for joint air support via the ALLOREQ process.

During battle rhythm activities, the MAGTF air center is responsible for managing the MAGTF air request process. The MSCs and MSEs submit their prioritized requirements for aviation support to the MAGTF air center via MSC and MSE air officers. The MAGTF air center validates and consolidates preplanned MAGTF air requests. The MAGTF air center, MEF G-4, and ACE coordinate preplanned assault support requests. The MAGTF air center subsequently coordinates with ACE planners to incorporate validated air requests into the ATO for sourcing. During execution, the MAGTF air center monitors and facilitates air request processing and sourcing.

There are two types of air requests: preplanned and immediate. Preplanned air requests are submitted and processed as discussed above. Immediate air requests are submitted to the appropriate MAGTF agency (e.g., DASC) for ACE sourcing.

Typically, MAGTF's air mission planners employ systems, such as the WARP [web air request processor] and the theater battle management core system (TBMCS) to facilitate the air request processes. Using systems greatly enhances air request process speed and efficiency. Both TBMCS and AFATDS have air request functionality and can share air request information between systems. However, there may be TBMCS or AFATDS interoperability issues that may pose limitations. MAGTFs should develop air request processes and procedures that consider system capabilities and limitations. As with most processes that employ systems, MAGTF air request processes and procedures should include redundant submission methods.

Air request formats vary based on the type of air request. The MAGTF submits all air requests using the JTAR [joint tactical air strike request] (Department of Defense form 1972), the Marine Corps assault support request form, and other air request formats as required (e.g., medical and casualty evacuation formats; nine-line request format).

> **NOTE:** The terms *air support request* and *assault support request* might both be abbreviated ASR. The MAGTF OPORDs and tactical standing operating procedures (TACSOPs) should provide clarity to preclude confusing terms.

Air Tasking

Air tasking is the process of translating apportionment and allocation decisions into an ATO and then disseminating the tasks to units involved. An ATO is used to task and disseminate projected sorties, capabilities, and forces to targets and specific missions to components, subordinate units, and C2 agencies.

During joint operations, MAGTF air assets typically support the MAGTF mission. Marine Corps air missions, capabilities, or forces that are tasked to directly support the MAGTF fall under MAGTF control. These Marine Corps aircraft, capabilities, or forces are included in the joint ATO for coordination purposes and are only redirected with the approval of the respective MAGTF or component commander.

During battle rhythm activities, MAGTF direct support sorties are integrated into the ATO via the TBMCS Marine Corps air mission planner. The Marine TACC receives a shell ATO from the JAOC, populates it with MAGTF direct support sortie information (assigning missions and mission support responsibilities to specific squadrons or units), and transmits the information to the JFACC for integration into the joint ATO. When posted, the joint ATO confirms all prior planning and agreements for sortie support. A timely joint ATO is critical as joint force components conduct their planning and operations based on a prompt, executable ATO and are dependent on its information. Sourcing and requesting units can access the daily ATO electronically through various systems.

The MAGTF air tasking cycle is developed during the MCPP, and executed throughout battle-rhythm activities. The air tasking cycle begins with approved plans, objectives, and guidance, and culminates with assessment of previous actions. The MAGTF air tasking cycle aligns with the joint air tasking cycle (typically a 72- to 96-hour cycle period). See Figure 3-5 for the MAGTF and joint air tasking cycles.

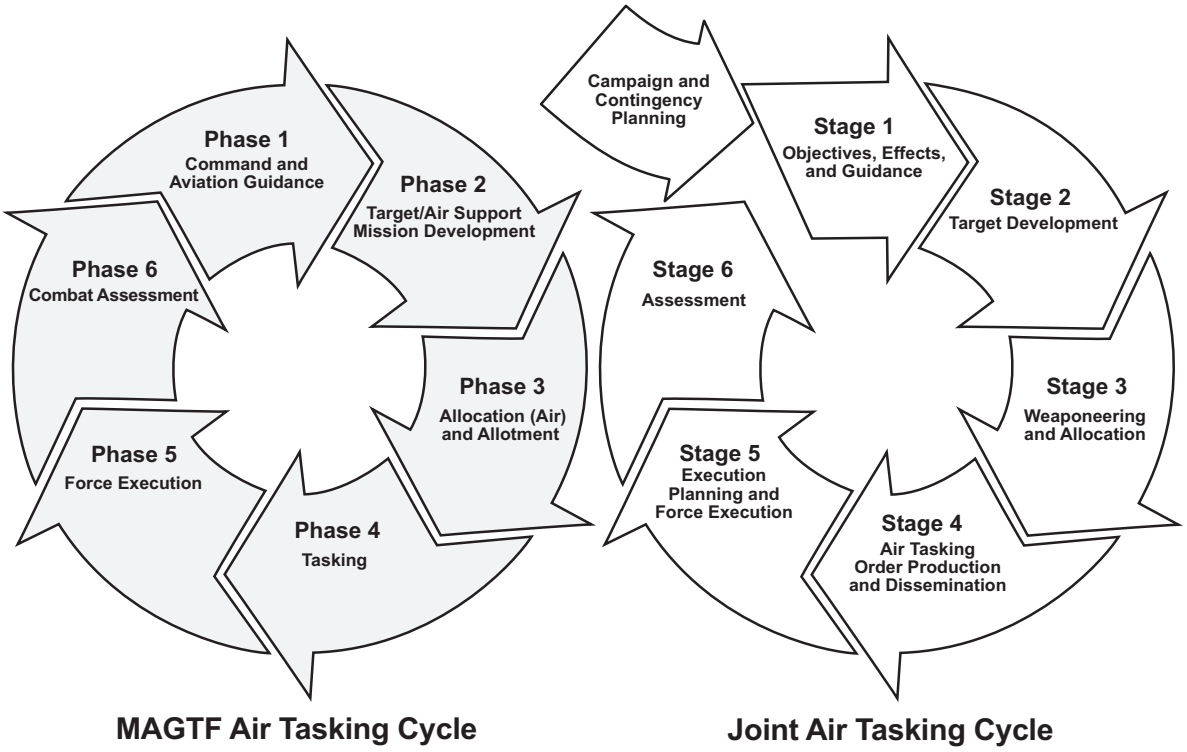

Figure 3-5. MAGTF and Joint Air Tasking Cycles.

During the air tasking cycle, a series of ATOs and related products are in various stages of progress at any time, to include (see Figure 3-6):

- The ATO undergoing assessment (yesterday's plan).
- The ATO in execution (today's plan).
- The ATO in production (tomorrow's plan).
- The ATO in planning (the following day's plan).
- Future ATOs (decision and guidance).

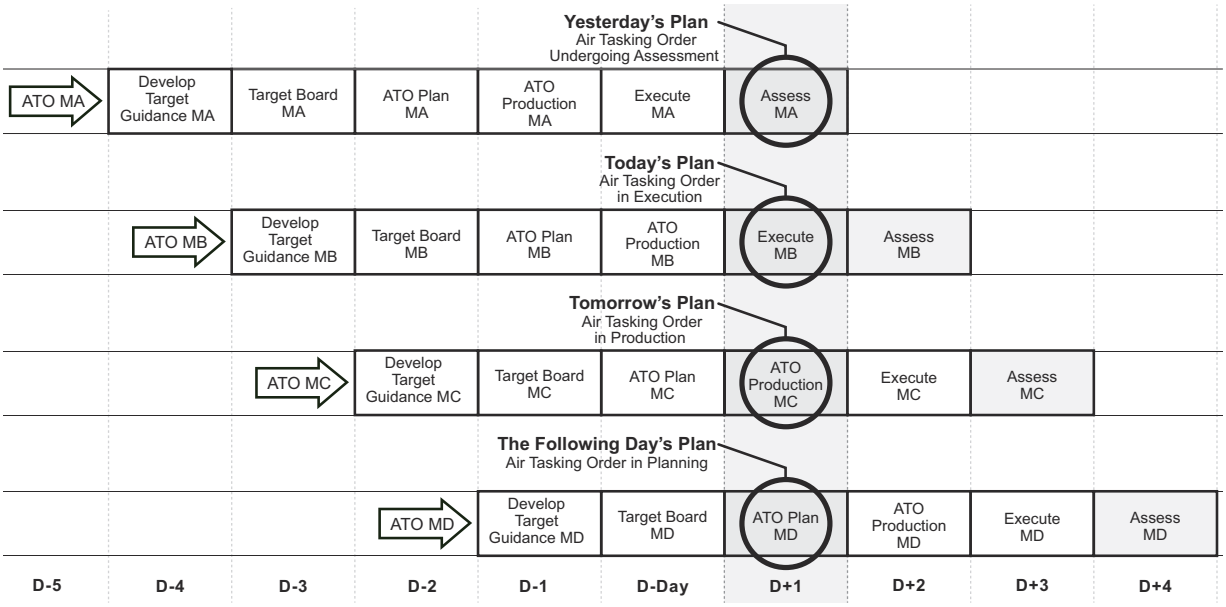

Figure 3-6. Example MAGTF Air Tasking Order and Targeting Battle Rhythm.

The MAGTF air center conducts an air coordination working group to coordinate MAGTF aviation requirements. The air center consolidates MAGTF air requests and other aviation requirements and collaborates with the Marine TACC MARLE to ensure MAGTF air requirements are coordinated and integrated into the ATO.

Planners consider ATO planning factors early in the MAGTF battle rhythm. Of particular importance is aviation capacity (i.e., number of sorties the ACE can sustain and surge). The ACE develops tools to predict daily aviation capacity. Such tools are extremely valuable in providing objective information to predict aviation firepower capacity, facilitate air apportionment recommendations and decisions, and facilitate production of daily air plans (to include the MAAP).

As part of the battle rhythm, fires and effects planners collaborate to ensure MAGTF fires and effects requirements are coordinated and integrated into the ATO and appropriate MAGTF coordination and control measures are integrated into the ACO. Personnel from MAGTF FECC, IOC, ICC, air center, and Marine TACC collaborate to establish a MIPTL cut line (see Chapter 5). These agencies also collaborate with the MARLE to coordinate requests for joint aviation support. The Marine TACC ATO development section refines ATO detail (e.g., conducts weaponeering, assigns missions to squadrons, establishes strike packaging).

The FECC, MAGTF air center, ACE, and IOC (collections management officer) collaborate to ensure organic MAGTF aviation collection requirements are coordinated and incorporated into the ATO. These agencies collaborate with the MARLE to submit requests for joint aviation ISR support.

INTELLIGENCE PLANNING

Intelligence supports fires and effects related decisions and actions through focused observations and assessments of the battlespace. The MAGTF G-2/S-2, supports its subordinate sections and provides centralized direction for the MAGTF's comprehensive intelligence effort. Intelligence maintains enemy and adversary composition, disposition, and location and general battlespace awareness. Intelligence produces various IPB products during the MCPP to aid in developing friendly, enemy, and adversary COAs. During IPB, planners create intelligence products and estimates that are critical to intelligence collection planning and targeting. Intelligence also directs the collection and analysis of BDA information to assist the combat assessment process.

Red and Green Cells assist the commander and staff in understanding the battlespace and assessing COAs. The red cell develops the most likely, most dangerous, or most advantageous enemy and adversary COAs. A Red Cell can range in size from the intelligence officer to a task-organized group of SMEs. The Green Cell analyzes independent wills and needs of various population groups that might affect the MAGTF's operations and provides the OPT with context for a better understanding of civil aspects of the battlespace. The Green Cell can also provide considerations for non-DoD entities, such as private sector or nongovernmental organizations. The Green Cell composition can range from an individual to a task-organized group of SMEs that can include liaisons from the local populace and non-DOD agencies. For additional information about intelligence planning, see JP 2-0, *Joint Intelligence*, and MCWP 2-10, *Intelligence Operations*.

Intelligence Preparation of the Battlespace

Intelligence preparation of "the battlespace is the systematic, continuous process of analyzing the threat and environment in a specific geographic area" (*USMC Dictionary*). The IPB process assists in developing fires and effects objectives and guidance by identifying systems relevant to the battlespace and MAGTF mission. Planners leverage various databases, products, and tools to gain enhanced understanding of enemy, adversary, neutral, and friendly systems. For additional information about IPB, see *The Joint Guide for Joint Intelligence Preparation of the Operational Environment*, and MCRP 2-10B.1, *Intelligence Preparation of the Battlespace*.

To address informational and cognitive aspects of the battlespace, information planners provide information support to intelligence. Planners conduct an intelligence preparation of the information environment as part of the IPB. Planners use informational models such as areas, structures, capabilities, organizations, people, and events (ASCOPE) and political, military, economic, social, information, and infrastructure (PMESII) to aid the staff in understanding the information environment and associated relevant actors. Planners may use a combined information overlay to depict where and how aspects of the information environment can affect operations. Planners often conduct TAA to refine understanding of target audiences selected for engagement. The intelligence staff leverages information and civil-military operations (CMO) personnel, as well as outside agencies who have expertise in civil considerations, to identify and analyze the local populace and other relevant actors in the operational environment. Civil intelligence preparation of the battlespace helps planners understand relationships within interrelated systems relevant to MAGTF operations.

The IPB process evaluates enemy and adversary capabilities, vulnerabilities, doctrinal principles, preferred TTP, and observed patterns and activities. Through an analysis of this information, the IPB process helps Marines develop the modified combined obstacle overlay, threat models, and similar products.

Intelligence Support to Targeting

Intelligence planning supports all six phases of the MAGTF fires and effects integration methodology (see Chapter 4) across the planning horizons. The MAGTF G-2 is responsible for providing intelligence support to targeting by identifying target systems, critical nodes, HVTs and HPTs, as well as providing intelligence to effectively engage these targets. Fires and effects planners develop and codify target intelligence processes and products in the MAGTF OPORD. The MCPP uses COG analysis to inform operational design, CONOPS development, and the targeting concept. Critical vulnerabilities and critical requirements illustrate decisive effects in the battlespace required to deny enemy mission success and enable friendly mission success. These decisive effects become targeting or maneuver objectives as the OPT develops the scheme of maneuver.

During COA development and wargaming, fires and effects planners identify and refine HPTs from selected HVTs based on fires and effects objectives and desired effects for each COA. Once HPTs are identified, the G-2 should develop target and maneuver objective studies to support mission planning. Target and objective studies are focused, detailed intelligence products that aid in the application of fires and effects against specific targets or areas. These studies use numerous graphics produced during the IPB process.

MAGTF intelligence leverages target system analysis (TSA) and federated intelligence support during target analysis. In addition to TSA products, MAGTFs can develop internal target folders containing orientation and time-distance graphics, weather and hydrographic forecasts, astronomical data, intelligence briefing notes, and a graphic intelligence summary. Intelligence employs analytical tools (e.g., relative combat power analysis, assessment tools) to facilitate target analysis.

Per CJCSI 3370.01, *Target Development Standards*, MAGTFs should maintain personnel trained in intermediate target development to develop and submit TDN packages. The FECC and IOC coordinate to provide MAGTF input to JTLs (e.g., submit TDNs and recommendations to the RTL and the no-strike list [NSL]).

Per CJCSI 3505.01, *Target Coordinate Mensuration Certification and Program Accreditation*, Services are required to provide trained and certified personnel to perform target coordinate mensuration to support employment of coordinate-seeking weapons, such as joint direct attack munitions, small diameter bomb, 155 mm Excalibur artillery munitions, and Global Positioning System Multiple Launch Rocket System (GMLRS) munitions. There are two types of target coordinate mensuration accreditation that support deliberate and dynamic targeting: target material production and target mensuration only (also referred to as TMO). Target material production is the conduct of target coordinate mensuration to generate target materials entered into the modernized integrated database (MIDB) or local database. Target mensuration only is the conduct of target coordinate mensuration when the derived coordinate is not entered into the MIDB. Typically, MAGTFs maintain personnel formally trained in target mensuration only.

MAGTF personnel develop specific processes and procedures that integrate intelligence and targeting functions during execution. For example, elements within the IOC, such as SARCC, targeting cell, and OCAC, participate in dynamic targeting collaboration and quick-fire nets to facilitate rapid coordination and engagement of targets (see Chapter 5).

Collections

During the MCPP, MAGTFs use several tools (adversary template, situation template, event template or matrix) to plan collection capabilities to acquire or engage targets or relevant actors and assess engagement effects at critical events or phases of the operation. During COA wargaming, the decision support template depicts decision points and time phase lines associated with movement of enemy, adversary, and friendly forces; the flow of the operation; and other information required to execute a specific friendly COA. The decision support matrix provides a recap of expected events, decision points, and planned friendly actions in narrative form. The decision support matrix ties decisions and decision points to CCIRs, ISR, named areas of interest (NAIs), TAIs, and potential friendly response options.

An NAI is a geospatial area or systems node or link where information can be collected to satisfy a specific information requirement, such as capturing indications of enemy and adversary COAs. Named areas of interest are points or areas along a particular avenue of approach through which enemy activity is expected to occur and are generally driven by prioritized essential elements of information or priority information requirements. In support of targeting, NAIs are used to confirm the location of, and track previously acquired targets within the battlespace. A TAI is a geographical area where HVTs can be acquired and engaged by friendly forces. Both NAIs and TAIs facilitate acquisition and tracking of unlocated or mobile targets suspected to be in a particular area.

Collection capabilities and asset availability have a significant effect on target priority determinations. Collection assets might not adequately fulfill all MAGTF collection requirements (e.g., ISR demand is greater than supply), which requires deliberate ISR apportionment and dynamic ISR priority management. When there is a high quantity of relevant actors, or collection assets are limited, ISR prioritization is critical, and planners must carefully analyze and prioritize collections operations.

As part of the battle rhythm and execution, the collection plan matches MAGTF collection requirements to available ISR capabilities. The collection plan should support fires and effects requirements (surveil relevant actors and assess engagements and effects). The FECC, in coordination with the target intelligence officer and ICC, is responsible for identifying fires and effects collection requirements for the IOC and collection manager. The collection plan must support targeting processes (typically accomplished by employing TAIs). For example, the collection plan should include TAIs to obtain coordinates for future scheduled MIPTL targets for each targeting cycle or ATO period, as well as TAIs that support dynamic targeting requirements.

Intelligence collection is the acquisition of information and the provision of this information to processing elements. Intelligence collection supports the commander and staff throughout planning and execution. Collection assets focus on key areas that are associated with the scheme of maneuver, location and development of critical targets, IPB, and combat assessment. For

additional information about MAGTF collections, see MCRP 2-10A.8, *Multi-Service Tactics Techniques, and Procedures for Intelligence, Surveillance*, *and Reconnaissance Optimization*, and Marine Corps Tactical Publication (MCTP) 2-10A, *MAGTF Intelligence Collection*.

Assessment

The IOC is a significant contributor to fires and effects assessment processes, particularly to fires and effects assessment. Throughout the battle rhythm activity, the FECC and IOC coordinate fires and effects assessments. Combat assessment is a collaborative MAGTF effort, primarily conducted between intelligence, fires, information, and aviation planners. Combat assessment processes must be properly integrated into targeting, air tasking, intelligence, and information planning cycles. The IOC targeting cell manages MAGTF BDA collection, tracking, and reporting processes (part of combat assessment). For more information about fires and effects assessments, see Chapter 1.

INFORMATION PLANNING

Influencing and deceiving enemies and adversaries and influencing the decisions of neutral and friendly relevant actors are principal planning considerations. Information planning must be an integral part of, not an addition to, the overall planning effort to ensure information is an inherent part of the plan. The MAGTF staff ensures information planning begins during operational design, which is the earliest stage of operational planning. Planners work with intelligence analysts to determine how information affects the operational environment, gain an understanding of relevant actors and systems in the operational environment, and consider how information is used by, and affects the behavior of those actors. Planners assist in analyzing the informational, physical, and human aspects of the environment; identifying information-based threats, vulnerabilities, and opportunities across the operational environment; identifying and describing relevant actors and their drivers of behavior; and determining the most likely behaviors of relevant actors. Desired conditions should include a description of relevant actor behaviors that impede or support changing current conditions to desired conditions. Planners identify entities and systems within the operational environment that must change or remain the same to achieve command objectives.

EXTERNAL AGENCY COORDINATION

Fires and effects planners coordinate with external agencies during long-and near-term planning. This section briefly addresses external agency planning considerations.

Higher and Adjacent Headquarters and Multinational

During operations, planners coordinate with external higher and adjacent headquarters agencies to integrate MAGTF fires and effects into joint and multinational processes. Effective coordination with higher and adjacent headquarters agencies requires integrating personnel, virtual collaboration, or exchanging liaisons. Coordination requirements vary to meet operation requirements, and often change during an operation. In general, MAGTF fires and effects personnel coordinate to integrate MAGTF fires, intelligence, aviation, and information activities

with the joint or combined force to ensure unity of effort. Planners coordinate to integrate MAGTF fires and effects related C2 architecture, processes and procedures, planning cycles, battle rhythms, etc., across the planning horizons.

Planners initiate coordination during the MCPP focusing on how the MAGTF will be integrated into the operation (e.g., task organization, command relationships). Planners identify relevant higher and adjacent headquarters fires and effects agencies, review higher and adjacent headquarters orders, and identify fires and effects related processes and procedures. Planners review higher and adjacent headquarters command, control, communications, computers, and intelligence architecture and identify fires and effects related systems, software applications, versions, and formats.

Planners continue coordination with external agencies throughout the battle rhythm and execution. Fires and effects planners or designated liaison officers, participate in higher and adjacent headquarters fires and effects battle rhythm events to ensure MAGTF fires are coordinated with the joint or combined force.

Liaisons

Planners should identify joint, multinational, and component agencies the MAGTF should integrate with, and the MAGTF command element subsequently coordinates liaison requirements. MAGTFs exchange fires and effects liaisons with external agencies and commands across the joint or combined force at multiple command echelons. As each CCMD has a unique fires and effects enterprise, MAGTFs identify agencies they expect to integrate with and coordinate appropriate liaisons. While operating at competition levels below armed conflict, MAGTFs establish and maintain liaisons to build habitual relationships and refine theater-specific fires and effects integration procedures. During operations, liaison requirements increase, and MAGTFs develop a plan to source additional liaisons. The ANGLICO and MARLE are two common MAGTF fires and effects liaison elements (see Chapter 2 for additional ANGLICO and MARLE information).

EXTERNAL SUPPORT

A MAGTF can coordinate or request external fires and effects support during planning and execution through various processes and procedures. Fires and effects support can be coordinated through support relationships. Commanders and their staff coordinate with higher and adjacent commanders to develop support relationships. If designated a supported commander, the MAGTF commander has the authority to exercise general direction of the supporting effort to include designating and prioritizing targets or objectives.

Special operations forces are uniquely suited to provide fires and effects support to FMF, providing various capabilities (such as ISR, air- and surface- delivered fires, unconventional warfare, direct action, maritime mobility, MISO, civil affairs support, etc.). Special operations forces have unique capabilities and authorities that MAGTFs can leverage to create desired effects in support of objectives. Marine air-ground task forces should coordinate with appropriate SOF agencies to develop support relationships, coordinate operations, and maintain situational awareness of theater-specific SOF capabilities.

PLANNING FOR FIRES AND EFFECTS TASKS

The MAGTF fires and effects tasks are targeting, fire support, counterfire, interdiction, countering air and missile threats, integrating information, and assessing fires and effects. A MAGTF simultaneously employs integrated fires and effects tasks using unique procedures for each. There is often overlap between fires and effects tasks that requires process and procedure integration. The integration and synchronization of these fires and effects tasks to create desired effects and achieve objectives essentially constitutes MAGTF fires.

Fires and Effects Task Considerations

The FECC is responsible for coordinating overall fires and effects planning; however, integrating and synchronizing fires and effects tasks requires a coordinated MAGTF effort and input from all echelons. Fires and effects planners consider top-down guidance (command objectives, priorities, requirements, and capabilities that support the CONOPS) and employ bottom-up development, such as input from MSCs, MSEs, and SMEs, to refine and synchronize fires and effects tasks and associated procedures.

Different processes and procedures to request external support apply to each planning horizon. During the MCPP, OPT members identify external fires and effects support requirements and coordinate support requests to HHQ through various processes. As part of the battle rhythm, MAGTFs can coordinate or request external fires and effects support through joint force processes. When task-organized under a component, MAGTFs coordinate requests for external fires and effects support through the respective component. To ensure unity of effort, the FECC consolidates and coordinates MAGTF requests for external fires and effects support. Typical joint force fires and effects request processes include target nominations (via a TNL); requests for external air support (via the ALLOREQ process); requests for external ISR support; and requests for external information support.

Authorities

Fires and effects planners should carefully consider authorities and associated level of control in relation to the fires and effects tasks. Commanders ensure fires and effects related authorities are carefully planned and promptly disseminated. Fires and effects related authorities vary by operational requirements, and often change over the course of an operation. For example, targeting authorities might be retained at high levels (centralized) during early and late phases of an operation, but be delegated to lower echelon commands during other phases of the same operation. Planners should liaise with higher, adjacent, and subordinate commands to ensure MAGTF authorities and procedures are properly coordinated and synchronized. Authorities are published in appropriate directives and orders (OPORDs, FRAGOs, etc.), and should be promptly disseminated to ensure subordinate commands and executing agencies employ fires and information capabilities consistent with commander's intent.

The authority to validate and engage targets typically resides with a CCMD assigned physical areas of responsibility or operational objectives. Target validation is part of the target development process that ensures candidate targets meet objectives and criteria outlined in commander's guidance and ensures compliance with the law of war and ROE. Target validation authority and target engagement authority are related, but distinct authorities:

- Target validation authority denotes a particular individual designated by a CCMD to validate targets, approve changes to target lists, and approve target restrictions. Target validation authority can be delegated to a subordinate JFC or command.
- Target engagement authority denotes a particular individual designated to approve target engagements. Target engagement authority can be delegated to subordinate commanders.

The authority to validate targets does not imply authority to engage targets.

Combatant commanders or JFCs communicate target engagement criteria to the force through commander's objectives, targeting guidance, and intent, and more specifically through ROE, SPINS, or other directives.

Combatant commands can retain target engagement authority or delegate authority to engage targets to subordinate JFCs or component commanders. If authorized, target engagement authority can be further delegated to tactical-level control elements, on-scene commanders, attack assets, or individuals authorized to make target engagement decisions. During armed conflict, target engagement authority is typically delegated to the lowest practical level consistent with guidance, authority of the CCMD or JFC, and ROE. Target engagement authority for certain sensitive targets might reside at a higher level than the CCMD. Target engagement authority delegation details should be clearly stated in ROE, orders, SPINS, or other directives. Commanders, agencies, and individuals delegated target engagement authority are responsible for planning, coordinating, and ensuring the following targeting requirements are met per joint or Service TTP:

- ISR and collection management support.
- Positive identification.
- Combat identification.
- Target coordinate mensuration.
- Weaponeering.
- CDE.
- Airspace control.

Target engagement authority applies to deliberate and dynamic targeting and other fires processes. For example, during deliberate targeting, commanders can approve engagement of targets during a targeting board or commanders can approve engagement of specific targets associated with a targeting CONOPS brief or a sensitive target approval and review package. During execution, individuals typically authorize target engagements per joint and Service fires TTP. For example, an individual in a dynamic targeting cell might authorize target engagements during the target step of find, fix, track, target, engage, and assess (F2T2EA). During CAS missions, joint terminal attack controllers or the forward air controller (airborne) might clear aircraft to attack specific targets; an individual in an air and missile defense (AMD) command and C2 element may

authorize engagement a particular air or missile threat. In some cases, tactical-level C2 elements might be required to coordinate with higher-echelon C2 elements or commands to obtain approval to engage targets. In all cases, a single individual typically makes target engagement decisions.

When target engagement authority is delegated to the MAGTF, the commander may further delegate target engagement authorities to subordinate commands or elements (if consistent with CCMD or JFC guidance). When delegating target engagement authority, planners must ensure responsibilities and procedures for targeting requirements are clearly identified and communicated to executing elements. For example, if the MAGTF commander delegates target engagement authority to the ACE, responsibilities and procedures for positive identification (PID), combat identification (CID), target coordinate mensuration, CDE, etc., must be planned and coordinated between the command element and ACE fires and effects agencies, control elements, and attack assets. In addition to target engagement authority, planners should develop and disseminate other targeting-related authorities during execution. For example, authorities to divert strike or ISR assets should be disseminated to appropriate executing agencies.

Target engagement authority for certain sensitive targets might come from a higher level than the CCMD or JFC but might be delegated to the component commander when the situation dictates. When conducting military operations, positive steps and precautions must be taken to avoid excessive incidental civilian casualties and damage to civilian property. In general, civilian populations and civilian and protected objects should not be intentionally targeted. All targeting decisions must be made considering ROE and the law of war. For additional information about legal considerations in targeting, see JP 3-60; MCTP 11-10B, *The Commander's Handbook on the Law of Naval Operations*; and MCTP 11-10C, *The Commander's Handbook on the Law of Land Warfare*.

Rules of engagement supplemental measures allow commanders to refine ROE to the mission, often making the ROE more restrictive. Supplemental measures define limits or grant authority for the use of force. Supplemental measures may also authorize specific actions if clarity is required or requested. Target engagement authorities and ROE are inextricably linked. Targeting authorities (to include target engagement authority and delegation considerations) and target engagement criteria (to include PID, CID, CDE considerations) should be included as part of ROE. Approved ROE and rules for the use of force applicable to a specific mission, are typically found in the mission's respective warning order, execute order, OPORD, operation plan, ROE serials, or SPINS section of the ATO. Unit commanders retain the inherent right and obligation of self-defense in response to a hostile act or demonstrated hostile intent.

Combat identification supports force protection and enhances operations by helping minimize friendly fire incidents and collateral damage. Combat identification characterizations, when applied with ROE, enable target engagement decisions concerning use or prohibition of weapons and capabilities that can create lethal or nonlethal effects. Depending on operational requirements, CID characterization could be limited to friendly, enemy, hostile, neutral, or unknown. In some situations, additional characterizations are required, including, but not limited to, class, type, nationality, and mission configuration. The MAGTF staff should develop CID procedures consistent with JFC guidance and ROE early during planning.

There are many unique considerations associated with integrating information capabilities into the targeting process. Many information activities and capabilities have interagency execution approval levels that increase the time required to plan, coordinate, and integrate. Planners must

understand authorities, permissions, request procedures, and timelines required to execute different information activities. If permissions to employ an information capability are held at a higher echelon, the MAGTF must adhere to the applicable timelines and approval process for that capability. Employing information capabilities can involve complex legal and policy issues requiring careful review. In accordance with DoD Directive 3600.1, *Information Operations (IO)*, information activities will be conducted in accordance with all applicable US statutes, codes, and laws, and will not be directed at or intended to manipulate audiences, public actions, or opinions in the United States.

For this discussion, level of control refers to authorities granted to designated agencies or entities that exercise direction of fires and effects tasks. Fires and effects tasks warrant different levels of control based on battlespace considerations and mission requirements. Some fires and effects tasks, such as targeting, interdiction, integrating information, warrant a relatively high level of centralized control in certain conditions to minimize risk or ensure unity of effort. Other fires and effects tasks, such as fire support, dynamic counterfire, and countering air and missile threats, are executed using relatively decentralized control processes and procedures to rapidly engage threats and protect friendly forces. After commander's guidance is issued and apportionment decisions made, control of fire support, dynamic counterfire, and countering air and missile threat fires and effects tasks are delegated to the lowest echelon feasible, consistent with mission requirements.

When able, MAGTFs emphasize decentralized execution of fires and control tasks. Decentralized execution provides unit commanders and agencies the freedom and flexibility to execute missions and delivery tactics consistent with commander's intent, desired effects, and fall within ROE. Decentralized execution of tasks makes it possible to generate the required tempo of operations while coping with the uncertainty, disorder, and fluidity of combat coordinated action. Properly integrated fires and effects tasks facilitate decentralized execution, increasing speed, agility, and effectiveness of fires and effects.

Marine air-ground task forces should clearly delineate authorities in orders and TACSOPs. As a best practice, MAGTFs should develop and disseminate a comprehensive authorities matrix tailored to specific operations. Such a matrix should clearly delineate authorities granted to MAGTF entities to engage specific types of targets, launch, or divert ISR or engagement assets, etc.

Target Nomination

Component commanders, surface force commanders, national agencies, supporting commands, or the JFC staff submit prioritized target nominations via TNLs. Joint force target nomination processes vary, and agencies submit target nominations in various formats or using MIDB replication. Target nomination lists are typically submitted to the JFACC, JAOC, and the JFC's designated representative (usually the JFE) for review at the same time. The JFE and JAOC consolidate TNLs and prioritize targets based on JFC objectives.

Joint forces typically employ a strategy-to-task targeting methodology to ensure targets support JFC objectives. The JFACC provides joint targeting guidance, transmitted in an AOD, which links JFC effects and objectives to prioritized tactical tasks. Targets are initially prioritized by their associated AOD tactical task, and then independently prioritized resulting in a draft joint integrated prioritized target list (JIPTL). The JFE and JAOC targeting effects team coordinates

any remaining issues and develops the draft JIPTL for joint targeting coordination board (JTCB) consideration. It is essential for MAGTFs to provide input to the AOD to ensure MAGTF targeting requirements are incorporated into the joint targeting process.

The FECC coordinates and submits the MAGTF TNL to HHQ. After submitting the TNL, fires and effects planners continue coordination with HHQ (i.e., attend HHQ targeting working groups or boards) and liaison elements (i.e., MARLE, JFE liaison) to ensure MAGTF target nominations, objectives, and supporting rationale are clearly articulated to and understood by HHQ and the joint force. Planners ensure Marine Corps representatives at the joint targeting working group and JTCB are fully attuned to MAGTF fires and effects plans and efforts.

For targets outside the MAGTF area of operations, target nominations only include desired effect(s). For example, a MAGTF can nominate an enemy unit outside of the MAGTF area of operations with the desired effect of "enemy unit unable to enter or employ effects in the MAGTF area of operations." For targets inside the MAGTF area of operations, targets nominations should delineate desired effect(s) and can provide additional detail, such as identifying specific target elements to be engaged. For additional information on targeting, see Chapters 1 and 5; JP 3-60; MCRP 3-31.5, *Multi-Service Tactics, Techniques, and Procedures for Dynamic Targeting*; and the *Joint Targeting School Student Guide*.

Fire Support

The FECC bases the MAGTF fire support plan on achieving the following four basic tasks:

- Support the CONOPS.
- Support forces in contact.
- Integrate and synchronize fire support.
- Sustain fire support operations.

The FECC is responsible for coordinating the MAGTF fire support plan. Portions of the fire support plan exist in various MAGTF OPORD sections. The MAGTF fire support plan is codified in Appendix 17 (Fire Support) to Annex C (Operations). Appendix 17 to Annex C includes fires detail in applicable tabs such as Aviation Support, Fire Support Coordination Plan, Artillery Support, Naval Surface Fire Support, Fire Support System Plan, Coalition Fire Support Plan. The MAGTF fires procedures applicable to more than one MSC, or to external organizations are codified in MAGTF OPORD. Fires and effects planners ensure fire support plans are synchronized between all parts of the MAGTF OPORD. For example, Appendix 17 to Annex C and Annex W (Aviation Operations) of the MAGTF OPORD must be synchronized to ensure aviation fire support (CAS, surface fires and airspace coordination, fire support system integration, etc.) are properly integrated. Bottom-up refinement greatly enhances MAGTF fire support planning. For example, GCE, ACE, and rear area planners provide significant input to MAGTF fire support plans. For more information about fire support planning refer to JP 3-09; JP 3-09.3, *Close Air Support*; MCTP 3-10F, *Fire Support Coordination in the Ground Combat Element;* MCTP 3-10E, *Artillery Operations;* and MCTP 3-20D, *Offensive Air Support*.

Interdiction

Typically, the planning staff plans and coordinates MAGTF interdiction through the fires and effects integration methodology and conducts interdiction via targeting procedures. The interdiction fires task must be integrated with the targeting, integrating information, and assessing fires and effects tasks. Interdiction is often conducted in the deep battlespace; however, interdiction can be conducted anywhere in the battlespace to include targets in the close or rear areas. During interdiction, targets can be engaged by capabilities that create lethal and nonlethal effects. The FECC and aviation staff plan and coordinate interdiction via air and surface fires. Long-range surface-to-surface weapons systems should be included in interdiction planning. The FECC and ICC coordinate interdiction via information capabilities.

The ACE performs MAGTF air interdiction via DAS. Air interdiction plans are codified in Annex W (Aviation Operations) to the MAGTF OPORD. Planning for MAGTF air interdiction includes incorporating interdiction plans into the MAGTF MAAP, coordinating air interdiction plans with the JAOC, facilitating requests for external aviation interdiction support, etc. The MAGTF's air interdiction battle rhythm planning is a collaborative effort between FECC, air center, IOC, MARLE, and ACE personnel. The ACE conducts detailed air interdiction planning and coordinates appropriate MAGTF input to the ATO. During execution, MAGTF air interdiction is executed via air interdiction, armed reconnaissance, and SCAR missions.

The Marine TACC deep battle cell is the primary MACCS agency responsible for managing aviation assets in support of MAGTF deep operations. The Marine TACC deep battle cell collaborates with FECC watch officers to coordinate targeting priorities and requirements. The Marine TACC deep battle cell then coordinates with the TAOC deep air operations section to command and control organic and joint air assets to create desired effects in the battlespace. To enhance MAGTF deep battle fires and effects capabilities, MACCS agencies coordinate with other air C2 entities such as Air Force theater air control system (TACS) elements, Joint Surveillance Target Attack Radar System aircraft, airborne early warning and control platforms, and maritime air control platforms. For additional information, see JP 3-03, *Joint Interdiction*, and MCRP 3-20D.1.

Counterfire

The MAGTF counterfire plan is delineated in Tab J (Counterfire Plan) to Appendix 17 (Fire Support) to Annex C (Operations) of the MAGTF OPORD and can include a target acquisition plan and CBR queuing plan. Additionally, MAGTFs can be tasked to integrate counterfire plans with higher or adjacent headquarters counterfire plans. Throughout the battle rhythm, the FECC refines the daily counterfire execution plan. It comprises an analysis that defines the counterfire threat; a counterfire collection plan (sensors that cover expected counterfire target locations); and a counterfire matrix that specifies attack responsibilities based on sensor source, target location, and target engagement resources.

Proactive counterfire can be an essential effort as MAGTF CONOPS can depend on successful proactive engagement of enemy indirect surface fires systems. For example, a MAGTF might have to engage enemy medium and heavy artillery capable of ranging planned breaches before initiating ground maneuver. Planners analyze enemy indirect surface fires systems and capabilities and identify CTEs to be engaged in a systematic manner. Enemy indirect surface fire system CTEs can include—

- C2 nodes and systems.
- Artillery batteries.

- Rocket or missile launchers.
- Target acquisition systems.
- Logistic capabilities that resupply, repair, or transport fires assets.

Proactive counterfire planning and execution is primarily conducted via the targeting and interdiction fires and effects tasks.

As a result of IPB, the G-2/S-2 collection plan should identify linkages among counterfire targets, NAIs, TAIs, collection asset, and data dissemination. The counterfire matrix should depict the entire enemy indirect surface fires system from sensor to shooter.

The MAGTF must integrate the dynamic counterfire and dynamic targeting processes to ensure unity of effort among participating agencies. They should also use dedicated communications and data channels to establish effective counterfire collaboration. For example, an enemy counterfire target that cannot be ranged by organic cannon artillery essentially becomes a dynamic target, coordinated engagement by MAGTF assets (e.g., air or rocket artillery). Agencies and assets tasked with conducting dynamic counterfire must be capable of rapidly responding to enemy fires. Counterfire procedures often includes direct sensor-to-shooter links to expedite target engagement (e.g., quick-fire nets).

A MAGTF can establish a counterfire coordination center (CFCC) in the MAGTF command element COC or FAHQ COC to coordinate dynamic counterfire in response to CBR acquisitions. A CFCC consists of the following:

- Target Processing Center (TPC). The TPC coordinates organic CBR assets and processes CBR acquisitions. The TPC validates acquisitions and, if directed, generates a fire mission to the CFCC.
- Target Intelligence Cell. The target intelligence cell compares CBR acquisitions with known or suspected targets, recommends engagement, and templates the CBR acquisitions to provide the MAGTF IOC targeting cell an analysis of the enemy IDF threat.

The CFCC receives TPC fire missions; determines the appropriate fires platform(s) to engage dynamic counterfire targets; coordinates and deconflicts surface or air fires with other elements of the MAGTF (such as GCE, ACE, LCE, and RAOC); and updates the FECC on the status of the counterfire fight.

The MAGTF counterfire plan should delineate specific proactive and dynamic counterfire procedures and include associated MSC or agency tasks. As with other fires and effects tasks, counterfire planning is a collaborative effort that requires significant input from fires, information, intelligence, and MSC SMEs. Some examples include—

- GCE fires planners providing detailed counterfire planning input to support the ground scheme of maneuver.
- The rear area commander providing input to support rear area counterfire.
- Intelligence planners providing input regarding counterfire queuing and ISR.
- Aviation planners providing input regarding air command and control and counterfire capabilities.
- Information planners providing input regarding information capabilities.

The MAGTF should plan and integrate organic and external ISR assets and capabilities to support the MAGTF counterfire plan. The MAGTF counterfire plan should incorporate CBR assets based on mission requirements, and asset type and availability. Certain radar systems provide the MAGTFs with a capability to detect relatively deep targets. A FAHQ can be tasked to plan and coordinate MAGTF CBR asset employment (see Chapter 6 for more information on FAHQs). An artillery regiment is tasked to plan and employ organic CBR assets in support of the GCE. As CBR employment is planned at various echelons, MAGTF CBR asset employment should be planned using top-down guidance and bottom-up refinement. The MAGTF counterfire plan can include radar search zones that prioritize radar search patterns and reaction response postures. For example, MAGTF critical friendly zones designate friendly locations to be protected from enemy fires. Typical critical friendly zones include critical C2 and logistic nodes, forward arming refueling points, and troop concentrations. Call-for-fire zones designate search areas beyond the forward line of own troops the MAGTF wants suppressed or neutralized (e.g., suspected enemy artillery positions). The employment and signature management of CBR is a MAGTF planning consideration.

Typically, the FECC is responsible for planning, coordinating, and directing MAGTF counterfire operations. However, the FECC can delegate all, or portions of, counterfire coordination or direction responsibilities to other commanders, such as the FAHQ or GCE commander. For example, the FECC can delegate authorities to a FAHQ to coordinate and direct cannon, rocket artillery, and other fires capabilities during counterfire operations. In general, the GCE typically directs counterbattery operations inside its boundaries, while the FECC coordinates MAGTF counterfire actions throughout the battlespace. For addition counterfire information, see Army Techniques Publication 3-09.12, *Field Artillery Counterfire and Weapons Locating Radar Operations*; Marine Corps Interim Publication 10-10B.1i, *MAGTF Counter Guided-Rockets Artillery*, *Mortars, and Missiles (G-RAMM) Operations*; and MCTP 3-10E.

Integrating Information

Planners ensure that information plans and activities in support of Marine Corps operations properly nest with HHQ plans. Higher headquarters guidance establishes the boundaries for information planning, identifies limitations based on policy and ROE, and helps reduce the uncertainty associated with information planning.

Planners analyze the information environment using several analytical processes and models. Information planners leverage all-source intelligence products to facilitate understanding the information environment and to identify and develop targets and relevant actors. Products that can help identify relevant actors are IPB and joint intelligence preparation of the operational environment products, TSA, COG analysis, network analysis, TAA, publicly available information, and area studies and assessments. Relevant actors the MAGTF intends to engage then become audiences for inform tasks, target audiences for influence tasks, or targets.

Integrated planning helps develop the concept of information detailing how information supports the MAGTF plan. The MIG and ICC develops the concept of information in coordination with the FECC, G-2, G-3, G-6, and MSC and MSE information planners. Planners concurrently develop and integrate the concept of information with the concept of fires. The concept of information is based on an understanding of the information environment and relevant actors. It shows how information supports the MAGTF commander's intent and CONOPS, and how information

activities help create desired effects. Key elements of the concept of information include objectives, tasks, and relevant actors. The concept of information is included in Annex I (Information) of the MAGTF OPORD, with core elements included in the base plan and Annex C (Operations). Coordinating elements can be found in other portions of the MAGTF OPORD.

Planners participate in all six phases of the fires and effects integration methodology. Planners develop an initial list of relevant actors considered for engagement during problem framing. Planners subsequently coordinate with the FECC to develop target lists and other lists through the fires and effects integration methodology to ensure a unified effort. Information planners provide significant input when developing and prioritizing fires and effects tasking to ensure fires and information activities are integrated and synchronized to create desired effects.

During battle rhythm activities, planners integrate and synchronize fires and effects tasking. The ICC, FECC, G-3, MSCs, and other agencies coordinate information task detail as appropriate. Planners determine external information requirements and facilitate requesting and coordinating external information support. During execution, planners facilitate detailed coordination, execution, and assessment of information tasks.

Subject matter expertise is required to understand all available information capabilities. As such, appropriate (numbers and experience) MAGTF information planners participate in OPTs and battle rhythm activities. Considerations should be made for factoring in long lead times as necessary when planning and executing certain information capabilities (i.e., military deception, MISO, cyberspace operations) because of authorities and permissions required. In addition, the MAGTF staff must understand information authorities and approval processes, with key staff members being "read-in" to the appropriate programs that will support the mission. For more information, see JP 3-04, *Information in Joint Operations*; MCDP 8; and MCWP 8-10, *Information in Marine Corps Operations*.

Countering Air and Missile Threats

During the MCPP, AAW planning is a collaborative MAGTF effort, with MAGTF air center and ACE planners leading. The MAGTF conducts AAW planning to shape the battlespace and provide force protection and air superiority required to conduct deep, close, and rear operations in support of the MAGTF CONOPS.

In the FOPS event horizon, MAGTFs refine AAW plans. For example, MAGTF counterair missions are apportioned and included on the ATO as part of the targeting and air tasking cycles. Marine air-ground task force nominations to the critical asset list are consolidated and submitted to the JFC. Because of limited AMD resources, the JFC might not approve all MAGTF inputs for inclusion on the defended asset list. These areas can become MAGTF air defense priorities that require allocation of organic air defense assets.

During execution, the ACE, having most of the air defense capabilities, conducts air defense tasks and commands and controls MAGTF AAW assets. The MACCS provides the MAGTF with the capability to command, control, and influence the application of Marine air defense aviation assets. The Marine TACC and TAOC are the primary Marine air C2 agencies involved in AAW planning. The MAGTFs air control assets are integrated into the joint force IAMD system. The area air defense commander (AADC) can task the MAGTF to function as a SADC using the

TAOC. Additionally, MAGTFs can provide aviation assets to support the joint counterair and IAMD effort through the ALLOREQ process. For more information refer to JP 3-01, *Countering Air and Missile Threats*; MCTP 10-10B, *Multi-Service Tactics, Techniques, and Procedures for Air and Missile Defense*; MCTP 3-20C, *Antiair Warfare*; MCTP 3-20F, *Control of Aircraft and Missiles*; MCRP 3-20F.6, *Tactical Air Operations Center Handbook*; and MCRP 3-20F.8, *Low Altitude Air Defense Battalion Handbook*.

Assessing Fires and Effects

During the MCPP, planners develop and codify assessment tools and criteria in the MAGTF OPORD. Developing assessment criteria during the MCPP provides an assessment baseline that is refined during execution. Because fires and effects objectives, desired effects and conditions, transition criteria, and fires and effects assessment criteria are all related, planners should develop and refine them in unison during planning. During phased operations, MAGTF planners develop assessment criteria by phase, stage, part, and step.

During battle rhythm activities, planners conduct fires and effects assessment on a continuous basis. For each execution period, planners identify air tasking, targeting, intelligence, information cycle friction points and coordinate appropriate adjustments to MAGTF integration procedures. For example, the FECC, air center, and ACE should concurrently review the ATO and MIPTL for each period, determine whether MAGTF DAS missions on the ATO were properly tasked to engage planned MIPTL targets, and determine whether targets were engaged as planned (established MOPs expedite this assessment). Planners then determine whether targeting and air tasking cycle process or procedure problems exist and coordinate adjustments, as required. As a best practice, MAGTFs identify fires and effects procedures in TACSOPs.

Fires and effects assessment is one of the first agenda items at the appropriate fires and effects working group, as assessment affects the remainder of the agenda. Fires and effects assessment should be a collaborative effort among working group members. As a best practice, the FECC, ICC, and IOC should consider assigning specific personnel to conduct fires and effects assessment. Fires and effects assessment personnel should review fires and effects objectives, desired effects, transition criteria, and fires and effects tasking effectiveness in relation to battlespace conditions and MAGTF objectives.

Fires and effects assessment personnel first review MOEs and indicators and determine progress toward achievement of fires and effects objectives, or creation of desired effects and conditions. If fires and effects assessment personnel determine that progress is not proceeding as planned, planners then must assess whether fires and effects tasking was properly executed (i.e., MOPs). If tasking was improperly executed, planners coordinate with MSCs and execution agencies to facilitate proper task execution. If fires and effects tasking was properly executed, but desired effects and objectives were not achieved, planners review the effects created in the battlespace, determine task effectiveness, and consider employing alternative fires and effects tasking. In addition, planners assess whether undesired effects were created by fires and effects actions. If progress toward fires and effects objectives is proceeding as planned, but progress towards achieving MAGTF objectives is not proceeding as planned, MAGTF operation assessment personnel should review the operational approach and adjust fires and effects objectives and tasking as appropriate. Assessment personnel should consider changes in the battlespace in relation to MAGTF objectives and operational approach and adjust as required.

Fires and effects assessments must be integrated across planning horizons and should be future oriented (not focused on a single day). A two-way information flow is essential as fires and effects assessments inform MAGTF operation assessments and vice-versa. Future plans and FOS personnel should help develop and refine fires and effects objectives to ensure fires and effects is properly integrated into branch or sequel plans, or changes to MAGTF objectives and operational approach. As such, FOS and future plans personnel should attend fires and effects battle rhythm activities, and appropriate FECC, IOC, ICC personnel should attend MAGTF assessment events.

SHAPING

Shaping operations and activities are continuously conducted throughout the battlespace to set conditions for successfully executing a campaign, operation, or mission. Commanders primarily shape the battlespace through the integrated employment of fires, information activities, and maneuver. Shaping actions are lethal and nonlethal activities conducted throughout the battlespace to create desired effects on enemy, adversary, neutral, and friendly entities and systems. Military forces conduct continuous shaping actions throughout the competition continuum. Fleet Marine Forces often contribute to combatant command campaign plans, integrating Marine Corps shaping actions into CCMD theater shaping actions. During operations, FMF continuously conduct shaping actions during all operational phases.

Shaping integrates numerous functions and capabilities to create desired effects and is more than just fires and targeting. Shaping may include activities such as direct attack, deception, MISO, electromagnetic spectrum operations (also referred as EMSO), CMO, communication strategy and operations, engineer operations, etc. Shaping actions also enhance friendly capabilities and protect friendly vulnerabilities. Shaping actions can—

- Destroy, disrupt, degrade, or neutralize enemy capabilities.
- Limit enemy or adversary freedom of action.
- Deny the enemy or adversary the capability to concentrate forces.
- Deceive the enemy or adversary about friendly intentions.
- Alter the tempo of operations, allowing friendly forces to gain and maintain momentum.
- Influence or inform adversaries, allies, and civilian populations.
- Affect physical, informational, and human aspects of the battlespace.

During an operation or mission, shaping can establish conditions for the decisive action. Fleet Marine Forces gain the initiative, preserve momentum, and control the tempo of combat through shaping. Shaping actions should strip away enemy capabilities and attack the enemy's mental, moral, and physical abilities forcing the enemy to abandon a COA and adopt a COA favorable to friendly force commander's objectives. Shaping can make the enemy vulnerable to attack, impede or divert enemy attempts to maneuver, aid friendly force maneuver, and otherwise dictate the time and place for decisive action. The commander shapes events in a way that allows for several COAs, giving the commander multiple approaches to conduct decisive action. Ideally, shaping actions change battlespace conditions to where the results of decisive action are a matter of course.

CHAPTER 4.
THE MARINE AIR-GROUND TASK FORCE FIRES AND EFFECTS INTEGRATION METHODOLOGY

Fires and effects integration methodology is a holistic approach to synchronizing fires and information capabilities and activities from planning through execution and assessment. The fires and effects integration methodology integrates and synchronizes multiple processes, procedures, and cycles across the three planning horizons, promoting a focused, collaborative effort from multiple agencies, MSCs, and MSEs. The methodology uses a six-phase construct and objective-to-task approach designed to integrate all operations and activities throughout the competition continuum. Joint and other Service forces use processes similar to those described in this chapter. As such, tenets in this chapter should serve to facilitate MAGTF integration into joint and component operations (see Chapter 8 for more detail on joint operations).

MAGTF FIRES AND EFFECTS INTEGRATION METHODOLOGY PRINCIPLES

Principles of the MAGTF fires and effects integration methodology are as follows:

- Decision Making. From initial planning, through battle rhythm events, execution, and assessment, the fires and effects integration methodology integrates MAGTF cycles, processes, and procedures that support the commander's decision cycle.
- Unity of Effort. To be effective, planners must coordinate, synchronize, and direct fires and effects in a unified manner. Integrating fires and effects requires participation from, and coordination with, many staff elements and agencies. The MAGTF FECC, under the purview of the G-3, coordinates and directs the fires and effects integration methodology to ensure unity of effort.
- Systematic Approach. The MAGTF fires and effects integration methodology is a rational and iterative process that methodically analyzes, prioritizes, and assigns assets and capabilities to engage battlespace entities to achieve commander's objectives. The fires and effects integration methodology employs a structured, objective-to-task approach that links end state, objectives, tasks, and assessment.
- Assessment. The methodology integrates fires and effects assessment processes and criterion that contribute to MAGTF operation assessment and facilitate decision making.

Decision Making

The commander's decision-making cycle is a process where command and staff elements determine required actions, codify them in directives, execute them, and monitor their results. Four interrelated planning cycles are directly associated with the MAGTF fires and effects integration methodology:

- The intelligence cycle.
- The air tasking cycle.
- The targeting cycle.
- The information tasking and coordination cycle (ITCC).

These planning efforts are inextricably linked, conducted collectively with the inputs and outputs of each cycle interacting with the other cycles on a continuous basis. The MCPP provides the MAGTF mission detail and focus for these planning efforts, all of which support the commander's decision-making cycle (see Figure 4-1).

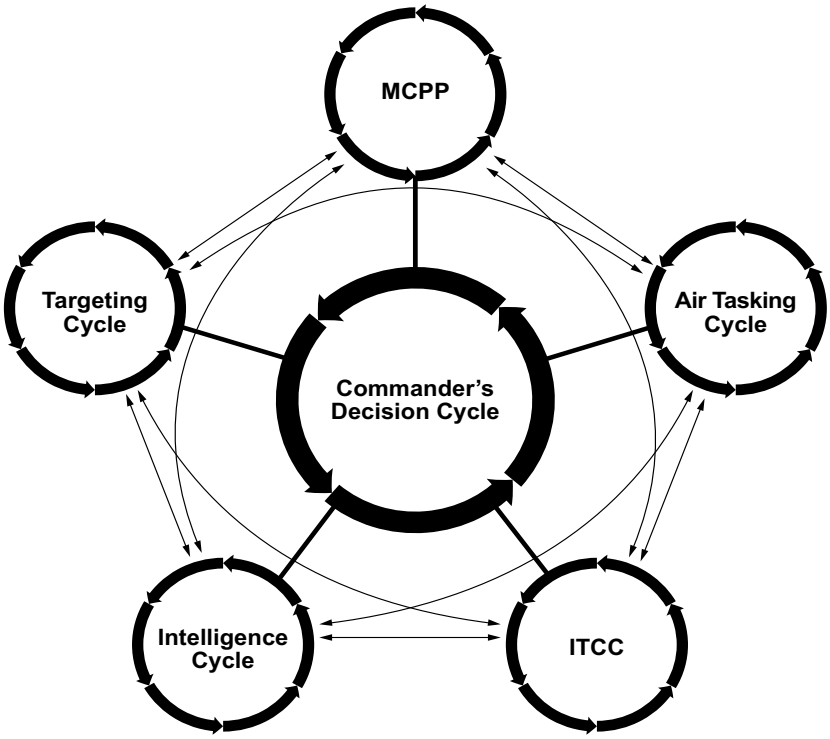

Figure 4-1. Planning Cycle Relationships.

Unity of Effort

The MAGTF fires and effects integration methodology embraces the single-battle concept by promoting unity of effort. It facilitates integration across the three planning horizons, integrates multiple cycles and processes, and enhances coordination among multiple agencies.

Planning develops a common understanding of the problem, which provides a basis for unity of effort. Early in the planning process, MAGTF planners identify desired effects required to attain the end state, subsequently focusing on identifying requirements to create desired effects on enemy, adversary, friendly, and neutral systems in the physical domains, the information environment, and the electromagnetic environment.

The MAGTFs establish common fires and effects objectives to integrate required task planning and execution. Fires and effects objectives enhance unity of effort by integrating and synchronizing fires and information activities in a coordinated manner.

A synchronized MAGTF battle rhythm is essential to unity of effort, as planners review, assess, and refine MAGTF fires and effects objectives and tasking. Fires and effects battle rhythm activities facilitate coordination, integration, synchronization, and deconfliction of fires, ISR, aviation, and information activities, providing input to the fires and effects and targeting boards, where the MAGTF commander makes decisions and provides future guidance.

Centralized command and decentralized execution guides the MAGTF fires and effects integration methodology. Centralized command ensures unity of effort to plan, coordinate, direct, and assess MAGTF fires and effects. The MAGTF FECC, under the staff cognizance of the G-3, is tasked to direct and coordinate the fires and effects integration methodology across the three planning horizons to ensure a unified effort.

Decentralized execution delegates execution of fires and effects tasking to subordinate commanders, making it possible to generate the required operational tempo while coping with the uncertainty, disorder, and fluidity of coordinated combat action. During execution, MAGTFs maintain effective command and control of fires and effects activities while employing decentralized execution procedures. In the execution phase of operations, MAGTF activities are coordinated through specific processes (such as dynamic targeting collaboration), while units and agencies assigned to execute assigned fires and information tasks are given flexibility to foster initiative and responsiveness consistent with objectives.

Systematic Approach

The MAGTF fires and effects integration methodology uses a systematic approach where ends (end state, desired conditions, and objectives) drive the ways (sequence of military actions) and means (military resources) required to shape the battlespace. The methodology's objective-to-task approach ensures fires and effects activities are focused and synchronized to achieve commander's objectives. The MAGTF fires and effects integration methodology is based on a six-phase construct (see Figure 4-2):

1. Commander's Objectives, Guidance, and Intent. Commanders use problem framing to generate their guidance and intent. Problem framing clearly and concisely expresses the purpose of the operation and an understanding of the desired end state and commander's objectives. Attaining clear, measurable, and achievable objectives is essential to attaining the desired end state.

2. Relevant Actor Development and Prioritization. Relevant actor development entails systematically examining entities in the operational environment to determine and prioritize the necessary type and duration of action that must be exerted on entities to create desired effects.

3. Capabilities Analysis. Capabilities analysis enables planners to evaluate available capabilities to determine appropriate target and relevant actor engagement options and identify the best possible solution under given circumstances.

4. Commander's Decision and Force Assignment. The force assignment process fuses capabilities analysis with available forces, sensors, and engagement capabilities. The staff prepares and releases tasking orders to the executing forces.

5. Mission Planning and Force Execution. Upon receipt of tasking orders, executing forces conduct detailed planning and execute tasks and actions.

6. Assessment. The assessment process helps the commander and staff determine whether fires and effects tasking has resulted in progress toward creating desired effects or achieving fires and effects objectives.

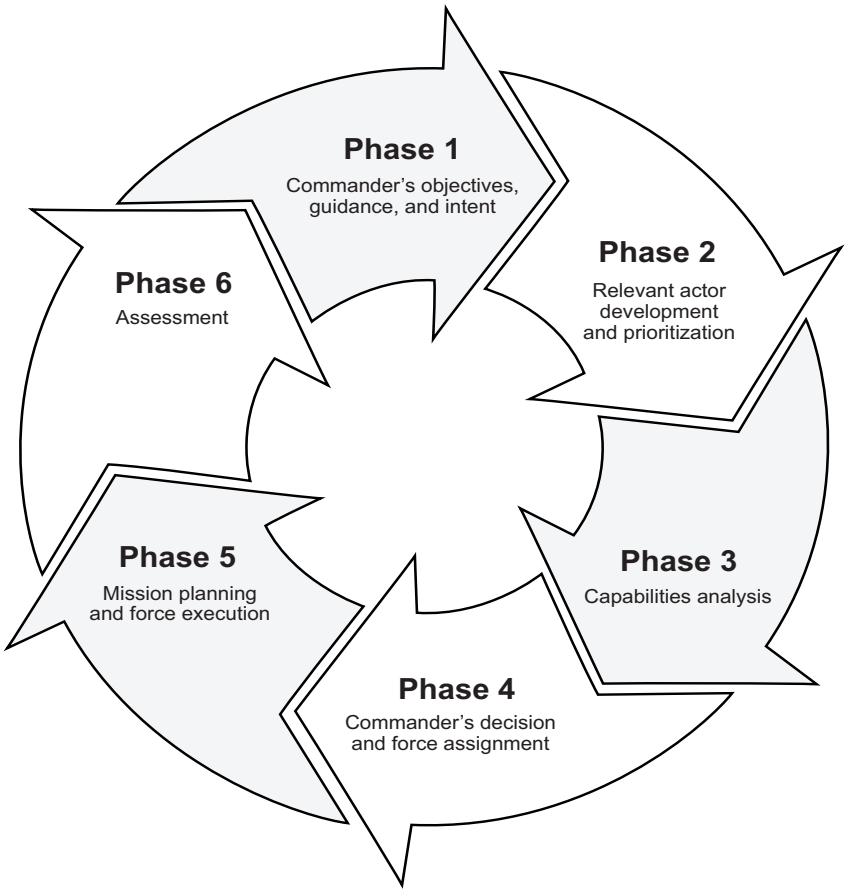

Figure 4-2. Fires and Effects Integration Methodology.

A MAGTF uses the fires and effects integration methodology to integrate fires and information processes and TTP. The methodology is designed to be compatible with the joint targeting cycle and associated processes. Although similar in construct, the fires and effects integration methodology differs from joint targeting processes. The joint targeting process is strictly enemy and adversary focused, while the methodology employs a holistic approach to identify, engage, and assess targets and neutral and friendly entities throughout the battlespace.

The fires and effects integration methodology is designed to integrate fires and information processes and TTP using a single, systematic approach. Specific processes and TTP differ depending on engagement capability and type of entity. Certain processes and TTP that apply to targets, often do not apply to neutral or friendly entities and vice versa. Likewise, certain processes and TTP that apply to fires might not apply to employment of information capabilities.

For example, the Phase Three capabilities analysis process applies to both targets and neutral and friendly entities. Regardless of entity type, fires and effects planners evaluate available capabilities to determine appropriate engagement options and identify the best possible solution. Specific procedures during the capabilities analysis process vary. Planners use weaponeering procedures to determine target engagement options. Planners use other procedures to determine neutral or friendly entity engagement options because weaponeering is not applicable to neutral or friendly entities.

The fires and effects integration methodology provides a single, systematic approach to integrate enemy and adversary targeting, as well as neutral and friendly engagement processes and TTP, facilitating unity of effort (see Figure 4-3). Targeting processes and TTP can be thought of as one part of the methodology. Marines can engage targets with activities or capabilities that create lethal and nonlethal effects. Processes and TTP to engage neutral and friendly entities can be thought of as the other part of the methodology, in which Marines engage neutral and friendly entities and influence or provide input for information activities and capabilities that create nonlethal effects.

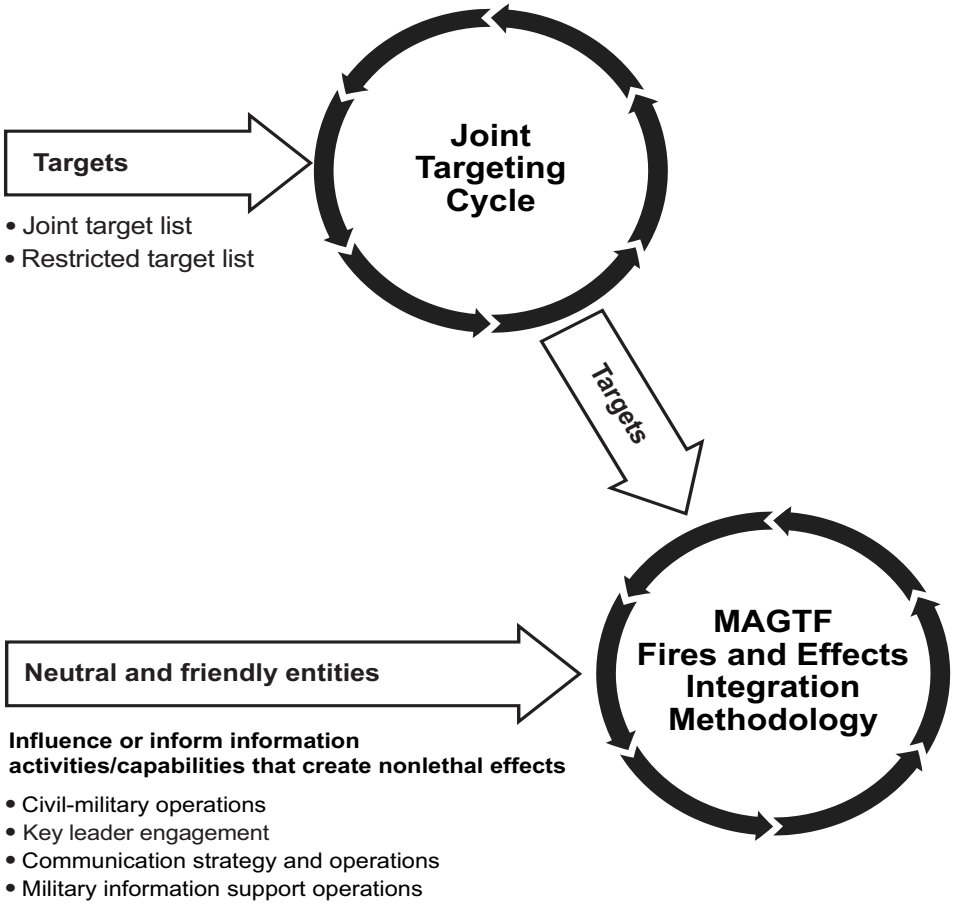

Figure 4-3. Fires and Effects Integration Methodology Relationships.

Assessment

Assessing fires and effects is a continuous process, initiated during the MCPP, and refined during the battle rhythm and execution. Planners integrate and link MAGTF assessment criterion (such as MOEs, MOPs, and indicators) to end state, desired effects, fires and effects objectives, and tasking. Fires and effects assessments contribute to MAGTF operation assessment, in which they are integrated with other assessments to provide a complete picture of progress. See Chapters 1 and 3 for additional fires and effects assessment information.

MAGTF Fires and Effects Integration Methodology Phases

The MAGTF fires and effects integration methodology is a continuous, iterative process synchronized across the three planning horizons. Unique fires and effects integration methodology processes and procedures apply to each planning horizon. The following discussion describes this methodology as a process in relation to the methodology six-phase construct, rather than a step-by-step checklist.

Phase One—Commander's Objectives, Guidance, and Intent

Planning is the deliberate process of determining how to implement guidance—how to use military capabilities in time and space to achieve objectives within an acceptable level of risk. Operational design is the conception and construction of the framework that underpins planning. During operational design, MAGTF planners define the current state of the battlespace, the problem set, and the desired end state. The commander and planning team produce the operational approach, which broadly describes the mission, operational concepts, tasks, and actions required to accomplish the mission. (See Figure 4-4 for operational design components.)

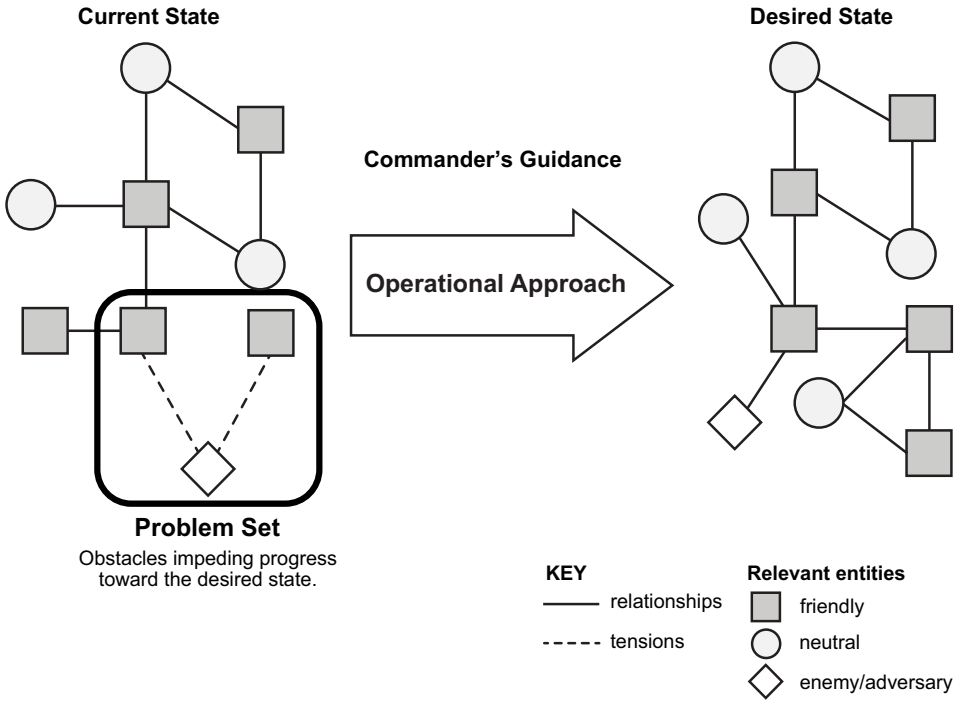

Figure 4-4. Operational Design Components.

The foundation of the fires and effects integration methodology is directly linked to operational design. During operational design, planners consider the operational environment from a systems perspective to understand significant relationships and interdependencies within and between interrelated systems and subsystems (see Figure 4-5). The MAGTF staff analyzes relevant battlespace entities and systems in relation to MAGTF and JFC objectives. This analysis assists with identifying enemy and adversary COGs and their critical capabilities, requirements, and vulnerabilities. In combat operations, this involves understanding enemy and adversary physical and psychological strengths and weaknesses, and how an enemy or adversary organizes, fights, and makes decisions. Understanding these relationships helps the commander and staff identify effective options to transform current conditions into desired conditions.

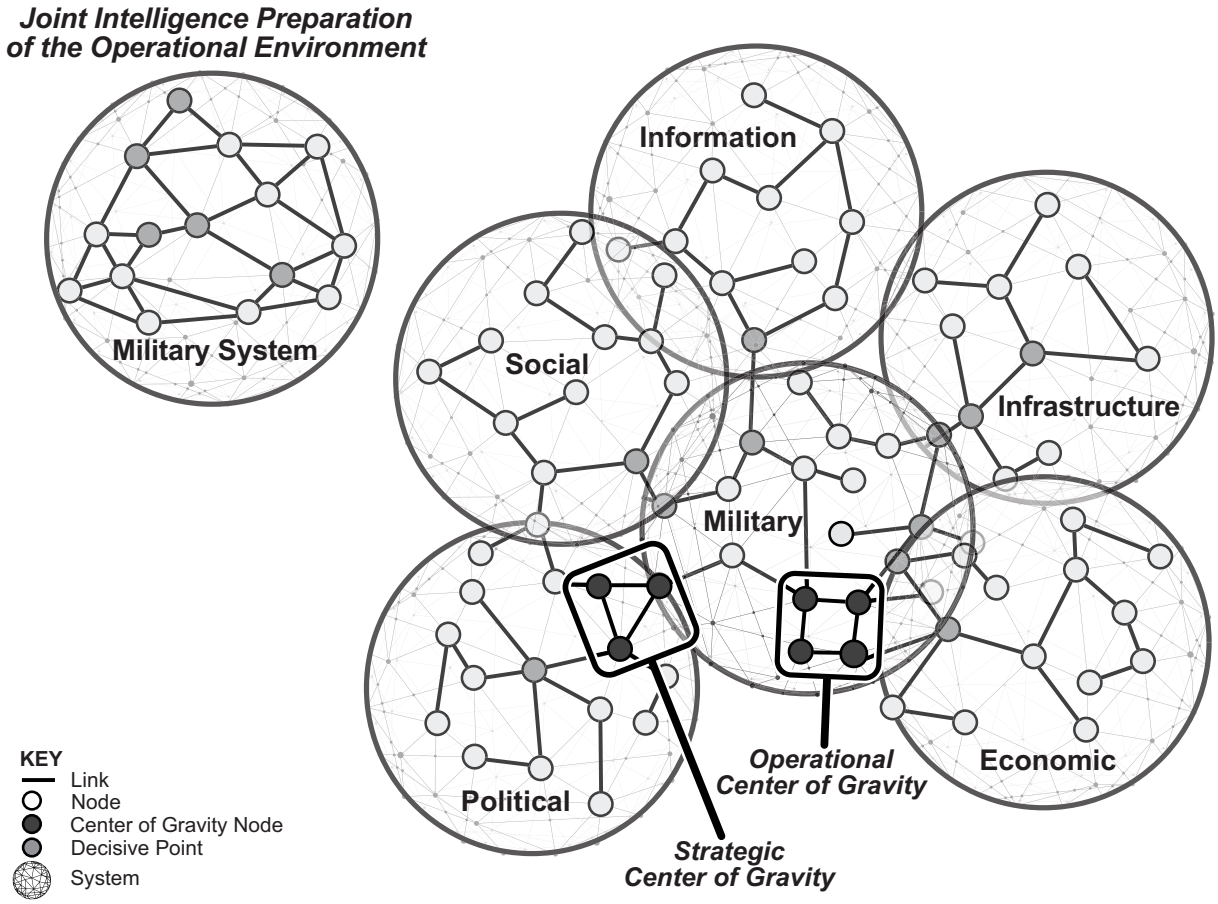

Figure 4-5. Systems Perspective of the Operational Environment.

During operational design, planners focus on conditions that need to be changed in the battlespace, as well as obstacles that impede progress toward desired conditions. Planners identify and analyze system nodes and links in the battlespace. Nodes are the tangible elements within a system that can be engaged for action, such as people, materiel, and facilities. Links are the behavioral or functional relationships between nodes. Links establish the interconnectivity between nodes that allows them to function as a system. Planners link nodes to each other in sufficient detail to identify potential key nodes. The purpose of identifying key nodes for engagement is to affect the relationship between them and other nodes, which ultimately influences the system as a whole. Potential key

nodes are typically related to a COG or a desired condition. Some key nodes can be identified for decisive action because, when acted upon, they could allow the MAGTF to gain a marked advantage over an enemy.

Intelligence preparation is an essential element of the planning process. Joint intelligence preparation of the operational environment, an analytical process that produces estimates and other intelligence products to support the JFC's decision-making process. MAGTF planners conduct IPB to help battle staffs understand the MAGTF area of operations, understand enemy and adversary characteristics, and determine opportunities to exploit enemy critical vulnerabilities. For additional information about intelligence preparation, see the *Joint Guide for Joint Intelligence Preparation of the Operational Environment* and MCRP 2-10B.1.

The MAGTF must fully integrate their operations with joint intelligence activities to ensure unity of effort and mutual support, and to effectively employ limited intelligence resources. For example, planners leverage TSA capabilities during operational design to develop a deeper understanding of enemy and adversary entities and systems to identify key nodes and critical vulnerabilities.

Within the operational environment are interrelated networks of people, places, and actions that can be categorized as friendly, neutral, or threat networks. MAGTFs engage these networks from a systems perspective to achieve objectives. Network engagement activities include a number of methods that support MAGTF C2 processes (MCPP, IPB, the fires and effects integration methodology, assessment, etc.). Network engagement activities provide battle staffs with an array of TTP focused on employing capabilities to shape the battlespace. For additional information on network engagement, see JP 3-25, *Joint Countering Threat Networks*, and MCTP 3-02A, *Network Engagement: Targeting and Engaging Networks*.

Objective-to-Task Approach. The fires and effects integration methodology objective-to-task approach directly links operational design elements to fires and effects objectives, desired effects, and fires and effects tasking. The objective-to-task approach is a continuous, iterative process applicable across the planning horizons. Planners ensure the MAGTF objective-to-task approach nests with and supports the HHQ and JFC approach.

Objectives specify goals of actions taken that are essential to the commander's plan. Military objectives provide the basis for describing desired effects. Objectives and associated effects should directly or indirectly link to higher echelon objectives and associated effects. MAGTF planners ensure MAGTF objectives are consistent with HHQ objectives.

The objective-to-task approach begins with planners identifying MAGTF operational objectives and desired end states. The MAGTF's operational objective should be a clearly defined, decisive, and attainable goal toward which the operation is directed. The end state is the set of desired battlespace conditions that defines achievement of the operational objective. A clear and concise end state enables planners to better examine military objectives that must be achieved to attain the desired end state. Once the end state is identified, planners continue developing the operational approach, which includes MAGTF mission objectives.

The end state and MAGTF mission objectives provide the basis for identifying MAGTF fires and effects objectives. Fires and effects objectives provide the basis for identifying desired effects. Fires and effects planners use fires and effects objectives and desired effects as the basis for developing fires and effects tasking. Fires and effects tasking directs units or agencies to execute tactical fires and information activities to achieve fires and effects objectives and create desired effects.

Phasing is a way to view, plan, and execute an operation in manageable portions, with phases, stages, parts, and steps delineating the sequential progression of an operation. Based on the operational approach and commander's envisioned decisive, shaping, and sustaining actions, planners develop a sequential progression of required actions and determine a defined set of desired starting and ending conditions for each portion of an operation. Desired ending conditions for one part of an operation might be desired starting conditions for the next part of an operation. These desired conditions are often called transition criteria. When using a phased approach, fires and effects objectives, desired effects, and transition criteria should be developed for each portion of an operation.

Planners develop assessment criteria (MOE or other indicators) associated with fires and effects objectives or desired effects. Planners concurrently develop fires and effects tasking with assessment criteria (MOP or other indicators) associated with tasks.

Desired conditions, fires and effects objectives, desired effects, transition criteria, and assessment criteria are all related, and should be developed or refined in unison during the MCPP, and continuously refined as part of the battle rhythm.

Table 4-1 provides an example of how MAGTF objectives, fires and effects objectives, desired effects, fires and effects tasking, and assessment criteria work together.

Table 4-1. Objectives, Effects, Tasks, and Assessment Example.

MAGTF Objective	Gain and maintain local air superiority to ensure freedom of action for friendly forces.
Fires and Effects Objective	Neutralize or destroy Red counterair and short-range ballistic missile (SRBM) forces in sector X.
Effect	Friendly forces capable of conducting air operations without prohibitive interference from Red counterair forces in sector X.
MOE	< 10 percent of friendly force air missions flown in sector X ineffective because of prohibitive interference from Red counterair forces.
MOE	> 90 percent of Red mobile surface-to-air missile (SAM) radars, transporter-erector-launchers (TELs), and SRBM systems engaged within 1 hour of detection.
Task	Disrupt Red air defense C2 systems covering sector X.
Task	Suppress Red integrated air defense systems covering sector X in support of friendly air missions.
Task	Destroy Red SAM radar systems and TELs covering sector X.
Task	Deny Red aircraft from entering sector X.
Task	Destroy Red SRBM systems within range of sector X.
MAGTF Objective	Seize Objective X.
Fires and Effects Objective	Degrade enemy will to fight in the vicinity of (IVO) objective X.

Table 4-1. Objectives, Effects, Tasks, and Assessment Example (Continued).

Effect #1	Enemy forces IVO objective X surrender.
MOE	Number of adversary forces surrendering or seeking to defect.
Task	Disseminate fair treatment offer messages via leaflet.
Task	Broadcast calls to surrender over tactical radio frequencies.
Effect #2	Enemy forces isolated IVO objective X.
MOE	Reduction in cellular communication traffic IVO objective.
MOE	Enemy use of alternate means to communicate and obtain support.
Indicator	Enemy attempts to exfiltrate small units from objective area.
Indicator	Increased use of local noncombatants for logistical resupply and messenger services.
Task	Conduct denial of service attack on cellular network.
Task	Degrade adversary ability to use tactical communications IVO objective X.
Task	Block approaches to objective X.

Fires and Effects Objectives. Fires and effects objectives are goals that describe aspects of the enemy capability or aspects of the battlespace the MAGTF commander wants to affect. The MAGTF end state and mission objectives provide planners the basis for identifying fires and effects objectives. Planners use fires and effects objectives and desired conditions as the basis for identifying desired effects. Planners develop fires and effects objectives and desired effects in both temporal and spatial terms (when and where desired effects must be created). Objectives and desired effects provide the basis for identifying fires and effects tasking.

Planners develop fires and effects objectives during planning in a collaborative manner with input from MSCs and SMEs from multiple functional areas. During problem framing, planners develop broad fires and effects objectives that are consistent with conceptual planning for inclusion in the concept of fires. During COA development, planners refine fires and effects objectives to reflect more detail. Different COAs require unique fires and effects objectives consistent with each COA. Once a COA is selected, planners further refine fires and effects objectives. During orders development, fires and effects objectives should be codified in the base order or Annex C (Operations) to the MAGTF OPORD. If the operation is phased, planners should establish fires and effects objectives for each portion. Fires and effects objectives are continuously refined throughout the MCPP and battle rhythm activities. Fires and effects objectives should have the following characteristics:

- Observable. Fires and effects objectives must strive to affect visible change in an entity's behavior. For example, "Destroy the (XXX Armor Brigade) if it moves out of its assembly area to eliminate its exploitation potential." From this objective, it is clear the commander intends to contain the enemy unit to a particular location, and destroy the unit if it becomes a threat.
- Quantifiable. The change in behavior must be quantifiable. Specific levels of expected results must be identified (i.e., the percentage of destruction [the effect] created by strikes on a target). For example, "Destroy enemy long-range artillery units capable of being employed in the Gulf of Jacksonville." The relative success of this objective can be quantified through various collection assets available once engagements are completed.
- Achievable. The required assets and time available must be available and sufficient to achieve the objective. An objective should not be defined in such a way it requires creation of a desired effect that also prohibits fulfilling the objective.

The following questions can aid planners in developing fires and effects objectives.

Planning Questions

- Whose behavior do we want to modify? Identify the specific people, groups, or organizations whose behavior we wish to alter. For example, do we wish to modify the behavior of the political leader, military forces, the civilian population, or a combination?
- What do we want to make them do? Identify the behavior to be affected.
- How much do we want to affect target or relevant actor activity? State the criteria, using metrics that can be used to assess progress. Using consistent assessment metrics at all planning levels can help assessment analysts quickly and accurately determine progress.
- What effects do we want to create? There are numerous capabilities that create lethal and nonlethal effects. However, the available capabilities and the situation might limit options to create a desired effect.
- When do we want to create the desired effect and how long do we want it to last? The following five principal timing factors must be considered:
  - Timing of the Effect. Determining the optimum time to create the desired effect is critical. Timing is particularly important in missions against certain targets or relevant actors where activity and productivity vary significantly over time, such as barracks, supply depots, airfields, and ports. For example, an attack against an empty barracks or a supply depot, just after the supplies were moved out, would accomplish little. Likewise, operational, environmental, or survivability factors can dictate a time on target. For example, there might be a case where enemy defenses can be more easily penetrated during cover of darkness and a time on target of sunrise would aid in target identification.
  - Synchronization of Engagement(s). Consider the timing and requirements of other entities involved.
  - "Critical Time" Parameters. These parameters are time-sensitive tasks or activities that must be accomplished at certain points for plans to succeed.
  - The time from creation of lethal or nonlethal effect until its effect is felt by the target or relevant actor. Attacking enemy supplies stored near the battle lines has a more immediate effect on the battle than striking or attacking supplies stored in rear area warehouses or striking enemy factories. If the effects of friendly actions need to be felt immediately, different entities might be used than those where immediate effect is not required. Attempts to have an immediate effect can delay the achievement of longer-range goals. Such a trade-off must be considered when establishing the timing criteria.
  - Recuperation or Reconstitution Time. The neutralization period influences the type, amount, and frequency of force to be used. Recuperation time should also be considered when formulating assessment criteria.
- Where do we need to create the effect to best influence target or relevant actor activity? The specific location (e.g., "nation-wide," "the eastern sector," "xxx city") to be engaged should be stated in an objective.
- Why do we want to create a given effect on the target or relevant actor? Understanding why we want to create a desired effect allows planners to effectively analyze targets and give more accurate recommendations. It also limits the creation of undesired effects.
- How much risk is required to achieve the objective and is it worth the risk? Assuming a proposed objective is achievable, an estimate of the associated risk (attrition of equipment and personnel, time, resources, manpower, etc.) and the potential benefit must be weighed carefully.

Identifying Effects. In the context of the fires and effects integration methodology, effects are condition related, describing desired change(s) in relevant actor entities and systems, or battlespace conditions that support achieving an objective. Planners primarily consider effects during fires and effects integration methodology Phases One through Three, and Phase Six.

During Phases One and Two, planners identify desired effects using a system perspective of the operational environment and battlespace. The MAGTF's objectives, end states, and desired conditions provide the initial basis for identifying desired effects. Planners leverage IPB, COG analysis, TSA products, conduct target or relevant actor development, etc., to gain an enhanced understanding of the operational environment and battlespace. Once planners develop a systems perspective (system links and nodes have been identified), required changes to battlespace conditions become more obvious, which helps them develop effects statements.

During Phase Three (capabilities analysis), planners consider effects to help determine best engagement options to achieve fires and effects objectives. When analyzing capabilities, planners consider effects on the target and relevant actor entity, associated system, as well as effects that can be produced in the operational environment. For each engagement capability considered, planners consider—

- Effects on the intended target or relevant actor. Planners estimate effectiveness of employing the capability on the individual target or relevant actor entity (first-order effects).
- Effects on the associated target or relevant actor system. Planners estimate effects on the larger target or relevant actor system (second- and third-order, cumulative, cascading effects).
- Effects on other entities and systems in the operational environment. Planners conduct CDE (collateral damage is a second-order effect). Planners also attempt to identify potential undesired effects and associated risk (higher-order effects), such as adverse diplomatic and public relations consequences arising from collateral damage or the potential for post-hostility economic costs to restore damaged infrastructure.

During the assessment phase, planners focus on measuring progress toward achievement of fires and effects objectives (see Chapters 1 and 3 for additional assessment information). Fires and effects personnel determine effectiveness of engagements and determine if entities must be re-engaged, if other entities must be engaged, or if different engagement capabilities should be employed to create desired effects.

Desired effects statements describe desired change(s) to targets, relevant actors, and battlespace conditions that support achieving an objective. Achieving a single objective might require more than one desired effect and a desired effect can support more than one objective. Desired effects statements should—

- Link directly to one or more objectives.
- Be distinguishable from the objective it supports as a condition for success, not as another objective or a task.
- Be measurable.
- Not specify methods for accomplishment.

Desired and undesired effects should be clearly communicated to ensure desired effects are created and undesired effects avoided. An improperly or incompletely stated effect, that does not clearly link the desired effect with the objective, can result in an action that successfully engages the designated relevant actor, but does not achieve the objective.

Fires and Effects Tasking. Fires and effects tasking directs units or agencies to execute tactical fires and information activities to achieve fires and effects objectives. Fires and effects tasking is assigned to MSCs, MSEs, and agencies based on capabilities. MAGTF TACSOPs typically delineate fires and effects tasking procedures. The FECC, in coordination with the G-3, is responsible for coordinating fires and effects tasking. Fires and effects tasking is derived from tactical tasks identified in MCDP 1-0, *Marine Corps Operations*. The the influence task was expanded upon and the inform task was added to align with MCDP 8. Table 4-2 provides some typical fires and effects tasks.

Table 4-2. Standard Fires and Effects Tasks.

Task	Description
Corrupt	To change information from its original or correct form or version by intentionally introducing errors or alterations, thereby rendering it useless.
Deceive	To manipulate an enemy or adversary into believing and acting upon something that is not true for a selected period of time or at a particular location.
Defeat	To disrupt or nullify the enemy's plan so they are unwilling or unable to pursue adopted COAs, thus convincing the enemy commander yield to the friendly commander's will.
Degrade	To diminish the effectiveness or efficiency of enemy or adversary C2 systems, communications systems, or information collection efforts or means; lower the morale of an enemy unit; reduce an entity's worth or value; or impair enemy or adversary decision-making capability.
Deny	To hinder or prevent an enemy or adversary from using terrain, space, personnel, supplies, facilities, or specific capabilities.
Destroy	To physically render an enemy force combat-ineffective unless it can be reconstituted, or to render a target or capability so damaged that it can neither function as intended nor be restored to a usable condition.
Disrupt	To employ or integrate fires and obstacles in order to break apart an enemy's formation and tempo, interrupt the enemy's timetable, or cause premature commitment or the piecemealing of enemy's forces. In the information environment, to prevent efficient interaction of enemy or adversary combat and combat support systems by inflicting damage over the short term to specific facets of the system's operation.
Feint	To conduct action that deceives the enemy about the location or time of the actual main offensive action.
Influence	To affect perceptions, attitudes, decisions, and other drivers of relevant actor behavior in support of commander's objectives. To cause the enemy or adversary to behave in a manner favorable to friendly forces. To persuade the local population, including potential and known adversaries within the operational area, to support, cooperate with, or at least accept the friendly force presence, and to dissuade the local population from interfering with operations.
Inform	To release accurate information to domestic and international audiences that put joint operations in context; to facilitate informed perceptions about military operations; to counter adversarial misinformation, disinformation, and propaganda.
Interdict	To divert, disrupt, delay, or destroy the enemy's surface military potential before it can be used against friendly forces.
Neutralize	To render an enemy or adversary or resources ineffective or unusable. As an effect of fires delivered, to render a target ineffective or unusable, thereby degrading the enemy's ability to accomplish its mission.
Suppress	To temporarily degrade an opposing force or a weapons system's performance below the level needed to fulfill its mission objectives.

Fires and effects tasking is relevant-actor related, describing to relevant actors what must be accomplished. Fires and effects tasking can include a method, describing how friendly forces accomplish the task (describing engagement capabilities and activities). MAGTFs often execute multiple tasks to achieve a single objective or create a desired effect. A task can contribute to achieving more than one fires and effects objective.

Fires and effects tasking can be codified in the MAGTF OPORD as follows:

- Fires and effects tasking that specify fires actions to engage targets are delineated as *MAGTF Targeting Tasks* in appropriate appendices (e.g., Appendix 17 [Fire Support] to Annex C [Operations], Annex I [Information], Annex W [Aviation Operations]) of the MAGTF OPORD.
- Fires and effects tasking that specify actions to engage friendly and neutral entities are delineated as *MAGTF Information Tasks* in Annex I, and other appropriate parts of the OPORD (e.g., Annex G [Civil-Military Operations]).

Planners and agencies from multiple echelons coordinate fires and effects tasking during battle rhythm activities. Fires and effects planners ensure the following essential information is included when assigning tasking to MSCs, MSEs, and executing agencies:

- Target(s) to be engaged. An HPT or multiple HPTs within a target system can be identified and CTEs should be identified. Essential target information is typically listed on the MIPTL.
- Other relevant actors (neutral or friendly entities) to be engaged. Individuals, groups, populations, or automated systems can be identified.
- Desired effects to be created.
- Temporal and spatial engagement aspects (i.e., when and where the desired effect should occur; sequencing of engagements in time and space).
- Engagement details (e.g., method of engagement–capability, platform, system; munitions requirements and restrictions; collateral damage considerations; other restrictions).

Phase Two—Relevant Actor Development and Prioritization

Early in the MCPP, fires and effects planners begin Phase Two of the fires and effects integration methodology—relevant actor development and prioritization. This phase of the MAGTF fires and effects integration methodology is generally composed of three parts:

1. Relevant actor analysis.
2. Relevant actor development.
3. List management.

The three parts are not mutually exclusive and are conducted in a coordinated manner.

This phase is initiated during step one of the MCPP. Relevant actor development and prioritization is continuously refined throughout future plans and FOPS planning processes. Planners generate MAGTF target lists and other relevant actor lists during this phase. These lists facilitate execution of MAGTF fires and effects plans by providing adequate detail required to develop fires and effects tasking.

Relevant Actor Analysis. Relevant actor analysis entails the systematic examination of systems and entities in the battlespace, identifying potential relevant actors, and determining military importance, priority of engagement, and capabilities required to create desired effects. These efforts include the conduct of all-source intelligence operations and engagement with partners to improve knowledge of friendly, neutral, and adversary actors, and how they work as systems and networks. Products and processes that can help identify and analyze relevant actor entities and systems in the battlespace include the following:

- IPB and joint intelligence preparation of the operational environment.
- TSA.
- COG analysis.
- Network analysis.
- Information models (ASCOPE, PMESII, and TAA).
- Publicly available information.
- Area studies and assessments.

Center of Gravity Analysis. Centers of gravity exist in an adversarial context involving a clash of moral wills or physical strengths. One of the most important tasks confronting the MAGTF staff during planning is identifying and analyzing friendly and adversary COGs. An OPT conducts a COG analysis after it understands the operational environment from a systems perspective. Typically, COGs are not single nodes in the system but consist of a set of nodes and their respective links. Planners must recognize that COGs can change over the course of an operation. See JP 5-0; the *Joint Guide for Joint Intelligence Preparation of the Operational Environment*; and MCWP 5-10 for additional information concerning COG analysis.

Fires and effects planners consider enemy and adversary critical vulnerabilities, applying friendly capabilities against weaknesses. Planners focus on identifying critical vulnerabilities that will do the most decisive damage to enemy COGs and that will efficiently generate desired effects. Planners select critical vulnerabilities by comparing criticality with accessibility, vulnerability, redundancy, ability to recuperate, and effect on the civilian populace. The goal is to aggressively seek opportunities to apply force against an enemy's vulnerabilities in as many dimensions as possible.

The COG analysis helps identify HVTs and HPTs. The loss of HVTs would be expected to seriously degrade important enemy functions throughout the friendly commander's area of interest. High-payoff targets are derived from identified HVTs.

During the MCPP, planners identify and refine HVTs and HPTs as the plan develops. Planners identify HVTs in conjunction with the COG analysis during problem framing. During COA development, planners refine HVTs and identify HPTs for each COA. If planners determine an HVT must be engaged to create a desired effect or contribute to a fires and effects objective for a given COA, it becomes an HPT for that COA. Different COAs require unique fires and effects objectives and associated HPTs consistent with the CONOPS of each COA. Marine air-ground task forces use the MIPTL to list, prioritize, and manage HPTs. Once a COA is selected, the HPTs for that COA are added to the MIPTL. Fires and effects planners then conduct detailed target analysis to further refine MIPTL CTEs.

Target analysis is a continuous process and enemy or adversary critical vulnerabilities can change during an operation. Fires and effects planners must recognize changes in the battlespace and adjust fires and effects objectives, associated HPTs, and the MIPTL accordingly.

Target System Analysis. Target system analysis provides the foundational process of enemy system-level target development (see Figure 4-6). The term, target system analysis, refers to both a process and products. The TSA process identifies, describes, and evaluates enemy target system compositions and components to determine various functions, capabilities, requirements, and vulnerabilities. Target system analysis is also the name given to those products that result from the TSA process (MIDB records, electronic target folders, etc.). Target system analysis exploits target system vulnerabilities (e.g., target development at the entity level) that weaken the enemy's ability to engage in hostile operations.

As TSA in an all-source process managed by CCMDs, MAGTFs do not conduct TSA. MAGTFs use the TSA process to request TSA products and leverage these products to conduct target analysis. Fires and effects planners leverage TSA capabilities to facilitate a deeper understanding of enemy and adversary entities and systems, as well as facilitate development of fires and effects objectives, sequence of military actions, and military resources required.

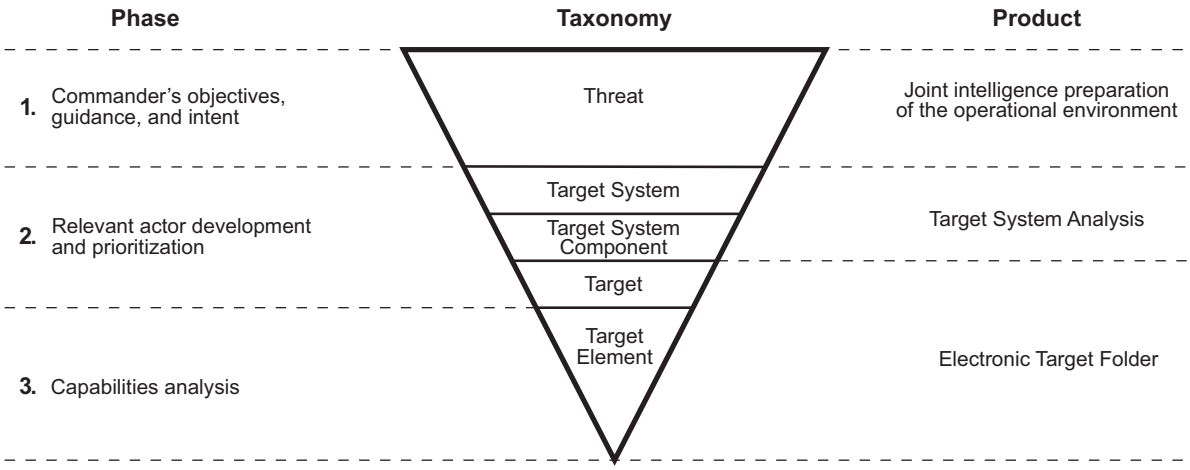

Figure 4-6. Target Development Relationships.

There are two TSA categories: nation-state and non-state actors. Nation-state target systems include those target systems associated with sovereign nation-states and their warfighting and sustainment capabilities. Target system analysis products for nation-state target systems commonly include analysis of the following:

- Air defense forces.
- Air forces and airfields.
- Ballistic missile forces.
- Command, control, communications, computers, and intelligence.
- Electric power.
- Ground forces and facilities.
- Industry.

- Naval forces and ports.
- Petroleum industry.
- Space forces.
- SOF.
- Transportation and LOCs.
- Weapons of mass destruction.
- Cyberspace forces.

Non-state actors are non-sovereign entities that exercise significant economic, political, or social power and influence at a national, and in some cases international, level. Target system analysis can be conducted on ethnically or ideologically based terrorist groups, narco-terrorism gangs, local or regional insurgencies, other transnational criminal organizations, and modern-day piracy groups. Target system analysis products for identified non-state actor functions can include analysis of the following:

- Leadership.
- Havens.
- Finance.
- Communication.
- Movement.
- Intelligence.
- Weapons.
- Personnel.
- Ideology.

For more information about TSA, see CJCSI 3370.01 and JP 3-60.

Information and Intelligence Integration. As commanders and staffs apply the operational design methodology, they account for how information affects the operational environment and the potential inherent informational aspects of their activities. Through this methodology, planners gain an understanding of relevant actors and consider how information is used by, and affects the behavior of, those actors.

Integrating the information and intelligence disciplines employs analytic processes and models, such as ASCOPE and PMESII, to characterize, forecast, and identify vulnerabilities; determine effects; and assess the information environment. These analyses provide conclusions on how information is likely to affect the operational environment and a broad analysis of enemy, adversary, friendly, and neutral efforts to influence domestic, regional, and world opinion. The goal is to allow fires and effects planners to identify how to effect behavioral change in relevant-actor entities and systems, and to identify likely actions. Integrating the information and intelligence warfighting functions facilitates understanding physical, informational, and human aspects of the operational environment.

During IPB, planners assist in analyzing the informational, physical, and human aspects of the environment; identifying and describing relevant actors and their drivers of behavior; and determining the most likely behaviors of relevant actors. Planners identify what to change or not to change to achieve desired conditions in the operational environment. Target audience analysis is a detailed and comprehensive examination of selected groups or individuals to determine how best to influence their decision making or behaviors. It includes examining the political, military, economic, cultural, religious, psychological, and social conditions that shape the operational environment and influence the behavior of the individuals and groups within that environment.

Relevant Actor Development. Relevant actor development is the examination of relevant actor systems, components, and associated elements to determine the level, type, and duration of action that must be exerted on each relevant actor to create desired effects consistent with fires and effects objectives. Systems are typically a broad set of interrelated functionally associated components that produce a common output or have a shared mission. Within a target system are target components (sets of targets performing similar functions) and target elements (specific features or parts of a target that enable it to function and, if engaged, may create specific effects on that target). See Figure 4-7 for examples of target system components and elements.

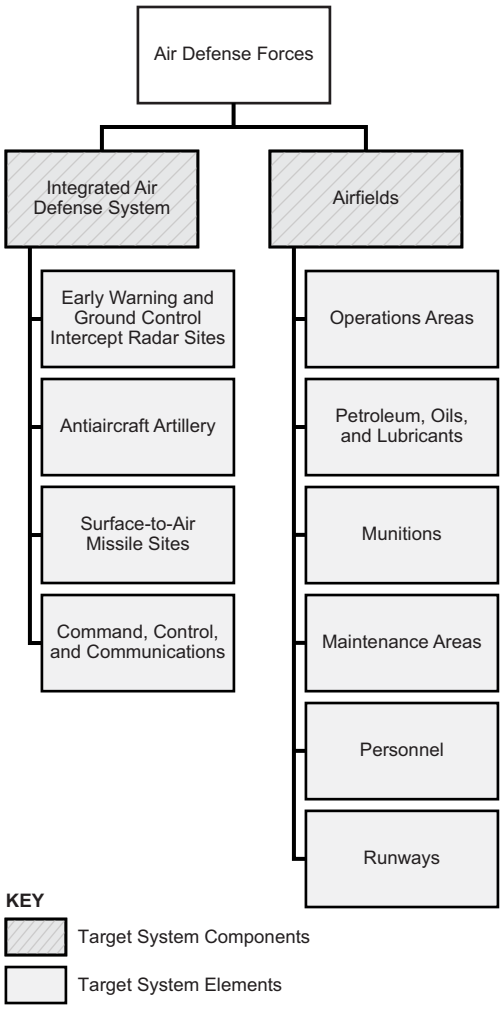

Figure 4-7. Example Target System Components and Elements.

Fires and effects planners leverage TSA to conduct target analysis, examining potential targets to determine military importance, priority of engagement, and capabilities required to create a desired effect. During entity-level target development, FECC and IOC planners conduct target analysis on identified HPTs to identify CTEs that must be engaged. After the analysis, planners can include targets and associated CTEs on the MIPTL.

Planners often develop and use tools to facilitate target development. For example, relative combat power analysis and assessment tools can be useful to determine how enemy units must be shaped to achieve a relative advantage during projected ground force engagements. Relative combat power tools are useful to optimize effects in time, space, and purpose to produce maximum, relative combat power at a decisive place and time. Such tools provide planners with objective information to help determine the specific number and type of CTEs within an enemy unit that must be included on the MIPTL and engaged.

Marine air-ground task forces should develop and employ standardized formats, appropriate systems or databases, and processes to analyze neutral and friendly entities and systems considered for engagement. For example, planners should leverage TAA to help identify key engagement nodes. Although a command cannot expect to influence all relevant actors within the battlespace, planners should identify and develop target audiences that a command has authorities or permissions to engage, has access to, and toward which resources can be devoted.

List Management. The methods used to list MAGTF targets and relevant actors vary based on entity type (target, neutral, or friendly entity). Targets are listed, prioritized, and tracked on appropriate target lists (i.e., JTL, RTL, JIPTL, MIPTL). Neutral entities *not* validated or classified as valid military targets are listed, prioritized, and tracked on a separate list. Planners develop these lists during the MCPP, refine them as part of the battle rhythm, and send them to the MAGTF commander for approval. The FECC is responsible for coordinating overall list management.

Targets. Although there is no joint standard regarding targeting lists, formats, and associated targeting C2 systems, MAGTF targeting processes and systems should be both consistent and interoperable with HHQ targeting processes and systems. Planners should research JFC and CCMD targeting processes and systems where the MAGTF expects to conduct operations and develop targeting procedures and associated C2 system experience accordingly. Additionally, MAGTFs should develop primary and alternative methods to produce, manipulate, and disseminate target lists during operations. Most JFCs and CCMDs use the Joint Targeting Toolbox to perform target list management functions. Marines are encouraged to use Joint Targeting Toolbox as the primary tool to coordinate, produce, and disseminate target lists. An additional source for target list development is the basic encyclopedia, which is "a compilation of identified installations and physical areas of potential significance as objectives for attack" (*DoD Dictionary*). Refer to JP 2-0 for more information on the basic encyclopedia.

The MIPTL is a prioritized list of targets approved by the MAGTF commander. Typically, MAGTF HPTs are selected from the JTL or RTL to compile the MIPTL. The MAGTF can include targets on the MIPTL that are not on the JTL or RTL if they are consistent with commander's objectives and ROE.

The MIPTL format should include target priority, target number (e.g., a basic encyclopedia or unit identification code), target name, target location, desired effect(s), and CTEs to be engaged to create desired effects. The MIPTL format should include other fields as required such as aim points, assessment tracking fields, engagement capability assigned, etc.

The MIPTL must specify the number and types of CTEs that the MAGTF must engage to create desired effects. Delineating specific target element information on the MIPTL is required to enable execution.

During the MCPP, fires and effects planners identify HHQ targeting processes and systems. Fires and effects planners review the applicable JTL, RTL, and NSL and coordinate MAGTF input to the JFC from planning through execution (e.g., submit TDNs, provide RTL and NSL input). As planners identify HPTs during the early MCPP steps, FECC and IOC planners coordinate to develop an initial MIPTL that includes potential HPTs. Once a COA is selected, the MIPTL is refined. The MIPTL includes HPTs that support fires and effects objectives and desired effects specific to the selected COA. Other HPTs can be added to the MIPTL as appropriate (e.g., potential HPTs, HPTs applicable to branch and sequel plans). Fires and effects planners leverage TSA and conduct target analysis to identify CTEs for each HPT. Throughout MCPP, planners continue to refine the MIPTL, focusing on fires and effects objectives, desired effects, and CTEs.

Mobile targets can pose challenges from a deliberate targeting perspective. For mobile targets, the basic encyclopedia number is not useful as it is linked to a garrison location and the intent of mobile targets is to engage enemy forces as they move in the battlespace. As such, a unit identification code is typically assigned to enemy mobile forces. Mobile target lists typically include a predicted location, usually in a global area reference system format. Mobile targets require location updates as they are tracked throughout the air tasking cycle; updates record the most recent update time, source of ISR sensors, and further refinement of target location. As such, the targeting process must be supported with timely intelligence information.

Over the course of an operation, planners should develop and maintain the MIPTL to reflect projected HPTs to be engaged, as well as potential HPTs that could be engaged. As such, the MIPTL might contain more targets than can be engaged during a given period. Targets on the MIPTL should be prioritized as described in this chapter. During phased operations, the MIPTL should reflect HPT engagement in a sequential manner, consistent with targeting requirements for each operational phase, stage, part, and step.

To avoid confusion, MAGTFs must establish and codify distinct target list nomenclature in applicable orders, targeting procedures, and TACSOPs. Planners should establish distinct target list names to delineate the MAGTF master target list (the comprehensive list of MAGTF HPTs to be engaged over the course of an operation), and the list of targets to be engaged for each targeting cycle and ATO period. As a best practice, the MAGTF master target list is designated “MIPTL,” and each subsequent targeting cycle list designator includes the ATO identifier and “MIPTL” (e.g., MA MIPTL).

Planners further refine the MIPTL during battle rhythm activities. Fires and effects planners review objectives, desired conditions and effects, fires and effects objectives, transition criteria, and refine HPTs for each targeting cycle and ATO period. Planners establish the MIPTL cut line for the period, and the list of targets to be engaged for each targeting cycle and ATO period is disseminated for execution. They repeat the process for each following targeting cycle and ATO period.

An operation's nature, joint task force (JTF) and combatant commander's requirements, command relationships, and other factors can influence target list nomenclature. For example, a MAGTF might be integrated into an amphibious force that uses an amphibious force target list (delineating all targets that may be engaged during an amphibious operation), and target bulletins (delineating the list of targets to be engaged for each targeting cycle and ATO period).

Relevant Actors Other Than Targets. There is no doctrinal list management procedure or nomenclature associated with entities not validated or classified as targets (typically friendly or neutral entities in the operational environment). Per CJCSI 3370.01, entities or objects not assessed as valid military targets are not placed on target lists. As such, MAGTFs develop and maintain a separate list of relevant actors that are selected for engagement but are not classified as targets. The format of this list should include the relevant actor's name, location, desired effect(s), engagement capability, assessment metrics, etc. Developing this list is a collaborative effort during the MCPP, and the list is further refined within the battle rhythm. The FECC, in coordination with the ICC, IOC, and MAGTF G-3, assumes responsibility for maintaining this list, and collaborates to ensure engagements of these relevant actors are integrated and synchronized with target engagements and other MAGTF operations.

Prioritization. Fires and effects activities must be executed at the appropriate time and location to create desired effects. In the fires and effects integration methodology construct, relevant actor priority is established by prioritizing fires and effects tasking. Fires and effects planners consider relevant actor engagement time and space factors required to create desired effects that support the MAGTF CONOPS, and prioritize fires and effects tasks in a sequential manner accordingly. The FECC is responsible for coordinating overall fires and effects tasking sequence and priority.

Fires and effects planners can choose to implement various methods and tools that facilitate fires and effects tasking prioritization. For example, planners might choose to prioritize fires and effects objectives or assign weights of effort required to create desired effects for each objective. Additionally, planners might choose to assign priorities or weights of effort by geographic location. Planners should develop prioritization method(s) for each situation (no single methodology is ideal for all situations). Planners develop and disseminate prioritization tools (e.g., matrices depicting priorities and weights of effort) during planning and execution.

During the MCPP, fires and effects tasking should be prioritized in the MAGTF OPORD, which provides a baseline for adjustments during battle rhythm activities. During battle rhythm activities, planners review and refine fires and effects tasking priority and sequencing at the appropriate fires and effects working group. Fires and effects planners then further refine sequencing targeting tasking for individual HPTs and associated CTEs on the MIPTL prior to establishing a cut line. During execution, the FECC current fires officer directs the deliberate targeting plan, making targeting adjustments per the commander's dynamic targeting guidance.

For neutral and friendly entities, a similar process is used, initially prioritizing relevant actors based on initial information tasking priority, then further refining priority based on sequencing requirements to create desired effects.

Phase Three—Capabilities Analysis

This phase of the fires and effects integration methodology involves evaluating all available engagement capabilities to engage entities and determining appropriate options available to create desired effects. The focus of capabilities analysis is to maximize the effectiveness and efficiency of relevant actor engagements to create desired effects.

Integrating and synchronizing multiple engagement capabilities that create lethal and nonlethal effects often produces synergistic effects, promoting effectiveness and efficiency. During capabilities analysis, fires and effects planners strive to integrate and synchronize engagement capabilities in the physical domains, the information environment (including cyberspace), and the electromagnetic environment.

Fires and effects planners consider target vulnerabilities and engagement capabilities in relation to available forces and resources. Planners estimate the most likely outcome and most likely effects resulting from employing selected capabilities against a specific target or relevant actor. Planners weigh the relative effectiveness and efficiency of capabilities to create desired effects while considering risks to the force, collateral damage, and waste of resources when evaluating available engagement options. Fires and effects planners analyze options and determine the best possible solution under given circumstances.

Analyzing engagement options and determining best possible solutions is typically a collaborative effort involving fires and effects planners from the MAGTF command element, the MSCs, MSEs, and external agencies. Planners from the FECC, IOC, air center, and ICC planners have significant roles in the capabilities analysis process. Fires and effects planners provide input to the capabilities analysis process based on their respective area of expertise. Input is often based on the type of entity to be engaged, and the engagement capability. The FECC is the overall coordinator of the capability analysis process to facilitate unity of effort.

Proffered engagement options should always be focused on accomplishing fires and effects objectives and desired effects with the understanding that attrition and annihilation options can be the least efficient.

Engagement Capabilities. During capabilities analysis, planners consider all engagement capabilities. In general, engagement capabilities fall into two categories: capabilities that create lethal effects and capabilities that create nonlethal effects.

Engagement capabilities that create lethal effects generally cause destruction in the physical environment through some combination of blast, fragmentation, cratering, incendiary, or penetrating a target. Engagement capabilities that create lethal effects generally include—

- Air-to-surface capabilities.
- Surface-to-surface capabilities.
- Standoff weapons.

There is not a single, standardized list of engagement capabilities that can create nonlethal effects. In the context of the fires and effects integration methodology, planners integrate information activities and capabilities to create effects during capabilities analysis. For more information on employing information capabilities, see JP 3-04 and MCWP 8-10. Information capabilities considered during capabilities analysis include but are not limited to the following:

- Cyberspace operations are "the employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace" (*DoD Dictionary)*. Cyberspace attack actions create noticeable denial effects in cyberspace or use manipulation in cyberspace that leads to denial effects in the physical domains. Cyberspace attack actions are a form of fires, taken when authorized as part of an offensive cyberspace operations or defensive cyberspace operations-response actions mission. For more information, see JP 3-12, *Joint Cyberspace Operations.*
- Space operations are those operations affecting or directly using space-based assets to enhance the potential of the US and multinational partners. Space control employs offensive space control and defensive space control operations to ensure freedom of action in space. For more information, see JP 3-14, *Joint Space Operations.*
- MISO are "planned operations to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals in a manner favorable to the originator's objectives" (*DoD Dictionary*). Military information support operations focus on the informational and human aspects of the information environment. Target audiences for MISO can include enemy, adversary, friendly, and neutral populations. For more information, see JP 3-13.2, *Military Information Support Operations.*
- Military deception characterizes "actions executed to deliberately mislead adversary military, paramilitary, or violent extremist organization decision makers, thereby causing the adversary to take specific actions (or inactions) that will contribute to the accomplishment of the friendly mission" (*DoD Dictionary*). For more information, see JP 3-13.4, *Military Deception*.
- Special technical operations. Special technical operations planners at CCMD or Service component headquarters can provide detailed information related to special technical operations.
- Electromagnetic spectrum operations are "coordinated military actions to exploit, attack, protect, and manage the electromagnetic environment" (*DoD Dictionary*). See JP 3-85, *Joint Electromagnetic Spectrum Operations*, and MCRP 3-32D.1, *Electronic Warfare* for more information.
- Communication strategy and operations activities develop integrated communication plans and products to communicate with internal, domestic, and international audiences. Communication strategy and operations produce written and visual information products to build understanding, credibility, and trust with audiences critical to mission success. Communication strategy and operations includes public affairs and combat camera activities. For more information, see JP 3-61, *Public Affairs*; MCTP 3-30F, *Marine Corps Public Affairs*; and MCTP 3-32A, *Marine Air-Ground Task Force Combat Camera*.
- Civil-military operations are "activities of a commander performed by designated military forces that establish, maintain, influence, or exploit relations between military forces and indigenous populations and institutions by directly supporting the achievement of objectives

relating to the reestablishment or maintenance of stability within a region or host nation" (*DoD Dictionary*). For more information, see JP 3-57, *Civil-Military Operations*, and MCTP 3-03A, *Marine Air-Ground Task Force Civil-Military Operations*.

- Key leader engagements are deliberate, planned engagements between US military leaders and the leaders of foreign audiences that have defined objectives, such as a change in policy or supporting friendly objectives.

In general, engagement capabilities that create lethal effects are intended to kill or cause physical damage to a target, while engagement capabilities that create nonlethal effects are not intended to cause death and destruction as an intended first-order effect. Lethal and nonlethal effects, however, are not necessarily tied to a capability. A capability typically used to create nonlethal effects can be used to create lethal effects and vice versa. Engagement capabilities that create lethal effects often create nonlethal effects. For example, employing munitions on an enemy unit typically diminishes the enemy unit's moral strength and will to fight (nonlethal effect). Employing certain information capabilities can create effects in the physical environment, to include lethal effects.

Information activities designed to create desired effects in support of MAGTF fires and effects objectives are complemented by a set of information activities and capabilities to enable and protect command and control of MAGTF forces (such as operations security, information assurance, electromagnetic protection, etc.). The MIG ICC, in coordination with the G-3, G-6, and other agencies, is responsible for coordinating information activities and actions that enable and protect MAGTF command and control.

Though highly effective for their intended purpose, capabilities that create lethal effects are not always suitable. Employing information capabilities can limit collateral damage, reduce risk to civilians, reduce the number of casualties associated with an excessive use of force, limit reconstruction costs, and maintain positive relations with the local populace. A JFC can prohibit or restrict joint force attacks on specific targets, entities, or objects based on political considerations, military risk, the law of war, and ROE, or other considerations. For example, during stabilization, military engagement, security cooperation, and deterrence activities, the application of fires is greatly restricted, making information capabilities the dominant feasible option.

Target Considerations. Fires and effects planners conduct target analysis and leverage TSA, external agencies, and other resources and tools during capabilities analysis. Target analysis is a shared responsibility during the MCPP, primarily coordinated by IOC and FECC personnel.

Capabilities analysis is a collaborative effort by all MAGTF fires and effects planners. Fires planners provide primary input regarding engagement options that create lethal effects. Aviation planners provide significant input regarding air delivered capabilities. Information planners provide primary input for information engagement options. Intelligence planners provide significant input during capabilities analysis, focusing on target analysis to identify critical vulnerabilities and CTEs.

Fires and effects planners consider target cognitive characteristics that describe how a target processes information or exercises control functions. It is important to analyze cognitive characteristics of critical nodes in a target system, since nearly every target system possesses some central controlling function. Creating effects on those controlling functions can be crucial to bringing about desired changes in behavior.

Information activities and capabilities provide numerous options that can facilitate targeting. For example, electromagnetic spectrum operations can facilitate targeting in many ways. Electromagnetic support and signals intelligence can be used to detect and exploit enemy electromagnetic emissions, facilitate target engagement (provide entity characterization, identification, location, etc.), and provide feedback on results of friendly attack actions. The MAGTF can use electromagnetic attacks on personnel, facilities, or equipment to degrade, neutralize, destroy, or deceive enemy combat capability.

A MAGTF can employ space-based ISR to facilitate targeting analysis, threat capability assessment, situational awareness, target cueing, BDA, and to characterize the operational environment. Marines can conduct offensive space control for space negation to deceive, disrupt, degrade, deny, or destroy enemy space systems or services. Offensive cyberspace operations can target enemy cyberspace functions or create first-order effects in cyberspace to initiate carefully controlled cascading denial effects into the physical domains to affect weapon systems, C2 processes, logistics nodes, and other HVTs. A MAGTF can use MISO to develop and deliver influential messages and coordinate the execution of actions to affect the behavior of selected target audiences. Some information capabilities require long lead times to obtain permissions and coordinate employment. Integrating these information capabilities into a 72-96 hour targeting cycle can pose challenges; thus, fires and effects planners must be proactive and coordinate early.

Weaponeering is a process used to determine the specific means required to create a desired effect on a given target. Planners can conduct weaponeering during Phases Three, Four, and Five of the fires and effects integration methodology. Weaponeering typically supports munitions employment. For munitions weaponeering, planners use operational and analytical models. Agencies such as the Joint Technical Coordinating Group for Munitions Effectiveness and Joint Warfare Analysis Center have developed several quantitative techniques and analytical methods used to predict munitions effectiveness and collateral damage risk. These models enable weaponeers to predict the effectiveness of munitions against most selected targets. Model outputs include the predicted effectiveness of selected munitions and target pairings, or the number of assets required to create desired effects using specified munitions or delivery systems. Individuals conducting weaponeering should be properly trained on applicable weaponeering systems (e.g., the Joint Munitions Effectiveness Manual Weaponeering System [also referred to as JWS]) and associated procedures.

The collateral damage methodology (CDM) is a process that encompasses the joint standards, methods, techniques, and processes for a commander to conduct CDE and mitigate unintended or incidental damage or injury to civilian or noncombatant persons or property or the environment. Targets with associated collateral damage concerns that are expected to exceed theater or CCMD thresholds are referred either to the Secretary of Defense or President using the sensitive target approval and review (also referred to as STAR) process. Department of Defense policy requires personnel assigned to billets required to conduct CDE to be qualified and certified as CDE

analysts. Additional information about the sensitive target approval and review process is detailed in CJCSI 3122.06, *Sensitive Target Approval and Review (STAR) Process* (title is unclassified; however publication is classified).

Collateral damage estimation, which begins in the target development phase, is considered during capabilities analysis, and continues through execution. During operations, MAGTFs integrate CDE systems and tools (e.g., the digital imagery exploitation engine) into targeting processes. The CDM does not limit a commander's inherent right of self-defense or deny the ability to respond to targets of opportunity; it should not be used as the sole justification to impede or delay fires on a lawful military target. However, it is appropriate for a commander to consider. Commanders ensure applicable personnel are trained, certified, and proficient in the CDM. The FECC is responsible for conducting or coordinating CDE with applicable MSCs and agencies. For additional information about the DoD CDM, see CJCSI 3160.01, *(U) No-Strike and the Collateral Damage Estimation Methodology*.

Neutral and Friendly Entity Considerations. Capabilities used to engage neutral and friendly entities are limited to certain information capabilities that produce influence or inform desired effects, such as CMO, communication strategy and operations, MISO, and key leader engagements. In addition, other information capabilities can be employed to support neutral and friendly entity engagement, such as electromagnetic spectrum operations (e.g., ensuring the electromagnetic spectrum is available for broadcast services).

Integration and Synchronization of Engagement Capabilities. Integrating and synchronizing multiple engagement capabilities that create lethal and nonlethal effects often generates synergistic effects, promoting effectiveness and efficiency.

Planners strive to integrate engagement capabilities in multiple domains, the information environment, and the electromagnetic environment. Planners consider all engagement capabilities and determine capabilities most appropriate to create desired effects. Multiple engagement capabilities should be used when appropriate. Planners consider employing joint capabilities as well as organic MAGTF capabilities. Planners consider that certain information capabilities take time to produce effects, and that such tasks might need to be executed over a period of time (vice a single ATO day period) to be effective.

Effective coordination during capabilities analysis is critical to integrating and synchronizing fires and effects tasking. As part of the battle rhythm, fires and effects planners identify HPTs and relevant actors that must be engaged and determine appropriate options available to create desired effects. Planners then focus on integrating and sequencing lethal and nonlethal engagement capabilities to optimize desired effects. Fires, information, aviation, and intelligence planners identify and coordinate engagement options with each other during, and between individual fires and effects working group events. Planners finalize integration and synchronization of engagement capabilities at the fires and effects working group.

Planners carefully synchronize and sequence fires and effects tasks to optimize desired effects. For example, planners might determine a desired effect is to neutralize an enemy unit's combat capabilities at a determined objective location.

During capabilities analysis, planners consider effects on targets and target systems as well as effects that could be created in the operational environment, to include identifying potential undesired effects. Planners also coordinate tasks to avoid conflicting effects. For example, planners might determine a desired effect is the local population does not interfere with MAGTF operations. As such, planners ensure influence tasks (e.g., messaging the population to remain at home or move to a determined location) are coordinated with planned fires and maneuver operations to avoid effect conflicts.

Once fires and effects tasking is determined and synchronized, planners coordinate to produce fires and effects products, tasking orders, and requests for external support. After the fires and effects board, the command element, MSE, and MSC planners continue to coordinate during the force assignment phase to ensure executing forces clearly understand fires and effects tasking and sequencing required to create desired effects.

Phase Four—Commander's Decision and Force Assignment

This phase of the methodology integrates actions from previous phases and serves to fuse capabilities analysis with available forces, sensors, and engagement capabilities. In this phase, fires and effects planners finalize fires and effects tasking sequencing and focus on assigning forces to engage specific relevant actors. Planners consider many factors to include the commander's guidance apportionment, enemy and adversary operations, friendly force status, weather, force protection concerns, battlespace management issues, law of war and ROE, and other constraints. Once plans are approved, MSCs, MSEs and other agencies coordinate fires and effects tasking.

During the MCPP, planners develop and approve fires and effects plans for inclusion in the MAGTF OPORD. During battle rhythm activities, fires and effects objectives, tasking, air apportionment, and MAGTF information, targeting, air, and collections plans are synchronized and presented to the MAGTF commander for approval at the fires and effects board. Once plans are approved, fires and effects tasks are assigned to MSCs, MSEs, and other agencies for detailed mission planning. The FECC, in conjunction with the ICC and G-3, coordinates fires and effects tasking and disseminates tasking orders as appropriate.

During Phase Four, MAGTF command element fires and effects planners closely coordinate with MSCs, MSEs, and other agencies to refine plans and coordinate fires and effects tasking. Standing operating procedures and detailed procedures associated with fires and effects planning cycles facilitate this coordination. For example, the FECC closely coordinates with the ACE ATO development section to establish a MIPTL cut line and ensure appropriate details of the fires plan are incorporated into the ATO. In addition to organic force assignment, planners coordinate external fires and effects support detail.

Phase Five—Mission Planning and Force Execution

In Phase Five, subordinate MAGTF units or agencies conduct detailed planning and execute assigned fires and effects tasking.

MAGTF, MSC, and MSE tasking orders must provide requisite information to facilitate execution of assigned fires and effects tasking. During battle rhythm activities, subordinate units conduct detailed tactical-level planning upon receipt of tasking orders. For example, the ATO is published to allow squadron personnel adequate time to conduct detailed air mission planning.

Planners develop and disseminate fires and effects and targeting guidance during battle rhythm activities, such as the fires and effects working group. After the guidance is approved, planners disseminate it to MSCs, MSEs, and applicable agencies. Future operations and COPS fires and effects personnel should conduct daily handover briefs to ensure deliberate and dynamic targeting plans are synchronized.

During execution, the battlespace changes continually. Fires and effects personnel monitor these changes and collaborate to seize and maintain the initiative. The FOPS and COPS fires and effects personnel collaborate to validate planned actions and make adjustments to ensure tasks executed during COPS are consistent with MAGTF fires and effects objectives and the commander's guidance.

MAGTFs employ dynamic targeting during this phase to ensure targets are identified, validated, engaged, and assessed. Current operations personnel at all echelons employ collaboration tools and procedures to synchronize dynamic targeting. See Chapter 5 for additional execution detail.

Phase Six—Assessment

Assessing MAGTF fires and effects is a continuous process focused on measuring progress toward achieving fires and effects objectives. The assessment process helps the staff determine whether execution of fires and effects tasking resulted in progress toward achieving fires and effects objectives or creating desired effects. Assessment provides the staff information regarding effectiveness of activities that occurred during the first five phases of the fires and effects integration methodology and facilitates making required adjustments. See Chapters 1 and 3 for additional fires and effects assessment detail.

Fires and Effects Integration Methodology Considerations

MAGTFs are organized and employed differently than any other Service organization or unit, and they—

- Can be tasked to conduct land-based operations.
- Typically conduct operations at the tactical level of warfare, often in expeditionary or littoral environments.
- Have relatively light IDF and armor capabilities and heavily rely on fixed-wing aviation assets to employ fires.

As such, MAGTFs employ unique processes and procedures that must be integrated in joint operations.

The decide, detect, deliver, and assess (D3A) methodology is both a deliberate and dynamic process which incorporates the same fundamental functions of the joint targeting cycle or MAGTF fires and effects integration methodology in four steps instead of six phases. The deliberate aspect of D3A, decide, functions in Phases One and Two of the joint targeting cycle and MAGTF fires and effects integration methodology. The dynamic aspects of D3A, detect and deliver, function in Phases Three, Four, and Five. Assess aligns with Phase Six. The D3A

methodology facilitates synchronizing maneuver, information, intelligence, and fires. As such, it is often used by MSCs and MSEs to enhance fires and effects integration with MAGTF fires and effects tasks. See MCTP 3-10F for more information on the D3A methodology.

Decisive Points and Actions

The fires and effects integration methodology is directly related to decisive points and actions in that shaping actions set conditions for decisive action. Commanders and their staffs identify decisive points and actions to help them determine where, when, and how to apply friendly capabilities to exploit enemy vulnerabilities. Decisive points include key terrain and events, critical factors, or functions that enable commanders to gain a marked advantage over an enemy or contribute materially to achieving success (e.g., creating a desired effect, achieving an objective). The most important decisive points can be determined from analyzing COG critical factors.

For any given mission, there are decisive events or actions that are critical to the success of the MAGTF mission. A decisive action is an action the commander deems fundamental to achieving mission success. In counterinsurgency, it might be isolating the insurgents from the populace. In a small unit engagement, it might be destroying a particular enemy weapon or position. In a major operation, it might be defeating a particular unit. In foreign humanitarian assistance, it might be reopening a host-nation port or airfield. Decisive actions may occur anywhere and at any time in the single battle. Any of the MAGTF's MSCs or MSEs can conduct decisive actions.

Mission Type and Phasing

A MAGTF is employed in operations that vary in purpose, scale, risk, and combat intensity. The potential range of military operations extends from military engagement, security cooperation, and deterrence in times of relative peace to major operations and campaigns that involve combat operations. Pending mission type and associated ROE, a MAGTF can be limited regarding target or relevant actor engagement options.

Phasing is a way to view, plan, and execute an operation in manageable parts, with phases, stages, parts, and steps delineating the sequential progression of an operation. Phasing is important to understand from a fires and effects integration methodology perspective in that battlespace entities and systems must be shaped in a sequential manner consistent with the CONOPS.

The MAGTF fires and effects integration methodology considerations vary depending upon the type or phase of an operation. For example, during certain activities or operations (e.g., stabilization, humanitarian assistance, disaster recovery, security cooperation, and deterrence operations), employing capabilities that create lethal effects is often restricted, making information capabilities the dominant feasible option to engage relevant actors. Conversely, during combat operations, MAGTF fires and effects might focus heavily on employing lethal capabilities during certain phases. However, engagement capabilities can be restricted during other phases of the same operation. Regardless of mission type, operation phase, or engagement capability limitations, the MAGTF fires and effects integration methodology remains consistent.

Lines of Operation and Lines of Effort

Lines of operation and LOEs are the two primary methods of organizing an operation to achieve the objective.

Combat operations are typically planned using LOOs, which are lines that define the interior or exterior orientation of the force(s) in relation to the enemy or adversary COG or that connects actions on nodes and/or decisive points related in time and space to an objective(s). Lines of operations describe and connect a series of decisive actions that lead to control of a geographic or force-oriented objective. Operations designed using LOOs generally consist of a series of actions executed according to a well-defined sequence, although multiple LOOs can exist at the same time (parallel operations). These lines tie offensive, defensive, and stabilization activities to the geographic and positional references in the operational area. Commanders synchronize activities along complementary LOOs to attain the military end state.

During planning, an LOE is used to link multiple tasks and mission using the logic of purpose—cause and effect— to focus efforts on establishing and achieving operational and strategic conditions. Lines of effort provide utility to operational design when positional references to an adversary or enemy have little relevance, such as in counterinsurgency operations or stabilization activities. In operations involving many nonmilitary factors, LOEs are not only way to link tasks, effects, conditions, and the desired end state. Mission areas and LOEs are often essential to helping commanders visualize how military capabilities can support the other instruments of national power. They are a particularly valuable tool when used to achieve unity of effort in operations involving multinational forces and civil organizations, where unity of command can be elusive. For more information on LOOs and LOEs, see JP 5-0.

Commanders use both LOOs and LOEs to focus MAGTF fires and effects in a unified manner. Combining LOOs and LOEs allows commanders to integrate information activities into operational design. This combination allows commanders to consider the less tangible aspects of the battlespace where nontraditional military activities dominate. A MAGTF operational approach might use a combination of LOOs and LOEs where fires and effects objectives associated with LOOs might be relatively dynamic, and fires and effects objectives associated with LOEs might be more enduring in nature.

The fires and effects integration methodology should directly link the MAGTF operational approach and associated LOOs and LOEs. Fires and effects objectives, desired effects, and tasking should be developed and refined consistent with LOOs and LOEs. When using LOOs, fires and effects objectives, effects, and tasks should be developed in a sequential manner (by operation phase, stage, part, or step).

Task Organization and Command Relationships

Joint force task organization and designated supported and supporting command relationships define roles and responsibilities for joint fires planning and execution. MAGTF commanders and their staffs coordinate with HHQ commanders and staffs to develop task organization and supported-supporting command relationships (see Chapter 3). Coordination is a continuous process, as task organization, command support relationships, and associated authorities often change over the course of an operation. MAGTF planners ensure detailed fires and effects-related priorities and authorities are coordinated with HHQ and disseminated to subordinate units (see Chapter 3).

When assigned an area of operations or designated as a supported commander for a mission, function, or operation, the MAGTF commander employs organic forces and capabilities to accomplish the assigned mission. The MAGTF commander or battle staff can nominate targets or request external support to facilitate engagement of entities that cannot be engaged by organic forces because of asset or capability limitations (see Chapter 3). When designated as a supporting commander, the MAGTF commander and battle staff advise, assist, and coordinate to integrate MAGTF fires and effects into the appropriate supported commanders' efforts.

The MAGTF's targeting functions, roles, and responsibilities vary or change pending task organization and command relationships. Targeting functions, roles, responsibilities, and authorities typically differ for a MAGTF task-organized as a JTF; a MAGTF task-organized as a component under a JFC; and a MAGTF task-organized as a subordinate unit under a component (e.g., a joint force maritime component commander [JFMCC] or joint force land component commander). For example, targeting responsibilities for a MAGTF task-organized as a component typically include the following:

- Conduct target development.
- Nominate potential targets for inclusion in the JTL and RTL.
- Nominate targets for inclusion on the JFC's TST list.
- Identify and nominate CCTs for JFC approval.
- Provide appropriate representation to the JFE, joint targeting working group, and JTCB, as well as other associated staff organizations when established.
- Consolidate and nominate deconflicted and prioritized targets for inclusion in the JIPTL (manage the component TNL).
- Provide timely and accurate reporting to the JFE in support of joint operations assessment.
- Develop, maintain, and execute a component integrated prioritized target list.
- Coordinate component targeting via established procedures (includes establishing component-level targeting procedures and fires network architecture).

Task-organized as a subordinate unit under a component, MAGTFs targeting functions, roles, and responsibilities differ than the above list, as the MAGTF will be expected to nest fires and effects processes with the HHQ procedures, fires network architecture, component battle rhythm, etc.

CYCLE INTEGRATION

There are several interrelated planning cycles directly associated with the MAGTF fires and effects integration methodology:

- Intelligence cycles.
- Air tasking cycles.
- Targeting cycles.
- ITCC.

These planning efforts are inextricably linked, conducted collectively with the inputs and outputs of each cycle interacting with the other cycles on a continuous basis. The cycles must be integrated across the three planning horizons. During joint operations, MAGTFs integrate their cycles with higher and adjacent headquarters cycles and disseminate detailed cycle integration procedures in OPORDs and TACSOPs.

Intelligence Cycle

The MAGTF intelligence cycle is a six-step process used to plan, obtain, assemble, and convert information into intelligence and provide that intelligence to decision makers (see Figure 4-8). Two of the six MAGTF intelligence functions—support targeting and support combat assessment— are integral to, and must be synchronized with the fires and effects integration methodology. See Chapter 3 for additional information about integrating intelligence planning into the fires and effects integration methodology.

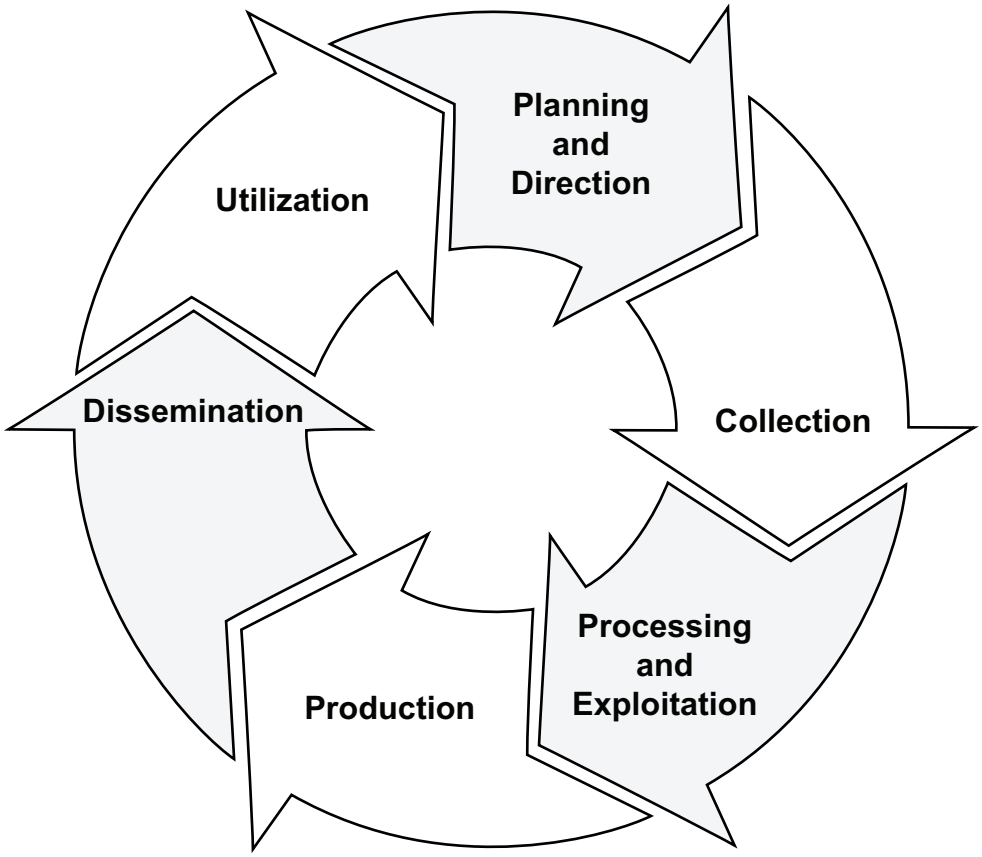

Figure 4-8. Marine Corps Intelligence Cycle.

Air Tasking Cycles

Planners use the air tasking cycle to effectively and efficiently employ available air capabilities and forces. This process provides an iterative, cyclic process for the planning, apportionment, allocation, coordination, and tasking of air missions and sorties to support objectives. The air tasking cycle begins with commander's guidance and objectives, incorporates input received during battle staff coordination, and culminates with assessment of previous actions (see Figure 4-9).

During battle rhythm activities, planners use the air tasking cycles to plan air operations for a specified time period (typically a 24-hour period). Air tasking cycles integrate targeting, collection, and information activities with aviation operations during battle rhythm activities. The MAGTF air tasking cycle supports the mission and facilitates planning and producing MAGTF input to the ATO. The air tasking cycle ensures that finite aviation assets are used to generate their maximum effect with correct prioritization based on MAGTF CONOPS. The MAGTF air tasking cycle and joint air tasking cycle use a similar construct to facilitate MAGTF-joint operation integration. See Chapter 3 for additional information about integrating aviation planning into the fires and effects integration methodology.

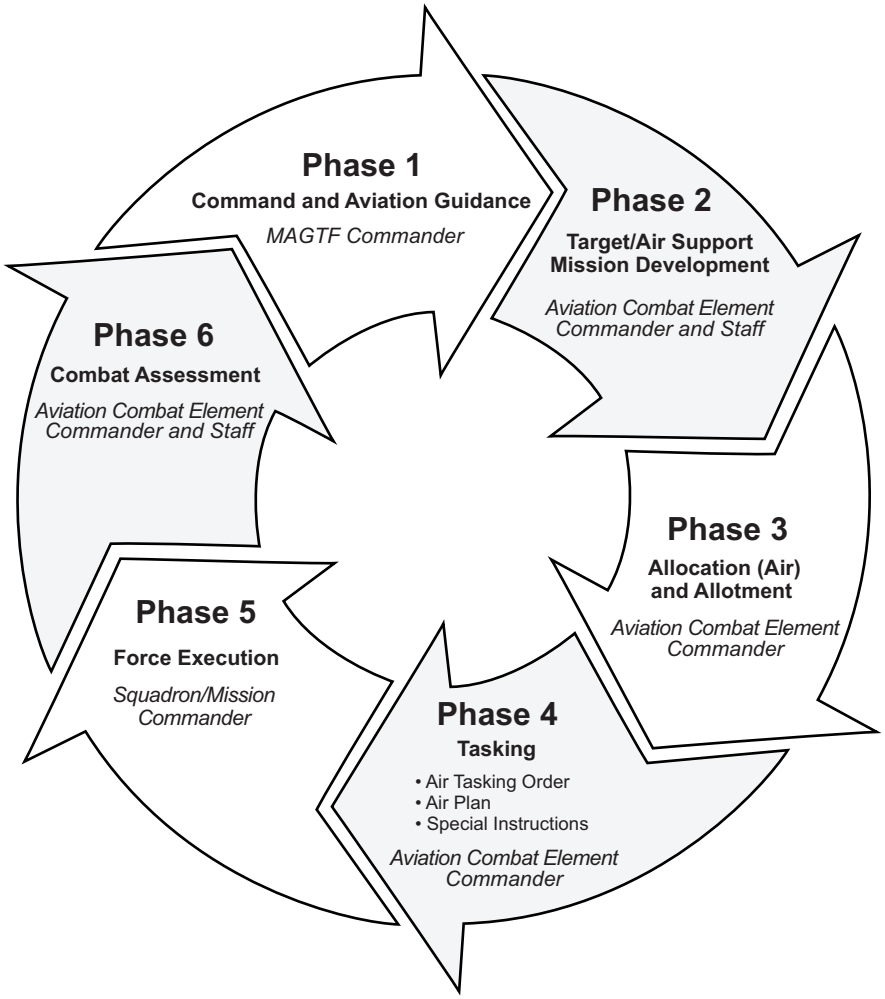

Figure 4-9. Marine Air-Ground Task Force Air Tasking Cycle.

Targeting Cycles

The joint targeting cycle supports the JFC's joint operational planning and execution with a comprehensive, iterative, and logical methodology for employing methods to create desired effects that support achievement of objectives. The MAGTF fires and effects integration methodology and joint targeting cycle use a similar six-phase construct to facilitate MAGTF-joint targeting integration.

Targeting encompasses many processes, all linked and logically guided by the joint targeting cycle, that continuously seek to analyze, identify, develop, validate, assess, and prioritize targets for engagement by the joint force. Figure 4-10 represents an approximation of the relationships and interactions of the various cycles.

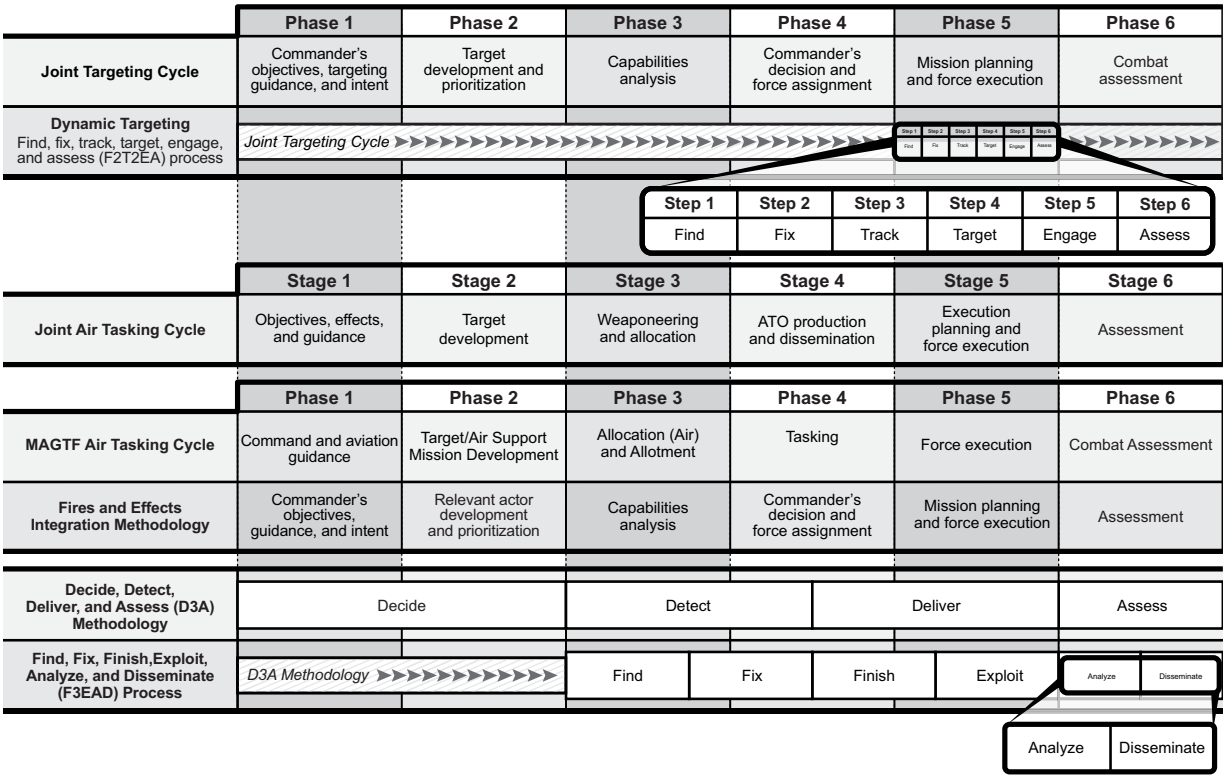

Figure 4-10. Targeting Cycle and Process Relationships (Approximation).

Information Tasking and Coordination Cycle

Planners must integrate and synchronize planning, executing, and assessing information activities with targeting, air tasking, and intelligence planning efforts. For example, many information capabilities can be employed via aviation, which requires planners to coordinate and ensure information capabilities are incorporated into an ATO. Likewise, certain information capabilities can facilitate intelligence support to targeting and BDA, which requires integrated planning.

The ITCC is the Marine Corps process for effectively and efficiently employing organic and externally provided information capabilities. It is a methodical, iterative, and responsive process that translates MAGTF commander's guidance into tactical-level plans and operations. The ITCC supports planning, apportioning, allocating, coordinating, and tasking information capabilities consistent with the commander's guidance. The ITCC uses the fires and effects integration methodology six-phase construct to integrate information with other planning efforts and cycles. The ITCC's primary product is the information tasking and coordination order (referred to as the ITCO).

CHAPTER 5.
MAGTF FIRES AND EFFECTS EXECUTION

MARINE AIR-GROUND TASK FORCE TARGETING

MAGTF targeting creates specific effects in the battlespace to meet the commander's objectives by integrating and synchronizing offensive capabilities. The MAGTF uses a six-phase targeting cycle consistent with joint targeting processes. MAGTF planners develop and employ fires and effects execution TTP that support and execute the fires and effects tasks by coordinating engagement actions among applicable agencies and COCs. During execution, the FECC's principal roles include coordinating, tracking, and assessing MAGTF fires and effects in the battlespace, directing dynamic targeting, and coordinating counterfire (see Chapter 2 for more information on the FECC).

Future Operations Planning Horizon and Battle Rhythm Activity

Battle rhythm activities and planning cycles facilitate MAGTF targeting planning and coordination. The FEC is responsible for coordinating fires and effects battle rhythm activities with the chief of staff or deputy MAGTF commander.

MAGTFs can form a dedicated targeting cell (consisting of fires and effects planners from the FECC, ICC, IOC, air center, and ACE) to facilitate coordination and synchronization of MAGTF fires and effects. Targeting cell activities include—

- Facilitating MAGTF targeting, information, collection, and air plan synchronization.
- Identifying HPTs and associated CTEs.
- Refining, synchronizing, and sequencing targeting tasks.
- Coordinating targeting task detail with MSCs and MSEs (e.g., coordinating incorporation of ISR targeting collection and assessment requirements into the collection plan; coordinating MIPTL cut line and incorporation of targeting information into the ATO).

Targeting planning is focused on a period of several days (see Figure 5-1). After targeting decisions are made at the fires and effects board, planners and decision makers continue to monitor current battlespace conditions, review planned actions, and adjust targeting plans as appropriate. In general, targeting during the battle rhythm should remain flexible to maximum extent feasible.

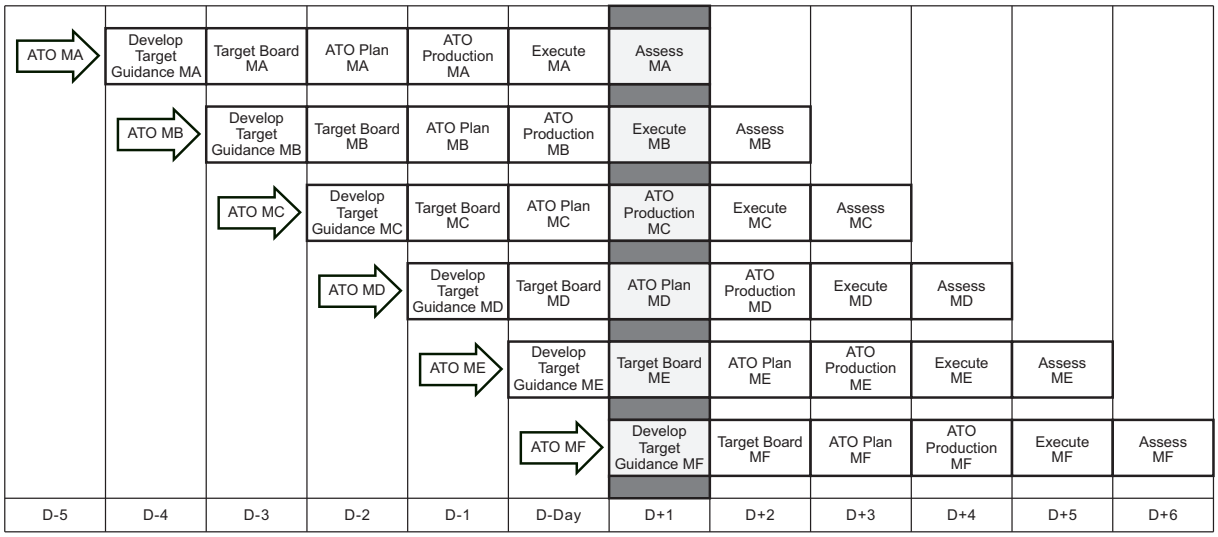

Figure 5-1. Example Marine Air-Ground Task Force Air Tasking Order and Targeting Battle Rhythm Activities.

Using Figure 5-1 as a foundation, the following vignette provides a discussion of targeting activities on D+1 (executing ATO "MB").

Air Tasking Order MB Execution

MAGTF fires and effects agencies collaborate to facilitate ATO MB dynamic targeting execution. Fires and effects planners are assessing ATO MA (yesterday's ATO), processing BDA information, and providing reattack recommendations to FECC COPS personnel via collaboration tools. The FECC and IOC are collaborating to ensure dynamic targets engaged on ATO MB are not duplicated on future deliberate targeting plans. Assessment personnel are collaborating to assess effects for ATO MA and determine adjustments (if required) to targeting plans. The Marine TACC ATO development section is planning ATO MD, and producing ATO MC.

During the fires and effects working group held on D+1, members start by reviewing current (ATO MB) and projected (ATO execution periods MC through MF) battlespace conditions. Intelligence personnel brief current and projected battlespace conditions, and COPS and FOPS personnel brief current and projected friendly unit dispositions and locations. Intelligence staff or other MAGTF agencies (e.g., CMO) brief current and projected relevant actor dispositions and locations.

Designated personnel provide the group a fires and effects assessment (to proceed or not proceed). The group reviews future ATO period deliberate targeting plans, and coordinates changes to fires and effects objectives and tasks, as required.

The working group then focuses on ATO ME planning detail. The group reviews the commander's fires and effects and targeting guidance for ATO ME and refines transition criteria, fires and effects objectives, and desired effects. The working group reviews target nominations and projected fire support and targeting requirements in relation to engagement capabilities; refines target priorities; and determines and refines HPTs to be engaged to create desired effects (includes determining targets that must be engaged during the ATO period, and targets that can be engaged during follow-on ATO periods). The working group then conducts capabilities analysis focusing on identifying tasks and engagement options required to create desired effects. Once tasks are determined, working group members coordinate synchronization of engagement activities. The working group determines required coordination and control measures, develops apportionment recommendation(s), and determines external fires and effects support requirements. The FECC refines the MIPTL and consolidates MAGTF fires and effects inputs to HHQ (e.g., the MAGTF TNL, external support requests, recommended changes to JFC target lists, AOD, critical asset list). Finally, the fires and effects working group refines dynamic targeting guidance recommendations for ATO MC, and fires and effects guidance recommendations for ATO MF. Throughout the meeting, fires and effects working group members coordinate to ensure daily MAGTF targeting, air, collection, and information plans are integrated and synchronized.

At the fires and effects or targeting board, the staff presents fires and effects plans in a logical flow to the chairperson (typically the MAGTF commander or designated representative) for decision.

Engagement Capabilities that Create Lethal Effects

During battle rhythm events, the FECC is primarily responsible for coordinating engagement capabilities that create lethal effects. Planners should use objective information to determine MAGTF organic firepower capacity in relation to targeting and fire support requirements.

Fires planners develop custom targeting tools (e.g., spreadsheets) to predict MAGTF firepower capacity in an objective manner. MAGTF targeting capabilities that create lethal effects primarily consist of surface fires, strike capable aviation platforms, and associated ordnance. During planning, the FECC should coordinate with aviation planners to develop MAGTF aviation firepower capacity predictive tools (see Figure 5-2). Fires planners should likewise develop surface fires capacity predictive tools.

	A	B	C	D	E	F	G	H	I	L	M	N	O
1	Type AC	Total # AC	AC Avail Rate	Sust Sorties/day	Surge Sorties/day	DAS Apportion %	Pri SCL Description	Pri SCL PGMs	Pri SCL PH	DAS Tgt Elems hit-Sust	DAS Tgt Elems hit-Surge	CAS-Sust	CAS-Surge
11	FA-18C/D	60	0.70	2.50	4.00	0.60	4xJDAM	4	0.60	151	242	101	161
12	F-35	32	0.70	2.50	4.00	0.60	4xJDAM	4	0.60	81	129	54	86
13	AH-1W	54	0.70	2.50	4.00	0.60	4xHellfire	4	0.75	0	0	284	454
14										232	371	438	701
15													
16													
17	Predictions:			- DAS Sustained			- DAS Surge			-CAS Sustained		-CAS Surge	

NOTE

This spreadsheet is an example planning tool that can be used to rapidly determine aviation firepower capacity and predict the daily number of enemy target elements that can be damaged. For example, such a tool can be used in the deliberate targeting planning process to rapidly predict the number of enemy target elements (DPIs) damaged by MAGTF aviation assets per day. In this example, column L represents a predicted number of DAS aviation ordnance hits on the target elements/DPIs per day using a sustained sortie rate, employing PGMs; column M shows DAS surge numbers; column N shows CAS sustained numbers; and column O shows CAS surge numbers.

Development and use of such tools can be useful in many ways during planning (particularly useful in battle rhythm planning). E.g., factors values, such as apportionment, can be changed to rapidly view objective information useful for decision making.

Tools such as this should be developed and tailored to any given specific scenario/mission. This example uses probability of hit (PH) factors only. Spreadsheet factors (# AC, sortie rates, PH, etc.), can be adjusted as required to improve utility, increase prediction accuracy, etc.

Figure 5-2. Example Aviation Firepower Capacity Prediction Tool.

Numerous analytical models are available to predict munitions effectiveness (i.e., Joint Technical Coordinating Group for Munitions Effectiveness products). Firepower capacity predictive tools can combine objective information from munitions effectiveness analytical models with platform employment information to predict organic MAGTF firepower capacity that can be employed on daily basis. Marines should custom-tailor tools to reflect mission requirements and planned capabilities. For example, during a combat operation, planners might determine that MAGTF targeting engagement platforms will primarily consist of MAGTF TACAIR and surface fires assets for a given period because of range, munitions, survivability, and other considerations. Planners subsequently tailor firepower capacity prediction tools to reflect TACAIR and surface fires employment capabilities, considering available munitions, logistic considerations, and surge and sustainment rates.

During the MCPP, planners can use these to tools to objectively predict firepower asset and munition requirements and associated timelines. During battle rhythm activities, these tools can facilitate rapid cut line predictions; facilitate air apportionment recommendations and decisions; facilitate decisions to surge or sustain aviation capabilities; and facilitate determination of external support requirements.

During battle rhythm activities, planners use MSC air requests for CAS to determine aviation fire support requirements. The number of HPTs and CTEs to be engaged determines MAGTF targeting requirements. For phased operations, planners consider time factors associated with operational phases, steps, and associated transition criteria. For example, planners might determine that 1,200 CTEs must be engaged to achieve transition criteria during a step of an operation. Using analytic tools, planners predict that MAGTF organic capabilities can effectively engage 200 targets per day using 50 percent TACAIR DAS apportionment, and 300 targets per day using 80 percent TACAIR DAS apportionment (sustained sortie rate).

Cut Line

A cut line reflects the targets on a prioritized target list that will most likely be engaged for a given targeting cycle period or ATO day. The MAGTF cut line reflects targets on the MIPTL that will most likely be engaged for a given targeting cycle period or ATO day. During battle rhythm activities, the FECC employs a sequential process to determine the MIPTL cut line.

The FECC produces a draft MIPTL and associated cut line prior to the fires and effects working group. The MIPTL targets are initially prioritized by precedence of targeting tasks required to achieve fires and effects objectives. Once initial prioritization is determined, FECC planners allocate engagement capabilities to targets in a systematic manner. Planners first identify specific targets where joint, external, or information capabilities should be employed as primary engagement means (this is determined during capabilities analysis). The FECC coordinates with the ICC to determine engagement feasibility and capacity for targets that should be engaged by information capabilities.

The FECC then determines appropriate MIPTL targets that should be allocated to surface fires capabilities (e.g., HIMARS, NSFS, cannon artillery). Surface fires capabilities are allocated prior to allocating air assets, as the number of surface fires targets might be limited by range or ordnance considerations. The FECC determines which targets can be effectively engaged by surface fires munitions and then conducts weaponeering. The FECC considers how many surface fires munitions can be allocated to deliberate targets versus dynamic targets for the day. The FECC collaborates with air planners to ensure appropriate preplanned ACMs (e.g., surface-to-surface missile system [SSMS] restricted operations zone [ROZ] for HIMARS munitions) are incorporated into the ACO.

To finish the draft cut line, FECC and aviation planners coordinate and apply planned air apportionment and allocation factors to estimate the number of targets that can be engaged by aviation assets (predictive tools and preplanned weapon-target pairing tables speed this process).

The draft MIPTL and cut line serves as a starting point for refinement during the fires and effects working group. After the working group, the targeting plan and daily MIPTL is briefed and approved at the fires and effects and targeting board. The FECC incorporates any targeting changes made during the board and finishes the cut line process. After the fires and effects and targeting board, MAGTFs can implement a targeting synchronization working group to facilitate targeting coordination and final cut line determination.

To finalize the cut line, the FECC first refines adjustments to targets planned to be engaged by external or joint capabilities, information capabilities, and organic surface fires capabilities. Remaining targets on the MIPTL are then sent to the Marine TACC (ATO development section). The Marine TACC applies approved air apportionment factors, determines targeting allocation, and conducts weaponeering to determine the number of targets that can be engaged by organic aviation capabilities.

During the cut line process, FECC planners check MIPTL targets against the RTL and NSL; conduct or coordinate CDE with the MSCs and MSEs; and coordinate with the IOC to ensure collection requirements are planned and target coordinates are mensurated, as required. Once the targeting plan is approved and MIPTL cut line finalized, the FECC disseminates the daily MIPTL to all appropriate agencies.

External Support

During battle rhythm activities, planners determine external support requirements to address shortfalls in organic targeting capabilities based on MAGTF targeting requirements and the MIPTL cut line for a given targeting cycle period. Planners collaborate to determine external support means best suited to address shortfalls. Fires and effects planners can request external support through several processes (see Chapter 3). To avoid duplicating efforts, MAGTF external support requirements should be consolidated at the fires and effects working group, and the FECC, IOC, ICC, air center, MARLE, and ACE planners should coordinate subsequent requests.

Targeting Products

Fires and effects planners develop various decision support products and tools that facilitate planning and execution of the targeting process. During the MCPP, planners develop and disseminate targeting products and tools to appropriate agencies for use during battle rhythm activities. MAGTF fires and effects related products and tools include—

- Target lists.
- MIPTL.
- Firepower capacity predictive tools.
- Combat assessment tools (e.g., BDA tracking).
- Relative combat power analysis and assessment tools.
- Targeting prioritization and synchronization tools (e.g., fires and effects objective-task matrix, fires and effects synchronization matrix).
- Targeting guidance tools.

Throughout battle rhythm activities, fires and effects planners refine targeting products to facilitate near-term targeting decision making and execution. The MIPTL is the primary tool to facilitate planning and executing the MAGTF targeting plan. Combat assessment tools facilitate BDA tracking and fires and effects assessments. Relative combat power tools are useful to help determine fires and effects requirements. Disseminating targeting products enhances staff understanding during planning and execution.

MAGTFs employ custom tools to facilitate development and dissemination of fires and effects and targeting guidance. For example, a MAGTF can develop matrices that depict how fires and effects objective and desired effects are linked to fires and effects tasks and prioritized (e.g., targeting priority and weight of effort matrices; objective-task matrices; fires and effects synchronization matrices). During the MCPP, these tools are codified in Annex C (Operations) of the MAGTF OPORD. For phased operations, these tools should be developed for each portion of the operation. During battle rhythm activities, planners refine fires and effects guidance and associated tools as required (often daily) and disseminate the tools to all units and agencies that conduct or coordinate execution.

Major subordinate commands and MSEs often develop and employ unique targeting products or tools. For example, GCE units often use targeting products or tools associated with the D3A process. Major subordinate commands and MSE targeting products and tools should be consistent with, and interface with MAGTF fires processes.

COMMAND AND CONTROL

To ensure efficient and timely coordination and collaboration within the MAGTF, an appropriate C2 structure should be part of MAGTF standing operating procedures. Planners should create the C2 structure prior to operations and should identify specific systems designed to support fires and effects tasks and associated procedures. Fires and effects communication and collaboration systems vary by operation and theater. MAGTF planners should strive to maintain proficiency in various fires and intelligence systems. For more information on fires systems and collaboration structure, see MCRP 3-31.7, *Fire Support Systems for MAGTF Operations*.

Dynamic targeting in a communications contested environment provides unique challenges. As a centralized dynamic targeting C2 construct might not be effective in a communications contested environment, MAGTFs should consider alternative C2 options. When applicable, MAGTFs develop and employ a C2 construct that includes multiple dynamic targeting cells tailored to meet mission requirements. For example, MAGTFs can establish autonomous forward-deployed dynamic targeting cell(s) in addition to a dynamic targeting cell in the MAGTF COC. Forward-deployed dynamic targeting cells should include appropriate C2 systems to receive, fuse, and display targeting information (e.g., common tactical pictures) and communications systems to coordinate and assess target engagements. Dynamic targeting cells should include appropriate aviation, fires, intelligence, and information personnel trained to perform all F2T2EA steps. Dynamic targeting cells should be capable of integrating MAGTF dynamic targeting with the joint force using common systems and TTP.

The FECC coordinates with the G-3 and G-6 to establish a MAGTF fires communication network, providing a means for overall fires coordination within the MAGTF and with external fires agencies. Marines conduct fires coordination by voice and digital communications networks, such as AFATDS, JADOCS, TBMCS, Voice over Internet Protocol (VoIP), and Internet relay chat. The

fires communications network structure optimizes the capabilities of available digital data devices while maintaining a voice capability. The MAGTF fires communication network can include but is not limited to the—

- FECC (net control).
- FAHQ.
- Primary FSCCs.
- Marine TACC, DASC, and TAOC.
- IOC (and supporting intelligence agencies).
- ICC.
- RAOC.
- Adjacent unit fires elements.

Collaboration

During operations, MAGTF fires and effects agencies collaborate with higher, adjacent, and subordinate agencies to facilitate execution of daily plans. MAGTFs integrate numerous tools and systems (e.g., JADOCS, AFATDS, intelligence systems, VoIP, Internet relay chat) into collaboration networks to facilitate fires and effects coordination and execution.

Fires and effects collaboration networks and procedures are tailored to meet specific operational requirements. The FECC is responsible for establishing collaboration mediums to coordinate targeting and counterfire; however, MAGTFS can establish other fires and effects collaboration means. For example, the IOC may establish collaboration means to coordinate collection and analysis capabilities; the FECC and ICC may establish collaboration means to coordinate monitoring and execution of different information capabilities.

During execution, fires and effects agencies—

- Coordinate fires and effects plans.
- Build and maintain battlespace situational awareness.
- Acquire, identify, and track targets and relevant actors.
- Evaluate targets and relevant actor validity and priority.
- Make engagement decisions.
- Identify engagement options and select appropriate engagement capabilities and assets.
- Coordinate engagement details. Facilitate rapid coordination and engagement of targets when required.
- Assess engagements.
- Coordinate re-engagements.

MAGTF agencies that participate in fires and effects collaboration include the following:

- FECC.
- IOC: OCAC, surveillance and reconnaissance cell, targeting cell.

- ICC.
- FAHQ (if established).
- Marine TACC: deep battle cell, close battle cell, air defense cell, airspace control cell, ACI.
- MACCS agencies and entities: DASC and TAOC.
- MSC or MSE fires and effects agencies: GCE FSCCs, LCE fires element, ROAC fires element.
- Fires and effects liaison elements: ANGLICO, MARLE.
- External fires and effects agencies.

MAGTFs may integrate quick-fire nets into collaboration networks to support dynamic targeting and other fires and effects tasks (e.g., counterfire, fire support, interdiction). Quick-fire nets are digital or voice nets that establish direct links to facilitate rapid coordination and engagement of targets using available fires assets. An effective quick-fire net rapidly provides target engagement information to fires agencies and assets. Employment of quick-fire nets into fires and effects tasks requires detailed planning to include—

- C2 systems employment.
- Integrated TTP.
- Control and coordination measures.
- Fires and acquisition asset placement.

The MAGTF must establish appropriate target engagement authorities and procedures to employ quick-fire nets (i.e., decentralized execution authorities and procedures to decrease target engagement response time).

DYNAMIC TARGETING

Dynamic targeting is a process that prosecutes targets identified too late or not selected for action in time to be included in deliberate targeting. Dynamic targeting provides commanders flexibility to adjust deliberate targeting plans and engage targets during a compressed timeline.

Effective dynamic targeting emphasizes decentralized execution. In some situations, some or all targeting steps can be delegated to tactical-level control elements, on-scene commanders, engagement assets, etc. For example, the MAGTF commander can choose to employ decentralized dynamic targeting procedures for certain target types. In a communications-contested environment, MAGTFs may employ an alternative dynamic targeting C2 construct (e.g., employ multiple dynamic targeting cells) or delegate target engagement authorities to subordinate commands or elements. As decentralized dynamic targeting often carries a relatively high level of risk, the MAGTF planners should clearly articulate dynamic targeting guidance to enable decision making, and ensure subordinate commanders understand the intent when accelerated coordination is required. Dynamic targeting guidance should provide succinct direction indicating authority levels based on collateral damage and mission risk.

Figure 5-3 shows the relationship between the targeting cycle and the dynamic targeting process. Dynamic targeting is part of the targeting cycle, executed in Phase Five, mission planning and execution. During dynamic targeting, targets are prosecuted using the F2T2EA process.

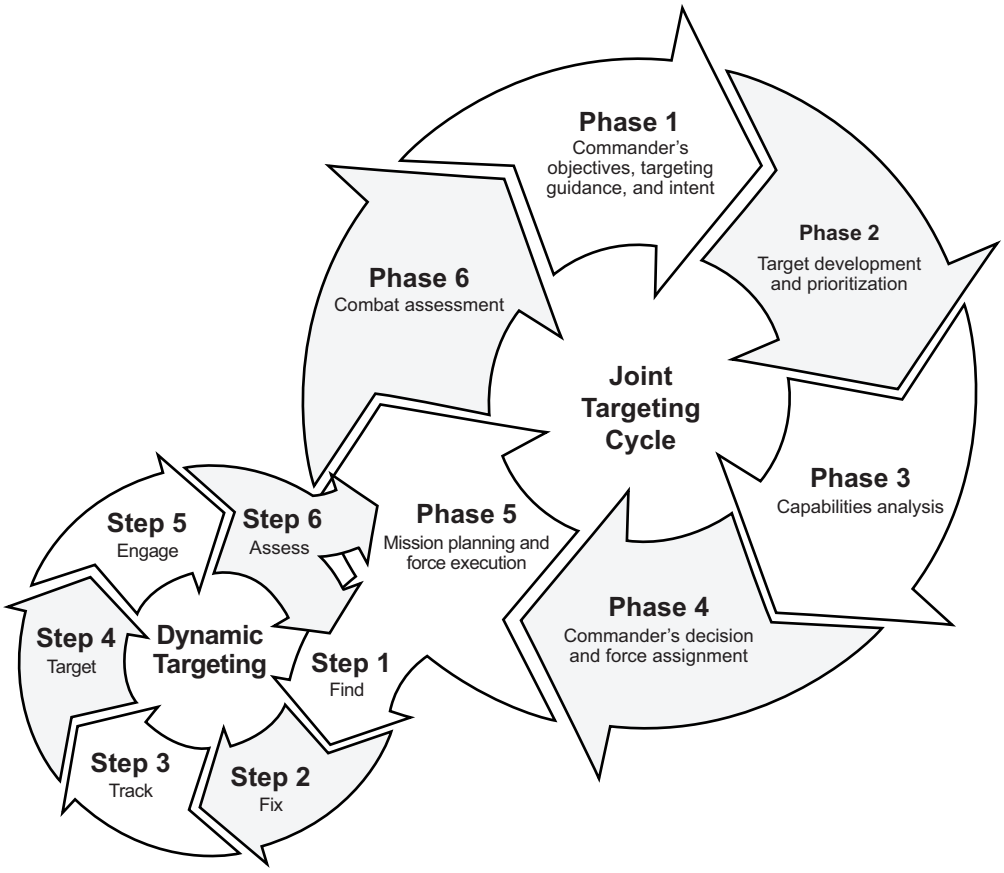

Figure 5-3. Dynamic Targeting in the Joint Targeting Cycle.

NOTE: The F2T2EA process applies to all targets whether developed during deliberate or dynamic targeting. The F2T2EA process is executed in a time-compressed manner during dynamic targeting to facilitate current operations responsiveness.

Guidance

The MAGTF commander, the staff, and MSCs or MSEs develop dynamic targeting guidance in a collective manner as part of the battle rhythm and that aligns with HHQ guidance. Prior to the start of each execution period, dynamic targeting guidance is disseminated to MAGTF targeting agencies.

There is no single dynamic targeting guidance format, as guidance will vary by mission requirements. MAGTF dynamic targeting guidance may include tools such as a synchronization matrix or other tools that delineate fires and effects objectives and prioritized targeting tasks. In

addition to tools, dynamic targeting guidance should include written instructions. Dynamic targeting guidance should not be limited to a prioritized list of target types and categories. Dynamic targeting guidance may include the following:

- Fires and effects objectives and desired effects for the execution period.
- Targeting priorities in relation to time and space (sequencing, or when and where targeting tasks and activities should occur during the execution period).
- Unique target types to be engaged under specified conditions.
- Actions to address threats to MAGTF forces, LOOs, or LOEs.
- ISR priorities and re-tasking guidance.
- Target or munitions restrictions.
- Engagement authorities and responsibilities.
- Acceptable risk.

Integration Process

The transition from deliberate to dynamic targeting typically occurs in conjunction with the submission deadline of MAGTF input to the ATO. Once MAGTF input to the ATO is submitted to the JAOC, the MAGTF has limited ability to change deliberate targeting products. As such, targets nominated or desired to be struck after this time are processed via dynamic targeting.

The FECC watch officers, led by the FECC current fires officer, direct the Marine dynamic targeting process. The FECC collaboratively integrates efforts of higher, adjacent, and subordinate agencies.

The FECC or FAHQ watch officers coordinate surface-delivered fires during dynamic targeting. MAGTFs may employ a FAHQ to facilitate coordination of surface-delivered deep fires and counterfire. The FAHQ may provide a liaison team to the battlefield coordination detachment (BCD) in the JAOC to facilitate surface-fires airspace coordination. MAGTFs often integrate counterfire and dynamic targeting procedures (e.g., employ quick-fire nets) to rapidly detect and engage enemy fires systems and weapons.

Fires and effects planners ensure MAGTF dynamic targeting procedures are consistent with HHQ procedures. MAGTF planners coordinate with Marine Corps liaison officers to ensure appropriate MAGTF HPTs are nominated for inclusion on the JFC TST or CCT list(s). Fires and effects watch officers maintain current HHQ targeting guidance and target lists and matrices.

Dynamic Targets

Dynamic targeting prosecutes targets of opportunity and on-call targets. In addition, the type of target factors into target prioritization during dynamic targeting. For example, TSTs usually receive highest targeting priority and require the timeliest response. Conversely, targets of opportunity should be more carefully analyzed to preclude diverting resources from higher-priority targets. Time-sensitive targets and CCTs are special types of HPTs. The JFC and components often establish lists of targets to provide targeting guidance. For example, a JFC will typically establish a TST list (or matrix), and components may establish CCT lists.

Time-Sensitive Targets. Time-sensitive targets are typically known, but not located (e.g., mobile ballistic missiles), and successful engagement usually requires the dynamic targeting compressed decision cycle.

The JFC's objectives, targeting guidance, and intent shape the basic procedural framework for components to expedite engagement of TSTs. Joint force commanders establish TST guidance and procedures for coordination, deconfliction, and synchronization among components. If established, the JFE recommends procedures for and monitors engagement of TSTs. Once JFC guidance is issued, components establish planned and reactive procedures for engaging TSTs. MAGTFs develop procedures that support JFC TST guidance.

Component-Critical Targets. Component commanders may nominate targets to the JFC for consideration as TSTs. These component HPTs, if not approved as TSTs by the JFC, may require both dynamic prosecution and cross-component coordination and assistance in a time-compressed fashion. These CCTs should receive the highest priority possible, just below targets identified on the JFC TSTs list.

The JFE publishes CCT lists in appropriate directives and orders. Component commanders identify CCTs within the joint targeting cycle, provide clear guidance to ensure the appropriate priority of asset allocation (intelligence collection, exploitation, and attack assets), and provide ROE to facilitate rapid cross-component coordination. Direct cross-component coordination provides a means to rapidly coordinate dynamic targeting and avoid delays or possible miscommunication through liaison elements. In addition, components may provide dynamic targeting guidance for on-call targets and targets of opportunity (i.e., HPTs) within their operational area.

On-Call Targets. On-call targets are engaged using the dynamic targeting process when they are detected, located, or called by an MSC or MSE during execution. On-call targets may be scheduled to be engaged by air assets on the ATO being executed. Dynamic targeting can provide a responsive use of on-call or re-tasked missions to exploit enemy vulnerabilities that may be of limited duration. Fires planners often develop on-call targets and associated dynamic targeting execution procedures. The FECC watch officers coordinate engagement of on-call targets.

Targets of Opportunity. Targets of opportunity may cause deliberate plans to change and are best managed using the dynamic targeting process. Changes to the target status (priority, access, permissions) could result in the need (or opportunity) to engage the target during the current cycle.

Unanticipated targets, in some cases, will require engagement in the current targeting cycle via dynamic targeting. In other cases, the target will be passed to deliberate targeting.

Dynamic Targeting Cycle

Executed in Phase Five of the joint targeting cycle, dynamic targeting consists of a six-step F2T2EA process (see Figure 5-4):

- Find. Emerging targets are detected and characterized for further prosecution.
- Fix. The location (fix) and identification of the potential target is determined.
- Track. The target is observed, and its activity and movement are monitored.

- Target. The decision is made to engage the target in some manner to create desired effects and the means to do so are selected and coordinated.
- Engage. Action is taken against the target.
- Assess. Initial assessment of action against the target is performed.

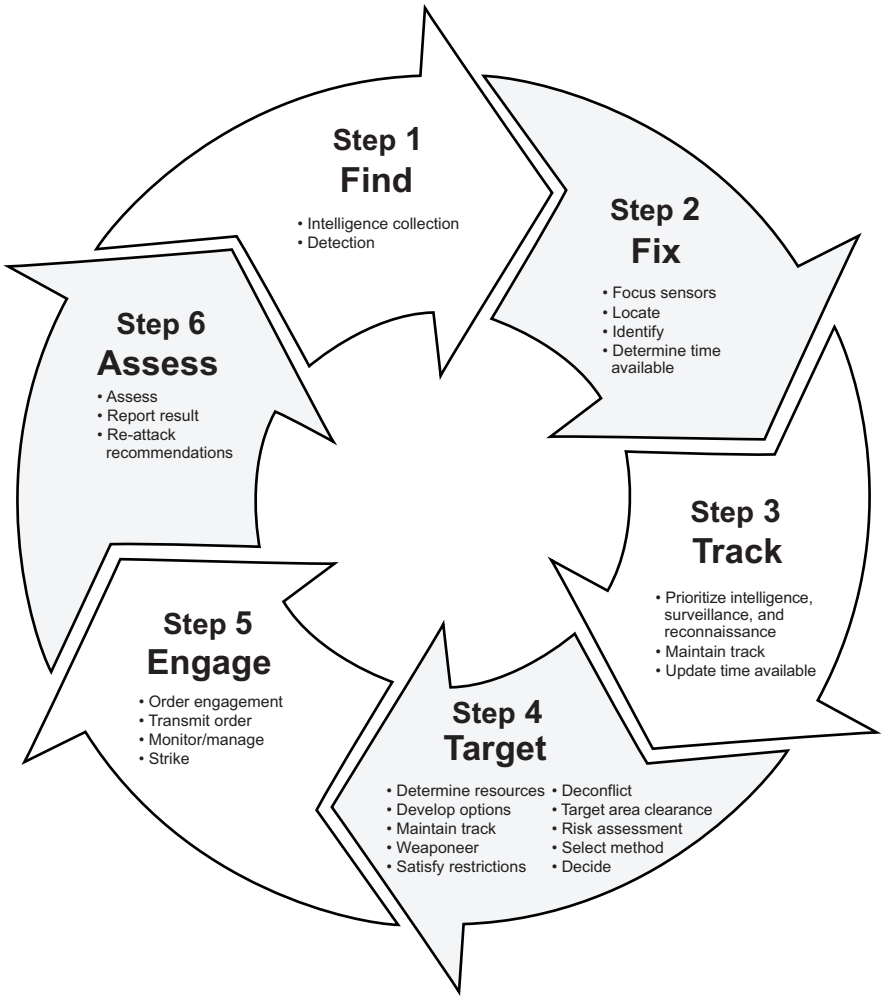

Figure 5-4. Dynamic Targeting Cycle.

Deliberate (planned) targets are engaged using dynamic targeting, but the steps listed in Figure 5-4 only confirm, verify, and validate previous decisions (in some cases requiring changes or cancellation). The find, fix, track, and assess steps tend to be ISR-intensive, while the target and engage steps are typically labor-, force-, and decision making-intensive.

> **NOTE:** Another methodology that can be used in dynamic targeting is the "find, fix, finish, exploit, analyze, and disseminate" (F3EAD) process. The F3EAD process is not a replacement for F2T2EA but is an additional tool used to address certain targeting challenges, particularly those found in a counterinsurgency environment. The F2T2EA process provides a method for prosecuting various categories of targets while F3EAD provides a method for prosecuting specific targets such as high-value individuals.

Find, Fix, and Track Steps. The term emerging target is often used to describe a detection that meets sufficient criteria to be evaluated as a potential target. Emerging targets require ISR or analysis to develop, confirm, and continue the dynamic targeting process. During the find, fix, and track steps, further information about emerging targets may be required to determine accurate location and support PID, CID, and ROE determinations. Manned strike aircraft, unmanned strike aircraft, collection assets, and other sensors can be used to collect this information. Under the supervision of the senior watch officer, the watch floor coordinates tasking or re-tasking of available collection asset(s). After detection, the MAGTF IOC and FECC watch officers collaborate to determine which of the listed five dynamic targeting follow-on actions apply (See Figure 5-5).

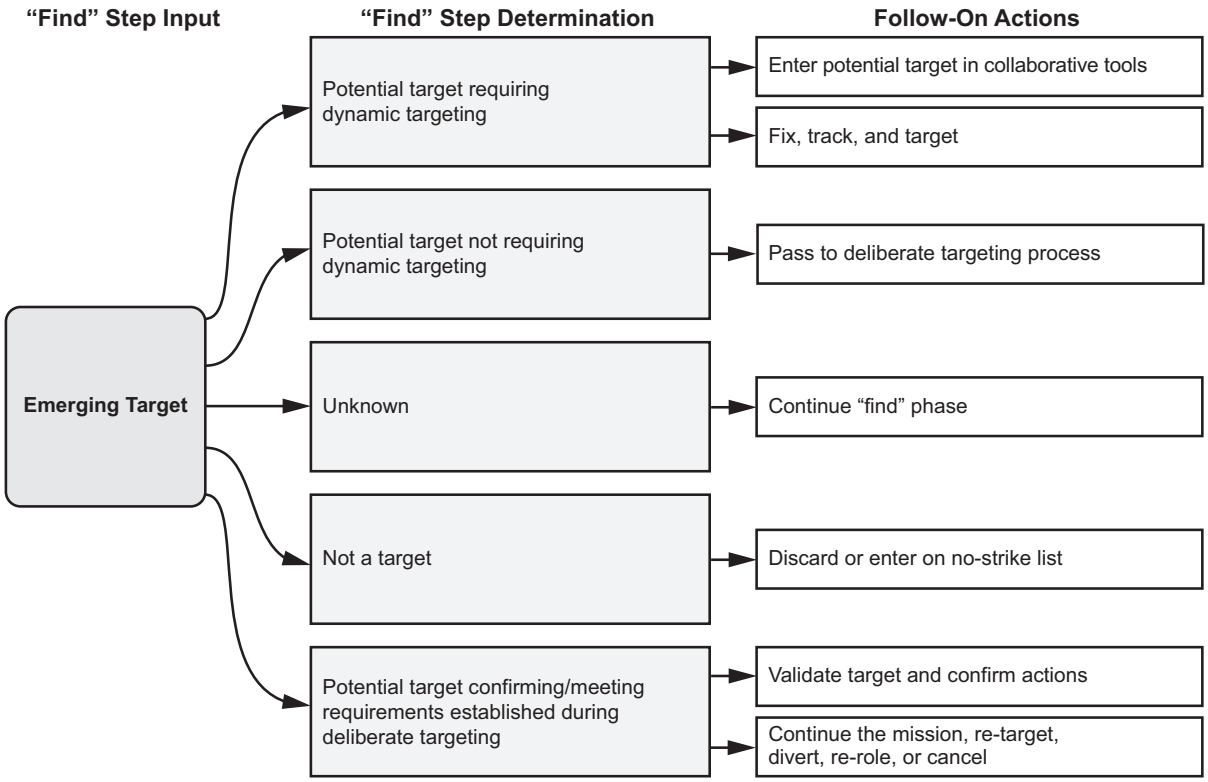

Figure 5-5. "Find" Step Determinations and Actions.

The IOC typically establishes a targeting cell to coordinate dynamic targeting functions. The IOC coordinates the dynamic targeting find function with internal (SARCC, OCAC, Marine TACC, ACI, ICC, etc.) and external collection agencies to cue ISR assets to monitor designated NAIs, TAIs, and points of interest. The SARCC usually serves as the primary element for the supervision of MEF collection operations. The SARCC directs, coordinates, and monitors intelligence collection operations conducted by organic, external, attached, and direct support collection assets. Once collections assets identify potential targets, the IOC continues coordinating dynamic targeting fix and track functions. The IOC evaluates target selection standards to validate accuracy and timeliness of ISR target reporting and coordinates target coordinate mensuration (when required). The IOC considers dynamic targeting guidance, analyzes the evolving situation, and provides dynamic targeting recommendations to the FECC current fires officer via collaboration tools.

Dynamic ISR re-tasking involves effecting changes in the mission of a collection asset while it is executing its mission. Dynamic ISR re-tasking impacts other mission requirements and IOC analysts must weigh intelligence gain and loss for ISR movement or re-tasking. Re-tasking ISR platforms often requires detailed airspace deconfliction. The SARCC considers ISR asset persistence capabilities when identifying assets to support the find, fix, track, and assess steps. Sensors may be coordinated to maintain situational awareness. When sharing ISR assets, sensor-target revisit times may require management while refining target characteristics. Some targets may require continuous tracking upon initial detection as an emerging target (e.g., a TST). Relative priorities for ISR requirements are based on commander's guidance and objectives (TSTs generally receive the highest priority). If track continuity is lost, the find and fix steps may have to be repeated.

Target prioritization during dynamic targeting is necessary to account for battlespace changes between the deliberate targeting cycle and execution. Dynamic targeting agencies consider multiple factors and collaborate to make dynamic target priority determinations. Dynamic targeting factors that influence target priorities include the following:

- Targeting priority information and guidance (MAGTF and HHQ).
- Planned targeting actions.
- Time and battlespace factors.
- Targeting and collections capabilities and assets.
- Threat, friendly, and neutral entity actions.

MAGTF agencies participating in dynamic targeting must maintain current dynamic targeting information to include the following:

- Joint force and component dynamic targeting guidance and priorities (e.g., TSTs, CCTs, and their lists and matrices.
- MAGTF dynamic targeting guidance and priorities.
- Joint force, component, and MAGTF collection plans.
- Target lists (MIPTL, JIPTL, RTL, and NSL).
- The ATO, SPINS, AOD.

When an emerging target is detected, it is entered into the applicable dynamic targeting collaboration system (e.g., JADOCS). MAGTF agencies collaborate to determine which action is appropriate (see Figure 5-4). This determination essentially comes down to target prioritization. If the emerging target is a TST or CCT, the acquisition is immediately reported to the JFC headquarters and component dynamic targeting cells. If it is determined additional target information is required (e.g., unable to meet PID or CID criteria), the MAGTF continues to analyze the emerging target as a potential target (continuing the find step). If it is determined the detection is not a valid target, or is on the NSL, the target may be discarded.

If an emerging target in not a TST or CCT, dynamic targeting personnel consult planned targeting actions to avoid inefficiencies. Fires watch officers reference deliberate plans (daily MIPTL, JIPTL, ATO, surface fires plans, etc.) to determine if planned actions exist to engage the potential

target (a scheduled or on-call target). Dynamic targeting personnel then collaborate to validate the target and either continue with the planned actions, or retarget, divert, re-role, or cancel assets as necessary. If there are no planned actions to engage the emerging target, dynamic targeting personnel collaborate to prioritize it.

Dynamic targeting agencies consider many factors to determine target priority. Dynamic targeting agencies consult current dynamic targeting information and collaborate to determine if a potential target meets MAGTF or HHQ commander's dynamic targeting guidance and objectives. If a potential target is valid, dynamic targeting agencies collaborate to determine if the target is a MAGTF HPT, and if so, determine its priority rank in relation to other HPTs. Dynamic targeting personnel collaborate to determine if the target is high enough priority to be engaged via dynamic targeting or passed to deliberate targeting.

Time and space factors influence target priority determinations. For example, there may be a fleeting window of opportunity to engage a lucrative HPT requiring immediate dynamic targeting engagement. Some targets may require engagement at a specific time and location. For example, the targeting plan may require engagement of certain targets in time and space based on an event driven timeline.

Friendly and enemy maneuver in relation to MAGTF and HHQ objectives impacts dynamic target prioritization to a large degree. For example, targeting actions may be planned against an enemy unit that subsequently surrenders or retreats. Conversely, an enemy unit may maneuver in a way that threatens friendly forces or accomplishment of objectives. Both cases typically require dynamic target reprioritization and subsequent dynamic targeting action (asset re-targeting and re-allocation).

Environmental conditions may change (impacting target engagement or collection capabilities) that may require target reprioritization and subsequent dynamic targeting action.

When making target priority determinations, MAGTF dynamic targeting agencies collaborate to determine target engagement capabilities or asset availability. Ideally, emerging targets are engaged with capabilities or assets specifically allocated for dynamic targeting (e.g., SCAR or armed reconnaissance aviation assets). Planned interdiction strike missions may be diverted to higher priority dynamic targets; however, dynamic targeting personnel should coordinate subsequent re-targeting as appropriate to ensure the deliberate targeting plan is properly executed.

Dynamic target prioritization is a complex process that requires collaboration among multiple MAGTF agencies. Dynamic target priority decisions should involve both subjective and objective reasoning, with the goal of achieving objectives. Multiple agencies provide prioritization input during collaboration; however, the IOC targeting cell provides primary input (targeting intelligence fusion), with the FECC current fires officer being the primary dynamic targeting decision maker. The use of targeting collaboration tools (the JADOCS, Internet relay chat, VoIP) to facilitate timely dynamic targeting coordination and execution cannot be overemphasized.

Target Step. During the target step, the decision is made to engage the target, and the means to do so are selected and coordinated. The track and target steps are routinely conducted simultaneously to facilitate timely target engagement. The target step can be time-consuming because of the numerous requirements to satisfy.

The FECC current fires officer receives dynamic targeting collaboration input, analyzes the emerging situation, and ultimately makes dynamic targeting decisions. If the current fires officer determines a potential target is actionable, FECC personnel plot the target, conduct CDE, determine required coordination and control measures, and collaborate with fires and effects agencies to coordinate required measures. The current fires officer determines the most applicable engagement asset, capability, and any specific engagement instructions (e.g., precision-guided munition only, specific strike window). Execution tools, such as target-weapon pairing matrices, should be planned and employed to facilitate timely engagement.

During the target step, FECC watch officers perform or coordinate many tasks to include the following:

- Resolve restrictions.
- Perform threat and risk assessment.
- Identify the impact of redirecting strike, attack, and collection assets from planned operations.
- Weaponeer targets.
- Formulate engagement options.
- Match available engagement and sensor assets to create desired effect.
- Nominate and coordinates approval of engagement option(s).
- Perform CDE for chosen weapon, fusing, and delivery parameters.
- Coordinate and deconflict actions against the target.
- Coordinate assessment requirements.

The FECC watch officers accomplish the above by collaborating with the following:

- MAGTF COC officers (senior watch officer; surface, air, and naval fires watch officers; intelligence watch officers; information watch officers; etc.)
- MAGTF agencies (IOC, ICC, Marine TACC, FAHQ, ANGLICO, SJA, MARLE, etc.).
- Higher and adjacent headquarters agencies (JFE, component dynamic targeting cells or fires elements, BCD, JAOC, etc.).

When tasked, FECC watch officers coordinate and track their portion of the mission, and report to the current fires officer when coordination tasks have been finalized and platforms or capabilities are prepared to execute engagement. Fires watch officers also report additional requirements or changes to support the engagement. When engaging large targets or enemy formations, the current fires officer typically coordinates support for multiple assets by tasking several FECC watch officers.

Engage Step. In this step, action is taken against the target. The current fires officer pushes actionable targets to the appropriate FECC watch officer for final coordination and engagement. The applicable FECC watch officer uses dynamic targeting collaboration tools to coordinate detail

with the appropriate fires agency controlling the engagement asset or capability. During target engagement, FECC watch officers coordinate (directly or indirectly) with watch officers such as the following agencies:

- IOC: OCAC, surveillance and reconnaissance cell, and targeting cell.
- Marine TACC: deep battle cell, close battle cell, air defense cell, airspace control cell, and ACI.
- MACCS agencies and entities: DASC and TAOC.
- FAHQ and CFCC.
- ICC.
- MSC and MSE fires and effects agencies: FSCCs, fires elements, and air elements.
- ROAC fires and air elements.
- US Navy fires agencies: Maritime operations center (MOC) fires and effects elements, Navy tactical air control center (Navy TACC), and supporting arms coordination center (SACC).
- JOAC elements.
- Joint, component, and adjacent unit dynamic targeting cells and fires elements.
- Liaison elements: ANGLICOs, MARLEs, BCDs, naval and amphibious liaison elements (also referred to as NALE), and special operations liaison element.

Coordination among multiple agencies and watch officers may be required, particularly if the target engagement option requires assets external to the MAGTF. The FECC watch officers manage and monitors target engagement to completion. The IOC continues to monitor targets through execution, providing target updates as required.

Assess Step. In this step, initial assessment of action against the target is performed, and re-attack recommendations are made as required.

The FECC and IOC collaborate to evaluate effects of the engagement and determine whether a reattack should be initiated. Assessments of TST and CCTs receive high priorities. Once a target is engaged, the watch floor coordinates tasking or re-tasking of applicable ISR asset(s) (e.g., manned strike aircraft, unmanned strike aircraft, or ISR assets) to provide initial combat assessment of the physical or functional status of the target. Phase One BDA information (e.g., inflight reports, mission reports, observer and reconnaissance reports, live video feeds, signals intelligence) is analyzed and watch officers determine if the engagement created desired effects. For example, a pilot can identify a hit or a miss on a vehicle; however, it may require a technical collection asset to confirm the functionality of a radar system. For engagements using lethal capabilities, the assessment confirms impact of the weapon on the target and makes an initial estimate of the damage. In cases of a confirmed weapon miss, a reattack may be approved based on target priority and attack asset availability. For information capabilities, the initial assessment attempts to detect changes in functionality indicating a successful engagement.

Aviation Roles

Aviation has a significant role in MAGTF dynamic targeting. The MAGTF's single battle concept exploits DAS to create desired effects in the battlespace. Marine aviation strike-capable assets may provide the preponderance of MAGTF organic fires capability. The Marine TACC is the primary MACCS agency responsible for managing airspace and aviation assets that supports MAGTF dynamic targeting. The FECC watch officers collaborate with the Marine TACC deep battle cell to maintain situational awareness of the evolving situation. The Marine TACC deep battle cell coordinates closely with the TAOC deep air operations section to command and control organic and joint air assets in the MAGTF deep battlespace. The MACCS agencies coordinate with other air C2 entities (e.g., KBC or the SCAR; Air Force TACS elements, such as Joint Surveillance Target Attack Radar System and Airborne Warning and Control System) to enhance MAGTF dynamic targeting capabilities.

Armed reconnaissance and SCAR missions are often significant elements of MAGTF dynamic targeting. MAGTFs employ SCAR aircraft to reconnoiter designated areas (e.g., TAIs, kill boxes), provide near-real-time battlespace updates, and coordinate target engagement. When employing SCAR or armed reconnaissance, the FECC current fires officer collaborates closely with the Marine TACC deep battle cell regarding weighting the MAGTF DAS effort. The current fires officer provides dynamic targeting guidance in terms of locations, times, and types of targets to engage to create desired effects. The Marine TACC deep battle cell collaborates with TAOC deep air operations section to focus the SCAR or armed reconnaissance effort, coordinating and redirecting aviation assets as appropriate. The TAOC, ACI, ICC, IOC, and other MAGTF agencies participate in this dynamic targeting collaboration to facilitate battlespace awareness, provide target priority updates, conduct ISR management, and conduct assessments. The ACE may establish a flight line intelligence center to facilitate rapid two-way flow of target intelligence (pre-mission target update information to pilots, and reconnaissance and BDA information to assessment personnel).

CHAPTER 6.
FORCE ARTILLERY HEADQUARTERS

A MAGTF can form a force artillery MSE with associated headquarters, known as the MAGTF FAHQ. The FAHQ closely coordinates with the FECC and MAGTF fires agencies to facilitate cannon, rocket, and missile fires. When established, the FAHQ controls ground IDF assets not assigned or attached to the GCE and controls survey, meteorological, and CBR assets assigned to the MAGTF (see Figure 6-1). Additionally, the FAHQ can be tasked to reinforce fire support operations, facilitate general support surface-to-surface missile fires, perform deep fires and counterfire coordination, facilitate the coordination of airspace for ground fires, and conduct logistical coordination for multiple-launch rocket system (MLRS) family of munitions within the MAGTF.

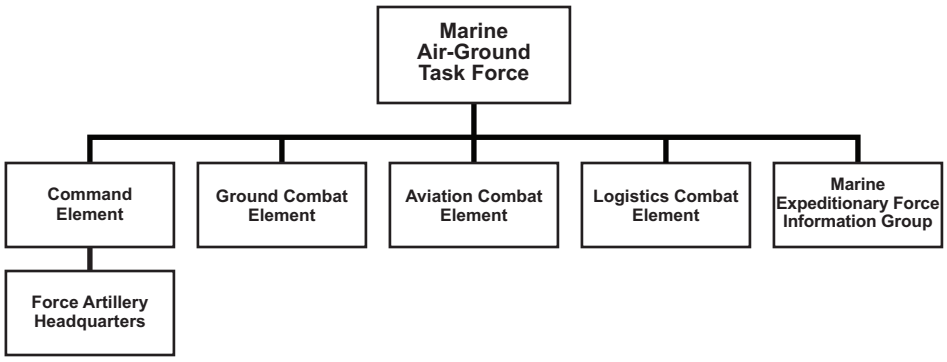

Figure 6-1. Example Marine Air-Ground Task Force Organization with Force Artillery Headquarters.

Force artillery headquarters responsibilities include—

- Enhancing MAGTF surface fires command and control by establishing a FAHQ COC, a CFCC, a fire direction center, or a TPC to facilitate MAGTF counterfire and targeting coordination.
- Providing liaison elements to the MAGTF and applicable theater air-ground system agencies (also referred to as TAGS) to facilitate precision surface fires and airspace coordination.
- Providing personnel to augment the MAGTF FECC if a CFCC, fire direction center, or TPC is established in MAGTF COC.
- Facilitating and conducting MAGTF logistical resupply of HIMARS and associated munitions.

CONCEPT OF OPERATIONS

An artillery regimental headquarters typically forms the FAHQ's nucleus (currently 14th Marine Regiment is assigned this mission). MAGTF rocket and missile artillery (to include attached US Army, allied, and coalition rocket and missile artillery assets) are attached to the FAHQ. Force artillery combat organization is based on METT-T [mission, enemy, terrain and weather, troops and support available–time available] analysis and provides the MAGTF with weapons and systems capable of ranging into the MAGTF deep battlespace. The FAHQ's units are assigned the tactical mission of general support or general support-reinforcing of the MAGTF.

The FAHQ can provide support for the deep, close, and rear areas in both contiguous and noncontiguous operational areas. The FAHQ can support all combat operations because it is tailorable and scalable to any size MAGTF. The FAHQ—

- Enhances MAGTF command and control of surface fire assets.
- Provides liaison elements and SMEs on fire support systems.
- Facilitates surface fires airspace coordination.
- Provides surface fires SMEs during naval operations.
- Enhances MAGTF targeting and counterfire process planning, command and control, and execution.
- Facilitates logistic coordination.
- Participates in MAGTF OPTs and battle rhythm events.
- Assists with intelligence planning and analysis.

During planning, FAHQ personnel can provide SMEs to address surface fires considerations, including artillery survey and meteorology, target acquisition and CBR (capabilities, positioning, cueing, zone management), and movement and positioning of artillery units. For additional information about surface fires planning, see MCTP 3-10E.

COMMAND AND CONTROL

The FAHQ facilitates command and control of surface fire assets not assigned to the MSC or MSEs, including joint and combined capabilities in support of the MAGTF. The FAHQ can co-locate with the MAGTF command element to ensure staff properly integrates liaison teams and maximizes existing C2 infrastructure. The FAHQ's size and construct is operationally and functionally dependent and tailorable. The FAHQ's composition varies depending on mission requirements, MAGTF size, and the number of fire support assets required to support the MAGTF. Regardless of size, the FAHQ directly coordinates with the FECC.

The FAHQ provides functional liaison elements to MAGTF and various external agencies. The FAHQ coordinates with MSCs and MSEs regarding the positioning, movement, and integrating artillery units. This coordination enhances support to the MAGTF, reduces movement control

concerns within the MAGTF area of operations, optimizes efficiency and coverage of assets, and facilitates force protection by managing the electromagnetic signature of related antenna farms and radar sites.

Command Relationships

The FAHQ commander makes recommendations regarding artillery organization for combat to the FECC and G-3. The MAGTF specifies artillery command and support relationships with other MAGTF elements, to include tactical mission assignments, in appropriate directives.

Tactical Missions

The MAGTF commanders can assign artillery units one of four standard tactical missions (direct support, reinforcing, general support-reinforcing, general support) or a nonstandard mission. Each tactical mission includes inherent responsibilities that guide 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. For a detailed description of these tactical missions, see MCTP 3-10E.

Force Artillery Headquarters Liaison Elements

The FAHQ can provide liaison elements in various functional areas. The FAHQ's liaison teams are scalable and tailorable to mission and support requirements. Liaison personnel integrate with the MAGTF staff and agencies serving predominantly as SMEs on MAGTF surfaces fires employment and sustainment. The FAHQ elements coordinate with, or provide augmentation personnel as follows:

- Participate in various MAGTF OPTs and battle rhythm events.
- Support the MAGTF FECC with SMEs on precision surface fires capabilities, deliberate and dynamic fire mission planning and execution, movement of fire support assets, and other FECC functions as required.
- Support G-2 collections, targeting efforts, and combat assessment.
- Support the G-3 to include—
  - Providing augments on the MAGTF COC watch floor to assist with FAHQ fire mission processing (targeting and counterfire) and provide up-to-date information on FAHQ fires assets to the FECC current fires officer and the senior watch officer.
  - Providing augments to the G-3 FOS to assist MAGTF surface fires planning, employment, and movement of fire support assets.
  - Providing augments to the G-3/G-5 to assist surface fires planning (future unit locations, ACMs and FSCMs, munitions requirements, and movement priorities).
  - Support the MAGTF G-4 to include—
  - Exchanging current logistical and operational information.
  - Facilitating logistical coordination required to support current and future fires plans.
  - Providing information on possible future movements of surface fires assets.
  - Providing information pertaining to MAGTF surface fires logistical requirements (to include maintenance and sustainment support required for each of the fires systems).

- Coordinating surface fires field service representatives.
- Coordinating movement of MLRS family of munitions, which will have theater- and Service-level requirements and supply.

- Support the MAGTF G-6 by providing subject matter expertise on MAGTF fires C2 systems.
- Provide SMEs on surface fires airspace coordination; provide liaison personnel to airspace coordination agencies.

AIRSPACE COORDINATION

The MLRS family of munitions require external airspace coordination. As seen in Figure 6-2, GMLRS and Army Tactical Missile System (also referred to as ATACMS) munitions traverse multiple airspace boundaries when fired, requiring close coordination between multiple fires and airspace agencies. The FAHQ's liaison elements provide critical enablers to coordinate precision surface-to-surface missile fires with associated airspace coordination agencies.

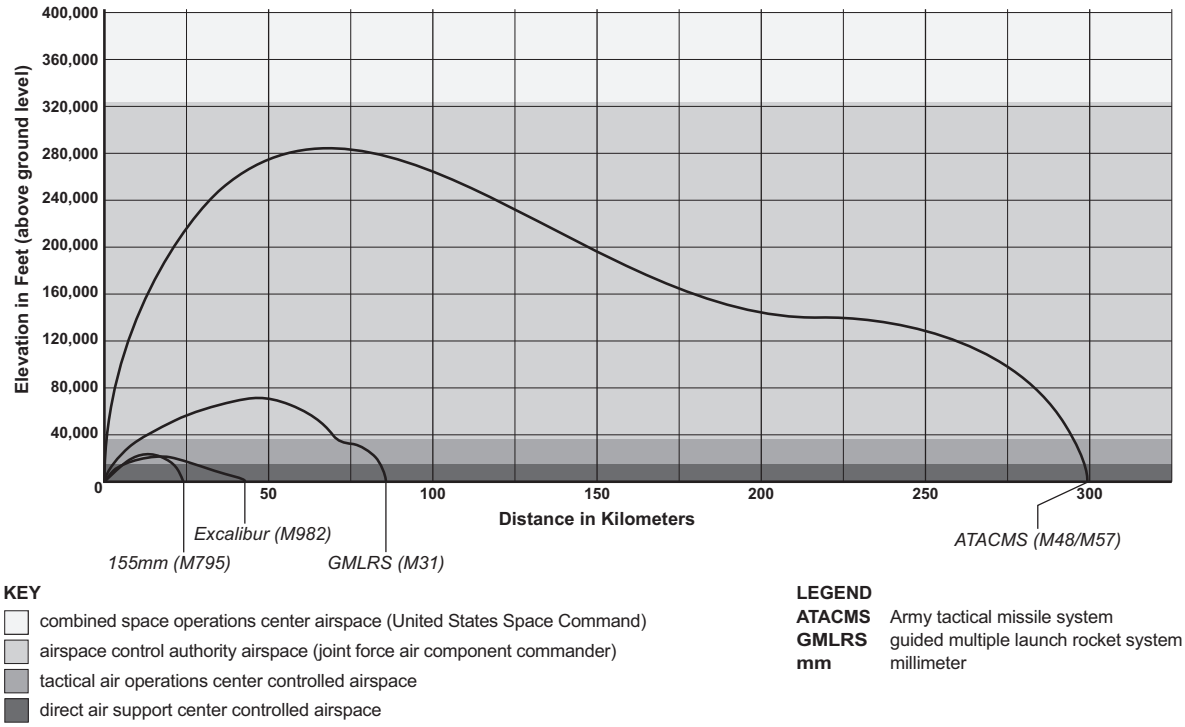

Figure 6-2. Example of Airspace and Maximum Apogees of Fire System Munitions.

The FAHQ's liaison elements can integrate with various airspace coordination agencies. These liaison elements provide the agencies with augmentation, knowledge, and experience on various surface fire assets and assist with digital fire mission processes. The FAHQ can coordinate with, or augment various airspace coordination agencies to include the following:

- The Marine TACC to augment their COC watch floor, assist with coordinating airspace within and outside the MAGTF area of operations, and coordinate or monitor surface fire missions.

- MACCS agencies (DASC, TAOC) to assist with coordinating surface fire missions and airspace within the MAGTF area of operations.
- External agencies such as the JAOC and BCD.

The FAHQ's personnel facilitate surface missile fires airspace coordination with the MARLE and the airspace control authority (typically the JFACC) when HIMARS munitions exceed MAGTF airspace. Liaison elements can facilitate airspace coordination for deliberate and dynamic HIMARS missions. When munitions exceed JFC airspace, airspace coordination includes US Strategic Command.

The FAHQ's personnel liaise with the BCD, which facilitates the synchronization of air and Army ground operations within the JOA. The BCD expedites information exchange through coordination with JAOC division or teams as BCD personnel are trained to operate in the JAOC environment using both Army systems and joint air C2 systems, and understand the operations process, joint C2 processes, and air component processes.

Another consideration for airspace coordination is civilian airspace. The FAHQ's personnel assist with developing processes to facilitate airspace coordination with civilian agencies to ensure proper deconfliction of civilian aircraft.

The most common method to coordinate airspace control is ACMs. The preferred ACM used during HIMARS employment is the SSMS ROZ (see Figure 6-3). An SSMS ROZ is airspace of defined dimensions designed specifically for Army Tactical Missile Systems, GMLRS, and Tomahawk land-attack missile launch point, route of flight, and impact points. Compared to other methods, the SSMS minimizes the impact to airspace when coordinating missile fires.

The FAHQ's liaison elements can provide SMEs to facilitate airspace coordination during planning and execution. For example, during the MCPP, FAHQ personnel can assist with developing HIMARS and MLRS airspace coordination procedures for incorporation into Annex W (Aviation Operations) of the MAGTF OPORD. The FAHQ's personnel can assist with C2 procedure and systems integration to ensure SSMS ROZ data generated by the AFATDS is properly employed. During the battle rhythm, FAHQ personnel can assist with planning deliberate HIMARS missions to include developing preplanned ACMs for incorporation into the ACO. During execution, FAHQ personnel can assist with dynamic airspace coordination for dynamic targeting and counterfire missions.

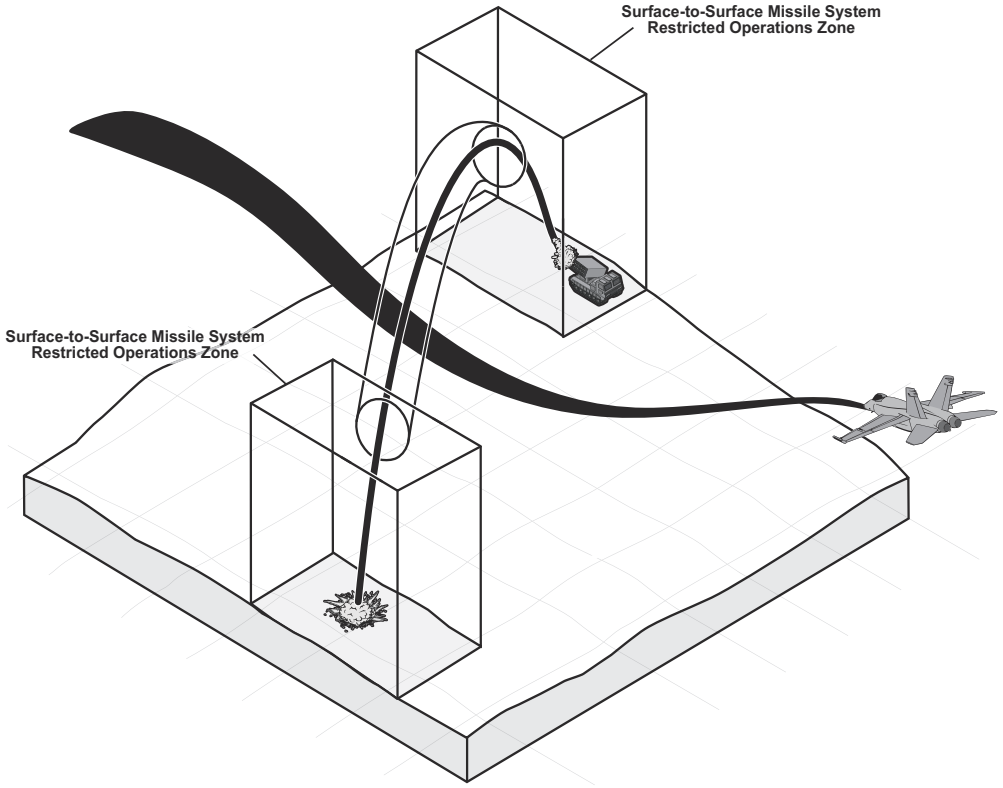

Figure 6-3. Example Surface-to-Surface Missile System Restricted Operations Zone.

MARITIME CONSIDERATIONS

The FAHQ's liaison elements coordinate with maritime organizations to provide SMEs regarding HIMARS or other surface fires employment considerations. The FAHQ augments can integrate into the US Navy agencies (e.g., supporting arms coordination center [SACC] or Navy TACC). The FAHQ's personnel can also integrate with the MAGTF and JFMCC staff to provide SMEs regarding required coordination for most HIMARS maintenance items, as well as the proper ordering, embarkation, movement, and storage of the MLRS family of munitions.

TARGETING AND COUNTERFIRE

Personnel in the FAHQ can facilitate planning and execution of MAGTF targeting tasks. The following paragraphs discuss FAHQ considerations applicable to targeting tasks, focusing on the targeting and counterfire tasks.

Deliberate Targeting

The FAHQ's personnel facilitate MAGTF deliberate targeting in multiple ways. They assist FECC FOPS personnel with deliberate surface fires coordination during the battle rhythm to include the following:

- FAHQ personnel can assist with developing surface fires detail on the MIPTL and the cut line process.
- If aviation forces determine they cannot attack targets assigned to them during the ATO planning cycle (because of maintenance, weather, munitions shortages, or other factors), surface fires can attack targets previously assigned to aviation assets.
- If desired effects are not realized on deliberate targets, the FECC and FAHQ can coordinate reattack of these targets with surface fires using a compressed deliberate targeting process (typically between 12-24 hours).

Liaison elements from the FAHQ can integrate with the ACE to facilitate deliberate targeting, ATO integration, and surface fires airspace coordination. Deliberate targeting allows FAHQ personnel to develop and incorporate proper ACMs associated with planned surface fires engagements in the ACO. Additionally, FAHQ personnel can also coordinate with the IOC to facilitate deliberate targeting, collections, and combat assessment requirements.

Dynamic Targeting

The FAHQ typically participates in dynamic targeting collaboration, providing input and recommendations, and coordinating target engagements. After determining a target is actionable, the FECC current fires officer can assign target engagement to firing agencies of the FAHQ. For targets engaged with HIMARS or MLRS, the FAHQ facilitates airspace coordination through appropriate MACCS and external airspace agencies. After target engagement, the FAHQ coordinates with the IOC and target intelligence to facilitate Phase One BDA information flow and provide reattack recommendations to the current fires officer as appropriate.

Counterfire

The FECC is responsible for planning, coordinating, and directing MAGTF counterfire operations. There are two basic options to coordinate and direct the MAGTF counterfire fight: retain control at the MAGTF command element or delegate counterfire coordination and direction responsibilities to subordinate commanders. Based on mission requirements, MAGTFs can delegate all or portions of counterfire coordination and direction responsibilities to the FAHQ. The GCE typically directs counterbattery operations inside its boundaries, while the FECC, ACE, and FAHQ coordinate MAGTF counterfire actions throughout the battlespace.

During planning, FAHQ personnel provide counterfire input to MAGTF and MSC OPORDs and FRAGOs during OPTs, as well as provide input to the MAGTF counterfire plan during the battle rhythm.

The FAHQ personnel primarily coordinate proactive counterfire through deliberate targeting. MAGTFs employ dynamic (reactive) counterfire procedures that are integrated with other fires procedures (e.g., dynamic targeting procedures) to ensure unity of effort. The FECC establishes appropriate collaboration and quick-fire nets to support dynamic targeting and counterfire. Force artillery headquarters personnel are integrated into, and actively participate in, MAGTF

counterfire and dynamic targeting procedures to include fires collaboration networks. If the FAHQ is delegated counterfire coordination and direction responsibilities, it establishes a CFCC (in the MAGTF COC or the FAHQ COC) to direct MAGTF counterfire functions, which includes leading the MAGTF counterfire collaboration network.

LOGISTICS

The MLRS family of munitions is a low-density item and requires MAGTF coordination with Service- and theater-level logistic organizations. Since the FAHQ is not organic to a MAGTF, coordination with logistical agencies must be established. Logistic planners in the FAHQ can assist the MAGTF G-4 with planning and coordinating unique requirements associated with embarkation, movement, maintenance, and resupply of artillery units. The size of the MAGTF area of operations and unique ammunition and support equipment used by artillery units might require external support and subsequent coordination with theater- or joint- logistical agencies. A MAGTF might need to coordinate host-nation or Service-unique logistic support. Specifically, a MAGTF needs to coordinate with appropriate movement control centers to facilitate ground-based transportation into and within the MAGTF area of operations.

The FAHQ liaisons would work with logistics planners to identify logistical infrastructure nodes, aerial ports and seaports of embarkation and debarkation. Considerations for ground transportation of artillery systems should include trailer transportation for long distances and self-transportation for short distances, depending upon terrain and equipment availability. Ground transportation for MLRS family of munitions also has unique considerations. While the HIMARS resupply systems provides organic transportation of up to four missile pods per vehicle, it should not be the main planning factor for ground transportation of the munition. Amphibious (L-Class) shipping of ammunition is limited because the size of the system and the munitions. Most ship-based ammunition magazines are too small to store any quantity of MLRS family of munitions, and the transportation of MLRS family of munitions is limited because of its weight. Depending on the size of the HIMARS element being transported, sea-based transportation might not be efficient because of the quantity and size of equipment being transported. Multiple air platforms can transport HIMARS and associated munitions. The HIMARS units should tether to airfields to better facilitate movement of the system and the resupply of MLRS family of munitions.

CHAPTER 7.
MARITIME FIRES AND EFFECTS

FIRES AND EFFECTS IN MARITIME OPERATIONS

The terms *naval* and *maritime* forces are used to encompass Navy, Marine Corps, and Coast Guard personnel, weapon systems, and organizations. Maritime operations include any actions performed by maritime forces to gain or exploit command of the sea, sea control, or sea denial, or to project power from the sea. A maritime force is any force constituted by the JFC to achieve operational objectives at sea or to achieve an objective on land from the sea. Joint maritime operations are performed with maritime forces, and other forces assigned, attached, or made available, in support of the JFC's operation or campaign objectives or in support of other components of the joint force. Maritime forces operate on, under, and above the sea to gain or exploit command of the sea, sea control, or sea denial and project power from the sea. Maritime forces are mostly a self-deploying, self-sustaining, sea-based expeditionary force and a combined-arms team. A naval operation is the process of carrying on or training for naval combat to gain the objectives of any battle or campaign. Naval operations are actions (or performance of naval missions) that may be strategic, operational, tactical, logistic, or training. Naval forces employ five functions, which are sea control, power projection, deterrence, maritime security, and sealift in a combined-arms approach to provide a unique comparative advantage for the joint force.

Naval and maritime operations are dynamic in nature. Marine Corps integration into the Navy's composite warfare commander (CWC) structure is ongoing with development of TTP. Fleet Marine Forces should participate in developing and refining Navy TTP and products such as fleet CONOPS, tactical memorandums, tactical bulletins, etc.

The Marine Corps must be able to fight at sea, from the sea, and from the land to the sea; operate and persist within range of enemy and adversary long-range fires; maneuver across the seaward and landward portions of complex littorals; and sense, shoot, and sustain while combining actions in the physical domains and information environment to achieve desired effects. The following sections provide general considerations for integrating fires and effects into a maritime component using—

- Command and support relationships.
- C2 organizations and communications, computer, and C2 systems
- Processes and procedures.

Command and Support Relationships

The JFC can directly task maritime forces or designate a JFMCC. The structures and organizational title used in this document could also be applied in multinational operations with the appropriate identifier (e.g., *multinational, combined*) in place of the term joint. The Service component commander with the preponderance of maritime forces and the ability to command and control those forces is designated as the JFMCC. The JFMCC exercises operational control (OPCON) as a Service component commander over their own Service forces and tactical control (TACON) as a functional component commander over other Services forces made available for tasking.

Naval command relationships are based on a philosophy of mission command involving centralized guidance, collaborative planning, and decentralized control and execution reinforced by command by negation. When planning maritime operations, the JFMCC coordinates closely with higher, adjacent, and subordinate commanders (including appropriate FMF commanders) to develop appropriate command and support relationships (i.e., OPCON, TACON, and supporting or supported relationships). Command and support relationships vary by operation, and often change over the course of an operation.

Command and support relationships are published in applicable directives and orders. An establishing directive is issued to specify the purpose of support relationships, the effects desired, the objectives, and the scope of the action to be taken. An establishing directive can—

- Establish air, maritime, ground, and cyberspace MCMs.
- Develop joint air support requests.
- Develop target nominations.
- Establish FSCMs, integrate air defense, and the role of coordination centers.
- Develop current enemy situation and joint intelligence preparation of the operational environment to guide the joint operation planning process, intelligence collection plan, and ISR strategy.
- Develop force protection responsibilities.

When a JFMCC is established, the JFC typically designates a maritime area of operations. As the supported commander within the area of operations, the JFMCC is responsible for integrating and synchronizing maneuver, fires, and interdiction, and has the authority to designate target priority, effects, and timing of fires within the maritime area of operations. The JFMCC plans the employment of operational fires within the maritime area of operations to develop and integrate multidimensional attacks on the enemy's COGs and shape the JFMCC's area of operations. In addition, the JFC tasks the JFMCC to provide sea-based fires in support of other components or HHQ requirements.

The JFMCC typically uses organic capabilities to engage targets within its area of operations. Maritime forces conduct tactical fires within the maritime area of operations against targets on the JTL; enemy combatant ships, submarines, aircraft, land targets; and other maritime dynamic targets. If the maritime force has insufficient organic assets to engage targets within the maritime area of operations, or if maritime targets are outside the maritime area of operations, the targets

can be nominated for joint targeting or engagement by joint forces. The maritime force routinely offers excess strike assets for use in joint missions or as required by other components. The JFMCC's targeting functions and responsibilities include the following:

- Conducting target development.
- Advising the JFC on the application of maritime operational fires.
- Providing apportionment recommendations to the JFC.
- Developing targeting guidance and priorities.
- Coordinating components dynamic targeting via established procedures.

Refer to JP 3-32, *Joint Maritime Operations* for more information on the JFMCC's targeting functions and responsibilities.

The JFMCC can subdivide some or all its area of operations or establish maneuver space for subordinate elements. If the JFMCC assigns a MAGTF commander an area of operations, the MAGTF commander typically becomes a supported commander assuming responsibility to plan, coordinate, direct, and assess employment of fires and effects within its assigned area of operations. A JFMCC can designate a MAGTF commander as a supported commander for specific missions, functions, or operations; as such the MAGTF commander is responsible for planning, coordinating, directing, and assessing employment of fires and effects for assigned missions, functions, or operations. When not assigned an area of operations or designated a supported commander, the MAGTF commander and battle staff advises, assists, and coordinates with the JFMCC to integrate MAGTF fires and effects into the maritime effort.

The JFMCC and MAGTF commander coordinate to develop and disseminate appropriate fires and effects related authorities (see Chapter 3). Fires and effects related authorities vary by operation requirements, and often change over the course of an operation. Authorities are published in appropriate directives and orders and should be promptly disseminated to ensure subordinate commands and executing agencies employ fires and information capabilities consistent with commander's intent.

Command and Control Organizations

Marine Corps agencies coordinate with other maritime organizations to synchronize operations and ensure unity of effort. There are several options available to facilitate maritime and Marine Corps coordination to include physically integrating personnel into battle staffs; collaborating between battle staffs via virtual collaboration means; and establishing liaisons. Effective coordination requires combining battle staff integration, virtual collaboration, and liaison. Coordination requirements vary to meet operation requirements, and often change during an operation. In general, maritime and Marine Corps fires and effects personnel coordinate across the planning horizons, focusing on synchronizing fires, intelligence, aviation, and information-related activities to ensure unity of effort.

In the case of maritime air defense regions, the JFMCC may recommend a subordinate maritime commander who possesses planning and C2 capabilities to the AADC for assignment as a regional air defense commander (also called RADC) or SADC.

The MOC IAMD cell serves as the JFMCC's primary planning and execution coordination conduit with HHQ, other Service components, subordinate forces, and outside support agencies for IAMD requirements. The IAMD cell helps develop the area air defense plan and provides subordinate AMD planners a conduit for providing recommendations and adjustments to the plan. If a subordinate task force commander is designated as a regional air defense commander, the MOC's IAMD cell assists with coordination.

Marine Corps agencies coordinate with other maritime fires and effects organizations at the operational and tactical levels of warfare. At the operational level of warfare, the MOC is the US Navy construct in which a JFMCC organizes a maritime headquarters to facilitate decision making, synchronize functions, and exercise command and control. For more information about Navy operational command and control, see Navy Warfare Publication (NWP) 3-32, *Maritime Operations at the Operational Level of War*; NWP 3-56, *Composite Warfare: Maritime Operations at the Tactical Level of War;* and Navy Tactics, Techniques, and Procedures (NTTP) 3-32.1, *Maritime Operations Center.*

Maritime Operations Center. The Navy MOC provides a structure to support the JFMCC decision cycle and set conditions for assigned forces to ensure they can execute JFMCC's CONOPS. The MOC links tactics and strategy by establishing operational objectives and conditions for achieving strategic objectives; sequencing events to create operational conditions; and applying resources to execute and sustain these events. The MOC uses a functional and cross-functional approach to organize the JFMCC battle staff. The structure, organization, and staffing of MOC teams vary to meet operation requirements and may change over the course of an operation.

Functional teams such as centers and cells form the core of the MOC. These teams are subordinate staff elements aligned with the classic N-code structure. Cross-functional teams established within an MOC include functional boards, working groups, and planning teams. These teams fall under the principal oversight of staff directorates who typically chair or participate within boards, working groups, and planning teams for which they are responsible.

Typically, MEF FECCs establish a partnership or habitual relationship with appropriate naval component and numbered fleet commands. The MOC and Marine Corps fires and effects personnel coordinate using a combination of battle staff integration, virtual collaboration, and liaison. The MOC's functional and cross-functional team members can be distributed in a combination of reachback, forward ashore, and afloat elements based on the commander's intent, priorities, and CONOPS. Regardless of location, all elements of the MOC are synchronized through the battle rhythm to meet the knowledge and information needs of the commander and staff.

Marine Corps personnel coordinate and synchronize fires and effects with MOC functional teams to include the following:

- COPS, FOPS, and future plans.
- Maritime intelligence operations center.
- Intelligence plans cell.
- Intelligence operations cell.
- Collection management cell.

- Fires element.
- Tomahawk land-attack missile cell.
- IAMD cell.
- Information operations cell.
- Air component coordination element or maritime air operations cell.

Marine Corps personnel participate in MOC fires and effects related cross-functional teams to include the following:

- Targeting and effects coordination board.
- Collection management board.
- OPTs.
- Intelligence synchronization group.
- Collection management working group.
- Information operations working group (US Navy).
- Force protection or threat working group.
- Fires and targeting working group.
- Space support working group.
- Cyberspace and electromagnetic warfare working group.

The JFMCC typically delegates authority to plan and execute tactical missions to subordinate task force or task group commanders. This enables the JFMCC and the MOC to focus on the operational level and empowers subordinate commanders to employ their forces in support of commander's CONOPS at the tactical level via the US Navy CWC structure.

Composite Warfare. Navy tactical commanders typically exercise command and control over assigned forces through use of composite warfare doctrine. Navy composite warfare doctrine provides guidance on organization of US Navy tactical forces and a framework to decentralize execution at the tactical level of warfare. The composite warfare organization enables accomplishment of both offensive and defensive mission objectives and provides commanders options to organize and employ forces independently or as part of a joint force and conduct operations in any domain. Table 7-1 lists typical warfare commanders, functional group commanders, and coordinators who support the Navy's CWC structure.

Table 7-1. Warfare Commanders, Functional Group Commanders, and Coordinators.

		Warfare Commanders	Functional Group Commanders	Coordinators
Officer in Tactical Command	Composite Warfare Commander	Air and Missile Defense Commander	Ballistic Missile Defense Commander	Airspace Control Authority
		Information Warfare Commander	Maritime Interception Operations Commander	Air Resource Element Coordinator
		Sea Combat Commander: • Antisubmarine Warfare Commander • Surface Warfare Commander	Mine Warfare Commander	Cryptologic Resource Coordinator
		Strike Warfare Commander	Screen Commander	Common Tactical Picture Manager
			Underway Replenishment Group Commander	Force Track Coordinator
				Helicopter Element Coordinator
				Launch Area Coordinator
				Submarine Operations Coordinating Authority

MAGTF and Navy composite warfare fires and effects personnel coordinate by integrating planning, virtually collaborating, or liaising. Marine Corps personnel coordinate and synchronize MAGTF fires and effects with the applicable personnel listed in Table 7-1.

Command, Control, Communications, and Computer Systems. Conducting modern maritime operations requires command, control, communications, and computer systems that support planning and execution from the strategic to tactical levels. The Navy must ensure its ability to command and control forces, which requires capabilities that permit commanders to exchange information and orders, employ fires, and assess the results as part of the joint force.

As the maritime component is inherently a distributed force, net-centric collaborative tools and technologies significantly improve information flow in a maritime force. Effectively employing maritime fires requires a cooperative effort between operational and tactical level commands. Operational-level commanders must have detailed awareness of tactical operations to make decisions, and information should flow down to the unit level and on-scene commanders. The JFMCC MOC, task force, task group operation centers, FMF fires and effects agencies, and individual units require common collaborative capabilities compatible with other joint or component operating centers. The FMF must integrate its activities into evolving maritime command, control, communications, computers, and intelligence systems (e.g., the naval operational architecture, to include the naval tactical grid).

Common understanding (shared situation awareness) is a comprehensive knowledge across the maritime force of the tactical problem and the desired end state as it progresses. Common understanding provides the means for decision makers to collaborate in making effective group decisions that lead to synchronized, unified, and efficient execution. Common understanding is primarily built on accurate common pictures to include:

- Common Operational Picture (COP). The COP provides situational awareness through a single, identical display of relevant information that is shared by and facilitate collaborative planning of more than one command.
- Common Maritime Picture (CMP). The CMP is "a maritime tactical picture fused together to represent a single operational component commander's input into the common operational picture" (*Navy Supplement to the DoD Dictionary of Military and Associated Terms*, hereafter referred to as the *Navy Dictionary).*
- Common Tactical Picture (CTP). The CTP integrates tactical information from the multi-tactical data link network, ground network, intelligence network, and sensor networks into an accurate and complete display of relevant tactical data.

The JFMCC is responsible for integrating communications systems and resources into the theater's networked communications system architecture, or COP. The MOC naval communication systems coordination center typically serves as the overall JFMCC COP or CMP manager, and the maritime IOC typically serves as the red-track database manager.

At the tactical level, the CTP enables common understanding and shared situational awareness that differs from the CMP or COP. Common tactical pictures are focused on the current, projected, and planned disposition of hostile, neutral, and friendly tracks that includes real-time, near-real-time, and non-real time data, directly or indirectly from national, theater, and tactical feeds via available communications links and feeds that provide additional fused and correlated data.

A key element to integrated maritime CTPs is effective tactical data link management. A tactical data link is a joint staff-approved, standardized communication link used for the transmission of digital information via a single or multiple network architecture and multiple communication media for exchange of tactical information. Tactical data links provide continuous exchange of information concerning friendly, hostile, and unidentified space, air, land, surface, and subsurface tracks. In addition, information on friendly units, the status of weapons and engagements, and other tactical data may be exchanged. Tactical data links provide commanders with the capability to digitally collaborate with higher, adjacent, and subordinate fires and effects agencies. Examples of tactical data links include TDL A (Link 11); TDL J (Link 16); Joint Tactical Information Distribution System; and common data link.

Maritime planners coordinate to integrate fires and effects systems required to support effective planning, coordination, and execution of fires. Maritime forces employ various C2 systems and applications to perform fires and tactical functions. At the tactical level, common understanding

and shared situational awareness is facilitated through continuous inputs by multiple watch standers into collaboration tools to include the following (list reflects current programs of record, not accounting for future programs):

- SIPRNET [SECRET Internet Protocol Router Network] access.
- CTP (Global Command and Control System, C2 computer).
- Dynamic fires tool (i.e., JADOCS).
- Ground fires manager (AFATDS for ground and amphibious forces).
- TBMCS (e.g., ATO manager or viewer; execution status and monitoring).
- Collaboration tools and Internet relay chat.
- E-mail.
- Dual-screen display.

For additional information about maritime employment of fires and effects C2 systems, see NWP 3-09, *Navy Fire Support*, and NTTP 3-60.2, *Maritime Dynamic Targeting*.

The JADOCS is the principal tool for joint and Navy dynamic targeting collaboration, information sharing, and command and control. The JADOCS is used to provide common understanding and rapidly coordinate dynamic targeting requirements among CWCs, the MAGTF, the MOC, other components, and the JFC. The JADOCS should be accessible to as many tactical units as possible.

Processes and Procedures

Maritime fires encompass numerous tasks, missions, and processes, to include—

- Conducting organic maritime and joint targeting.
- Providing joint fire support and joint fires to assist joint forces to move, maneuver, and control territory, populations, airspace, and key waters.
- Countering air and missile threats to integrate offensive and defensive operations and capabilities to attain and maintain a desired degree of air superiority and force protection.
- Diverting, disrupting, delaying, or destroying the enemy's military surface capabilities.
- Conducting strategic attack, to include offensive action against military, political, economic, or other targets that are selected specifically to achieve strategic objectives.
- Employing information capabilities.
- Assessing the results of employing fires.

The JFMCC is responsible for coordinating overall maritime fires and effects planning. Maritime planners coordinate to integrate and synchronize fires and effects processes and procedures using a top-down guidance and bottom-up development approach. Integrating and synchronizing fires requires a coordinated effort and input from all echelons. In general, the JFMCC focuses on developing and coordinating fires processes at the operational level, and subordinate commands focus on developing, coordinating, and executing fires procedures at the tactical level. For example, the MOC and FECC coordinate during planning to develop integrated fires processes at the operational level. At the tactical level, subordinate command planners coordinate with MOC and FECC planners to develop integrated fires and effects procedures.

Maritime planners develop and coordinate fires and effects processes and procedures specific to an operation or theater. Planners ensure maritime fires and effects processes, procedures, and systems are consistent with and support HHQ processes, procedures, and systems. Maritime fires and effects processes and procedures are disseminated via appropriate orders, directives, and TACSOPs.

Decentralized execution provides unit commanders and agencies freedom and flexibility to execute missions and delivery tactics if they are consistent with commander's intent, desired effects, and fall within ROE. Decentralized execution makes it possible to generate the required operational tempo while coping with the fog of war. Integrating Marine Corps and Navy fires processes and procedures facilitates decentralized execution, which increases speed, agility, and precision of fires and effects.

Many Navy and Marine Corps fires and effects tasks are similar. For example, Navy and Marine Corps targeting processes share many of the same tenets (e.g., employ a six-phase construct and an objective-to-task methodology; use a prioritized target list to plan or engage targets with organic capabilities within the assigned area of operations; conduct targeting assessment). However, there are differences between Navy and Marine Corps fires processes and procedures. For example, MAGTFs do not typically conduct strategic attack; however, MAGTFs can provide forces and capabilities to facilitate strategic attack directed by a JFMCC and JFC. Also, there are fires processes and procedures unique to maritime operations to include the following:

- Surface warfare.
- Mine warfare.
- Antisubmarine warfare.
- Strike warfare.
- Naval aviation warfare.
- Air operations in maritime surface warfare.
- Tomahawk land-attack missile employment.
- NSFS.

The MAGTF should be mindful that fires procedures applicable to joint land operations often differ from and may not apply to maritime operations. As maritime operations have unique fires considerations, FMF should understand well-established maritime doctrinal processes and procedures. For more information on maritime fires and effects processes and procedures, see the following publications:

- JP 3-02, *Amphibious Operations.*
- JP 3-32.
- NWP 3-09.
- NWP 3-30, *Maritime Command and Control of Air Operations (Organization and Processes).*
- NTTP 3-02.2M, *Supporting Arms Coordination in Amphibious Operations.*
- NTTP 3-32.1.
- NTTP 3-60.2.

- MCTP 10-10B.
- MCTP 13-10G, *Defense of the Amphibious Task Force.*
- MCRP 3-20.1.
- MCRP 3-20D.1.
- MCRP 3-20.2, *Multi-Service Tactics, Techniques, and Procedures for Air Operations in Maritime Surface Warfare.*
- MCRP 3-31.5.

AMPHIBIOUS OPERATIONS

An amphibious operation is launched from the sea by an amphibious force to conduct landing force operations within the littorals. The amphibious force, which is composed of an amphibious task force (ATF), a landing force, and other force, is specifically trained, organized, and equipped to conduct amphibious operations. The littorals include those land areas (and their adjacent sea and associated airspace) that are predominantly susceptible to engagement and influence from the sea and may reach far inland. Amphibious operations use maneuver principles to transition ready-to-fight combat forces from the sea to the shore to achieve a position of advantage over the enemy. Certain amphibious operations (amphibious assaults and raids) seek to exploit the element of surprise and capitalize on enemy weakness by projecting and applying combat power precisely at the most advantageous location and time. MAGTFs conduct other amphibious operations to—

- Deceive an enemy by show of force (amphibious demonstration).
- Extract forces by sea in ships or crafts (amphibious withdrawal).
- Contribute to conflict prevention and crisis mitigation (amphibious support to crisis response and other operations).

For additional information about amphibious operations, see JP 3-02 and JP 3-18, *Joint Forcible Entry Operations.*

COMMAND AND CONTROL

The initiating directive designates a Navy officer as the commander, amphibious task force (CATF). The initiating directive also designates an officer as the commander, landing force (CLF) for the landing force for an amphibious operation. The JFC establishes unity of command over amphibious forces by either retaining OPCON over the Service or functional component commands executing the amphibious operation, or by delegating OPCON or TACON amphibious force. The JFC may remain the common superior to the CATF and CLF or delegate this responsibility to a subordinate commander.

Typically, commanders establish a support relationship among themselves. In amphibious operations, the supported commander refers to the amphibious force commander, which is either the CATF or the CLF, who has been delegated the command authority to plan and coordinate fires and effects for either the entire amphibious operation; a particular phase or stage of the operation; a particular function; or a combination of phases, stages, events, and functions.

Amphibious operations generally include the following fires and effects C2 organizations: SACC, Navy TACC, air defense agencies, FECC, FSCC, and MACCS agencies. For additional information describing amphibious operation fires and associated organizations, see JP 3-02; MCTP 3-31A, *Supporting Arms Coordination in Amphibious Operations*; and MCTP 13-10G.

AMPHIBIOUS FORCES FIRES AND EFFECTS PLANNING

Fires and effects planning is an integral element of the amphibious force single-battle concept. The commander's guidance should articulate a desired end state and objectives, as well as desired effects and how these effects will contribute to the overall success of the operation. Detailed integration of ATF and landing force fires, intelligence, information, and aviation C2 agencies is necessary.

The various amphibious force commanders have equal influence in planning matters, and planning decisions should be reached on a basis of free exchange of information and common understanding of the mission, objectives, and TTP. Typically, the CATF is responsible for planning and preparing overall NSFS plan, which allocates gunfire support ships and facilities and determines fire support areas. The CLF is responsible for determining the NSFS landing force requirements, which includes selecting targets to be attacked in pre-assault operations; those to be fired on, supporting the landing force assault; and the timing of these fires in relation to the landing force scheme of maneuver. When designated the supported commander, the CLF coordinates the timing, priorities, and desired effects of fires within the operational area. The CLF establishes a fire support coordination agency at each appropriate level of the landing force to accomplish fire support coordination responsibilities during planning and execution of the operation. The CLF can use a FEC to supervise the SACC and provide personnel to assist in the operation of the SACC. The CLF supports defending the ATF. See MCTP 13-10G for defense planning considerations.

Fires planning for an amphibious operation has two distinct but related aspects: shaping the operational environment prior to the action phase, and determining amphibious force fires and effects during the action phase. For each phase in the amphibious operation, the CLF coordinates fires requirements with the CATF. Based on these requirements, the supported commander tentatively allocates aircraft and fire support ships as a basis for planning. This allocation appears in fires plans (orders), and is refined during the amphibious force battle rhythm activities.

Amphibious Operational Areas

Amphibious operations typically require a three-dimensional operational area enclosing the objective(s) the amphibious force is to secure. Operational areas that are assigned to an amphibious force include an amphibious objective area or an area of operations in conjunction with a high-density airspace control zone. An amphibious force operational area should be of

sufficient size for conducting necessary maritime, air, and land operations in direct support of the amphibious operation but not so large as to be beyond the supported commander's control capability or ability to defend. Establishing and disestablishing an amphibious force operational area is typically the decision of the establishing authority, delineated in directives and follow-on orders, and incorporates applicable CATF and CLF recommendations.

Shaping the Operational Environment

Prior to executing an amphibious operation, the amphibious force supported commander seeks to shape the operational environment. The JFC and JFMCC can use maritime and joint forces to prepare the amphibious objective area prior to the commencement of the amphibious operation. The way shaping operations are conducted depends on the amphibious operation. Shaping operations include supporting and prelanding operations.

Supporting operations establish the conditions for an amphibious operation (e.g., gaining air and maritime superiority). The JFC or common superior commander directs supporting operations, typically in response to CATF and CLF requests. Naval, air, and SOF forces typically conduct supporting operations, which can occur at any time before or after H-hour.

A JFC or JFMCC can assign an amphibious advance force to conduct shaping operations in the amphibious operational area prior to the arrival of the amphibious force. The amphibious advance force commander controls air operations in the designated area through an air control agency tailored and trained for the mission. Amphibious advance force operations may require a fires agency to coordinate shaping fires (e.g., an advance force SACC). The landing force CONOPS should not assume that the amphibious advance force will be available for tasking as part of the support force. Upon the amphibious force's arrival, the amphibious advance force is usually disestablished, and forces revert to control of supported commanders to either continue conducting supporting operations or to conduct other JFC operations.

Prelanding operations take place between the amphibious force's arrival into the operational area and the ship-to-shore movement. Prelanding operations focus on the landing beaches, sites, and landing zones and readiness of the amphibious force to execute the mission. The CATF and CLF typically make final preparations of the landing area. Fires-related planning considerations for prelanding operations include the following:

- Demolition of visible obstacles, clearance of required mines, breaching of any remaining seaward minefields and barriers to and on the beach, overt marking of usable channels, direct action missions, target acquisition and spotting for NSFS, and initial terminal guidance for designated assault landings.
- Air operations in accordance with air support plans, including electromagnetic warfare, and preplanned air strikes against enemy installations en route to and in the vicinity of beaches, drop zones, landing zones, targets of opportunity, and mines and obstacles in the surf zone and on the beach.
- NSFS in accordance with the NSFS plan, including destruction or neutralization of enemy installations that might interfere with the approach and final deployment of the amphibious force or otherwise interfere with the operation.

- Artillery support on landing areas in accordance with artillery fire support plans if artillery has been put in place during prelanding operations.
- Ammunition (e.g., naval, aviation ordnance, artillery) expenditure and fuel consumption prior to the landing.
- Resupply and rearming schedule for the amphibious force.
- Landing force requirement to support other forces prior to and after D-day.

Amphibious Force 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). 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 coordination requirements. Subordinate landing force commanders submit fire support requirements to the CLF. The CLF submits air and NSFS requirements for each operational phase to the supported commander, who has the command authority to plan and coordinate fires. The CLF reviews and revises the requirements as detailed planning progresses.

The landing force fire support requirements become the basis for landing force fire support plans. They should 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. Landing force fires planners should submit requirements in sufficient detail for approval and implementation by the supported commander.

Amphibious Force Fire Support Plan

When developing the amphibious force fire support plan, the supported commander publishes guidance for fires. Based on commander's guidance and CONOPS, supporting and subordinate commanders and fire support personnel determine the role of fire support in the plan. Planners develop the fire support plan in close alignment with the landing force plan for operations.

The supporting arms coordinator and FEC oversee the preparation of the amphibious force fire support plan with the assistance of air, NSFS, and artillery representatives. The amphibious force fire support plan accommodates fire support requirements of subordinate units and ensures fire support plans are integrated and resourced. 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 feasible and coordinated with overall amphibious force requirements. The fire support plan should employ a flexible, parallel C2 architecture that allows for decentralized execution.

The CATF prepares the overall NSFS plan and establishes general policy on NSFS priorities, based on CLF and amphibious force requirements. The NSFS plan allocates gunfire support ships and designates fire support areas and fire support stations. The CLF determines landing force NSFS requirements, which includes target nominations during pre-assault and assault operations, and the timing of NSFS relative to the landing force scheme of maneuver. The MAGTF naval gunfire liaison officer provides information on the MAGTF CONOPS that allows the amphibious

force to produce an NSFS plan that meets MAGTF requirements. The CATF can pass NSFS control to the CLF once the necessary communications and control agencies are established ashore. The CLF then has the authority to assign NSFS missions directly to the fire support ships.

Ground-based fire support planning typically comes under the purview of the landing force. The amphibious force drafts its fire support plan to ensure that IDF systems (mortars and cannon or rocket artillery) are appropriately phased ashore and positioned to support the landing force scheme of maneuver. The landing force artillery fire plan incorporates the requirements of subordinate artillery units and fire support requirements of the landing force. The respective GCE FSCC coordinates with the supporting arms coordinator or FECC to develop artillery fire plans and integrate them into the amphibious force fire support plan. During execution, if it is not possible to coordinate artillery support at lower echelons, the SACC coordinates with air and NSFS assets.

From the beginning of the action phase until a short time after the first waves land, the landing force is typically supported by scheduled fires. Until the landing force's organic artillery is ashore, NSFS and aviation fixed- and rotary-wing assets are typically the primary means of landing force fire support. A portion of these assets can be tasked to defend the amphibious force, limiting their availability to the landing force. As such, subordinate amphibious force commands must the amphibious force apportionment and allocation processes address their requirements.

Once landing force control agencies (TACPs, forward observers, etc.) are ashore, the landing force typically begins calling for fires to support operations. After landing, landing force fire support agencies plan, coordinate, and execute fires at the lowest echelon possible. At each level, fire planners generate daily fire support plans as required and submit them to the next higher level.

Commanders at each level should—

- Provide input to the landing force fire support plan.
- Submit requirements for air, NSFS, information, and artillery fire support.
- Provide prioritized requests for NSFS and air support.
- Plan for and employ fire support agencies at each appropriate landing force echelon.
- Coordinate FSCMs, as required.

AMPHIBIOUS FORCE TARGETING

The fires and effects concepts and processes described in Chapter 4 generally apply to amphibious operations. The overarching framework for amphibious force targeting is the joint targeting cycle. However, amphibious force targeting processes and associated systems employed can vary by operation. Amphibious operation shaping and targeting is a collaborative effort, primarily led by the CATF and CLF. The supported commander typically coordinates the amphibious force's targeting process.

During planning, amphibious force fires and effects planers typically develop a prioritized amphibious force target list. The SACC, target information center (also referred to as TIC), amphibious force intelligence, and the supporting arms coordinator or FEC typically develop the recommended amphibious force target list. The supported commander approves the list. The amphibious force influences shaping of its designated operational area prior to its arrival through target nominations to HHQ and coordination with the amphibious advance force (if established).

During execution, the amphibious force establishes an integrated targeting battle rhythm plan that provides broad oversight for targeting and fires and effects functions. The battle rhythm activities provide guidance for synchronizing targeting and applying combat power to meet amphibious force objectives. The amphibious force targeting battle rhythm activities address CATF and CLF requirements, and coordinates and integrates fires throughout the amphibious force operational area. Amphibious force targeting timelines match JFC targeting and planning cycle timelines (72-96 hours out). The amphibious force provides liaison officers to coordinate amphibious force targeting requirements at higher echelon targeting battle rhythm activities (i.e., HHQ component targeting working group and board and JTCB).

The amphibious force targeting working group and board meet daily to refine and synchronize amphibious force targeting and fire support plans. The CATF, CLF, other MSCs and MSEs, and adjacent and supporting units provide staff for the targeting working group and board. In addition, other key staff, such as intelligence, information, aviation, operations, plans, staff judge advocates, are represented. The supported commander exercises final approval authority over the amphibious force targeting and fire support plans. The deputy commander of the supported command, or designated representative, chairs the targeting board.

The amphibious force targeting working group and board functions and output include the following:

- Review, assess, refine, integrate, and synchronize amphibious force targeting and fire support plans.
- Develop and promulgate amphibious force targeting guidance.
- Integrate MSC and MSE target nominations with amphibious force targeting requirements to form the amphibious force target list (supported commander approves).
- Provides apportionment guidance for organic resources (supported commander approves).
- Address conflicting requirements in the prioritization process.
- Coordinate amphibious force fires input and requests (e.g., TDNs, TNLs, recommended ROE changes, requests for external support) with joint and component HHQs.

During the battle rhythm, the joint information center collects available target data and forwards the data to the SACC's target information center. Targets identified for engagement by amphibious force organic assets are passed to appropriate agencies for refined mission planning and execution. Targets identified for engagement by external assets are coordinated with HHQ (e.g., via target nomination and ALLOREQ processes). See MCRP 3-31.5 and NTTP 3-60.2 for more information.

COMMAND AND CONTROL TRANSITION (AFLOAT AND ASHORE)

Applicable directives should outline support relationships among the HHQ commander, CATF, CLF, and other commanders supporting the amphibious operation. Unless limited by the establishing or initiating directive, the supported commander (CATF or the CLF) has the authority to exercise general direction of the supporting effort to include designating and prioritizing targets or objectives. Command support relationships, however, can shift during amphibious operations (see Table 7-2). As such, amphibious force commanders and battle staffs must consider support relationship changes, and carefully plan C2 roles and responsibilities. Fires and effects related planning factors to consider during amphibious force support relationship changes include—

- Control of air operations and fires; agency roles and responsibilities.
- ATO planning and production responsibilities.
- Targeting processes and agency responsibilities (producing the amphibious force target list, hosting targeting battle rhythm events, directing amphibious force dynamic targeting).

Table 7-2. Examples of Support Relationship Shifts in Amphibious Operations.

Mission	Supported Commander
Assault	CATF, then CLF
Raid with coastal threat	CATF, then CLF, then CATF
Inland raid with no coastal threat	CLF
Demonstration	CATF
Withdrawal	CLF, then CATF
Foreign humanitarian assistance	CATF or CLF
NOTE The establishing authority designated actual supported-supporting commanders based on the specific mission requirements.	

Pre-D-Day Operations

Prior to D-day, the airspace control authority and AADC, as designated by the JFC, are responsible for airspace control and air defense operations throughout the operational area. When an amphibious advance force is established, its commander controls air operations in the designated area through an air control agency. The amphibious advance force commander controls NSFS and can establish an advance force SACC to coordinate fires to support target engagement. Upon arrival in the objective area, the amphibious force supported commander assumes command and control of air operations and fires, which they can delegate to the Navy TACC and SACC respectively.

Retaining Command and Control Afloat

Depending on the amphibious operation, command and control can remain afloat and not transfer ashore. Forward-deployed Marine expeditionary units conducting small-scale operations routinely exercise command and control afloat. By doing so, the CLF can use the support capabilities inherent in Navy platforms while reducing the requirements for command and control and force protection ashore, thereby enhancing movement and maneuver. When afloat, the CLF and staff

plan, direct, and monitor landing force actions from the landing force operations center on the ATF's flagship. If command and control does not transition ashore, the Navy TACC and SACC provides control of air operation and fires respectively for landing force forces ashore.

Transitioning Command and Control Ashore

Depending on the amphibious operation being conducted, all, or selected C2 elements might transition ashore. For example, commanders might determine control of air operations should remain afloat, while certain fires elements should transition ashore and control fires. The CLF should consider the limitations of shipboard communications systems and the amount of space to conduct control, determining which, if any, control elements should transition ashore. If phased ashore, the landing force COC can assume control from the landing force operations center. Likewise, the supported commander can pass control of air operations or control of fires to the CLF after required landing force C2 capabilities are established ashore.

In some amphibious operations, such as an amphibious assault, the landing force should rapidly build its combat power ashore as the tactical situation allows. Because of their proximity to the action and situational awareness, forces ashore should take control of operations as soon as possible. For large-scale amphibious operations, the transition of control of fires and air operations ashore is complex and requires detail planning. A key challenge for amphibious planners is how to combine weapons platforms with their respective C2 systems in a way that enables commanders to eventually assume command and control ashore. Echeloning assault waves necessitates an incremental assumption of control by functional capability. Once weapons platforms and requisite C2 systems are ashore and aware of the situation, the supported commander can shift control of selected C2 functions to the CLF. In the following paragraphs, the term control refers to exercising direction of air operations or employment of fires by designated C2 agencies and entities.

Transitioning Control of Air Operations Ashore. During an amphibious operation, elements of both the Navy TACC and Marine TACC systems are employed to different degrees. The Navy TACC, working under the CATF, initially controls all air operations in the operational area regardless of mission or origin. As the operation proceeds, the CLF establishes aviation C2 systems and capabilities ashore that eventually become a Marine TACC. The CATF can incrementally pass responsibility for numerous C2 functions from the Navy TACC (e.g., control of direct air support can pass ashore before control of other aspects of air operations). When the Marine TACC ashore achieves its full capability, the CLF can assume full responsibility for control of air operations from the CATF. Aviation C2 functions are sequenced in five phases:

- Phase One. Various supporting arms controllers arrive ashore (TACPs, forward observers, and shore fire control party).
- Phase Two. The DASC and air support element (ASE) is established ashore.
- Phase Three. The TAOC moves ashore.
- Phase Four. The Marine TACC (or senior organization of the Marine air control group) is established ashore and functions as the Marine tactical air direction center (TADC) under control of the Navy TACC.
- Phase Five. Command and control responsibility of air operations is passed ashore and the Marine TADC assumes the role of the Marine TACC. Once the Marine TACC receives control of all landing force air operations, the Navy TACC may become the TADC (afloat) supporting the land-based air control agency.

Transitioning Control of Fires Ashore. The SACC begins passing control of fires to landing force agencies ashore as they are established ashore and reliable communications and coordination are established among the SACC, FSCC ashore, DASC or ASE, and Navy TACC. The landing force FSCC or FECC displace ashore, leaving sufficient personnel in the SACC to continue coordinating fires functions until the landing force agencies are functioning ashore. The FSCC is the first major landing force fires control agency to come ashore and typically lands in the same wave as the DASC or ASE. The process of passing control of fires ashore begins when the FSCC and DASC or ASE is ashore and establishes communications with the SACC and Navy TACC. The SACC incrementally phases control of fires to the FSCC(s) or FECC. After passing any or all control of fires to the CLF, Navy control centers afloat continue to monitor appropriate C2 communications and remain ready to resume control if required. Control of NSFS may pass to the CLF when control of fires is established ashore giving the CLF authority to assign NSFS missions directly to the NSFS ships. The CATF retains responsibility for the allocation of available NSFS ships, and for their logistical support. It also retains OPCON over the NSFS ships for functions other than fire support.

Passing control of fires to landing force maneuver elements as soon as they can control fires within their area of operations is essential to expedite clearance of fires. Large MAGTF amphibious operations (Marine expeditionary brigade- or MEF-sized) may include a GCE comprising multiple maneuver elements (battalions, regiments, or division) each with its own respective FSCC. During such operations, transitioning control of fires ashore to all these FSCCs might occur incrementally. As each maneuver element establishes sufficient C2 capabilities ashore, boundaries are established. Control of fires within those boundaries may be subsequently passed from the SACC to maneuver element FSCC(s). Until senior FSCCs (regiment, division) control capabilities are established ashore, the SACC retains control of fires for the remaining operational area and coordinates cross-boundary fires of adjacent maneuver elements. Once senior FSCC(s) establish capabilities ashore, the SACC can transfer control of fires within their respective boundaries to these FSCCs, who then assume responsibility to coordinate cross-boundary fires of subordinate maneuver elements.

The SACC may transfer control of fires to embarked landing force maneuver element FSCC(s), using the C2 spaces on L-Class ship(s) on which they are located. In such cases, the maneuver element FSCC assumes control of fires within its respective boundaries as described above. The landing force maneuver element FSCC(s) may subsequently transition ashore, maintaining control of fires within their respective boundaries.

For additional information about transitioning control of fires ashore, see the Passage of Control section of MCTP 3-31A, Appendix C.

Transition of Command and Control from Ashore to Afloat

In some situations, it might be necessary to pass control of fires or air operations from ashore back to afloat. This might happen if the FSCC, FECC, or Marine TACC lose the ability to control operations ashore. Also, command and control can transition from ashore to afloat during a planned retrograde phase of an operation. The C2 transition process can occur incrementally or all at once.

For additional information about naval and maritime operations, see JP 3-32 and Naval Doctrine Publication 1, *Naval Warfare.*

CHAPTER 8.
MAGTF FIRES AND EFFECTS IN JOINT OPERATIONS

Joint fire support comprises the fires that assist the joint force in creating effects and achieving objectives. Two or more component forces coordinate actions to deliver joint fires to create the desired effects in support of a common objective. A JFC establishes the C2 architectures and processes to facilitate dynamic targeting execution across the joint force (see Figure 8-1). When the Marine Corps is among the components employed, the MAGTF fire support assets must integrate and synchronize with JFC and theater C2 assets to effectively execute fires and effects in support of MAGTF and JFC objectives.

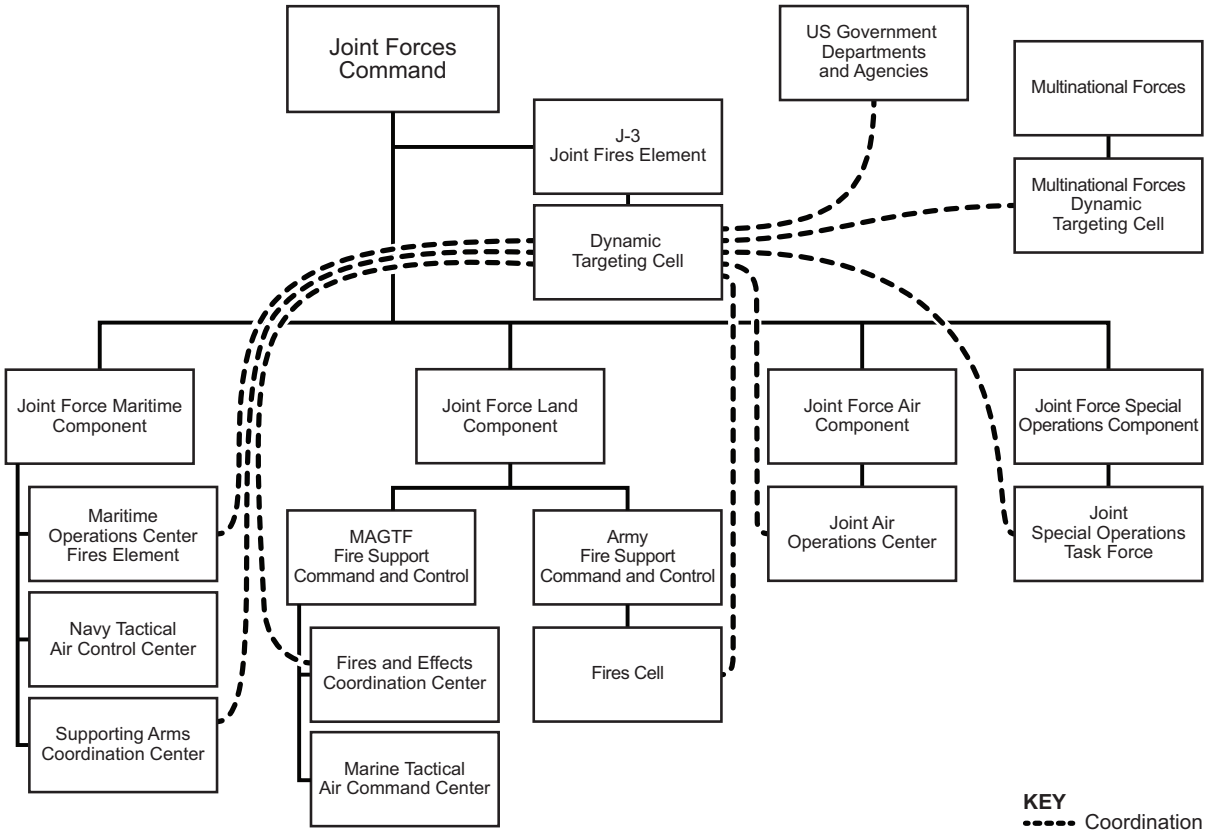

Figure 8-1. Notional Joint Dynamic Targeting Command and Control.

Joint fires assist air, land, maritime, and special operations forces efforts to maneuver and control territory, populations, airspace, and key waters. Combatant commands and JTFs establish fires agencies, elements, groups, or boards, as required, to support operations. Joint force commanders may establish a JFE and host events such as a JTCB to facilitate effective execution of joint fires

during operations. A JTF may establish subordinate JTFs that focus on specific functional aspects of operations with which MAGTF fires and effects planners may need to coordinate. These subordinate JTFs may include a joint civil-military operations task force, information task force, or joint military information support task force. For more information on joint fires and associated entities, see JP 3-09 and JP 3-60.

At the armed conflict level, Marines integrate with joint forces to conduct combat operations and defeat enemies. At the cooperation and competition level, Marines may conduct military operations and various missions, tasks, or activities in support of CCMD campaign plans. Whether deployed into an area of responsibility, or integrated into CCMD campaign or contingency plans, Marines coordinate with joint forces to ensure MAGTF fires and effects capabilities and activities are integrated into joint plans. The MAGTF fires and effects planners become familiar with respective threats, CCMD and component plans, and theater-specific fires and effects processes, procedures, and C2 systems. Fires and effects planners participate in various joint force activities such as exercises, OPTs, targeting processes, and battle rhythm events. For example, they maintain and update IPB products associated with joint plans on a continuous basis; submit TDNs for target entities and systems associated with their part in the plan; participate in or conduct OPTs to update associated support plans.

MAGTFs can task-organize to form the nucleus for a JTF, as a component under a JFC, or as a subordinate unit under a component (e.g., task-organized under a JFMCC or joint force land component commander). For further information on joint force command and control, refer to JP 3-30; JP 3-31, *Joint Land Operations*; JP 3-32; and JP 3-33, *Joint Force Headquarters*.

JOINT FIRES COORDINATION

MAGTFs can establish or exchange liaison elements with appropriate joint, other Service component, and subordinate commands to facilitate planning, coordination, integration, and deconfliction of AMD operations. If the JFACC is, or is collocated with, the AADC, the MARLE serves as the primary Marine Corps liaison. If the AADC is not located at the JAOC, establishing a separate Marine Corps liaison to the AADC should be considered. If the MAGTF relies on an Army AMD capability within their operational area, the Army ADAFCO [air defense artillery fire control officer] should be part of, or liaison with, operations centers that may have control of or support from Army AMD assets. If the MAGTF is task-organized under a JFMCC, appropriate liaisons should be established with the MOC IAMD cell and appropriate CWCs, functional group commanders, and coordinators.

The JFE is an optional staff element composed of representatives from the joint force headquarters directorates and J-3; the components (i.e., the Army fires cell or the Marine Corps FECC) and other staff elements, to include the J-2 targeting staff and J-5. The JFE synchronizes and coordinates fires and effects planning on behalf of the JFC. The JFE also assists the J-3 in accomplishing responsibilities and tasks as a staff advisor to the J-3 and may include any and all of the J-3 joint fires tasks with the JFC's approval. For additional JFE information, see Chairman of the Joint Chiefs of Staff Manual 3108.01, *Joint Fires Element*; JP 3-09; and JP 3-60.

MAGTFs can employ ANGLICO elements to provide a liaison capability between the MAGTF headquarters and subordinate or adjacent joint, allied, or coalition units with a focus on fire support coordination and execution of ground and aviation fire support assets. The level of support required is determined by the capability of the supported unit.

Regardless of command relationships, MAGTFs establish procedures and mechanisms to coordinate and integrate fires and effects with higher and adjacent commanders. The MAGTF FECC within the G-3 leads this coordination and integration effort. MAGTFs often employ liaisons or agencies to facilitate fires and effects coordination and integration. For example, a MARLE to the JFACC is typically established to facilitate integrating Marine aviation operations into joint air operations.

MAGTFs provide appropriate representatives to HHQ fires and effects agencies, elements, working groups, and boards. For example, the MAGTF or Marine component typically provides a senior Marine to the JTCB to clearly articulate MAGTF target nominations, objectives, and supporting rationale to the JFC.

Joint Fires Command and Control Considerations

Joint force commanders can establish support relationships among all functional and Service component commanders which define roles and responsibilities for joint fires planning and execution. Joint force commanders may designate supported commander(s) for specific missions, functions, or operations. Unless limited by the establishing directive, the supported commander has the authority to exercise general direction of the supporting effort to include designation and prioritization of targets or objectives, timing and duration of the supporting action, and other instructions necessary for coordination and efficiency. The supported commander provides joint fires requirements to supporting commander(s). Supporting commander(s) allocate resources based on joint fires requirements. Support relationships may be long-term, frequently repeated, or a one-time occurrence. A MAGTF may be a supported or a supporting command depending on JFC established command relationships and operation details.

Joint force commanders may establish land and maritime areas of operations to decentralize surface force operations, allow rapid maneuver, and provide the ability to fight at extended ranges. When designated by a JFC, surface force commanders are supported commanders responsible for integrating and synchronizing movement and maneuver with intelligence, fires, protection, sustainment, and employment of information capabilities within their respective area of operations. Accordingly, surface force commanders designate target priority, effects, and timing of fires within their respective areas of operation. Staffs and C2 agencies coordinate to synchronize joint fires to optimize effects and mitigate risks to friendly forces and civilians in the supported commander's area of operations.

Joint force commanders may designate commanders to execute theater and JOA-wide functions in coordination with other component commanders. For example, the JFC may designate the JFACC as the supported commander for theater or JOA-wide air interdiction, strategic attack, targeting, and airborne ISR (among other missions). Joint force commanders may designate the JFACC as the AADC and airspace control authority because the functions are integral to one another.

In coordination with surface force commanders, commanders tasked by a JFC to execute theater- or JOA-wide operations have the latitude to plan and execute them within land and maritime areas of operation. Commanders executing such operations within a land or maritime area of operations must coordinate the operation with the appropriate commander to avoid collateral effects and friendly fire incidents. If planned operations would cause collateral effects within a land or maritime area of operations, the commander assigned to execute the JOA-wide functions must readjust the plan, resolve the issue with the land or maritime component commander, or consult with the JFC for resolution.

Joint Fires Architecture and Networked Systems

Integrated C2 systems are required to support effective planning, coordination, and execution of fires. A clear understanding of the joint fires network architecture is required for effective integration and application of MAGTF fires and effects capabilities. The joint fires network architecture may vary based on CCMD, JTF task organization, command relationships, etc. The Marine Corps fire support system automates most fires C2 functions by using digital devices and data communications to collect, process, and distribute information quickly and accurately. It incorporates systems employed by the Marine Corps as well as joint C2 systems and web-based applications that require special training and certifications to operate in a joint environment.

The following are some C2 systems that facilitate the MAGTF capability to integrate fires and effects in a joint environment:

- MIDB. The MIDB is the national level repository for the general military intelligence available to the entire DoD intelligence information system community and, through Global Command and Control System integrated imagery and intelligence, to tactical units. For more information on MIDB, see CJCSI 3370.01, *Target Development Standards.*
- Joint Targeting Toolbox. The Joint Targeting Toolbox is the joint targeting program of record. It contains applications that support the execution of the entire targeting cycle to include commander's objectives, guidance and intent, generation of target lists in support of ATO production, execution, and combat assessment (e.g., BDA).
- TBMCS. The TBMCS is used by the JFACC and other air capable component commanders to collaboratively plan, direct, and control joint air operations in support of JFC objectives.
- AFATDS. The AFATDS is a multi-Service integrated fire support system that processes fire missions, air support requests, and other related information to coordinate and maximize the use of all fire support assets (i.e., mortars, field artillery, attack helicopters, air support, naval gunfire, electromagnetic attack).
- JADOCS. The JADOCS integrates communication, coordination, collaboration, and execution of joint and multinational targeting and fires.
- Theater-Air Ground System. Referred to as "TAGS," this system refers to organizations, personnel, equipment, and procedures that participate in planning and executing joint air-ground operations. It combines the Army air-ground system, Navy tactical air control system, MACCS, special operations air-ground system, and TACS. See MCRP 3-20.1, for more information.

For additional information, see JP 3-60; JP 6-0, *Joint Communications*; and MCRP 3-31.7.

JOINT INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE AND INFORMATION SUPPORT

In coordination with the G-3 and FECC, the ICC and IOC coordinate MAGTF requests for joint ISR and information support respectively in accordance with theater, JFC, and component procedures. Processes and formats to request ISR or information support are CCMD-, JFC-, component-dependent and can include the use of automated systems or tools to facilitate requests for joint ISR and information support. Joint force commanders and components can specify unique formats to request ISR and information support such as an electromagnetic attack request form, cyberspace effects request form, space support requests, or spreadsheet templates.

JOINT AIR SUPPORT

MAGTFs use the ALLOREQ process to request external joint air support during the battle rhythm. The ALLOREQ is a daily process coordinated between the JFACC and air-capable components and commands. MAGTFs provide the JFACC the following information during the ALLOREQ:

- Number of MAGTF TACAIR sorties provided to the JFC for tasking through the JFACC (sorties in support of the JFC air apportionment or excess sorties) by capable mission(s) and type aircraft to be flown during the air tasking day.
- Requests for external air support that exceed MAGTF capabilities. Requests for external air support may include preplanned CAS, air interdiction, air reconnaissance, surveillance, escort, airlift, and other air support missions as required.

In addition to the above information, MAGTFs provide the JFACC with additional information (MAGTF input to the ATO, aircraft flow, MIPTL, target planning worksheets, information activities, etc.) required to facilitate development of the joint MAAP.

The FECC, air center, ACE, and MARLE personnel coordinate MAGTF interaction with the JFACC during the ALLOREQ. MAGTFs may coordinate the ALLOREQ directly with the JFACC or via a HHQ component (task organization dependent). As a TACAIR-capable command, MAGTFs typically use the ALLOREQ vice submitting air support requests to the JFACC.

Contracts can be used to fulfill the ALLOREQ function, serving as agreements or standing ALLOREQs with a time period, and adjusted as necessary to accommodate both parties' operational constraints and MAAP planning factors. MAGTFs or Marine Corps components may coordinate contracts with the JFACC as required. Typically, JAOCs delineate ALLOREQ or contract requirements in the SPINS.

The JFACC reviews all ALLOREQs and responds with a sortie allotment message (SORTIEALOT) 12-18 hours before an ATO day commences. The SORTIEALOT is sent by the joint force commander, allotting excess sorties to meet subordinate commander's requirements as detailed in the air employment plan, allocation plan, or both. The SORTIEALOT confirms the ALLOREQ and provides general guidance for planning operations. The SORTIEALOT contains—

- Revisions, if any, to command planned allocation of sorties. The SORTIEALOT can convey revisions or redirection of missions outside of the apportionment guidance.
- Approval or changes to the command requests and allotment of excess sorties.
- Revisions to mission data in command requests, such as a changed mission. Liaison elements and the JFACC usually coordinate such revisions in advance.

Joint Air Tasking Cycle: Air Allocation and Apportionment

In the context of joint fires, air apportionment is part of the joint targeting process that ensures the weight of joint force air effort is consistent with JFC intent and objectives. After consulting with other component commanders, the JFACC recommends air apportionment to the JFC, who makes the air apportionment decision. Following the JFC's air apportionment decision, the JFACC allocates and tasks joint capabilities and forces made available.

MAGTF commanders may be tasked to provide TACAIR sorties for tasking in support of the JFC air apportionment decision. In addition to these sorties, MAGTFs may also provide the JFC TACAIR sorties in excess of MAGTF direct support requirements (often called "excess sorties"). Per joint doctrine, JFCs should allow Service tactical and operational assets and groupings to function generally as they were designed and organized. Per JP 3-30—

> *The MAGTF commander will retain OPCON of organic air assets. During joint operations, the MAGTF aviation assets will normally be in support of the MAGTF mission. The MAGTF commander will make sorties available to the JFC for tasking through the JFACC for air defense, long-range air 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.*
>
> **NOTE:** MAGTF TACAIR assets are aviation platforms capable of executing joint air defense, long-range air interdiction, or long-range reconnaissance missions (F-35, FA-18, etc.). Based on JFC requirements, Marine TACAIR assets may vary by operation. Identification of MAGTF TACAIR assets is coordinated among the MAGTF commander, Marine Corps component commander, JFACC, and JFC, and may be codified in appropriate directives.

The decision to provide excess sorties to the JFC is part of the MAGTF air apportionment decision. When providing the JFC sorties, ACE, MAGTF air center, and MARLE planners coordinate details with the JFACC through the ALLOREQ process (see Chapter 3).

When tasked-organized under a functional component command, MAGTFs coordinate air apportionment and allocation with the respective component staff as well as the JFC or JFACC staff during the battle rhythm. MAGTFs integrate into and exchange liaisons with the component

staff to facilitate air apportionment and allocation coordination. MAGTF, component, and joint aviation planners consider all direct support and joint air tasking requirements in relation to mission requirements, and coordinate air apportionment and allocation accordingly. The MARLE and other component liaison elements to the JFACC (e.g., naval and amphibious liaison element or BCD) work in a coordinated manner to integrate and coordinate MAGTF and component air plans with joint air operations. Air apportionment and allocation is coordinated among JFACC, component, and MAGTF aviation planners in a cooperative manner. For example, a JFC objective may be to achieve local air superiority during an early phase of an operation, and as air superiority is a prerequisite for subsequent MAGTF or component air operations, providing MAGTF TACAIR sorties to the joint effort is mutually beneficial.

Master Air Attack Plan

Joint master air attack planning is conducted at the JAOC in support of JTF operations. The JAOC MAAP team begins planning using JFC or JFACC guidance, a draft JIPTL, component plans and requests, availability of capabilities and forces, and weapon system allocation. Once the JIPTL is approved, the MAAP team finalizes allocation, and the resulting MAAP is the plan for employment that forms the foundation of the ATO. MAGTF air center, ACE, and MARLE planners coordinate MAGTF input to the JAOC MAAP process.

Air Tasking

The joint air tasking cycle is synchronized with the JFC's battle rhythm. For more information on joint air tasking and joint air operations, refer to JP 3-30.

GLOSSARY

Section I: Abbreviations and Acronyms

AADC	area air defense commander
AAW	antiair warfare
ACE	aviation combat element
ACI	air combat intelligence
ACM	airspace coordinating measure
ACO	airspace control order
AFATDS	Advanced Field Artillery Tactical Data System
ALLOREQ	allocation request
AMD	air and missile defense
ANGLICO	air/naval gunfire liaison company
AOD	air operations directive
ASCOPE	areas, structures, capabilities, organizations, people, and events
ASE	air support element
ATF	amphibious task force
ATO	air tasking order
BCD	battlefield coordination detachment (*Army*)
BCL	battlefield coordination line
BDA	battle damage assessment
C2	command and control
CATF	commander, amphibious task force
CAS	close air support
CBR	counterbattery radar
CCIR	commander's critical information requirement
CCMD	combatant command
CCT	component-critical target
CDE	collateral damage estimation
CDM	collateral damage methodology
CFCC	counterfire coordination center

CID	combat identification
CJCSI	Chairman of the Joint Chiefs of Staff instruction
CLF	commander, landing force
CMO	civil-military operations
CMP	common maritime picture
COA	course of action
COC	combat operations center
COG	center of gravity
CONOPS	concept of operations
COP	common operational picture
COPS	current operations (*planning horizon*)
CTE	critical target element
CTP	common tactical picture
CWC	composite warfare commander
D3A	decide, detect, deliver, and assess
DAS	deep air support
DASC	direct air support center
DoD	Department of Defense
F2T2EA	find, fix, track, target, engage, and assess
F3EAD	find, fix, finish, exploit, analyze, and disseminate
FAHQ	force artillery headquarters
FEC	fires and effects coordinator
FECC	fires and effects coordination center
FMF	Fleet Marine Forces
FOPS	future operations (*planning horizon*)
FRAGO	fragmentary order
FSCC	fire support coordination center
FSCL	fire support coordination line
FSCM	fire support coordination measure
G-2	assistant chief of staff, intelligence/intelligence staff section
G-3	assistant chief of staff, operations and training/operations and training staff section
G-4	assistant chief of staff, logistics/logistics staff section
G-5	assistant chief of staff, plans/plans staff sect

G-6	assistant chief of staff, communications/communications system staff section
GCE	ground combat element
GMLRS	Global Positioning System Multiple Launch Rocket System
HHQ	higher headquarters
HIMARS	High Mobility Artillery Rocket System
HPT	high-payoff target
HVT	high-value target
IAMD	integrated air and missile defense
ICC	information coordination center
IDF	indirect fire
IOC	intelligence operations center
IPB	intelligence preparation of the battlespace
ISR	intelligence, surveillance, and reconnaissance
ITCC	information tasking and coordination cycle
J-2	intelligence directorate of a joint staff
J-3	operations directorate of a joint staff
J-5	plans directorate of a joint staff
JADOCS	Joint Automated Deep Operations Coordination System
JAOC	joint air operations center
JFACC	joint force air component commander
JFC	joint force commander
JFE	joint fires element
JFMCC	joint force maritime component commander
JIPTL	joint integrated prioritized target list
JOA	joint operations area
JP	joint publication
JTCB	joint targeting coordination board
JTF	joint task force
JTL	joint target list
KBC	kill box coordinator
LAAD	low-altitude air defense
LCE	logistics combat element
LOC	line of communications

LOE	line of effort
LOO	line of operation
MAAP	master air attack plan
MACCS	Marine air command and control system
MAGTF	Marine air-ground task force
Marine TACC	Marine tactical air command center
MARLE	Marine liaison element
MCDP	Marine Corps doctrinal publication
MCM	maneuver control measure
MCPP	Marine Corps Planning Process
MCRP	Marine Corps reference publication
MCTP	Marine Corps tactical publication
MCWP	Marine Corps warfighting publication
MEA	munitions effectiveness assessment
MEF	Marine expeditionary force
MIDB	modernized integrated database
MIG	Marine expeditionary force information group
MIPTL	Marine air-ground task force integrated prioritized target list
MISO	military information support operations
MLRS	multiple-launch rocket system
MOC	maritime operations center
MOE	measure of effectiveness
MOP	measure of performance
MSC	major subordinate command
MSE	major subordinate element
MTTP	multi-Service tactics, techniques, and procedures
NAI	named area of interest
Navy TACC	Navy tactical air control center
NSFS	naval surface fire support
NSL	no-strike list
NTTP	Navy tactics, techniques, and procedures
NWP	Navy warfare publication
OCAC	operations control and analysis center

OPCON	operational control
OPORD	operation order
OPT	operational planning team
PID	positive identification
PMESII	political, military, economic, social, information, and infrastructure
RAOC	rear area operations center
ROE	rules of engagement
ROZ	restricted operations zone
RTL	restricted target list
S-2	intelligence officer/office
SACC	supporting arms coordination center
SADC	sector air defense commander
SARCC	surveillance and reconnaissance coordination center
SCAR	strike coordination and reconnaissance
SME	subject matter expert
SOF	special operations forces
SORTIEALOT	sortie allotment message
SPINS	special instructions
SSMS	surface-to-surface missile system
TAA	target audience analysis
TACAIR	tactical air
TACON	tactical control
TACP	tactical air control party
TACS	theater air control system
TACSOP	tactical standing operating procedure
TADC	tactical air direction center
TAI	target area of interest
TAOC	tactical air operations center
TBMCS	theater battle management core system
TDN	target development nomination
TNL	target nomination list
TPC	target processing center
TSA	target system analysis

TST	time-sensitive target
TTP	tactics, techniques, and procedures
US	United States
VoIP	Voice over Internet Protocol

Section II: Terms and Definitions

adversary
A party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged. (DoD Dictionary)

air and missile defense
Direct [active and passive] defensive actions taken to destroy, nullify, or reduce the effectiveness of hostile air and ballistic missile threats against friendly forces and assets. Also called **AMD**. (DoD Dictionary)

air officer
An officer (aviator/naval flight officer) who functions as chief advisor to the commander on all aviation matters. An air officer is normally found at battalion level and higher within the ground combat element and within the Marine air-ground task force command element and logistics combat element headquarters staffs. The air officer is the senior member of the tactical air control party. The battalion air officer supervises the training and operation of the two battalion forward air control parties. Also called **AirO**. (USMC Dictionary)

airspace control plan
The document approved by the joint force commander that provides specific planning guidance and procedures for the airspace control system for the joint force operational area. Also called **ACP**. (DoD Dictionary)

air support element
An element task-organized by the Marine air support squadron to perform various air support control functions. Employment options can range from Marine expeditionary unit level operations characterized by limited assets and endurance to a multi-division operation where the air support element is almost if not identical in capability but set apart in responsibilities and subordinate to the direct air support center. The air support element can function as an extension of the Navy tactical air control center/amphibious air traffic control center, in conjunction with the battalion tactical air control party. Also called **ASE**. (USMC Dictionary)

air support request
A means to request preplanned and immediate CAS, air interdiction, air reconnaissance, surveillance, escort, helicopter airlift, and other aircraft missions. Also called **AIRSUPREQ**. (DoD Dictionary)

allocation request
A daily message that provides an estimate of the total air effort, identifies any excess and joint force general support aircraft sorties, and identifies unfilled air requirements for preplanned missions. Also called **ALLOREQ**. (DoD Dictionary)

amphibious objective area
A geographical area of sufficient size for conducting necessary sea, air, and land operations and within which is located the objective(s) to be secured by the amphibious force. Also called **AOA**. (DoD Dictionary)

area air defense commander
The component commander with the preponderance of air defense capability and the required command, control, and communications capabilities who is assigned by the joint force commander to plan and execute integrated air defense operations. Also called **AADC**. (DoD Dictionary)

area of operations
An operational area defined by a commander for the land or maritime force commander to accomplish their missions and protect their forces. Also called **AO**. (DoD Dictionary)

armed reconnaissance
A mission with the primary purpose of locating and attacking targets of opportunity (i.e., enemy material, personnel, and facilities) in assigned general areas or along assigned ground communications routes, and not for the purpose of attacking specific briefed targets. Also called **AR**. (USMC Dictionary)

audience
In public affairs, a broadly-defined group that contains stakeholders and/or publics relevant to military operations. (DoD Dictionary)

battle damage assessment
(See DoD Dictionary for core definition. Marine Corps amplification follows.) The timely and accurate estimate of the damage resulting from the application of military force. Battle damage assessment estimates physical damage to a particular target, functional damage to that target, and the capability of the entire target system to continue its operations. Also called **BDA**. (USMC Dictionary)

battlefield coordination detachment
An Army liaison located in the air operations center that provides selected operational functions between the Army forces and the air component commander. Also called **BCD**. (DoD Dictionary)

battlefield coordination line
A fire support coordination measure, similar to a fire support coordination line, that facilitates the expeditious attack of targets with surface indirect fires and aviation fires between this measure and the fire support coordination line. To facilitate air delivered fires and deconflict air and surface fires, an airspace coordination area will always overlie the area between the battlefield coordination line and the fire support coordination line. The battlefield coordination line location is graphically portrayed on fire support maps, charts, and overlays by a solid black line with the letters “BCL” followed by the establishing headquarters in parentheses above the line and effective date-time group below the line. Also called **BCL**. (USMC Dictionary)

branch
The contingency options built into the base plan used for changing the mission, orientation, or direction of movement of a force to aid success of the operation based on anticipated events, opportunities, or disruptions caused by enemy actions and reactions. (DoD Dictionary, part 4 of a 4-part definition.)

center of gravity
(See DoD Dictionary for core definition. Marine Corps amplification follows.) A key source of strength without which an enemy cannot function. Also called **COG**. (USMC Dictionary)

close air support
Air action by aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces. Also called **CAS**. (DoD Dictionary)

collateral damage
A form of collateral effect that causes unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time. (DoD Dictionary)

collateral effect
Unintentional or incidental effect to objects that would not be lawful military targets in the circumstances ruling at the time. (DoD Dictionary)

collection
(See DoD Dictionary for core definition. Marine Corps amplification follows.) The gathering of intelligence data and information to satisfy the identified requirements. (USMC Dictionary)

collection asset
A collection system, platform, or capability that is supporting, assigned to, or attached to a particular commander. (DoD Dictionary)

collection management
In intelligence usage, the process of converting intelligence requirements into collection requirements, establishing priorities, tasking or coordinating with appropriate collection sources or agencies, monitoring results, and retasking, as required. (DoD Dictionary)

collection plan
A systematic scheme to optimize the employment of all available collection capabilities and associated processing, exploitation, and dissemination resources to satisfy specific information requirements. (DoD Dictionary)

collection requirement
(See DoD Dictionary for core definition. Marine Corps amplification follows.) An established intelligence need considered in the allocation of intelligence resources to fulfill the priority intelligence requirements and other intelligence needs of a commander. (USMC Dictionary)

combat assessment
The determination of the overall effectiveness of force employment during military operations. (DoD Dictionary)

combat identification
The process of attaining an accurate characterization of detected objects in the operational environment sufficient to support an engagement decision. Also called **CID**. (DoD Dictionary)

combat operations center
The primary operational agency required to control the tactical operations of a command that employs ground and aviation combat, combat support, and logistics combat elements or portions thereof. The combat operations center continually monitors, records, and supervises operations in the name of the commander and includes the necessary personnel and communications to do the same. Also called **COC**. (USMC Dictionary)

combat power
The total means of destructive and disruptive force that a military unit/formation can apply against an enemy at a given time. (DoD Dictionary)

command and control
(See DoD Dictionary for core definition. Marine Corps amplification follows.) The means by which a commander recognizes what needs to be done and sees to it that appropriate actions are taken. Command and control is one of the seven warfighting functions. Also called **C2**. (USMC Dictionary)

commander's critical information requirement
(See DoD Dictionary for core definition. Marine Corps amplification follows.) Information regarding the enemy and friendly activities and the environment identified by the commander as critical to maintaining situational awareness, planning future activities, and facilitating timely decision making. The two subcategories are priority intelligence requirements and friendly force information requirements. Also called **CCIR**. (USMC Dictionary)

commander's intent
(See DoD Dictionary for core definition. Marine Corps amplification follows.) A commander's clear, concise articulation of the purpose(s) behind one or more tasks assigned to a subordinate. It is one of two parts of every mission statement which guides the exercise of initiative in the absence of instructions. (USMC Dictionary)

command relationships
The interrelated responsibilities between commanders, as well as the operational authority exercised by commanders in the chain of command. (DoD Dictionary)

component
1. One of the Service or functional subordinate organizations that constitutes a joint force. 2. In logistics, a part or combination of parts having a specific function, which can be installed or replaced only as an entity. (DoD Dictionary)

concept of operations
A verbal or graphic statement that clearly and concisely expresses what the commander intends to accomplish and how it will be done using available resources. Also called **CONOPS**. (DoD Dictionary)

condition
1. Those variables of an operational environment or situation in which a unit, system, or individual operates and that may affect performance. 2. A physical or behavioral state of a system that is necessary for the achievement of an objective. (DoD Dictionary)

counterair
A mission at the theater level that integrates offensive and defensive operations to attain and maintain a desired degree of control of the air and protection by neutralizing or destroying enemy aircraft and missiles, both before and after launch. (DoD Dictionary)

counterfire
Fire intended to destroy or neutralize enemy weapons. (DoD Dictionary)

course of action
1. Any sequence of activities that an individual or unit may follow. 2. A scheme developed to accomplish a mission. Also called **COA**. (DoD Dictionary)

critical asset list
A prioritized list of assets or areas, normally identified by phase of the operation and approved by the joint force commander, that should be defended against air and missile threats. Also called **CAL**. (DoD Dictionary)

critical target element
A feature or part of a target that enables it to perform its primary function and, if effectively engaged, should create a significant effect on that target. Also called **CTE**. (DoD Dictionary)

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. (USMC Dictionary)

damage assessment
1. The determination of the effect of engagements on targets. (DoD Dictionary, part 1 of a 2-part definition.)

decision point
(See DoD Dictionary for core definition. Marine Corps amplification follows.) An event, area, or point in the battlespace where and when the friendly commander will make a critical decision. (USMC Dictionary)

decisive action
Any action the commander deems fundamental to achieving mission success. (USMC Dictionary)

decisive point
Key terrain, key event, critical factor, or function that, when acted upon, enables commanders to gain a marked advantage over an enemy or contribute materially to achieving success. (DoD Dictionary)

deep air support
Air action against enemy targets at such a distance from friendly forces that detailed integration of each mission with fire and movement of friendly forces is not required. Deep air support missions are flown on either side of the fire support coordination line; the lack of a requirement for close coordination with the fire and movement of friendly forces is the qualifying factor. Also called **DAS**. (*Note: The acronym DAS stands for deep air support and not direct air support.*) (USMC Dictionary)

direct air support center
The principal air control agency of the United States Marine Corps air command and control system responsible for the direction and control of air operations directly supporting the ground combat element. Also called **DASC**. (USMC Dictionary)

dynamic targeting
Targeting that prosecutes targets identified too late or not selected for action in time to be included in deliberate targeting. (DoD Dictionary)

effect
1. The physical or behavioral state of a system that results from an action, a set of actions, or another effect. 2. The result, outcome, or consequence of an action. 3. A change to a condition, behavior, or degree of freedom. (DoD Dictionary)

electromagnetic attack
Division of electromagnetic warfare involving the use of electromagnetic energy, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Also called **EA**. (DoD Dictionary)

electromagnetic warfare
Military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. Also called **EW**. (DoD Dictionary)

engagement authority
An authority vested with a joint force commander that may be delegated to a subordinate commander, that permits an engagement decision. (DoD Dictionary)

entity
Within the context of targeting, a term used to describe facilities, individuals, virtual (nontangible) things, equipment, or organizations. (DoD Dictionary)

establishing directive
An order issued to specify the purpose of the support relationship. (DoD Dictionary)

exploitation
1. Taking full advantage of success in military operations, following up initial gains, and making permanent the temporary effects already created. 2. Taking full advantage of any information that has come to hand for tactical, operational, or strategic purposes. 3. An offensive operation that usually follows a successful attack and is designed to disorganize the enemy in depth. (DoD Dictionary)

field artillery
Equipment, supplies, ammunition, and personnel involved in the use of cannon, rocket, or surface-to-surface missile launchers. Also called **FA**. (DoD Dictionary)

fire direction center
That element of a command post, consisting of gunnery and communications personnel and equipment, by means of which the commander exercises fire direction and/or fire control. Also called **FDC**. (DoD Dictionary)

fires
(See DoD Dictionary for core definition. Marine Corps amplification follows.) Those means used to delay, disrupt, degrade, or destroy enemy capabilities, forces, or facilities as well as affect the enemy's will to fight. Fires is one of the seven warfighting functions. (USMC Dictionary)

fire support
(See DoD Dictionary for core definition. Marine Corps amplification follows.) 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. (USMC Dictionary)

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**. (DoD Dictionary)

fire support coordination
The planning and executing of fire so targets are adequately covered by a suitable weapon or group of weapons. (DoD Dictionary)

fire support coordination center
A single site in which centralized communications facilities and personnel incident to the coordination of all forms of fire support for Marine forces are located. Also called **FSCC**. (DoD Dictionary)

fire support coordination line
A fire support coordination measure established by the land or amphibious force commander to support common objectives within an area of operation, beyond which all fires must be coordinated with affected commanders prior to engagement and, short of the line, all fires must be coordinated with the establishing commander prior to engagement. Also called **FSCL**. (DoD Dictionary)

fire support coordination measure
A measure employed by commanders to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces. Also called **FSCM**. (DoD Dictionary)

fire support coordinator
(See DoD Dictionary for core definition. Marine Corps amplification follows.) The officer in charge of the fire support coordination center who is the direct representative of the landing force commander for the planning and coordination of all available fire support. Also called **FSC**. (USMC Dictionary)

fire support plan
A plan on how indirect fires and target acquisition will be used to support an operation. It should include a portion for each means of fire support involved. (USMC Dictionary)

fire support station
An exact location at sea within a fire support area from which a fire support ship delivers fire. Also called **FSS**. (DoD Dictionary)

force
1. An aggregation of military personnel, weapon systems, equipment, capabilities, and necessary support, or combination thereof. 2. A major subdivision of a fleet. (DoD Dictionary)

force protection
(See DoD Dictionary for core definition. Marine Corps amplification follows.) Actions or efforts used to safeguard own centers of gravity while protecting, concealing, reducing, or eliminating friendly critical vulnerabilities. Force protection is one of the seven warfighting functions. (USMC Dictionary)

forward observer
An individual operating with front line troops trained to adjust ground or naval gunfire and pass back battlefield information. Also called **FO**. (DoD Dictionary)

fragmentary order
(See DoD Dictionary for core definition. Marine Corps amplification follows.) An abbreviated form of an operation order, usually issued on a day-to-day basis, that eliminates the need for restating information contained in a basic operation order. It may be issued in sections. Also called **FRAGO**. (USMC Dictionary)

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. (DoD Dictionary)

high-payoff target
A target whose loss to the enemy will significantly contribute to the success of the friendly course of action. Also called **HPT**. (DoD Dictionary)

high-value target
A target the enemy commander requires for the successful completion of the mission. Also called **HVT**. (DoD Dictionary)

indicator
1. In intelligence usage, an item of information that reflects the intention or capability of an adversary to adopt or reject a course of action. 2. In operations security usage, data derived from friendly detectable actions and open-source information that an adversary can interpret and piece together to reach conclusions or estimates of friendly intentions, capabilities, or activities. 3. In the context of assessment, a specific piece of information that infers the condition, state, or existence of something, and provides a reliable means to ascertain performance or effectiveness. (DoD Dictionary)

indirect fire
Fire delivered on a target that is not itself used as a point of aim for the weapons or the director. Also called **IDF**. (USMC Dictionary)

information environment
The aggregate of social, cultural, linguistic, psychological, technical, and physical factors that affect how humans and automated systems derive meaning from, act upon, and are impacted by information, including the individuals, organizations, and systems that collect, process, disseminate, or use information. Also called **IE**. (DoD Dictionary)

information requirements
(See DoD Dictionary for core definition. Marine Corps amplification follows.) All information elements the commander and staff require to successfully conduct operations, that is, all elements necessary to address the factors of mission, enemy, terrain and weather, troops and support available—time available. Also called **IRs**. (USMC Dictionary)

initiating directive
An order to a subordinate commander to conduct military operations as directed. Also called **ID**. (DoD Dictionary)

intelligence
(See DoD Dictionary for core definition. Marine Corps amplification follows.) Knowledge about the enemy or the surrounding environment needed to support decision-making. Intelligence is one of the seven warfighting functions. (USMC Dictionary)

intelligence cycle
A six-step process by which information is converted into intelligence and made available to users. The six steps are planning and direction, collection, processing and exploitation, production, dissemination, and utilization. (USMC Dictionary)

intelligence, surveillance, and reconnaissance
1. An integrated operations and intelligence activity that synchronizes and integrates the planning and operation of sensors, assets, and processing, exploitation, and dissemination systems in direct support of current and future operations. 2. The organizations or assets conducting such activities. Also called **ISR**. (DoD Dictionary)

joint air operations center
A jointly staffed facility established for planning, directing, and executing joint air operations in support of the joint force commander's operation or campaign objectives. Also called **JAOC**. (DoD Dictionary)

joint fires
Fires delivered during the employment of forces from two or more components in coordinated action to create desired effects in support of a common objective. (DoD Dictionary)

joint fires element
An optional staff element that provides recommendations to the operations directorate to accomplish fires planning and synchronization. Also called **JFE**. (DoD Dictionary)

joint force
A force composed of elements, assigned or attached, of two or more Military Departments operating under a single joint force commander. (DoD Dictionary)

joint force air component commander
The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for recommending the proper employment of assigned, attached, and made available for tasking air forces; planning and coordinating air operations; or accomplishing such operational missions. Also called **JFACC**. (DoD Dictionary)

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**. (DoD Dictionary)

joint force maritime component commander
The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for recommending the proper employment of assigned, attached, and made available for tasking maritime forces and assets; planning and coordinating maritime operations; or accomplishing such operational missions. Also called **JFMCC**. (DoD Dictionary)

joint integrated prioritized target list
A prioritized list of targets approved by the joint force commander. Also called **JIPTL**. (DoD Dictionary)

joint intelligence
Intelligence produced by elements of more than one Service of the same nation. (DoD Dictionary)

joint intelligence preparation of the operational environment
The analytical process used by joint intelligence organizations to produce intelligence estimates and other intelligence products in support of the joint force commander's decision-making process. Also called **JIPOE**. (DoD Dictionary)

joint operation
(See DoD Dictionary, **joint operations**, for core definition. Marine Corps amplification follows.) An operation carried on by a force that is composed of significant elements of the Army, the Navy or the Marine Corps, and the Air Force, or two or more of these Services operating under a single commander authorized to exercise unified command or operational control over joint forces. (*Note: A Navy and Marine Corps operation is not a joint operation.*) (USMC Dictionary)

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, synchronization, and priorities; and approving the joint integrated prioritized target list. Also called **JTCB**. (DoD Dictionary)

joint target list
A consolidated list of validated targets of military significance without restrictions within a joint force commander's operational area. Also called **JTL**. (DoD Dictionary)

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**. (DoD Dictionary)

kill box
A three-dimensional permissive fire support coordination measure with an associated airspace coordinating measure used to facilitate the integration of fires. (DoD Dictionary)

landing force
A Marine Corps or Army task organization, which is part of the amphibious force, formed to conduct amphibious operations. Also called **LF**. (DoD Dictionary)

line of communications
A route, either land, water, and/or air, that connects an operating military force with a base of operations and along which supplies and military forces move. Also called **LOC**. (DoD Dictionary)

link
1. A behavioral, physical, or functional relationship between nodes. 2. In communications, a general term used to indicate the existence of communications facilities between two points. 3. A maritime route, other than a coastal or transit route, that connects any two or more routes. (DoD Dictionary)

littoral
A zone of military operations comprising two segments of the battlespace: (1) Seaward approaches from the open ocean to the shore, which must be controlled to support operations ashore. (2) Landward approaches to the shore that can be supported and defended directly from the sea. (USMC Dictionary)

maneuver
(See DoD Dictionary for core definition. Marine Corps amplification follows.) The movement of forces for the purpose of gaining an advantage over the enemy. Maneuver is one of the seven warfighting functions. (USMC Dictionary)

Marine air command and control system
A system that provides the aviation combat element commander with the means to command, coordinate, and control all air operations within an assigned sector and to coordinate air operations with other Services. Also called **MACCS**. (USMC Dictionary)

Marine Corps Planning Process
A six-step methodology that helps organize the thought processes of the commander and staff throughout the planning and execution of military operations. It focuses on the mission and the threat and is based on the Marine Corps philosophy of maneuver warfare. It capitalizes on the principle of unity of command and supports the establishment and maintenance of tempo. The six steps consist of problem framing, course of action development, course of action war game, course of action comparison and decision, orders development, and transition. Also called **MCPP**. (*Note: Tenets of the MCPP include top-down planning, single-battle concept, and integrated planning.*) (USMC Dictionary)

Marine tactical air command center
The principal United States Marine Corps air command and control agency from which air operations and air defense warning functions are directed. Also called **Marine TACC**. (DoD Dictionary)

maritime forces
Forces that operate on, under, or above the sea to gain or exploit command of the sea, sea control, or sea denial and/or to project power from the sea. (DoD Dictionary)

master air attack plan
A plan that contains key information that forms the foundation of the joint air tasking order. Also called **MAAP**. See also target. (DoD Dictionary)

measure of effectiveness
An indicator used to measure a current system state, with change indicated by comparing multiple observations over time. Also called **MOE**. (DoD Dictionary)

measure of performance
An indicator used to measure a friendly action that is tied to measuring task accomplishment. Also called **MOP**. (DoD Dictionary)

mensuration
The process of measurement of a feature or location on the Earth to determine an absolute latitude, longitude, and elevation. (DoD Dictionary)

modified combined obstacle overlay
A joint intelligence preparation of the operational environment product used to portray the militarily significant aspects of the operational environment, such as obstacles restricting military movement, key geography, and military objectives. Also called **MCOO**. (DoD Dictionary)

munitions effectiveness assessment
The assessment of the military force applied in terms of the weapons system and munitions effectiveness to determine and recommend any required changes to the methodology, tactics, weapon system, munitions, fusing, and weapon delivery parameters to increase force effectiveness. Also called **MEA**. (DoD Dictionary)

named area of interest
(See DoD Dictionary for core definition. Marine Corps amplification follows.) A point or area along a particular avenue of approach through which enemy activity is expected to occur. Activity or lack of activity within a named area of interest will help to confirm or deny a particular enemy course of action. Also called **NAI**. (USMC Dictionary)

naval surface fire support
Fire provided by Navy surface gun and missile systems in support of a unit or units. Also called **NSFS**. (DoD Dictionary)

Navy tactical air control center
The principal air operations installation (ship-based) from which all aircraft and air warning functions of tactical air operations are controlled. Also called **Navy TACC**. (DoD Dictionary)

network engagement
Interactions with friendly, neutral, and threat networks, conducted continuously and simultaneously at the tactical, operational, and strategic levels, to help achieve the commander's objectives within an operational area. (DoD Dictionary)

neutral
In combat and combat support operations, an identity applied to a track whose characteristics, behavior, origin, or nationality indicate that it is neither supporting nor opposing friendly forces. (DoD Dictionary)

node
1. A location in a mobility system where a movement requirement is originated, processed for onward movement, or terminated. 2. In communications and computer systems, the physical location that provides terminating, switching, and teleport access services to support information exchange. 3. An element of a network that represents a person, place, or physical object. (DoD Dictionary)

no-strike list
A list of objects or entities characterized as protected from the effects of military operations under international law and/or rules of engagement. Also called **NSL**. (DoD Dictionary)

objective
1. The clearly defined, decisive, and attainable goal toward which an operation is directed. 2. The specific goal of the action taken which is essential to the commander's plan. (DoD Dictionary)

obstacle
Any barrier designed or employed to disrupt, fix, turn, or block the movement and maneuver, and to impose additional losses in personnel, time, and equipment. (DoD Dictionary)

on-call target
Planned target upon which fires or other actions are determined using deliberate targeting and triggered, when detected or located, using dynamic targeting. (DoD Dictionary)

operational control
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. Also called **OPCON**. (DoD Dictionary)

operational environment
The aggregate of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. Also called **OE**. (DoD Dictionary)

operation assessment
1. A continuous process that measures the overall effectiveness of employing capabilities during military operations to achieve stated objectives. 2. Determination of the progress toward accomplishing a task, creating an effect, changing a condition, or achieving an objective. (DoD Dictionary)

operations control and analysis center
Main node for the command and control of radio battalion signals intelligence operations and the overall coordination of Marine air-ground task force signals intelligence operations. The center processes, analyzes, produces, and disseminates signals intelligence-derived information and directs the ground-based electromagnetic warfare activities of the radio battalion. Also called **OCAC**. (USMC Dictionary)

organic
Assigned to and forming an essential part of a military organization as listed in its table of organization for the Army, Air Force, and Marine Corps and are assigned to the operating forces for the Navy. (DoD Dictionary)

phase
(See DoD Dictionary for core definition. Marine Corps amplification follows.) A planning and execution tool that is used to divide an operation in duration or activity. A change in phase may involve a change in task or task organization. Phasing helps in planning and controlling and may be indicated by time, distance, terrain, or occurrence of an event. (USMC Dictionary)

phase line
An easily identified feature in the operational area utilized for control and coordination of military operations. Also called **PL**. (DoD Dictionary)

physical damage assessment
The estimate of the quantitative extent of physical damage to a target resulting from the application of military force. (DoD Dictionary)

point defense
Employment of defense measures to protect limited areas. (DoD Dictionary)

positive identification
An identification derived from observation and analysis of target characteristics including visual recognition; electronic support systems; non-cooperative target recognition techniques; identification, friend or foe systems; or other physics-based identification techniques. Also called **PID**. (DoD Dictionary)

priority intelligence requirement
(See DoD Dictionary for core definition. Marine Corps amplification follows.) An intelligence requirement associated with a decision that will critically affect the overall success of the command's mission. Also called **PIR**. (USMC Dictionary)

procedures
1. Standard, detailed steps that prescribe how to perform specific tasks. 2. The particular courses or modes of action for performing certain functions. (USMC Dictionary)

rear area
That area extending forward from a command's rear boundary to the rear of the area assigned to the command's subordinate units. (*Note: This area is provided primarily for the performance of combat service support functions.*) (USMC Dictionary)

reattack recommendation
An assessment, derived from the results of battle damage assessment and munitions effectiveness assessment, providing the commander systematic advice on reattack of a target. Also called **RR**. (DoD Dictionary)

reconnaissance
A mission undertaken to obtain information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographic, geographic or other characteristics of a particular area by visual observation or other detection methods. (DoD Dictionary)

regional air defense commander
Commander, subordinate to the area air defense commander, who is responsible for air and missile defenses in the assigned region and exercises authorities as delegated by the area air defense commander. Also called **RADC**. (DoD Dictionary)

relevant actor
Individual, group, population, or automated system whose capabilities or behaviors have the potential to affect the success of a particular campaign, operation, or tactical action. (DoD Dictionary)

restricted target
A valid target that has specific restrictions placed on the actions authorized against it due to operational considerations. See also target. (DoD Dictionary)

restricted target list
A list of restricted targets nominated by elements of the joint force and approved by the joint force commander or directed by higher authorities. Also called **RTL**. (DoD Dictionary)

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

scheduled target
Planned target upon which fires or other actions are scheduled for prosecution at a specified time. (DoD Dictionary)

scheme of maneuver
The central expression of the commander's concept for operations that governs the development of supporting plans or annexes of how arrayed forces will accomplish the mission. (DoD Dictionary)

sector air defense commander
(See DoD Dictionary for core definition. Marine Corps amplification follows.) A commander designated the responsibility for an air defense sector within a region. Responsibilities may include, but are not limited to, coordinating actions between regions and sectors; evaluating the results of engagements within the designated region or sector; forwarding observations and results of engagements within the assigned region or sector to the area air defense commander (AADC); requesting from the AADC or, when authorized, directing changes to the air defense alert and weapons release conditions commensurate to the threat; and, when necessary, requesting from the AADC additional air defense assets. Sector air defense commanders further distribute air defense aircraft to control agencies within their sector. The controlling agencies, in turn, are responsible for executing the air defense mission through the coordination, control, and integration of aircraft and surface-to-air weapon systems under their direction. Also called **SADC**. (USMC Dictionary)

sensor
Equipment that detects, and may indicate, and/or record objects and activities by means of energy or particles emitted, reflected, or modified by objects. (USMC Dictionary)

sequel
The subsequent operation or phase based on the possible outcomes of the current operation or phase. (DoD Dictionary)

shaping
To use lethal and nonlethal activities to influence events in a manner that changes the general condition of the battlespace to an advantage. (*Note: Shaping is primarily conducted through the integrated employment of fires, information activities, and maneuver.*) (This modified definition is proposed for inclusion in the next edition of the USMC Dictionary)

shaping actions
Lethal and nonlethal activities conducted throughout the battlespace to create effects on adversary, enemy, friendly, and neutral entities and systems. (*Note: Shaping actions are part of a purpose-based battlespace framework.*) (This modified definition is proposed for inclusion in the next edition of the USMC Dictionary)

sortie
In air operations, an operational flight by one aircraft. (DoD Dictionary)

staff estimate
A continual evaluation of how factors in a staff section's functional area support and impact the planning and execution of the mission. (DoD Dictionary)

strike
An attack to damage or destroy an objective or a capability. (DoD Dictionary)

strike coordination and reconnaissance
(See DoD Dictionary for core definition. Marine Corps amplification follows.) A mission flown for the purpose of acquiring and reporting deep air support targets and coordinating armed reconnaissance or air interdiction missions upon those targets. Also called **SCAR**. (USMC Dictionary)

subordinate command
A lower-echelon command consisting of a commander and all those individuals, units, detachments, organizations, or installations that have been placed under the command by the establishing authority. (DoD Dictionary)

support
1. The action of a force that aids, protects, complements, or sustains another force in accordance with a directive requiring such action. 2. A unit that helps another unit in battle. 3. An element of a command that assists, protects, or supplies other forces in combat. (DoD Dictionary)

supported commander
1. The commander having primary responsibility for all aspects of a task assigned. 2. In the context of joint planning, the commander who prepares operation plans or operation orders in response to requirements of the Chairman of the Joint Chiefs of Staff. 3. In the context of a support command relationship, the commander who receives assistance from another commander, and who is responsible for ensuring the supporting commander understands the assistance required. (DoD Dictionary)

supporting arms
Weapons and weapons systems of all types employed to support forces by indirect or direct fire. (DoD Dictionary)

supporting arms coordination center
A single location on board an amphibious warfare ship in which all communication facilities incident to the coordination of fire support of the artillery, air, and naval gunfire are centralized. Also called **SACC**. (DoD Dictionary)

supporting commander
1. A commander who provides actions and other directed support to a supported commander. 2. In the context of a support command relationship, the commander who aids, protects, complements, or sustains another commander's force and who is responsible for providing the assistance required by the supported commander. (DoD Dictionary)

suppression of enemy air defenses
Activity that neutralizes, destroys, or temporarily degrades surface-based enemy air defenses by destructive and/or disruptive means. Also called **SEAD**. (DoD Dictionary)

surveillance
(See DoD Dictionary for core definition. Marine Corps amplification follows.) The systematic visual or aural observation of an enemy force, adversary, named area of interest, or an area and the activities within it to collect intelligence required to confirm or deny enemy and/or adversary courses of action or identify their critical vulnerabilities and limitations. (USMC Dictionary)

survivability
(See DoD Dictionary for core definition. Marine Corps amplification follows.) The degree to which a system is able to avoid or withstand a man-made hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission. (USMC Dictionary)

synchronization
1. The arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time. 2. In intelligence usage, application of intelligence sources and methods in concert with the operation plan to answer intelligence requirements in time to influence the decisions they support. (DoD Dictionary)

synchronization matrix
A format for the staff to record results of wargaming and synchronize the course of action across time, space, and purpose in relation to an enemy's and/or adversary's course of action. (USMC Dictionary)

tactical air control party
(See DoD Dictionary for core definition. Marine Corps amplification follows.) A subordinate operational component of a tactical air control system, organic to infantry divisions, regiments, and battalions, that establishes and maintains facilities for liaison and communications between parent units and airspace control agencies, inform and advise the ground unit commander on the employment of supporting aircraft, and request and control air support. Also called **TACP**. (USMC Dictionary)

tactical air direction center
An air operations installation, under the overall control of the Navy tactical air control center or the Marine tactical air command center, from which aircraft and air warning service functions of tactical air operations in support of amphibious operations are directed. Also called **TADC**. (DoD Dictionary)

tactical air operations center
The principal air control agency of the United States Marine Corps air command and control system responsible for airspace control and management. Also called **TAOC**. (DoD Dictionary)

tactical control
The authority over forces that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. Also called **TACON**. (DoD Dictionary)

target
An entity or object that performs a function for the threat considered for possible engagement or other action. (DoD Dictionary)

target acquisition
The detection, identification, and location of a target in sufficient detail to permit the effective employment of capabilities that create the required effects. Also called **TA**. (DoD Dictionary)

target analysis
An examination of potential targets to determine military importance, priority of engagement, and capabilities required to create a desired effect. (DoD Dictionary)

target area of interest
The geographical area where high-value targets can be acquired and engaged by friendly forces. Also called **TAI**. (DoD Dictionary)

target audience
An individual or group selected for influence. Also called **TA**. (DoD Dictionary)

target component
A set of targets within a target system performing a similar function. (DoD Dictionary)

target development
The systematic examination of potential target systems—and their components, individual targets, and even elements of targets—to determine the necessary type and duration of the action that must be exerted on each target to create an effect that is consistent with the commander's specific objectives. (DoD Dictionary)

and their components, individual targets, and even elements of targets
to determine the necessary type and duration of the action that must be exerted on each target to create an effect that is consistent with the commander's specific objectives. (DoD Dictionary)

target element
A specific feature or part of a target that enables it to function and, which if engaged, may create specific effects on that target. (DoD Dictionary)

target folder
A folder, hardcopy or electronic, containing target intelligence and related materials prepared for planning and executing action against a specific target. (DoD Dictionary)

target information center
The agency or activity responsible for collecting, displaying, evaluating, and disseminating information pertaining to potential targets. Also called **TIC**. DoD Dictionary)

targeting
The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. (DoD Dictionary)

target intelligence
Intelligence that portrays and locates the components of a target or target complex and indicates its vulnerability and relative importance. (DoD Dictionary)

target list
Those targets maintained and promulgated by the senior echelon of command that are to be engaged by supporting arms, as distinguished from a "list of targets" (confirmed, suspected, or possible) maintained by any echelon for informational and planning purposes. (USMC Dictionary)

target nomination list
A prioritized list of targets drawn from the joint target list, or restricted target list, and nominated by component commanders, appropriate agencies, or the joint force commander's staff for inclusion on the joint integrated prioritized target list. Also called **TNL**. (DoD Dictionary)

target of opportunity
1. A target identified too late, or not selected for action in time, to be included in deliberate targeting that, when detected or located, meets criteria specific to achieving objectives and is processed using dynamic targeting. 2. A target visible to a surface or air sensor or observer, which is within range of available weapons and against which fire has not been scheduled or requested. (DoD Dictionary)

target system
All the targets situated in a particular geographic area and functionally related or a group of targets that are so related that their destruction will produce some particular effect desired by the attacker. (DoD Dictionary)

target system analysis
An all-source examination of potential target systems to determine relevance to stated objectives, military importance, and priority of attack. Also called **TSA**. (DoD Dictionary)

task
A clearly defined action or activity specifically assigned by an appropriate authority to an individual or organization, or derived during mission analysis, that must be accomplished. (DoD Dictionary)

tasking
The process of translating the allocation into orders and passing these orders to the units involved. Each order normally contains sufficient detailed instructions to enable the executing agency to accomplish the mission successfully. (USMC Dictionary)

task organization
(See DoD Dictionary for core definition. Marine Corps amplification follows.) A temporary grouping of forces designed to accomplish a particular mission. Task organization involves the distribution of available assets to subordinate control headquarters by attachment or by placing assets in direct support or under the operational control of the subordinate. (USMC Dictionary)

time-sensitive target
A joint force commander-validated target or set of targets 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**. (DoD Dictionary)

unanticipated target
A target of opportunity that was unknown or not expected to exist in the operational environment. (DoD Dictionary)

unit
1. Any military element whose structure is prescribed by competent authority. 2. An organization title of a subdivision of a group in a task force. (DoD Dictionary)

unity of command
The direction of all forces under a single, responsible commander who has the requisite authority to direct and employ those forces. (DoD Dictionary)

unity of effort
Coordination and cooperation toward common objectives, even if the participants are not necessarily part of the same command or organization that is the product of successful unified action. (DoD Dictionary)

unscheduled target
A target of opportunity that is known to exist in the operational environment. (DoD Dictionary)

validation
A part of target development that ensures all candidate targets meet the objectives and criteria outlined in the commander's guidance and ensures compliance with the law of war and rules of engagement. (DoD Dictionary, part 2 of a 4-part definition.)

vulnerability
1. The susceptibility of a nation or military force to any action by any means through which its war potential or combat effectiveness may be reduced or its will to fight diminished. 2. The characteristics of a system that can cause it to be degraded (incapability to perform the designated function or mission) as a result of being subjected to a certain level of effects in an unnatural (man-made) hostile environment. (DoD Dictionary)

warfighting functions
The seven mutually supporting military activities integrated in the conduct of all military operations. The seven warfighting functions are command and control, fires, force protection, information, intelligence, logistics, and maneuver. (USMC Dictionary)

wargaming
A step-by-step process of action, reaction, and counteraction for visualizing the execution of each friendly course of action in relation to enemy and adversary courses of action and reactions. It explores the possible branches and sequels to the primary plan resulting in a final plan and decision points for critical actions. (USMC Dictionary)

warning order
1. A preliminary notice of an order or action that is to follow. 2. A planning directive that initiates the development and evaluation of military courses of action by a commander. Also called **WARNORD**. (DoD Dictionary)

weaponeer
An individual who has completed requisite training to determine the means required to create a desired effect on a given target. (DoD Dictionary)

weaponeering
The process of determining the specific means required to create a desired effect on a given target. (DoD Dictionary)

working group
An enduring or ad hoc organization within a headquarters consisting of a core functional group and other staff and component representatives whose purpose is to provide analysis on the specific function to users. Also called **WG**. (DoD Dictionary)

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