Joint Publication 3-09

Joint Fire Support

10 April 2019

PREFACE

1. Scope

This publication provides fundamental principles and guidance for planning, executing, and assessing joint fire support.

2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff (CJCS). It sets forth joint doctrine to govern the activities and performance of the Armed Forces of the United States in joint operations, and it provides considerations for military interaction with governmental and nongovernmental agencies, multinational forces, and other interorganizational partners. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders (JFCs), and prescribes joint doctrine for operations and training. It provides military guidance for use by the Armed Forces in preparing and executing their plans and orders. It is not the intent of this publication to restrict the authority of the JFC from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of objectives.

3. Application

a. Joint doctrine established in this publication applies to the Joint Staff, commanders of combatant commands, subordinate unified commands, joint task forces, subordinate components of these commands, the Services, and combat support agencies.

b. This doctrine constitutes official advice concerning the enclosed subject matter; however, the judgment of the commander is paramount in all situations.

c. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence unless the CJCS, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational doctrine and procedures ratified by the United States. For doctrine and procedures not ratified by the United States, commanders should evaluate and follow the multinational command's doctrine and procedures, where applicable and consistent with US law, regulations, and doctrine.

For the Chairman of the Joint Chiefs of Staff:

DANIEL J. O'DONOHUE
Lieutenant General, USMC
Director, Joint Force Development

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SUMMARY OF CHANGES
REVISION OF JOINT PUBLICATION 3-09
DATED 12 DECEMBER 2014

- **Adds 'synchronize and integrate fires and airspace' to the list of joint fires processes and tasks.**

- **Expands the discussion of no-strike list and restricted target list to separate the two and clarify the importance of each.**

- **Adds space and cyberspace as warfighting domains.**

- **Expands the discussion of the coordination between operations and intelligence directorates during planning, execution, and assessment, and clarifies operations responsibilities during targeting.**

- **Adds representation from the space component, the civil-military directorate, and nongovernmental organizations to the typical joint fires element; reflects the direct participation of interagency partners and the national intelligence community.**

- **Adds fires deconfliction and cross-boundary coordination procedures to the list of items addressed in the joint force commander's guidance for joint fire support.**

- **Simplifies the discussion of joint fire support planning during the joint planning process.**

- **Adds a discussion on the joint targeting cycle and its use as a framework for joint fire support planning during execution.**

- **Adds a section in the execution chapter on dynamic targeting, to include a discussion of the missions used to conduct joint fire support using dynamic targeting procedures.**

- **Adds a section in the execution chapter on air operations in maritime surface warfare.**

- **Deletes information on lasers and laser-guided systems that is tactical in nature and which is found in multiple Service publications.**

- **Modifies the definitions of 'coordinated fire line,' 'fire support,' 'fire support coordination,' 'fire support coordination center,' 'fire support coordinator,' 'forward observer,' 'free fire area,' 'laser-guided weapon,' 'laser target**

designator,' 'phase line', 'restrictive fire area,' 'restrictive fire line,' 'shore fire control party,' 'spotter,' and 'zone of action.'

- **Moves joint terms 'joint fires observer,' 'joint fire support,' and 'nonlethal weapon' to Joint Publication 3-09, *Joint Fire Support,* as source, and modifies definitions.**

- **Removes the terms 'grid coordinates' and 'inertial navigation system' from the *DOD Dictionary of Military and Associated Terms.***

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- **Describes joint force command structure and function, component fires command and control organizations, and support relationships employed to conduct joint fires.**
- **Presents the joint fire support planning process, both pre-execution (operations planning) and during execution (joint targeting cycle).**
- **Discusses considerations and factors involved during joint fire support execution.**
- **Presents the process to assess joint fire support.**

JOINT FIRE SUPPORT OVERVIEW

Joint Fire Support

Joint fire support is joint fires that assist air, land, maritime, space, cyberspace, and special operations forces to move, maneuver, and control territory, airspace, space, cyberspace, the electromagnetic spectrum, and key waters and to influence populations. Joint fire support helps create conditions that provide the supported commander freedom of action. Joint fire support is achieved through coordinated interaction of all of the elements of the fire support system, thorough and continuous planning, aggressive coordination, and vigorous execution.

The joint force commander (JFC) is responsible for all aspects of joint fire support planning, prioritization, coordination, execution, and assessment. The JFC and component commanders, with the assistance of their staffs, integrate and synchronize joint fire support in time, space, and purpose to increase the effectiveness of the joint force.

Scheme of Fires

The commander communicates the joint fire support plan through use of the scheme of fires—an integral part of the commander's concept of operations (CONOPS). The scheme of fires describes how to coordinate and synchronize the use of tactical,

operational, and strategic fires capabilities to create the JFC's desired lethal and nonlethal effects and achieve the desired objectives.

Relationship with Joint Targeting

Fires is a joint function—related capabilities and activities grouped together to help commanders synchronize, integrate, and direct joint operations. Joint fire support and joint targeting are fundamental tasks of the fires function with a unique relationship. The joint targeting process matches and integrates appropriate joint fires capabilities to validated targets to create desired effects and outcomes.

JOINT FIRE SUPPORT COMMAND AND CONTROL

Command Relationships

The JFC establishes clear supported and supporting command relationships that define the roles and responsibilities for joint fire support planning and execution. The JFC, though the operations directorate of a joint staff (J-3), conducts joint fire support with forces provided by and coordinated through component commanders and multinational partners.

Joint Fires Element

The JFC establishes a joint fires element (JFE) to integrate and synchronize fires planning and coordination. The JFE is composed of representatives from the J-3; the components (land, maritime, air, and special operations); and other elements of the JFC's staff, to include representatives from space and cyberspace operations, the directorates, interagency partners, and the national intelligence community. The JFE works closely with the command's intelligence directorate to ensure the successful execution of the joint targeting cycle.

Component Fires C2

Components (land, maritime, air, and special operations) provide fires to the JFC, including target acquisition, command and control (C2), and attack and delivery systems that collectively deliver fires where and when needed to support the commander's objectives.

Cyberspace Fires C2

Cyberspace forces, either local or global, deliver cyberspace attack support to the JFC, under tactical control or in direct support of the JFC. The cyberspace operations integrated planning element coordinates planning and integration of these fires.

JOINT FIRE SUPPORT PLANNING

The purpose of joint fire support planning is to optimize fires by integrating and synchronizing joint fire support.

The effectiveness of fire support planning and coordination is predicated on the JFC providing clear and precise guidance. From this guidance, the commander and staff develop the scheme of fires to support the scheme of maneuver.

All components plan for and coordinate joint fire support.

Joint Fire Support Functions

Joint fire support is built on four basic fire support functions:

- **Support Forces in Contact.** The commander provides joint fire support to protect and enable freedom of maneuver to forces in contact.
- **Support the CONOPS.** The CONOPS clearly and concisely expresses what the JFC intends to accomplish and how it will be done using available resources.
- **Integrate and Synchronize Joint Fire Support.** Joint fire support planning begins with the commander's estimate and CONOPS and continues concurrently with development of the scheme of maneuver. Joint fire support must also be synchronized with other joint force activities (e.g. air operations, cyberspace operations, special operations, personnel recovery, and information-related activities) to optimize limited resources and avoid friendly fire incidents.
- **Sustain Joint Fire Support Operations.** Joint fire support planners will mitigate logistics limitations and exploit logistical capabilities.

Joint Fire Support Capabilities

Fires planners must have a thorough knowledge of all available capabilities and their ability to create lethal and nonlethal effects. Joint fire support capabilities may

include, but are not limited to, **air-to-surface capabilities** (fixed-wing aircraft, rotary-wing aircraft, unmanned aircraft, standoff weapons, and precision-guided weapons), **surface-to-surface capabilities** (rockets, missiles, cannon artillery and mortars, and naval surface fire support), **cyberspace operations, offensive space control, electronic attack, information-related activities** (military deception, military information support operations, operations security, and special technical operations), **nonlethal weapons,** and **other capabilities that support joint fires** (civil affairs, electronic warfare support, and public affairs).

Joint Fire Support Planning

Prior to execution, joint fire support planning is performed as part of the **joint planning process.** This planning results in the joint fire support plan that is part of the operations order (OPORD) or operations plan (OPLAN). After OPORD/OPLAN approval and during execution, fire support is planned as part of the joint targeting process using the **joint targeting cycle.**

JOINT FIRE SUPPORT EXECUTION

Joint fire support execution begins when the supported commander issues an execute order for an operation to commence and continues until the operation is terminated or the mission is accomplished.

Considerations

Anticipate the dynamics of combat operations. A thorough understanding of the commander's intent at every level of command is essential for the successful execution of the joint fire support plan as the operational environment changes due to enemy response to friendly actions.

Maintain situational awareness of the operational environment.

Leverage interoperable fire support and C2 systems. Digitally aided fire support enables machine-to-machine exchange of required fire support and targeting information for efficient and effective target prosecution by joint and multinational forces.

Use the lowest echelon capable of furnishing effective support.

Furnish the type of joint fire support requested.

Use the most effective joint fire support means.

Plan during execution. As the operation progresses, joint planning generally occurs in three distinct but overlapping time-frames: future plans, future operations, and current operations.

Synchronize battle rhythms. The commander's battle rhythm enables the synchronization of current and future operations. Subordinate and supporting commanders synchronize their own battle rhythms with the JFC.

Determine fire support requirements. The supported commander identifies and validates the joint fire support requirements, and transmits those requirements to the supporting commanders.

Allocate joint fire support resources. The supporting commanders provide fires to the supported commander.

The Joint Targeting Cycle

Commanders and their staffs integrate capabilities that can create lethal and nonlethal effects and synchronize the execution of appropriate fires and activities through the joint targeting cycle. The joint targeting cycle is a six-phase, iterative process that methodically analyzes, prioritizes, and assigns assets against targets to create effects that will contribute to the achievement of the JFC's objectives.

Joint Fires Employment

During execution, control of joint fire support forces is normally exercised through the J-3, who integrates and synchronizes fires with other major elements of the operation such as maneuver, information-related activities, special operations, and logistics. Joint fire support execution requires operational **battle tracking** of friendly forces and equipment, targets, and threats to friendly forces.

The JFE coordinates joint fire support by employing coordination measures, control measures, and by coordinating airspace.

Target Engagement

Target engagement is when forces engage targets with fires.

Target acquisition (TA) is the detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. **Forces engaging targets must be able to acquire and identify intended targets prior to weapons release.** TA can be accomplished by a wide range of capabilities, from visual identification to sophisticated electronic means.

The authority and responsibility to engage targets rests with the JFC responsible for the operational area. The JFC communicates engagement criteria to the force through rules of engagement and special instructions. The JFC may delegate target engagement authority to subordinate commanders.

Dynamic Targeting

Targets identified too late, or not selected for action in time to be included in targeting, are prosecuted using dynamic targeting procedures, often referred to as **find, fix, target, track, engage, assess** (or the **"kill chain"**) by air and maritime component forces and the **decide, detect, deliver, and assess** methodology by land component forces. Dynamic targeting produces targets of opportunity that include unplanned targets and unanticipated targets.

Missions executed to specifically detect, locate, identify, and engage targets of opportunity include strike coordination and reconnaissance (SCAR), airborne alert air interdiction (AI), close air support (CAS), and suppression of enemy air defenses (SEAD). The timeline for engaging targets with SCAR, airborne alert AI, CAS, and SEAD missions could be minutes, versus hours, days, or longer for traditional joint targeting cycle missions, but the requirements for TA and identification, including specific combat identification procedures, positive identification, and target validation criteria, is still required. In some instances, a single aircrew could perform every step in the "kill chain," including being designated as the target engagement authority.

JOINT FIRE SUPPORT ASSESSMENT

The JFC-level and component-level staff will assess joint fire support. The staffs should assess how effectively the joint fire support system supports forces in contact, supports the CONOPS and associated fire support plan, synchronizes joint fire support, and sustains joint fire support operations.

Process

Operation assessment is a process that measures progress toward mission accomplishment. The JFC may direct the formation of a cell, whose primary function is to develop and execute the assessment plan and to conduct assessment. The assessment cell is a cross-functional organization with representatives from applicable J-code directorates, the staff judge advocate, components, and multinational and interagency partners.

Results and Products

Results. Assessment of the joint fire support system provides various benefits to the joint force. In addition to measuring results and progress, assessment is used to improve planning, support decision making**,** and improve staff situational awareness of the composition and capabilities of forces available.

Products. Assessment reports may be formal or informal. The joint fire support assessment results will normally be combined with the assessment results from other mission areas to form a comprehensive operations and intelligence assessment report.

CONCLUSION

This publication provides fundamental principles and guidance for planning, executing, and assessing joint fire support.

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CHAPTER I
JOINT FIRE SUPPORT OVERVIEW

"Joint fire support includes joint fires that assist air, land, maritime, cyberspace, and special operations forces to move, maneuver, and control territory, populations, airspace, cyberspace, EMS [electromagnetic spectrum], and key waters."

Joint Publication 3-0, *Joint Operations*

1. Introduction

a. This publication provides guidance to joint force commanders (JFCs) and their subordinates to plan, execute, and assess joint fire support. It also informs interagency and multinational partners, international organizations, nongovernmental organizations (NGOs), and other civilian decision makers of fundamental fire support principles, precepts, and philosophies that guide the employment of the Armed Forces of the United States.

b. The JFC is responsible for all aspects of joint fires planning, prioritization, coordination, execution, and assessment. The JFC and component commanders, with the assistance of their staffs, integrate and synchronize joint fire support in time, space, and purpose to increase the effectiveness of the joint force. The JFC provides guidance to integrate components' capabilities and synchronize the execution of fires. Systems for delivering fires may be limited, and there are competing priorities for employing these assets. Therefore, JFCs and their staffs balance resources and requirements over the course of a joint operation to employ the appropriate mix of forces and capabilities required to achieve the objective.

c. Fires is a joint function. Joint functions are related capabilities and activities grouped together to help JFCs synchronize, integrate, and direct joint operations, to include joint fires tasks (see Figure I-1). This publication focuses on the joint fires task to provide fire support. The foundation of joint fire support is based on generating and maintaining combat power throughout an operation. Commanders plan to create desired effects through the use of joint fires while considering the requirements and costs to project and sustain the units that produce those effects. The principles of joint operations provide a set of time-tested guidelines for employing fire support.

For more information on the principles of joint operations and joint functions, see Joint Publication (JP) 3-0, Joint Operations.

2. Scheme of Fires

The JFC communicates the concept of operations (CONOPS) in operation plans (OPLANs) and operation orders (OPORDs). The commander's CONOPS describes how the actions of the joint force components and supporting organizations will be integrated, synchronized, and phased to accomplish the mission. **The scheme of fires is an integral**

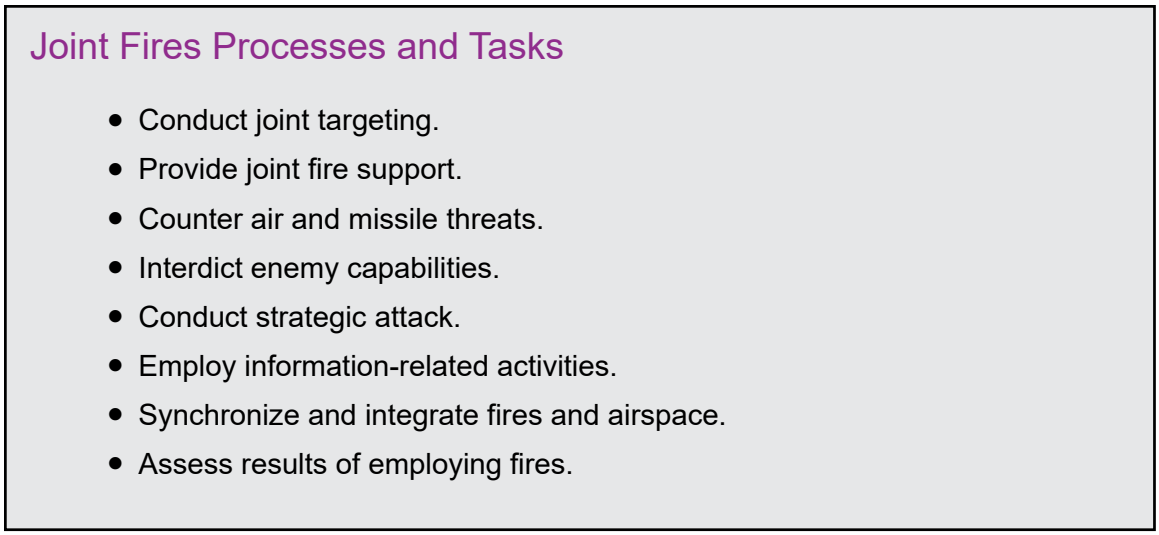

Figure I-1. Joint Fires Processes and Tasks

part of the commander's CONOPS. It describes how to coordinate and synchronize the use of tactical, operational, and strategic fires capabilities to create the JFC's desired lethal and nonlethal effects and achieve the desired objectives. Like the scheme of maneuver, the scheme of fires must be updated to reflect changes in the operational environment. Where the CONOPS scheme of fires provides the detailed plan to integrate weapon systems and other actions over the entire operation, the updated scheme of fires shows how tasks (on targets), and other actions, are being used to create desired effects to achieve objectives in the current operation. The commander sets the time frame for the period covered by an updated scheme of fires; however, it should be short enough (e.g., an air tasking order [ATO] cycle) to clearly convey the linkage between tasks (on targets), effects, and objectives. The JFC may provide guidance in the CONOPS scheme of fires as follows:

a. **Objectives.** The JFC provides clearly defined, decisive, and achievable objectives toward which every operation is directed. These stated objectives convey to subordinate commanders what the JFC wants to accomplish with fires.

b. **Priorities.** The JFC defines priorities to focus the weight of effort and timing of the joint force. With joint fires, this includes dedicated assets to planned component-critical targets, high-payoff targets (HPTs), JFC-designated time-sensitive targets (TSTs), and targets of opportunity during dynamic targeting.

c. **Effects.** Effects are a change to a condition, behavior, or degree of freedom. Effects are categorized as lethal or nonlethal in nature and are normally articulated using words such as destroy, delay, deny, neutralize, suppress, or influence.

d. **Munitions.** Munitions are used to create desired effects on targets. The JFC may issue guidance on the use or restricted use of unique weapons (e.g., directed energy) or certain munitions types (e.g., cluster munitions or mines) and may prioritize the allocation or use of joint operations area (JOA)-wide systems like the Tomahawk missile or the Army Tactical Missile System (ATACMS) for specific purposes.

e. **No-Strike List (NSL).** The NSL is a list of objects or entities characterized as protected from the effects of military operations under international law and/or rules of engagement (ROE). The NSL is not a target list. Deliberately engaging or not taking sufficient precaution to avoid these objects or entities may violate the law of war.

f. **Restricted Target List (RTL).** The RTL is a list of valid military targets that could be on the joint integrated prioritized target list (JIPTL) that have restrictions placed upon their engagement by the JFC or directed by higher authorities.

g. **Fire Support Coordination Measures (FSCMs).** Employment of FSCMs can permit or restrict the use of fires in the JOA.

3. Joint Fires

a. **Fires are the use of weapon systems or other actions to create specific lethal or nonlethal effects on a target.** Fires are normally synchronized and integrated to achieve synergistic results. Fires can be delivered by air, land, maritime, cyberspace, space, or special operations forces. Employing fires in conjunction with other activities, such as information-related activities, to create desired effects is a particularly important factor in maintaining or reestablishing a safe and secure environment.

b. **Joint fires are fires delivered during the employment of forces from two or more components in coordinated action to produce desired effects in support of a common objective.** Developing policy, guidance, and plans to employ operational and strategic fires are primarily joint activities. Joint fires assist conventional forces and special operations forces (SOF) in conducting military operations. Commanders employ fires to open windows of opportunity, ensuring freedom of action for friendly forces. Fires leverage joint, interagency, intergovernmental, and multinational capabilities at decisive points in time and space to achieve common objectives.

c. **Joint fire support is joint fires that assist air, land, maritime, space, cyberspace, and special operations forces to move, maneuver, and control territory, airspace, space, cyberspace, the electromagnetic spectrum (EMS), and key waters and to influence populations.** Effective integration, synchronization, and employment of joint fire support and joint targeting is essential to creating conditions that provide the supported commander freedom of action. Joint fire support is enhanced by interoperable systems, a broad understanding of the strengths and limitations of each component's capabilities, and a clear understanding of how they might be applied and integrated. Joint fire support is achieved through coordinated interaction of all of the elements of the fire support system, thorough and continuous planning, aggressive coordination, and vigorous execution. The joint fire support system includes target acquisition (TA), command and control (C2), and attack/delivery systems that collectively deliver fires where and when needed to support the commander's objectives.

4. Joint Targeting

a. **Targeting is the process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities.**

Targeting systematically analyzes and prioritizes targets and matches appropriate actions to targets to create specific lethal or nonlethal effects that achieve the JFC's objectives, accounting for operational requirements, capabilities, and the results of previous assessments.

b. **Joint targeting is a fundamental task of the fires function that encompasses many disciplines and requires participation from all joint force staff elements and components.** The purpose of joint targeting is to integrate and synchronize joint fires into joint operations by utilizing available capabilities to create a specific lethal or nonlethal effect on a target. Detailed joint intelligence preparation of the operational environment and country assessments, performed by JFCs within their JOAs, set the stage for detailed targeting within the joint targeting cycle. Many products used to support a contingency or military operation are developed, maintained, and continuously updated as foundational intelligence for specific targets. Joint targeting focuses on both future and current operations planning. It is executed through the joint targeting cycle, which is composed of the following six phases:

(1) Commander's objectives, targeting guidance, and intent.

(2) Target development and prioritization.

(3) Capabilities analysis.

(4) Commander's decision and force assignment.

(5) Mission planning and force execution.

(6) Combat assessment.

See JP 3-60, Joint Targeting, *and JP 2-01.3,* Joint Intelligence Preparation of the Operational Environment, *for more detailed information.*

c. **The Relationship Between Joint Targeting and Joint Fire Support.** Joint targeting and joint fire support are fundamental tasks of the fires function. The joint targeting process enables the JFC to identify joint fire support requirements (tasks to subordinate and supporting commands) by matching available capabilities to validated targets to create the JFC's desired effects. Supported and supporting fire support elements refine and execute fire support requirements from joint targeting to respond to dynamic combat operations and enable the JFC's freedom of action.

5. Target Engagement

a. **Target engagement is when forces engage targets with fires.** Supported commanders may grant engagement authority to supporting commanders. Forces engaging targets will carefully analyze JFC objectives and strictly adhere to higher headquarters (HQ) restrictions. Supporting commands conduct combat identification (CID) prior to and during target engagement. Engaging forces maintain vigilance on the location and movement of friendly forces throughout the engagement—friendly force tracking (FFT) is

inextricably linked to CID and paramount to mitigating the risk of friendly fire incidents. Observed changes to the operational environment that affect target engagement should be quickly transmitted between supported commands and forces providing joint fires.

b. **Relationship with Joint Fire Support.** If target engagement authority is delegated, it remains with the commander assigned the target during the joint targeting process. Controlling agencies integrate and synchronize joint fires between the supported and supporting commanders and transmit engagement orders to other (including subordinate) controlling agencies. Controlling agencies should also create procedures and mechanisms to enhance integration and synchronization of joint fires support requests for assigned targets to meet all legal and operational joint targeting functions. While joint fire support provides assigned commanders with an alternative to organic fires, nothing relieves the supported commander of the legal obligations associated with targeting.

6. Assessment

a. Assessment is a commander-centric process, integral to the joint fire support planning process. Assessments assist in determining the effectiveness of the joint fire support system as it relates to forces in combat, the CONOPS, synchronization, and sustainment operations.

b. Assessment of joint fire support requires the development of an assessment plan, which includes, but is not limited to, metrics to be monitored during execution, evaluation of joint fire support activities, and recommended adjustments to future fire support activities.

c. Effective assessments enable the commander and staff to measure progress, enhance situational awareness (SA) and knowledge, and, as necessary, continually adjust direct actions to achieve objectives.

A detailed discussion on assessment can be found in Chapter V, "Joint Fire Support Assessment."

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CHAPTER II
JOINT FIRE SUPPORT COMMAND AND CONTROL

"A superiority of fire, and therefore a superiority in directing and delivering fire and in making use of fire, will become the main factors upon which the efficiency of a force will depend."

Marshal of France Ferdinand Foch
***Precepts and Judgments*, 1919**

1. Introduction

This chapter reviews the joint force command structure and the fire support functions employed to control joint fires. It includes the roles, responsibilities, and some of the C2 and fire support systems available to the joint force. The successful application of joint fire support depends on the close coordination of these functions. Joint fire support functions in a coordinated and integrated manner to support the JFC's objectives.

2. Employment Considerations

a. **C2 in Operational Areas—Supported and Supporting Joint Fire Support Relationships.** To meet the JFC's objectives, the joint force synchronizes diverse fires assets from US and multinational forces. Joint fire support requires planning and detailed coordination to integrate and synchronize the supporting commander's joint fire support into the supported commander's operation. Clear JFC-designated supported and supporting command relationships define the roles and responsibilities for joint fire support planning and execution. The supported commander provides joint fire support requirements to the supporting commander(s). The supporting commander(s) allocates resources based on joint fire support requirements. Staffs and C2 agencies then coordinate to synchronize joint fire support to optimize effects and mitigate risks to friendly forces and civilians in the supported commander's operational area.

(1) Fire support relationships may be long-term, frequently repeated, or a one-time occurrence.

(a) **Long-term** support relationships should develop enduring joint fire support planning processes and procedures. The land, maritime, and SOF commanders are the supported commanders within the areas of operations (AOs) designated by the JFC. Within their designated AOs, component commanders not only integrate and synchronize maneuver, fires, and interdiction but also designate target priority, effects, and timing of fires. Close air support (CAS) is an example where decentralized execution nodes (air support operations center [ASOC], tactical air control party [TACP], and joint terminal attack controllers [JTACs]) are embedded with ground forces to plan and control joint fire support.

(b) Components should also anticipate **frequently repeated** temporary command relationships such as land component suppression of enemy air defenses (SEAD) fires in support of air component actions.

(c) For joint fire support actions that may have a **one-time occurrence,** such as TSTs, the JFC may delegate planning and execution C2 to a component because of efficiencies in detection and sensor control to support positive identification (PID). However, the JFC delineates the supported and supporting relationships facilitating another component's ability to provide more effective or rapid engagement.

(2) **Land and Maritime AO.** Commanders designated by the JFC to execute theater- and JOA-wide functions (e.g., joint force air component commander [JFACC]) plan and execute theater- and JOA-wide operations in coordination with the respective commanders. If the theater- or JOA-wide operations present a potential adverse impact within a land or maritime AO, the commander assigned to execute discusses the potential risks with the land or maritime component commander to resolve prior to execution or elevates any unresolved issues to the JFC for resolution.

(3) **Air interdiction (AI)** operations are conducted to divert, disrupt, delay, or destroy the enemy's military surface capabilities before they can be brought to bear effectively against friendly forces or to otherwise achieve objectives that are 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. The JFACC is normally the supported commander for the JFC's overall AI effort; however, within their operational areas, the joint force land component commander (JFLCC), joint force maritime component commander (JFMCC), and joint force special operations component commander (JFSOCC) remain the supported commanders.

See JP 3-03, Joint Interdiction; *JP 3-09.3,* Close Air Support; *JP 3-31,* Joint Land Operations; *and Appendix A, "Coordination and Control Measures," for a more detailed discussion of AI and the fire support coordination line (FSCL).*

(4) **Joint Special Operations Areas (JSOAs).** A JSOA is an area of land, sea, and airspace assigned by a JFC to the commander of a joint special operations force to conduct special operations activities (e.g., a discrete, direct action mission or longer-term, unconventional warfare operations). JFCs may use a JSOA to delineate and facilitate simultaneous conventional and special operations. Within the JSOA, the JFSOCC is the supported commander.

(5) **Amphibious Objective Areas (AOAs).** An AOA is a geographical area (delineated for C2 purposes in the initiating directive) within which is located the objective(s) to be secured by the amphibious force. This area should be of sufficient size to ensure accomplishment of the amphibious force's mission and must provide sufficient area for conducting necessary sea, air, and land operations. Within the AOA, the designated amphibious force commander is the supported commander.

(6) **Space Joint Operating Area (SJOA).** The SJOA extends the existing doctrinal operational area framework to space. Commander, United States Strategic Command (CDRUSSTRATCOM), leads Department of Defense (DOD) space operations planning and ensures planning supports, and is synchronized with, combatant command plans. CDRUSSTRATCOM plans for the defense and protection of the SJOA (which lies

in the space domain) and for the creation of space effects. The Joint Force Space Component Commander is responsible for conducting space operations to defend the SJOA and for creating theater and global space effects on behalf of CDRUSSTRATCOM. Consequently, with the exception of missile defense operations to defeat enemy ballistic missile attacks in their area of responsibility, actions and fires that have the potential to generate unintended effects in the SJOA should be coordinated between the executing combatant commander and CDRUSSTRATCOM.

For additional information, see JP 3-14, Space Operations.

See JP 3-0, Joint Operations, *for a more detailed discussion on operational areas. See JP 3-03,* Joint Interdiction, *for a more detailed discussion on joint fires in interdiction. See JP 3-02,* Amphibious Operations, *for a more detailed discussion of an AOA. For additional information on the SJOA, see JP 3-14,* Space Operations.

b. **Unity of Effort.** Component forces' planning, execution, and TA capabilities often overlap. Due to the diversity of systems capable of providing joint fire support, C2, and TA, the JFC should strive for unity of effort throughout the joint and multinational force.

c. **C2 of Multinational Forces.** Nations participating in multinational operations rarely, if ever, relinquish national command of their forces. As such, forces participating in multinational operations will almost always have at least two distinct chains of command: a national chain of command and a multinational chain of command. Synchronizing the operations of multinational forces and forces that include other nonmilitary mission partners requires considerably more coordination and planning. There are three doctrinal command structures when working with multinational forces: integrated, lead nation, or parallel. A robust liaison network and coordination centers are two key structural enhancements designed to improve the coordination efforts of multinational forces.

See JP 3-16, Multinational Operations, *for more information on multinational C2 relationships.*

3. Synchronization of Fires with Movement and Maneuver

a. **Coordinate Maneuver and Fires.** Joint fire support and maneuver are coordinated through teamwork; unity of effort; and synchronization of capabilities in time, space, and purpose. Maneuver is the movement of forces in relation to the enemy to secure or retain positional advantage, usually to deliver—or threaten delivery of—the direct and indirect fires of the maneuvering force. Maneuver positions forces at decisive points to achieve surprise and to create psychological effects and physical momentum. Maneuver may also enable or exploit the effects of massed or precision fires. The focus of maneuver is to render enemies incapable of resisting by shattering their morale and physical cohesion (their ability to fight as an effective, coordinated whole).

See JP 3-0, Joint Operations, *for a more detailed discussion on maneuver.*

b. **Movement, maneuver, and fires are complementary functions that are essential to achieving JFC objectives.** The principal purpose of movement and maneuver is to gain positional advantage relative to the enemy. Maneuver of forces relative to enemy-critical capabilities can be key to the JFC's operation. Through effective maneuver of friendly forces, the enemy can be placed into a position of disadvantage. **Chances of successful maneuver are improved with fire support and movement.** Commanders use joint fire support separately from, or in combination with, maneuver to destroy, neutralize, degrade, or suppress enemy forces and disrupt enemy maneuver, thus influencing the enemy to act in ways that better enable friendly force operations. In addition, commanders can achieve strategic objectives or influence populations using joint fires. If the enemy remains in position, their forces may be isolated and destroyed by fires delivered by the joint force. If the enemy withdraws; attempts to establish new, defensive positions; or maneuvers their forces for counterattack, they may be exposed to unacceptable losses caused by the effective use of joint fire support. When exploiting the effects of maneuver, commanders use joint fire support to neutralize the enemy's forces and destroy their will to fight. Maneuver and fires are complementary dynamics of combat power. Although one might dominate a phase of the battle, their synchronization is a characteristic of successful military operations. The synchronization of fires and maneuver makes the defeat of larger enemy forces feasible and enhances the protection of friendly forces.

4. Structure and Functions

a. JFC and Staff

(1) The **JFC** is responsible for all aspects of joint fires planning, execution, and assessment. The JFC should plan joint fires to reduce duplicate fires, implement procedures and coordination measures to prevent friendly fire incidents, and synchronize fires across all components. Additionally, the JFC synchronizes strategic fires with other higher, adjacent, and subordinate commanders to avoid conflicts with national military strategic operations occurring inside or outside the JFC's JOA. The JFC's primary targeting responsibility is to establish the objectives, priorities, and desired effects for component commanders. The subordinate component commanders will create the desired effects through the application of joint force capabilities (e.g., joint fire support). In addition, the JFC provides guidance on munitions usage and restrictions, restricted targets, and the NSL. The JFC will seek to overwhelm the enemy and destroy the enemy's will to resist through near-simultaneous application of fires.

(2) The Operations Directorate of a Joint Staff (J-3)

(a) The J-3 is the JFC's principal staff advisor to coordinate the interaction of all fire support system elements, including TA, C2, and attack/delivery systems. The J-3 must ensure these elements function collectively to deliver fires where and when the commander requires them. Additionally, the J-3 will integrate and synchronize joint fire support with other joint functions of C2, information, intelligence, movement and maneuver, protection, and sustainment. The J-3's joint fire support responsibilities may include:

1. In coordination with the intelligence directorate of a joint staff (J-2) and the civil-military operations directorate of the joint staff, developing joint targeting guidance, objectives, and priorities for JFC approval.

2. In coordination with the J-2, managing the joint target list (JTL), RTL, and NSL.

3. Coordinating and assessing joint operations.

4. Coordinating ROE.

5. Developing and employing coordination measures (e.g., FSCMs, airspace coordinating measures [ACMs], and maneuver control measures [MCMs]) to support CONOPS. This includes using target restrictions found in the RTL to create FSCMs. (See Appendix A, "Coordination and Control Measures.")

6. Coordinating with the airspace control authority to ensure joint airspace planning is integrated with joint fires planning. An Army digital liaison detachment, if established, can enhance interoperability among all stakeholders.

7. Conducting joint fire support and directing, coordinating, and synchronizing fires. The J-3 requires a broad understanding of the strengths and limitations of each Service and functional components' capabilities, as well as interagency, international, and multinational capabilities, and a clear understanding of how they might be applied and integrated.

8. Monitoring munitions supply status and logistic concerns affecting joint force fires. Considering ammunition management, ammunition distribution, and triggers for resupply.

9. Organizing and serving as a member of a joint targeting coordination board (JTCB), if established by the JFC.

10. Coordinating with the operations divisions of the established functional component commands (land, air, maritime, and special operations), the space coordinating authority, and the supporting joint force headquarters-cyberspace (JFHQ-C). Coordinating with the naval component commander when submarine operational authority is not held by the JFMCC.

11. Developing, publishing, and executing a fires deconfliction process during planning and execution that considers interagency and multinational partners, intelligence community members, and NGOs with equities in the JOA. These organizations are responsible for providing relevant operational liaisons in theater to support joint fires element (JFE) deconfliction processes.

(b) **JFE**

1. The JFE is a staff element established by the JFC and composed of representatives from the J-3; the components (land, maritime, air, and special operations); and other elements of the JFC's staff, to include space and cyberspace operations representatives and the directorates (e.g., intelligence, logistics, plans, and civil-military operations). See Figure II-1. The JFE integrates and synchronizes fires planning and coordination on behalf of the JFC and should be near the joint force joint operations center (JOC) and co-located with the information operations cell, if possible. The JFE works closely with the command's J-2 to ensure the successful execution of the joint targeting cycle. JFE responsibilities generally include:

a. Developing JOA-wide joint targeting guidance, objectives, and priorities. This is normally accomplished in conjunction with component planners as part of the joint planning group (JPG).

b. Coordinating component input to validate target nominations. During future plans, nominate targets to the JTL/RTL for planning. During future operations, nominate targets to the JIPTL.

c. Deconflicting targets with all components, multinational partners, interagency partners, intelligence community members, and NGOs with equities in the JOA. This process is separate from the target vetting process conducted by the J-2 to confirm the characterization of targets.

See Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3370.01, Target Development Standards, *for more information on the target vetting process.*

d. Forwarding the draft JIPTL to the JTCB for review and then managing the JFC-approved JIPTL.

e. Coordinating, maintaining, and disseminating a complete list of FSCMs and operational areas within the JOA to avoid friendly fire incidents and conflicts with other current or future operations. This includes applying restrictions found on the RTL and NSL to building FSCMs in joint fires and C2 systems.

f. In coordination with the J-2, developing the roles, functions, and agenda of the JTCB for JFC approval.

g. In coordination with the J-2, organizing a planning team to address targeting efforts to bridge the gap between current and future operations.

h. Recommending intelligence, surveillance, and reconnaissance (ISR) collection requirements, to include assisting the J-2 and components in developing targets.

i. Developing the joint fires estimate and courses of action (COAs).

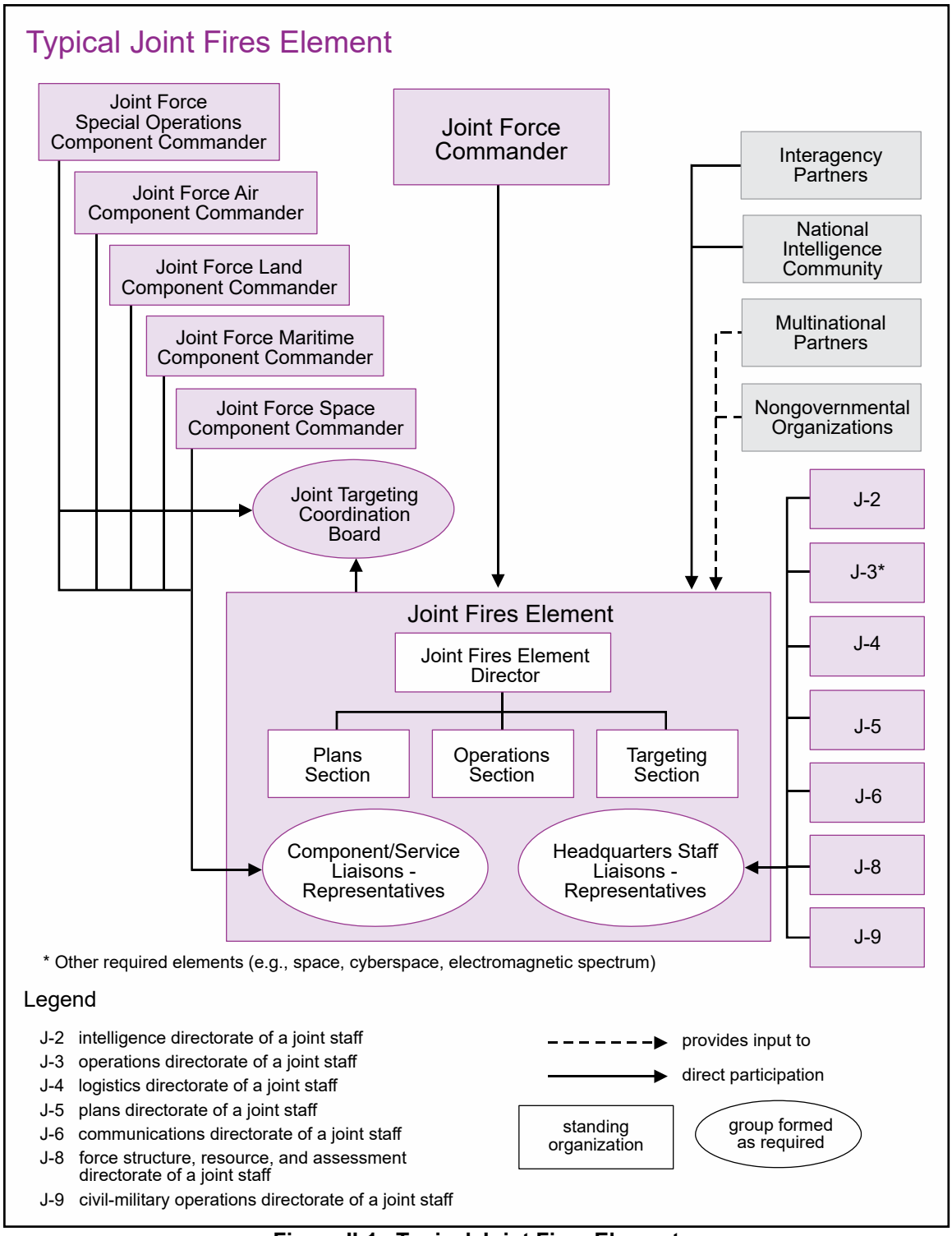

Figure II-1. Typical Joint Fires Element

j. Monitoring sensitive target, TST, and component-critical target actions for the J-3. Recommending procedures to engage TSTs and component-critical targets.

k. Recommending HPTs to the JPG.

l. Coordinating joint fires and targeting ROE issues with mission partners.

m. Developing procedures to minimize collateral damage based on commander's guidance and higher-level directives.

See CJCSI 3160.01, No-Strike and the Collateral Damage Estimation Methodology, *for a more detailed discussion on collateral damage.*

n. Conducting assessments of joint fires and targeting in coordination with higher HQs and components.

2. JFE director responsibilities include the following:

a. Advising the JFC and staff on joint fires.

b. Planning, coordinating, and facilitating the JTCB meetings, to include administrative support.

3. JFE plans section responsibilities normally include the following:

a. Providing the principal JFE representative to the JPG.

b. Preparing the fires portion of all plans, orders, branches, and sequels.

c. Drafting JOA-wide joint targeting guidance, objectives, and priorities for JFC approval.

4. JFE operations section responsibilities normally include the following:

a. Providing the principal representative to the JOC for all matters pertaining to ongoing joint fires operations.

b. Producing and disseminating updates to the fires and targeting situation and guidance (including JTCB updates).

c. Recommending the employment of joint FSCMs. Conferring with the JFE targeting section for a list of restrictions from the RTL and NSL that require FSCMs.

d. Monitoring joint fires and fire support in the JOA, to include contact with the components, as necessary.

e. Developing processes and procedures to identify and attack TSTs.

f. Developing processes and procedures to deconflict fires that are separate and distinct from the target vetting process.

5. JFE targeting section responsibilities normally include the following:

a. Assisting the J-2 in maintaining and refining the JTL.

b. Maintaining the RTL and NSL and publishing changes to these lists as needed.

c. Identifying restrictions on the RTL and NSL that require the generation of FSCMs and informing the JFE operations section of the requirement to establish and employ joint FSCMs.

d. Providing the J-3 representative to collection management.

e. Providing the J-2 with J-3 targeting priorities and other inputs as required.

f. Compiling and deconflict target nominations from the staff and higher HQ.

g. Maintaining liaison with the information operations cell.

h. Maintaining liaison with the civil-military operations staff.

i. Coordinating the tactical and operational assessment efforts with the staff and components.

j. Coordinating with other combatant command JFEs on issues that impact more than just the JFC's operational area.

(3) **Joint Force Staff Functions.** Planners build joint fire support to help accomplish the commander's intent. Joint fire support priorities and objectives are typically listed as part of the overall priorities and objectives within the CONOPS. The commander's estimate and the CONOPS focus planners to efficiently employ all assets, including joint fires.

(a) **Commander and Staff Estimates.** Estimates help the commander clearly understand the situation and select the best COA. Building estimates sharpens the staff's focus on the current enemy and friendly situation, helps the commander articulate the objective or mission, and clearly expresses COAs. Commander and staff estimates continuously evaluate how to employ joint and component fires.

(b) **CONOPS.** The CONOPS describes how the commander anticipates the operation will unfold. The CONOPS discusses joint force maneuver and the application of joint fire support. The joint fires discussion should reflect the JFC's concept for application of available fires. Guidance for joint fire support should address:

1. Joint force policies, procedures, and planning cycles.

2. Joint fire support assets.

3. Priorities for employing TA assets.

4. Areas that require joint fires to support operational maneuver.

5. TSTs.

6. High-value targets (HVTs) and HPTs.

7. Anticipated joint fire support requirements.

8. FSCMs.

9. Fires deconfliction.

10. Cross-boundary coordination procedures.

(c) **JTCB.** The JFC supervises the planning, coordination, and deconfliction of the joint targeting process. To coordinate targeting, the JFC normally establishes a JTCB and appoints the deputy JFC or a component commander to chair it, to provide experience and focus. When a JTCB is not established and the JFC decides not to delegate targeting oversight authority to a deputy or subordinate commander, this task may be performed at the joint force HQ. The JFC coordinates with subordinate commands, other agencies, and multinational partners. Joint targeting is an iterative process that requires close coordination. If the JFC delegates authority for joint target planning, coordination, and deconfliction to a subordinate commander, that commander should have sufficient C2 infrastructure, facilities, and expertise to manage and lead the JFC's joint targeting operations. When a specific agency is charged with joint functional command responsibilities, a joint targeting mechanism may be needed to facilitate this task at the component level. All components are normally involved in targeting and should establish procedures and mechanisms to manage their part in joint targeting. In a multinational environment, the JTCB may be subordinate to a multinational targeting coordination board.

(d) **Joint Targeting Working Group (JTWG).** To assist in the coordination and integration throughout the joint targeting process, the JFC may approve the formation of a JTWG. The JTWG supports the JTCB by conducting initial collection, consolidation, and prioritization of targets and synchronization of target planning and coordination on behalf of the JFC. The JTWG is an action officer-level venue that meets as required to consolidate and prioritize the draft JIPTL and discuss targeting integration and synchronization issues raised by the JFC, staff, planning teams, and the JFC's major subordinate commands.

See JP 3-60, Joint Targeting, *for more information on the JTCB and JTWG.*

(e) **Multinational Operations and Collaborative Information Environment (CIE)**

1. When conducting multinational operations, some contributing nations may not have connectivity and access to the joint force information systems. Additional communications systems may be needed to enable interoperability between all contributing nations. A CIE provides and supports mission partner information sharing.

2. The JFC can facilitate information sharing by coordinating with the supported commanders to establish a multinational partner local area network.

3. The establishment of a CIE with partner nations facilitates information sharing within a multinational force. Operations require US forces and partner nations to understand the tactics, techniques, and procedures for establishing and operating a collaborative network that is enabled by the technical capabilities that each partner nation brings to an operation. Within a CIE, the US commander should balance the need to know with the responsibility to share and understand the associated risk. Multinational information and intelligence sharing should be facilitated by establishing a shared local area network using systems such as CENTRIXS [Combined Enterprise Regional Information Exchange System] or another multinational mission network.

See JP 6-0, Joint Communications System, *for more information.*

(4) **Synchronizing C2 Assets.** The JFC exercises C2 to synchronize ISR and associated processing, exploitation, and dissemination capabilities. Joint, Service, and national agencies conducting ISR activities support the integration and synchronization of fires. Synchronizing fires requires C2 systems that are interoperable and capable of real-time data exchange.

See JP 2-0, Joint Intelligence, *and JP 6-0,* Joint Communications System, *for additional information.*

b. **Component Fires C2.** Components provide fires to the JFC. This includes providing available elements of the joint fire support system, such as target acquisition, C2, and attack and delivery systems that collectively deliver fires where and when needed to support the commander's objectives as outlined in the CONOPS and the scheme of fires.

(1) **Joint Force Land Component.** If the JFC chooses not to retain control of land forces at the JFC level, the JFC designates a JFLCC. When forces of significant size and capability of more than one Service component participate in a land operation, the JFC designates a Service component (normally the component commander with the preponderance of forces) as the JFLCC to achieve unity of command. The primary responsibility of the JFLCC regarding joint fire support is to advise the JFC on the best use of available land component fires capabilities, provide land component joint fire support requirements to the supporting commander(s) (if designated the supported commander), conduct component planning, and execute the OPORD.

See JP 3-31, Joint Land Operations, *for additional information.*

(a) **US Army Fire Support C2 Agencies.** Army commanders ensure the coordinated use of indirect fires, air and missile defense (AMD), and joint fires to create windows of opportunity for maneuver and put the enemy in a position of disadvantage. This is accomplished through the operations process, fire support planning, and targeting. These processes ensure the proper detection and delivery assets, capable of producing the desired effects on the enemy, are allocated against targets to enable friendly maneuver. The processes also enable the rapid and responsive delivery of fires by developing permissive and restrictive MCMs, FSCMs, and ACMs. Commanders use long-range fires (rocket, naval surface fire support [NSFS], and rotary-wing and fixed-wing air support) to engage the enemy throughout the depth of their AO. Units focus operations in their deep areas to set conditions that enable their subordinate units' success within their respective AOs. A corps coordinates and synchronizes joint fires as its primary tool to shape an engagement in its deep area. Staffs, liaisons, and other C2 elements assist the commander in these processes.

For additional information, see Field Manual (FM) 3-0, Operations.

1. **Chief of Fires.** The chief of fires is the senior fires staff officer at the theater level who advises the commander on the best use of available fires resources and provides input to the necessary orders.

For additional information, see Army Doctrine Reference Publication (ADRP) 3-09, Fires.

2. **Fire Support Coordinator (FSCOORD).** The FSCOORD is the senior field artillery (FA) commander for the corps, division, and brigade combat team. The FSCOORD executes the tasks of the fires function to create effects to achieve the commander's objectives. The FSCOORD is the maneuver unit commander's primary advisor to plan, coordinate, and integrate FA and fire support in the execution of assigned tasks. The FSCOORD provides guidance and direction to develop annex D (Fires). The FSCOORD translates the commander's guidance for fires into clear and concise fire support tasks. Fires support planning adheres to the principle of top-down planning with bottom-up refinement. The fires cell takes this guidance and develops annex D to support the scheme of maneuver.

For additional information on the FSCOORD, see ADRP 3-09, Fires.

3. **Fires Cell.** At the operational level of warfare, this cell coordinates, integrates, and assigns joint, interagency, and multinational fires to targets. It synchronizes fires, to include Army, joint, interagency, and multinational component air assets; SOF; NSFS; cyberspace operations; and EMS operations. Conversely, within the tactical-level echelons, the fires cells plan, prepare, execute, and assess fires in support of current and future operations. These fires cells back brief targeting guidance to the commander in accordance with the commander's intent for fires and maneuver; develop high-priority targets; and prioritize targets for attack, matching them to a wide range of targeting and delivery systems.

For additional information on the Army fires cell, see ADRP 3-09, Fires, *and FM 3-09,* Field Artillery Operations and Fire Support.

4. **Battlefield Coordination Detachment (BCD).** A BCD is a specialized, regionally focused Army element that serves as the senior Army operational commander's liaison with the air component. A BCD is co-located with the joint or combined air operations center (AOC). The BCD is the Army's interface for systems connectivity to the joint air operations center (JAOC) and for personnel integration with their JAOC counterparts. BCD tasks include facilitating the exchange of current intelligence and operational data, processing air support requests, monitoring and interpreting the land battle situation, coordinating AMD, coordinating airlift, and integrating airspace requirements. When a US Army HQ is designated as the joint forces land component command, the BCD may serve as the land component commander's liaison to the air component commander when augmented with other unique land force representatives.

For additional information on the BCD, see Army Techniques Publication (ATP) 3-09.13, The Battlefield Coordination Detachment.

5. **Other Liaisons.** The Army provides liaisons to integrate Army requirements with other components and multinational partners. Typically, Army ground liaison detachments are located at supporting fighter and bomber wings, airlift wings, and reconnaissance liaison detachments at supporting reconnaissance squadrons. The Army provides representatives to the JFE/JTCB; other joint working groups; and supporting elements such as Airborne Warning and Control System (AWACS), Joint Surveillance Target Attack Radar System (JSTARS), and the control and reporting center (CRC). Liaison elements from other Services are found at Army units. In addition to the Air Force TACP and ASOC, common liaison elements include air-naval gunfire liaison company (ANGLICO) and special operations command and control element (SOCCE).

6. **Joint Fires Observer (JFO).** A JFO is a certified and qualified Service member who, from a forward position, requests, adjusts, and controls surface-to-surface fires; provides targeting information in support of CAS; and performs terminal guidance operations (TGO). JFOs cannot perform terminal attack control of CAS missions and do not replace a qualified JTAC/forward air controller (airborne) (FAC[A]).

7. **Army Air and Missile Defense Command (AAMDC).** An AAMDC, as the Army's operational lead for AMD, plans, coordinates, integrates, and synchronizes the operational elements of theater AMD. Normally co-located with the JAOC, an AAMDC operates in direct support (DS) of the area air defense commander (AADC) and is fully integrated into the AADC's AMD C2 system. An AAMDC attack operations cell, and the intelligence section, conducts analysis and targeting focused specifically against the ballistic missile threat. Analysis includes actions to develop missile information requirements, build operational patterns and profiles, identify trigger events, analyze launch events, conduct countermobility analysis, and identify electronic warfare (EW) vulnerabilities. Missile targeting actions include nominating attack means and submitting target nominations to the draft JIPTL. When appropriate, an AAMDC

commander or representative participates in the JTCB. Also, an AAMDC and BCD will coordinate and synchronize their operations at the JAOC.

For more information on countering air and missile threats, see JP 3-01, Countering Air and Missile Threats, *and JP 3-31,* Joint Land Operations.

(b) **United States Marine Corps (USMC) Joint Fires C2 Agencies.** USMC forces may be employed as, or part of, the joint force land component; as, or part of, the joint force maritime component; or as the joint force air component. Marine Corps forces will operate as a Marine air-ground task force (MAGTF) consisting of a command element, a ground combat element (GCE), an aviation combat element (ACE), and a logistics combat element (LCE). Various agencies and elements within MAGTFs help commanders to execute fires. These agencies may be used for either landing force (LF) or sustained land operations. The MAGTF command element organizes a fires and effects coordination center (FECC), which coordinates overall fires. At each level below the command element (division, regiment, and battalion), a fire support coordination center (FSCC) is established to advise and coordinate fires within the GCE. The FECC and each FSCC are staffed with subject matter experts and representatives of the various Marine Corps and Navy supporting arms.

1. The **FECC,** under staff cognizance of the operations directorate, is the senior MAGTF fire support organization and assists the MAGTF commander in planning, coordination, execution, and assessment of MAGTF fires and effects. Normally located in the MAGTF combat operations center (COC) during operations, the FECC's primary effort is fighting the single battle, focused on shaping the battlespace. The FECC directs the MAGTF targeting methodology and counterfire actions and assists with coordinating fire support in the close and rear fight. The FECC coordinates and integrates fires and effects with MAGTF organizations, to include the GCE FSCC, ACE Marine tactical air command center (Marine TACC), LCE's COC, and rear area operation center (if established). In addition, the FECC coordinates MAGTF fires with higher and adjacent fires agencies and may provide liaisons to agencies to maintain close and continuous fires and effects coordination. During amphibious operations, fires and effects personnel from both the amphibious task force (ATF) and LF integrate and operate the supporting arms coordination center (SACC) while afloat. The FECC may incrementally assume responsibility for fires and effects planning and coordination from the Navy SACC if C2 is passed ashore.

See Marine Corps Warfighting Publication (MCWP) 3-31, Marine Air-Ground Task Force Fires, *for more information on USMC fires integration and coordination.*

2. **FSCC.** The FSCC is a single location that centralizes communications facilities and personnel for the coordination of all forms of fire support for the GCE. An FSCC exists at the Marine division; Marine regiment; and within infantry, tank, and light-armored reconnaissance battalions. The USMC employs a designated ground combat officer as a fire support coordinator (FSC), who acts as the direct representative of the GCE for the planning and coordinating of all available fire support. The FSCC is organized and supervised by the FSC. The FSCC is co-located with, and in support of, the operations

officer. A USMC FSCC normally includes an air section, naval gunfire liaison section, and artillery section to plan and execute fires in support of the scheme of maneuver. Additionally, a mortar section may be included in the FSCC for an infantry battalion but will not be found at any other level of C2 for fire support coordination. In amphibious operations, FSCCs are initially subordinate to the SACC and, if the FFCC is established ashore, subordinate to that agency.

3. **Marine TACC.** The Marine TACC is the senior agency of the Marine air C2 system. It provides the facilities for the commander of the ACE and the battlestaff to plan, supervise, coordinate, and execute MAGTF air operations. The Marine TACC is usually established ashore incrementally, beginning with a tactical air direction center. When the commander of Marine Corps forces is also the JFACC, the commander will augment the Marine TACC with elements from other components to create a JAOC.

4. **Direct Air Support Center (DASC).** The DASC is the principal Marine air C2 system agency responsible for the direction of air support activities affecting the GCE commander's operations and those air missions requiring close coordination with the ground combat forces. The DASC processes immediate requests for air support, coordinates aircraft employment with other supporting arms, manages terminal control assets supporting GCE forces, and procedurally controls aircraft transiting through DASC-controlled airspace. When control is afloat, the Navy tactical air control center (Navy TACC) supervises the ashore DASC's operation. When control is ashore, the Marine tactical air direction center or Marine TACC supervises the DASC's operations. The DASC is normally the first major air control agency to land in an amphibious operation. The DASC becomes operational when control of the operation is passed ashore and co-locates with the senior FSCC.

5. **Marine Corps TACP.** The Marine Corps TACP establishes and maintains facilities for liaison and communications between supported units and appropriate control agencies. An air officer leads the TACP, normally assigned to maneuver battalions. Their mission is to inform and advise the supported ground unit commander on the employment of supporting aircraft and to request and coordinate air support and surface-to-surface fire support missions. In addition, the TACP provides forward air controllers and JTACs for terminal attack control for CAS and initiates casualty evacuation missions.

6. **Tactical Air Operations Center (TAOC).** The Marine TAOC is subordinate to the Marine TACC. Among its duties, the TAOC provides safe passage, radar control, and surveillance for offensive air support aircraft en route to and from target areas.

7. **Shore Fire Control Party (SFCP).** The supporting Marine Corps artillery battalions provide SFCPs to supported units. The SFCP consists of an NSFS liaison team and an NSFS spotting team. The NSFS liaison team is specifically organized to handle NSFS liaison matters for the supported commander, while the spotting team is charged with requesting and adjusting fires of assigned DS ships and general support (GS) ships.

8. **ANGLICO.** The ANGLICO provides the MAGTF commander a liaison capability to plan, coordinate, and conduct the terminal control of fires in support of joint and multinational forces operating within or adjacent to the MAGTF battlespace. Each ANGLICO contains Marine and Navy personnel qualified to plan, coordinate, and integrate all fire support assets available to the MAGTF, as well as joint and multinational forces.

For more information on the ANGLICO, see JP 3-09.3, Close Air Support, *and MCWP 3-31,* Marine Air-Ground Task Force Fires.

9. **Marine Liaison Element (MARLE).** The MARLE is the Marine Corps forces commander's representative within the JAOC and is responsive to the JFACC on matters pertaining to Marine Corps operations. The MARLE provides feedback to organizations within the JAOC on current and future joint air operations concerning integration of force requirements.

See JP 3-30, Joint Air Operations, *for additional information.*

(2) **Joint Force Maritime Component.** The JFC may designate a JFMCC to conduct joint maritime operations. The JFMCC is the supported commander for operations within the JFC-designated maritime AO (including airspace above the AO). When designated the supported commander, the JFMCC has authority to designate target priorities, effects, and timing of fires within the AO. The primary responsibilities of the JFMCC regarding joint fire support are to advise the JFC on the best use of available maritime component fires capabilities, provide maritime component joint fire support requirements to the supporting commander(s) (if designated the supported commander), conduct component planning, and execute the OPORD.

See JP 3-32, Joint Maritime Operations, *for additional information.*

(a) **Maritime Operations Center (MOC) Fires Element (FE)**. Fires and targeting personnel who contribute to the various MOC fires functions are organized in the FE for standardization and coordination. The FE is led by the fires lead, who coordinates all fires functions. Fires personnel may be assigned from another organization (e.g., intelligence targeting personnel to the FE for deliberate targeting) or may perform duties under the direction of other MOCs and cells (e.g., maritime dynamic targeting chief to current operations battle watch captain). The FE is organized in three operational-level targeting areas: deliberate targeting, dynamic targeting, and operational planning. The FE may also have a Tomahawk land-attack missile (TLAM) cell assigned, which provides expertise for operational-level planning and targeting in addition to their principal responsibilities for TLAM strike mission planning and coordination for organic and joint TLAM execution. Warfare commanders develop and publish tactical procedures, similar to ATO special instructions (SPINS), defining how other component assets join (check in) and operate in their naval operations. The composite warfare commander or JFMCC should integrate these warfare commander-specific SPINS into one common maritime special instruction for simplicity and ease of use by other components. The JFMCC should

also address the maritime SPINS in the JFMCC's supporting plans provided to the other component commanders.

See JP 3-32, Joint Maritime Operations, *and Navy Tactics, Techniques, and Procedures (NTTP) 3-32.1,* Maritime Operations Center, *for additional detailed guidance on MOC.*

(b) **SACC.** In amphibious operations, the SACC plans, coordinates, and controls all fires within the operational area, in support of the amphibious force, if control is not ashore. It is located aboard a ship configured with the requisite C2 facilities, enabling coordination of all forms of supporting fires (land-, air-, and sea-based).

For additional information on the SACC, see JP 3-02, Amphibious Operations, *and NTTP 3-02.2M/Marine Corps Tactical Publication (MCTP) 3-31A,* Supporting Arms Coordination in Amphibious Operations.

(c) **Navy TACC.** The Navy TACC is the senior amphibious air control agency afloat. During amphibious operations, and before control is passed ashore, Navy TACC controls all air operations within the AOA. The Navy TACC plans and conducts air operations, including CAS. Typically, the Navy TACC is onboard the ATF flagship. If the JFACC's command operations center is afloat, the Navy TACC may support operations as the JAOC. The Navy TACC has two sections that control and integrate CAS:

1. **Air Traffic Control Section (ATCS).** The ATCS provides initial safe passage, radar control, and surveillance for CAS aircraft within or traversing the AOA, to include those not assigned to the amphibious force. The ATCS can also provide early detection, identification, and warning of enemy aircraft.

2. **Air Support Control Section.** The air support control section supports the Navy TACC by controlling, supporting, or transferring control to subsidiary tactical air direction controllers. The section is located in the SACC to deconflict air missions, routes, and requests for fires.

(d) **Maritime AMD Command.** AMD consists of those measures taken to defend the force against air and ballistic missile attacks. The maritime AMD command collects, evaluates, and disseminates AMD surveillance information to the force and also plans, directs, monitors, and assesses the employment of AMD resources.

(3) **Joint Force Air Component.** JFCs normally designate a JFACC, whose authority and responsibilities are defined by the establishing JFC based on the JFC's CONOPS. The JFACC's role will normally reside with the component commander who has the preponderance of air assets and the ability to C2 them. The JFACC typically exercises tactical control over forces made available for tasking and fulfills requirements of established supported/supporting relationships. The primary responsibilities of the JFACC regarding joint fire support are to advise the JFC on the best use of available air component fires capabilities, provide air component joint fire support requirements to designated supporting commander(s), and conduct component planning in support of the OPORD. If designated by the JFC, the JFACC also performs the duties of the airspace control authority, the AADC, and the space coordinating authority. The following

discussion is based upon US Air Force fires C2 capabilities when the commander, Air Force forces, is designated as the JFACC. In this instance, the JAOC is the focal point for tasking and exercising control of these forces.

See JP 3-30, Joint Air Operations, *for additional information.*

(a) **JAOC.** The JAOC is structured to operate as a fully integrated command center and should be staffed by members of all participating components, to include key staff positions, to fulfill the JFACC's responsibilities. A JAOC provides the capability to plan, coordinate, allocate, task, execute, monitor, and assess the activities of assigned or attached forces. Through the JAOC, the JFACC monitors execution of joint air operations and directs changes as the situation dictates. As the lead C2 mechanism of the theater air-ground system, the JAOC should have secure and redundant communications with operations, logistics, weather, intelligence centers, and higher and lateral HQs, as well as subordinate units, to preclude degradation in its ability to control joint air forces.

See JP 3-30, Joint Air Operations, *for additional detailed guidance on JAOC operations.*

(b) **ASOC.** The ASOC is the primary control agency within the theater air control system (TACS) for execution of air operations that directly support land operations within division-assigned airspace. The ASOC is an extension of, and directly subordinate to, the JAOC. Normally co-located with the senior Army FE, the ASOC performs a current operations function, while planning and execution functions are performed by members of the TACP. ASOC and TACP personnel at the Army division may be integrated with the division fires cell and airspace element to form a joint air-ground integration center (JAGIC). A JAGIC is designed to fully integrate and coordinate all fires and air operations over and within a division commander's AO.

(c) The **TACP** is an air liaison unit co-located with ground maneuver units. TACPs are under the operational control of the ASOC and have two primary missions: to advise ground commanders on the capabilities and limitations of air operations (the responsibility of the air liaison officer) and provide terminal attack control of CAS aircraft (the responsibility of the JTACs).

(d) **CRC, AWACS, and JSTARS.** Other elements of the TACS include the CRC, AWACS, and JSTARS. The CRC and AWACS provide battle management, early warning and surveillance, weapons control, and data link management. The CRC is a ground-based mobile radar system, while AWACS is an airborne radar system. The JSTARS is an airborne, wide-area surveillance, ground-moving target indicator and synthetic aperture radar. It provides battle management, early warning, and surveillance of ground targets, weapons control, and ISR support.

(e) **Joint Air Component Coordination Element (JACCE).** The JFACC may establish one or more JACCEs with other functional component commanders' HQs (e.g., JFLCC, JFSOCC, JFMCC) to better integrate joint air operations with their operations. When established, the JACCE is a component-level liaison that serves as the direct representative of the JFACC. A JACCE is normally made up of the liaison

element(s) of the Service designated to provide the JFACC. The JACCE does not perform any C2 functions and the JACCE director does not have command authority over any air forces. The JACCE may be provided to the supported joint task force (JTF) HQ (if the theater JFACC is designated in support to a JTF) to better integrate air component operations within the overall joint force.

(4) **Joint Force Special Operations Component.** The joint force special operations component coordinates all fire support in support of special operations and, when tasked, fire support using SOF assets in support of other elements of the joint force. Special operations coordinate fire support through both external and SOF channels. Within SOF channels, various elements are established to assist commanders in the execution of their fire support responsibilities. SOF organizations and elements that provide C2 capabilities include:

(a) **Special Operations Joint Task Force (SOJTF).** A SOJTF is the principal organization designed to meet all special operations requirements in major operations, campaigns, or a contingency. The SOJTF commander plans, integrates, and executes all special operations in a designated operational area. The SOJTF is a general officer-/flag officer-led modular, tailorable, and scalable special operations task force (SOTF) designed to integrate and enable joint SOF made available to geographic combatant commanders and JFCs. The SOJTF is the principal joint SOF organization tasked to meet all special operations requirements in major operations, campaigns, or contingencies. A SOJTF is a JTF-capable HQ and can be designated a supported or supporting JTF. The SOJTF commander may also serve as the JFSOCC. The SOJTF is normally responsible for all SOF in the operational environment. As appropriate, the staff can form a SOF JFE. The JFACC provides a JACCE to the JFSOCC to assist in coordinating joint air operations. The JACCE will typically be located with the SOF JFE at the senior SOF echelon. The JACCE will be active in planning both future and current operations and will work closely with the SOF JFE to pass the most responsive assets to immediate engagements that require fire support.

(b) **Joint Special Operations Task Force (JSOTF).** The JSOTF is formed to execute special operations in support of a campaign or other operations. The JSOTF is normally an O-6-led modular, tailorable, and scalable SOTF designed to provide a capability to C2 multiple SOTFs or a SOF JTF consisting of both conventional forces and SOF. The JSOTF staff establishes a SOF JFE and joint air coordination element (JACE) to coordinate joint fire support with other components of the joint force and other United States Government (USG) departments and agencies. In the absence of a SOJTF, the JSOTF may be responsible for all SOF in the operational environment. If the JSOTF is the senior SOF echelon, then the JFACC will provide a JACCE, if required.

(c) **Joint Special Operations Air Component (JSOAC)**

1. The **JSOAC** plans and executes joint special operations air activities and ensures effective coordination, synchronization, and deconfliction of such activities with conventional air operations. Another key responsibility of the JSOAC is to ensure close liaison is accomplished with other SOF components. The JSOAC also has direct

liaison with the special operations liaison element (SOLE). The JSOAC commander will normally be the commander with the preponderance of aviation assets or the greatest capacity to plan, coordinate, allocate, task, control, and support assigned and attached special operations aviation assets.

2. **Special tactics teams (STTs)** are usually included with US Air Force SOF under the JSOAC. STTs are a task-organized element that may include combat control, pararescue, select TACP personnel, and special operations weather personnel. Weather personnel provide forecasting and environmental reconnaissance in the form of terrain, route, riverine, avalanche, and littoral assessments. Depending on mission requirements, STTs can be employed by both SOF and conventional forces. To prevent potential confusion, command relationships should be clearly articulated.

(d) **SOTF.** An SOTF is a grouping of SOF assets formed to carry out a specific operation or a continuing mission. SOTFs are scalable organizations built around the nucleus of Army SOF, Marine Corps special operations units, or naval special warfare units. An SOTF establishes a fire support element for targeting coordination and for integrating fires delivered on surface targets by fire-support means, under the control, or in support, of the tactical-level force.

(e) **SOCCE.** The SOCCE synchronizes special operations with land and maritime operations. The SOCCE is normally employed when SOF conduct operations in conjunction with a conventional force. It co-locates with the command element of the supported commander and performs C2 or liaison functions directed by the special operations commander. The focus of fires coordination is on the synchronization and deconfliction of joint fires.

(f) **SOF Fire Support Coordination.** Liaison between SOF and other elements of the joint force is critical to both effective support and the prevention of friendly fire incidents. SOF liaison elements provide special operations expertise to coordinate, synchronize, and deconflict operations in support of conventional forces and when special operations are conducted unilaterally. SOF C2 organizations, such as a SOCCE, may provide (or act as) liaison elements to coordinate fire support with their respective Service components. Additionally, the following elements provide fire support coordination and/or liaison for SOF:

1. **SOLE.** The SOLE is a team provided by the JFSOCC to the JFACC (if designated) or appropriate Service component air C2 organization to coordinate, deconflict, and synchronize special operations air, surface, and subsurface operations with conventional air operations. The SOLE director places SOF ground, maritime, and air liaison personnel in divisions of the JAOC to coordinate with the air operations staff. The SOLE coordinates appropriate FSCMs to help avoid friendly fire incidents. Through the SOLE, the JFSOCC ensures special operations aviation activities are coordinated, synchronized, and deconflicted with the JFACC's operations to ensure airspace coordination, flight safety, operations security, and unity of effort.

2. **SOF JFE.** The SOF JFE plans, coordinates, synchronizes, and executes fire support to safeguard both friendly ground and air units while expediting joint fires. Together with the JACCE/JACE, the SOF JFE will monitor and rapidly respond to SOF joint fires requests and can efficiently determine the most responsive resource and delivery means to respond to immediate support requests. The SOF JFE consolidates FSCMs for SOF and tracks team locations and reports them to the SOLE to aid the air-ground deconfliction process.

3. **JACE.** The JACE locates with the SOF JFE at the JSOTF. The JACE provides the JSOTF with air operations expertise. The JSOAC and JACE will exchange the necessary liaisons and information to maintain a common operational picture (COP). The JACE functions as the focal point for preplanned air support requests and advises the JSOTF commander on effective use of air operations.

4. **Fire Support Element.** At the tactical operations center echelon, typically the SOTF, the fire support element is responsible for targeting coordination and for integrating fires delivered on surface targets by fire-support means under the control, or in support, of the tactical-level force.

5. **Fires Employment.** Although all SOF operators are capable of employing surface fires and aviation fires from AC-130 aircraft, current and qualified SOF JTACs are recognized across all components of US Special Operations Command as the primary fires employment capability at the strategic, operational, and tactical levels. These personnel are specifically organized, trained, and equipped to conduct and support special operations. SOF JTACs are carefully selected to conduct special operations using modified equipment and trained in irregular warfare activities to achieve strategic and operational objectives in austere environments worldwide. SOF also employ SOF aviators as FAC(A). The SOF FAC(A) is an airborne extension of the JTAC in support of special operations.

See JP 3-05, Special Operations, *for more information on SOF C2 and liaisons.*

(5) **Additional Entities for CAS**

(a) **FAC(A).** The FAC(A) is a specifically trained and qualified aviation officer who exercises control from the air of aircraft engaged in CAS of ground troops. The FAC(A) is normally an airborne extension of the TACP. The FAC(A) also provides coordination and terminal attack control for CAS missions, as well as locating, marking, and attacking ground targets using other fire support assets.

(b) **Tactical Air Coordinator (Airborne) (TAC[A]).** The TAC(A) is an officer who coordinates, from an aircraft, the actions of other aircraft engaged in air support of ground or sea forces. The TAC(A) also expedites CAS aircraft-to-JTAC handoff during heavy-traffic CAS. For the Marine Corps, the TAC(A) is an airborne extension of the DASC.

(c) **JTAC.** A JTAC is a certified and qualified Service member who, from a forward position, directs the action of combat aircraft engaged in CAS and other offensive

air operations. A qualified and current JTAC will be recognized across DOD as capable and authorized to perform all types of terminal attack control.

See JP 3-09.3, Close Air Support, *for more detailed information about C2 of CAS.*

c. **Cyberspace Fires C2.** Cyberspace forces, either local or remote, deliver cyberspace attack support to the JFC, under the tactical control or in DS of the JFC. The cyberspace operations-integrated planning element supporting the JFC coordinates planning and integration of these fires, and they are controlled during execution by the JFHQ-C that supports the JFC.

See JP 3-12, Cyberspace Operations, *for additional information about C2 of cyberspace operations.*

d. **Joint Fire Support Digital C2 Systems**

(1) The **Joint Automated Deep Operations Coordination System (JADOCS)** is a software application that presents and manipulates command, control, communications, computers, intelligence, information, and communications interfaces to and from various systems to obtain, coordinate, and disseminate information. This digital integration of US and allied fires provides a forum for nominating targets and coordinating deliberate and dynamic targeting. The JADOCS application can reside on any commercial off-the-shelf computer with a Microsoft Windows operating system and connected to the appropriate theater networks.

(2) The **Advanced Field Artillery Tactical Data System (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 (e.g., mortars, FA, attack helicopters, air support, naval gunfire, and offensive EW). It meets the needs of the FA for planning the use of critical resources and for managing, collecting, and passing vital fire support data throughout fire support channels. AFATDS can create, store, and check FSCMs/ACMs for violations during fire mission processing. AFATDS can send both preplanned and immediate air support requests through each echelon of command to the supporting AOC. It is fielded from echelons above Army corps or Marine expeditionary force to firing battery levels. With their AFATDS, the DASC is able to link digitally into the artillery and TA channels to achieve a rapid counterfire capability from either ground or air systems. AFATDS can communicate over a variety of networks, including frequency modulation, high frequency, very high frequency, and ultrahigh frequency.

(3) The **theater battle management core system (TBMCS)** is a force-level, integrated air C2 system. TBMCS provides hardware, software, and communications interfaces to support the preparation, modification, and dissemination of the force-level air battle plan. TBMCS provides applications and communication interfaces that allow the ground commander to nominate, track, and verify targets in the ATO and deconflict airspace with the airspace control order (ACO).

(4) The **forward observer system (FOS)** is an automated fire support system used by commanders, FSCs/FSCOORDs, fire support officers, Army fire support team (FIST) chiefs, forward observers, and surveyors located at or employed remotely from the fire support agencies at corps, division, regiment, brigade, squadron, battalion, company, battery, troop, and platoon echelons. The FOS provides fires and effects integrators with an automated decision-making, planning, and execution capability, which provides seamless integration of synchronized and accurate fires into the maneuver commander's scheme of maneuver. The FOS performs automated fire mission, artillery target intelligence, fire planning, clearance of fires, and survey and geometry processing supporting the FA mission.

(5) The **Tactical Airspace Integration System (TAIS)** is a mobile airspace management system that provides US Army commanders, airspace users, airspace managers, and Army air traffic controllers a system for providing digitized, multi-echelon planning and execution of airspace management and air traffic services. TAIS provides the following capabilities:

(a) Airspace control planning and enhanced airspace control execution.

(b) Improved theater and intra- and inter-corps/division air traffic services support.

(c) Effective battlespace synchronization.

(d) Direct links to the theater air-ground system through interfaces with the automated airspace planning and communications systems of the airspace control authority.

(6) The **Tactical Tomahawk Weapon Control System** provides the firing platform the ability to conduct strike planning and coordination functions, conduct launch operations, flex inflight TLAMs to alternate preplanned aim points, and receive inflight health and status updates from the missile.

See JP 2-01, Joint and National Intelligence Support to Military Operations, *for more detailed information about airborne ISR processing, exploitation, and dissemination systems.*

e. **Digitally aided close air support (DACAS) systems** involve digital systems in aircraft and ground-based JTAC kits, which aid in the conduct of CAS planning and execution for the purpose of attacking a surface target. DACAS consists of CAS that is augmented by machine-to-machine exchange of SA and/or targeting messages that can include CAS briefs; friendly, threat, and target locations; battle damage assessment (BDA); clearance of fires; and C2. DACAS utilizes datalink to exchange both text and/or visual cueing information to enhance SA of the battlefield, minimize transcription errors, and decrease kill-chain timeline. The use of DACAS systems requires detailed network planning and comprehensive mission planning to ensure digital connectivity and efficient mission data flow between CAS participants. Additionally, C2 nodes at the operational

and tactical level should be organized, manned, and equipped to support unique digital exchange standards to ensure digital interoperability.

See JP 3-09.3, Close Air Support, *for more information on DACAS systems.*

f. **Additional Assets.** Each Service operates additional assets capable of contributing specific capabilities as needed. Examples of such assets or systems include the US Army's Airborne Reconnaissance Low-Enhanced; the US Navy's EP-3s; or the US Air Force's RC-135s and U-2s that, if allocated or used in a joint reporting environment, can also provide timely intelligence to joint fire support.

CHAPTER III
JOINT FIRE SUPPORT PLANNING

1. Introduction

a. **The purpose of joint fire support planning is to optimize fires by integrating and synchronizing joint fire support as part of the JFC's OPLAN or OPORD.** Effective integration and synchronization of joint fire support requires the thorough and continuous inclusion of all component fire support elements in the joint planning process, aggressive coordination, and vigorous execution of the plan. The supported commander, supporting commanders, joint fire support planners, and joint fires support agency planners should maintain a continuous dialogue.

b. **The effectiveness of fire support planning and coordination is predicated on the JFC providing clear and precise guidance.** Joint fire support planners and coordinators actively participate with other members of the staff to develop estimates, provide the commander with recommendations, develop the associated scheme of fires to the CONOPS, develop the fire support appendix to the OPLAN/OPORD, and supervise the execution of the commander's decision throughout the joint targeting cycle.

c. **All components plan for and coordinate joint fire support.** Commander's CONOPS are integral to the scheme of fires. Just as the JFC's intent and CONOPS should take into account the integration and synchronization of tactical, operational, and strategic operations, the CONOPS for component commanders should integrate and synchronize joint fire support at the tactical, as well as the operational, level. Joint fire support planning and coordination is continuous and its execution decentralized.

See JP 3-0, Joint Operations, *and JP 5-0,* Joint Planning, *for a more detailed discussion of planning and operational considerations.*

2. Considerations

a. **Scheme of Fires.** During planning, commanders develop a CONOPS, which forms the basis for the plan or OPORD. From this guidance, the commander and staff develop the scheme of fires to support the scheme of maneuver. Commanders also determine how to shape the operational environment, including the use of joint fires, to create conditions to allow freedom of maneuver. Plans to achieve subordinate objectives should include the effects desired from joint fire support. Joint fire support planners advise commanders on the best use of available joint fires support capabilities, develop joint fire support plans, prepare necessary orders for approval by appropriate commanders, and implement approved joint fire support plans for the component or joint force. Joint fire support requirements are considered throughout the JFC's planning and decision-making processes and during all phases of an operation.

b. **Basic Joint Fire Support Functions.** Joint fire support is assessed by evaluating whether it creates desired effects on the enemy, helps create conditions for decisive

operations, and supports joint force operations. **Joint fire support is built on four basic fire support functions:**

(1) **Support Forces in Contact.** The commander provides joint fire support to protect and enable freedom of maneuver to forces in contact.

(2) **Support the CONOPS.** The CONOPS clearly and concisely expresses what the JFC intends to accomplish and how it will be done using available resources. The scheme of fires describes how joint fires will be synchronized and integrated to support the JFC's objectives, as articulated in the CONOPS.

(3) **Integrate and Synchronize Joint Fire Support.** Joint fire support is synchronized through fire support coordination, beginning with the commander's estimate and CONOPS. Joint fire support is planned continuously and concurrently with the development of the scheme of maneuver. Furthermore, joint fire support must be synchronized with other joint force activities (e.g., air operations, cyberspace operations, ISR functions, special operations, personnel recovery, and information-related activities) to optimize limited resources and avoid friendly fire incidents.

(4) **Sustain Joint Fire Support Operations.** Joint fire support planners will mitigate logistics limitations and exploit logistics capabilities. Planning includes consideration of multiple modes of transportation when preparing estimates to move units; an effective practice includes preparation of a continuity book with time-phased force and deployment data and estimated aircraft requirements by unit, typically requiring advance coordination with designated movement and fires authorities and centers.

c. **Joint Fire Support Coordination.** The supported commander plans, integrates, and synchronizes joint fire support across the joint functions, in coordination with supporting commanders. When planning and execution are concurrent, the JFC's J-3 staff coordinates integration and synchronization of joint fire support. Coordination between the supported and supporting commands makes joint fire support planning an iterative process. Both supported and supporting commanders need flexibility to rapidly modify existing plans to improve effectiveness and mitigate risks.

d. **Legal Considerations.** Legal advisors should actively participate in the entire joint planning process. Legal advisors should assist decision makers at every echelon in translating policy decisions into legally acceptable plans and orders that comply with the law of war and support national security objectives across the range of military operations.

For more information on legal considerations, see JP 1-04, Legal Support to Military Operations.

e. **ROE and Authorities.** The identification, understanding, and development of authorities and ROE are critical for successful planning and execution of joint fire support. The joint force staff judge advocate (SJA) has a pivotal role in assisting operational planners to anticipate, understand, and pursue necessary authorities. The JFC proactively determines the need and timing for additional authorities and/or supplemental ROE measures to preclude lagging operational requirements.

See JP 1, Doctrine for the Armed Forces of the United States, *for more information on authorities. See CJCSI 3121.01,* (U) Standing Rules of Engagement/Standing Rules for the Use of Force for US Forces, *for more information on ROE. Also see JP 3-0,* Joint Operations, *for information on ROE considerations across the range of military operations.*

f. **Planning Considerations Across the Range of Military Operations.** The range of military operations is a fundamental construct that helps relate military activities and operations in scope and purpose. The potential range of military activities and operations extends from military engagement, security cooperation, and deterrence in times of relative peace up through large-scale combat operations. The range of military operations encompasses three primary categories: military engagement, security cooperation, and deterrence; crisis response and limited contingency operations; and large-scale combat operations.

(1) **Military Engagement, Security Cooperation, and Deterrence**

(a) Military engagement, security cooperation, and deterrence activities encompass a wide range of activities where the military instrument of national power supports other USG departments and agencies and cooperates with international organizations, such as the United Nations or North Atlantic Treaty Organization (NATO), and other countries to protect and enhance national security interests and deter conflict. These operations usually combine activities of conventional forces and SOF, USG departments and agencies, international organizations, and NGOs, in a complementary fashion.

(b) Various joint operations, such as a show of force or enforcement of sanctions, support deterrence by demonstrating national resolve and willingness to use force when necessary. Others, such as humanitarian and civic assistance programs, promote international stability through peaceful cooperation.

(c) The use of deadly force in support of security cooperation and deterrence activities is normally restricted and may be limited to certain situations, such as where it might be necessary to defend against an imminent threat of death or serious bodily harm to DOD forces or other persons in the vicinity.

(2) **Crisis Response and Limited Contingency Operations**

(a) Crisis response and limited contingency operations can be a single, small-scale, limited-duration operation or a significant part of a major operation of extended duration involving combat. The strategic and operational objectives are to protect US interests, to include preventing surprise attacks or further conflict.

(b) Joint fires in support of crisis response and contingency operations may be similar to those employed for large-scale combat operations but are normally more restrictive in their application. Joint fire support planning for crisis response and contingency operations can be constrained by time limitations and rapid execution

requirements. During crisis response, joint fire support planning expeditiously organizes and prioritizes limited assets.

(3) **Large-Scale Combat Operations**

(a) To achieve national strategic objectives or protect national interests, the US national leadership may decide to conduct a major operation involving large-scale combat, placing the US in a wartime state. In such cases, the objective is to **prevail** against the enemy as quickly as possible; conclude hostilities; and establish conditions favorable to the US, the host nation, and multinational partners.

(b) Large-scale combat operations typically occur within the framework of a major operation or campaign. Joint fires in support of large-scale operations may include, but are not limited to, air support by manned and unmanned aircraft; NSFS; and artillery, mortars, rockets, and missiles, as well as effects from electronic attack (EA), cyberspace attack, and other capabilities.

(c) Major operations and campaigns involve an ever-changing balance of offensive, defensive, and stability activities throughout all phases of the operation. Stability activities are various military missions, tasks, and activities conducted outside the US in coordination with other instruments of national power that seek to maintain or reestablish a safe and secure environment and provide essential governmental services, emergency infrastructure reconstruction, or humanitarian relief. As the mission of stabilization efforts is to restore vital national services, rather than destruction of enemy forces, the ROE will normally limit lethal fires employed in support of these activities. Planners should consider the impact of lethal and nonlethal fires conducted during the early combat phases on later stabilization and reconstruction phases of the operation and should endeavor to ensure US ROE are understood and appreciated by mission partners to help build and sustain mutual trust and confidence.

See CJCSI 3121.01, (U) Standing Rules of Engagement/Standing Rules for the Use of Force for US Forces, *for more information on ROE.*

g. **Intelligence.** The limited availability and high demand for ISR collection assets make it imperative that fire support planners carefully consider their intelligence and collection requirements, to include potential intelligence gain/loss considerations, and closely coordinate with intelligence planners. Target and munition selection, mitigation of collateral damage and effects, and assessment are enabled through intelligence support. Fire support planners should also consider the intelligence analytical processes.

See CJCSI 3370.01, Target Development Standards, *for additional intelligence considerations.*

h. **Prevention of Friendly Fire Incidents.** The destructive power and range of modern weapons, coupled with the high intensity and rapid tempo of modern warfare, increase the potential for friendly fire incidents. Risk management is fully integrated with planning and executing operations. **Commanders identify and assess situations that increase the risk of friendly fire incidents.** Commanders minimize and control risks by

implementing preventive measures in all plans. The primary preventive measures to limit friendly fire incidents are CID training, command emphasis, disciplined operations, coordination measures, close coordination among component commands, rehearsals, reliable and interoperable coordination systems, battle tracking, and enhanced SA. Employment of FFT-capable systems and devices, and singular preventive measures identified above, assist in preventing friendly fire incidents but are not intended to be used as a sole means for clearance of fires. Vesting engagement decisions in well-trained and qualified personnel greatly reduces the risk of friendly fire incidents. Commanders balance the application of preventive measures to reduce friendly fire incidents with their impact on the ability to engage enemy forces, since overly restrictive preventative measures risk limiting the effectiveness of friendly operations and actions. SPINS may also specify means to prevent friendly fire incidents in particular missions.

i. **Weapons of Mass Destruction (WMD).** As part of joint fires planning, planners must complete detailed collateral damage estimates. This is particularly important prior to engaging enemy WMD storage sites, weapon systems, or production facilities that could result in a release and dispersal of chemical, biological, radiological, and nuclear (CBRN) material. This effort includes not only WMD sites but also all targets known or suspected to contain toxic industrial materials (TIMs). For this reason, targets of this nature are normally placed on the RTL; however, mission priorities to counter WMD and military necessity may obligate JFCs to engage WMD targets with joint fires. Ground commanders should be advised of the predicted hazard area and must be given enough time to take appropriate force protection measures and be prepared to conduct CBRN response. Collateral effects on the local civilians should also be anticipated and planned for as well. JFCs should plan for follow-on operations to respond to and mitigate the effects of collateral damage from the effects of WMD. The Defense Threat Reduction Agency (DTRA) provides modeling and simulation tools available continuously through its National Countering Weapons of Mass Destruction Technical Reachback Enterprise to aid in the planning of strikes on WMD targets by conducting in-depth/long-range and time-sensitive plume hazard analyses. DTRA has the capability to model CBRN plume hazards from deeply buried and hardened targets to further support the collateral damage estimation (CDE) mission. These software tools can provide information to help minimize the release or dispersal of CBRN material and forecast the effectiveness of conventional and agent defeat weapons strikes on WMD targets and the resulting possible collateral effects.

For more information regarding CDE, see CJCSI 3122.06, (U) Sensitive Target Approval and Review (STAR) Process, *and CJCSI 3160.01,* No-Strike and the Collateral Damage Estimation Methodology.

For more information on WMD, see JP 3-40, Countering Weapons of Mass Destruction, *and JP 3-41,* Chemical, Biological, Radiological, and Nuclear Response.

j. **Multinational Considerations**

(1) Military operations are inherently joint and multinational. Joint fire support to multinational operations may encounter delays until coordination with partner nations is complete and agreements are ratified. Specifically, developing agreements on multinational

ROE may require significant time to coordinate, since most nations require approval from their highest levels of government for national ROE in multinational operations. Integration of digital fire support systems also presents a challenge, as interoperability, approvals to connect, multi-level security issues, and variance in equipment reliability and resiliency tend to impede the rapid and complete formation of multinational information networks. Developing national ROE for multinational operations, and preparing detailed technical descriptions of fire support systems prior to the operation, can speed coordination, agreement, and approval of multinational joint fire support operations.

(2) To maximize the effectiveness of multinational fire support and to minimize the possibility of friendly fire incidents, the multinational force commander and staff should become familiar with each nation's capabilities and limitations in TA systems, attack and delivery systems, fire support C2 systems, munitions, and training. Special arrangements include implementation of communications and language standards, exchange of liaison personnel, and adoption of interoperability procedures. Commanders should establish a standard operating procedure (SOP) for fire support to implement special arrangements and to communicate the process for the exchange of targeting information. To synchronize forces and optimize mission partner capabilities, the multinational force staff should:

(a) Identify and integrate joint and multinational fire support C2 systems and procedures.

(b) Identify and codify attack and delivery system capabilities and limitations.

(c) Identify specific national C2 organizational requirements (e.g., command positions, liaisons, and technical representatives).

(d) Plan, coordinate, and rehearse the use of coordination and control measures.

(e) Develop and promulgate a methodology to assess multinational joint fire support results.

(3) Examples of coordinated fire support arrangements:

(a) Use NATO standardization agreements (STANAGs). These provide participants with common terminology and procedures. When operating with countries not in NATO, similar SOP agreements should be made.

(b) Use SOF teams assigned to multinational units to provide the JFC with an accurate evaluation of capabilities, location, and activities of multinational forces, thus facilitating the JFC's C2.

(c) Establish guidelines for clearance of indirect fires in the ROE.

(d) Use a standard datum.

(e) Establish common meteorological procedures and standards.

(f) Provide liaison officers as required.

(g) Establish/coordinate the multinational ROE before the commencement of hostilities and continually refine them during operations.

(h) Establish the policy for indirect fire systems using non-precision munitions within the ROE.

(i) Establish the policy for using obscurants, illumination, and cluster munitions with inherent high dud potential within the ROE.

(j) Establish SOPs concerning the ways that digitally and non-digitally equipped forces operate together. When automatic interfaces are unworkable, determine liaison officer requirements.

(k) Establish a multinational target numbering system.

See JP 3-16, Multinational Operations, *for further information.*

3. Joint Fire Support and Force Capabilities

Fires planners must have a thorough knowledge of all available capabilities and their ability to create lethal and/or nonlethal effects and be aware of capabilities that might be used by other multinational partners (and USG departments and agencies). Only by knowing what is available can the planners effectively develop COAs to employ fires for presentation to, and approval by, the commander and subsequent development of a joint fire support plan. Joint fire support capabilities may include, but are not limited to, air-to-surface capabilities, surface-to-surface capabilities, cyberspace capabilities, offensive space control, EA, information-related activities, and other capabilities that can create nonlethal effects.

a. Air-to-Surface Capabilities

(1) **Fixed-Wing Aircraft.** Fixed-wing aircraft provide JFCs flexibility, range, speed, lethality, precision, and the ability to mass fires at a desired time and place. Fixed-wing aircraft support the joint fires tasks of strategic attack, countering air and missile threats (including SEAD and offensive counterair), and interdiction. Fixed-wing aircraft provide joint fire support with AI, CAS, airborne C2, ISR, strike coordination and reconnaissance (SCAR), SEAD, and FAC(A). The capacity of aircraft to deliver precision-guided munitions can enable JFCs to limit collateral damage, as well as strike otherwise-inaccessible targets. Also, aircraft may provide real-time attack assessment. Additionally, stealth technology allows for the delivery of weaponry with increased survivability.

(2) **Rotary-Wing Aircraft.** Rotary-wing aircraft can employ a variety of weapons, including precision-guided weapons. They can also provide terminal guidance for other weapon platforms, as well as operate during periods of limited visibility. The US Army

normally employs attack helicopters as maneuver units to conduct two basic types of attack missions: attacks against enemy forces in close, friendly contact with other Army maneuver forces and attacks against enemy forces out of friendly contact with other Army forces. US Army attack helicopters can also perform CAS in support of another component. The USMC employs its attack rotary-wing aviation primarily as a CAS platform. The ACE deploys with the MAGTF to execute CAS in support of the GCE ground maneuver elements.

(3) **Unmanned Aircraft (UA).** The long endurance of UA necessary to support their ISR missions enables them to provide extended support to TST, HVT, and HPT missions. UA can also support or conduct CAS, SCAR, AI, and other joint fires missions. Specific tasks for the UA may include TA and marking, terminal guidance of ordnance, providing precision coordinates for Global Positioning System (GPS)-aided munitions, delivery of onboard precision-guided ordnance, BDA, signal intelligence, communication/data relays, and retargeting (i.e., shoot-look-shoot). UA should be requested, tasked, routed, controlled, and deconflicted in a manner similar to methods used for fixed-winged and rotary-winged manned aircraft, with exceptions made for their unmanned nature (e.g., inability to see and avoid other air traffic).

(4) **Standoff Weapons.** US forces employ a variety of air-to-surface standoff weapons, with a number of armaments and capabilities. Standoff weapons provide the JFC with an ability to engage targets at extended ranges while minimizing the risk to friendly forces. Some examples of air-to-surface standoff capabilities include:

(a) The joint air-to-surface standoff missile (JASSM) and its extended-range variant, which are air-launched, low-observable, subsonic cruise missiles specifically designed to penetrate air defense systems. The missiles incorporate GPS-aided inertial navigation system (INS) guidance with an infrared seeker in the terminal phase of flight. Optimizing JASSM's full-precision and low-observable capabilities requires prior coordination with both strike units and target intelligence agencies.

(b) The small diameter bomb (SDB), which is an air-launched, precision-guided, glide weapon. It provides strike aircraft with high-loadout, all-weather, autonomous, standoff-attack capability outside of point defenses. SDB increment I provides precision capability through a GPS-aided INS against fixed targets, while SDB increment II incorporates a GPS-aided INS and additional tri-mode seeker, optimized for engaging fixed, relocatable, moving targets, at any time of day and in adverse weather conditions.

(c) A joint standoff weapon, which is a medium-range, precision-guided, air-to-surface glide weapon employing a variety of munitions that can be employed against land and sea targets. A joint standoff weapon is a launch-and-leave weapon that employs a GPS-aided INS and is capable of day, night, and adverse weather operations.

(5) **Precision-Guided Weapons.** US forces employ precision-guided weapons with specific armaments that support the military operations and give the JFC the ability to engage a broad array of potential targets (e.g., equipment and personnel, hard and deeply buried targets, tunnels and enclosed spaces) while minimizing collateral damage.

b. **Surface-to-Surface Capabilities**

(1) **Rockets.** The multiple launch rocket system (MLRS) supplements cannon artillery by delivering a large volume of fires in a very short period of time against HPTs. MLRS is used for counterfire and deliberate attacks against enemy air defenses, light materiel, and personnel targets. The all-weather MLRS fires free-flight and guided rockets and missiles. Free-flight or guided rocket options include warheads with either unitary high-explosive or dual-purpose improved conventional munitions. The basic free-flight rocket munitions have a maximum range of 26 kilometers, while the extended-range rocket may engage targets to about 45 kilometers. The Global Positioning System Multiple Launch Rocket System (GMLRS) provides commanders with increased accuracy and greater range (up to 70 kilometers), reducing the number of rockets required to create desired effects on a target. The M270A1 MLRS can carry 12 rockets and the M142 High Mobility Artillery Rocket System (HIMARS) can carry 6 rockets. However, their extremely high altitude of delivery (apex of missile trajectory, maximum ordinate) requires close coordination with air planners and liaisons to ensure aircraft are not in the vicinity during launches and descents.

(2) **Missiles**

(a) The ATACMS provides long-range, surface-to-surface fire support. ATACMSs are fired from an MLRS (two missiles) or HIMARS platform (one missile) and may consist of antipersonnel/antimaterial submunitions or a unitary high-explosive warhead. The ATACMS retains the responsiveness of rockets, though it possesses a much greater range (up to 300 kilometers). The ATACMS antipersonnel/antimaterial warhead is designed to engage soft targets and the unitary high-explosive warhead is designed to engage fixed infrastructure while minimizing collateral damage. The ATACMS's accuracy and all-weather capability, coupled with extended range and quick response time, make it a formidable system against dynamic targets. Due to the range and altitude of the ATACMS and GMLRS, target engagements require detailed airspace coordination and integration.

(b) The US Navy U/RGM-109 Tomahawk is an all-weather, long-range, subsonic cruise missile used for deep land attack warfare, launched from US Navy surface ships and submarines. The U/RGM-109C [Tomahawk Block III Conventional] variant contains a 1,000-pound class blast/fragmentary unitary warhead, while the submunition variant [U/RGM-109D] includes a submunitions dispenser with combined effect bomblets. The Tomahawk Block IV [U/RGM-109E or Tactical Tomahawk], conventional variant, adds the capability to reprogram the missile while in-flight via two-way satellite communications to strike any of 15 pre-programmed alternate targets or redirect the missile to any GPS target coordinates. The Tomahawk Block IV missile can loiter over a target area to respond to emerging targets or, with its on-board camera, provide battle damage information. All Tomahawk variants can engage well-defended targets at long distances and provide precision fires to the joint force. Employing the Tomahawk weapon system requires coordination with the maritime component's MOC, Tomahawk strike coordinator, and strike and mission planning cells. Tomahawks require both mission planning to plan the routes and strike planning to coordinate the execution. With proper coordination,

Tomahawks can also support calls for fire from supported units (typically SOF or Marine). With proper planning, all variants can be used on short notice, day or night, with few weather restrictions. Tomahawk strikes may be conducted without air support and when the risk of aircraft loss is high. Tomahawks are also capable of neutralizing enemy air defenses to facilitate larger attacks by conventional air operations. In theater, associated MOC Tomahawk strike mission planning cells provide the JFMCC additional capacity to plan new missions or modify selected missions.

(3) **Cannon Artillery and Mortars**

(a) Cannon artillery is usually the most available fire support system within the AO, capable of performing counterfire, interdiction, and SEAD. However, range limitations (maximum range less than 40 kilometers) often prevent these systems from striking operationally or strategically relevant targets. Cannon artillery provides near-immediate response times, 24-hour availability, and 360-degree coverage. Cannon artillery offers area and precision fires, such as the Excalibur and precision guidance kit. The Excalibur is a precision-guided, extended-range, 155-millimeter high-explosive cannon artillery projectile with an integrated GPS INS guidance and unitary warhead. It provides artillery capabilities in urban areas and restrictive terrain, while minimizing collateral damage. The Excalibur is currently compatible with the M109A6 Paladin; self-propelled Howitzer; and the M777A2, lightweight (155 millimeter), towed Howitzer. The precision guidance kit is a trajectory-correcting fuse kit compatible with standard 155-millimeter munitions. It has the following advantages:

1. Operates in all weather conditions.

2. Engages targets with increased accuracy (less than 10 meters circular error probable at all ranges).

3. Has a near-vertical terminal trajectory.

(b) Organic mortars are organized as platoons in maneuver and Ranger battalions and as sections in Stryker brigade combat team and infantry brigade combat team rifle companies. Mortars are high-angle, relatively short-range, high rate-of-fire, area fire weapons. Their mobility makes them well suited for close support of maneuver. Mortars can also be used for final protective fire, obscuration, and illumination. US mortar munitions include a 120-millimeter precision munition; some multinational mortar units also have precision-guided munitions of different calibers. The maneuver commander decides how and when mortars, as a key fire support asset, will be integrated into the CONOPS.

(4) **NSFS**

(a) NSFS provides fire support by naval surface gun, missile, and EW systems in support of a unit or units tasked with achieving the commander's objectives. Naval assets can provide support in a unique manner and should be considered as one source of fire support along with other components and weapon systems.

(b) When supporting an amphibious assault, the commander, amphibious task force (CATF), prepares the overall NSFS plan. In general, the mission of NSFS units in an amphibious assault is to support the assault by destroying or neutralizing shore installations that oppose the approach of ships and aircraft and to deliver fires against enemy forces that may oppose the LF, including its post-landing advance.

1. When the number of ships permits, individual ships will be assigned as DS to assault battalions. The DS mission establishes the priority in which the ship will process calls for supporting fire and the anticipated zone of fire (ZF). The ship delivers fires on planned targets and targets of opportunity in the ZF, which normally corresponds to the zone of action of the supported unit. When possible, ships capable of performing simultaneous missions will be given a DS mission, to allow for maximum fire support to the forward units of the LF.

2. The GS mission requires an NSFS ship to support the force as a whole, or that portion of the force assigned to the ship, by attacking targets in the ZF. Prearranged fires are delivered in accordance with a schedule of fires published in the ATF OPORD and the NSFS plan in the LF OPORD. Fires may also be allocated to a subordinate unit for a specific mission(s). Upon completion of the mission(s), the ship reverts to GS. Ships in GS support regimental-sized units or larger.

For further details and information on joint fires assets, see ATP 3-09.32/Marine Corps Reference Publication (MCRP) 3-31.6/NTTP 3-09.2/Air Force Tactics, Techniques, and Procedures (AFTTP) 3-2.6, Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower. *For more information on TLAMs, see NTTP 3-03.1, Volume I,* Tomahawk Land-Attack Missile (TLAM-C/D/E) Employment Manual. *For more information on NSFS, see JP 3-02,* Amphibious Operations; *NTTP 3-02.2M,* Supporting Arms Coordination in Amphibious Operations; *and Navy Warfare Publication 3-09,* Navy Fire Support.

c. **Cyberspace Operations.** Cyberspace operations are the employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace. Offensive cyberspace operations (OCO) and defensive cyberspace operations-response actions (DCO-RA) missions may rise to the level of use of force, where physical damage or destruction of enemy systems require use of fires in cyberspace. OCO are intended to project power in and through cyberspace, and DCO-RA use defensive measures, including fires, outside the defended network to protect it. Cyberspace attack actions are a form of fires, taken as part of an OCO or DCO-RA mission, coordinated with other USG departments and agencies, and carefully synchronized with planned fires in the physical domains.

For additional guidance on cyberspace attack and integration with other fires, refer to JP 3-12, Cyberspace Operations.

d. **Offensive Space Control.** Offensive space control consists of operations conducted for space negation, where negation involves measures to deceive, disrupt, degrade, deny, or destroy space systems or services. Adversaries, both state and non-state

actors, will exploit the availability of space-based capabilities to support their operations. In keeping with the principles of joint operations, this makes it incumbent on the US to deny adversaries the ability to utilize space capabilities and services. Offensive space control actions targeting an enemy's space-related capabilities and forces could employ reversible and/or nonreversible means and are considered a form of fires.

For additional guidance on offensive space control, refer to JP 3-14, Space Operations.

e. **EA.** EA involves the use of electromagnetic energy, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment to degrade, neutralize, or destroy enemy combat capability. EA is considered a form of fires. EA includes active EA, in which EA systems or weapons radiate in the EMS. The effects of EA can be lethal or nonlethal. Integrating and synchronizing EA with maneuver, C2, and other joint fires is essential. Deconflicting EA and cyberspace operations is critical since uncoordinated EA may significantly impact cyberspace attack utilizing the EMS.

For additional guidance on EA, refer to JP 3-13.1, Electronic Warfare.

f. Capabilities that can create nonlethal effects can be used to support achievement of JFC objectives. Their use can also limit collateral damage, can reduce risk to civilians, and may reduce opportunities for enemy exploitation of friendly force actions. They may also reduce the number of casualties associated with the use of force, reduce unnecessary impedance of friendly force maneuver, aid restoration of local commerce, limit reconstruction costs, and maintain positive relations with the local populace.

(1) **Information-Related Activities.** The integration and synchronization of fires with information-related activities through the targeting process is fundamental to creating the necessary synergy between information-related activities and more traditional maneuver and strike operations. Some information-related activities supporting joint fires include:

(a) **Military deception (MILDEC),** which consists of actions taken to deliberately mislead enemy or potential enemy decision makers as to friendly military capabilities, intentions, and operations, thereby causing them to take specific actions (or inactions) that will contribute to the accomplishment of the friendly mission. MILDEC is part of the C2 function. Physical attack/destruction can support MILDEC by shaping an enemy's intelligence collection capability through destroying or nullifying selected ISR capabilities or sites. Attacks can mask the main effort from the enemy.

For additional guidance on MILDEC, refer to JP 3-13.4, Military Deception.

(b) **Military information support operations (MISO),** which 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. Selected audiences may include enemies, adversaries, friends, and neutral groups or populations. Psychological operations support forces devise actions and craft messages using visual, audio, and audiovisual formats, which can then be delivered

by air, land, and maritime means, and through cyberspace, to selected individuals and groups. Military information support personnel follow a deliberate process that aligns commander's objectives with an analysis of the operational environment. Many actions of the joint force, such as strikes, have psychological impact, but they are not MISO unless their primary purpose is to influence the attitudes, rules, norms, beliefs, and subsequent behavior of a target audience. However, the psychological impact of such events can significantly enhance or undermine MISO effectiveness and should be considered as part of the planning, execution, and assessment of MISO. Regardless of the circumstances, all MISO are conducted within carefully reviewed and approved programs and under mission-tailored product approval guidelines that flow from national-level authorities. Psychological operations officers advise the commander and operations officer on the possible psychological impacts of all actions and impacts to ongoing operations.

For additional guidance on MISO, refer to JP 3-13.2, Military Information Support Operations. *MISO support to non-US military is outlined in Department of Defense Instruction (DODI) O-3607.02,* Military Information Support Operations (MISO).

(c) **Operations security (OPSEC),** which is a capability that identifies and controls critical information and indicators of friendly force actions attendant to military operations and incorporates countermeasures to reduce the risk of an adversary exploiting vulnerabilities. OPSEC identifies critical information and actions attendant to friendly military operations to deny observables to the threat intelligence systems. For example, OPSEC can protect the location of friendly fires capabilities.

For additional information on OPSEC, see JP 3-13.3, Operations Security.

(d) **Special technical operations (STO).** Fire support requirements should be deconflicted and synchronized with STO. Detailed information related to STO and their contribution to fire support can be obtained from the STO planners at combatant command or Service component HQs.

(2) **Nonlethal weapons (NLWs)** are weapons, devices, and munitions that are explicitly designed and primarily employed to incapacitate targeted personnel or materiel immediately, while minimizing fatalities, permanent injury to personnel, and undesired damage to property in the target area or environment. NLWs are intended to have reversible effects on personnel and materiel. Planners should consider using NLWs to minimize loss of life and damage to property that could negatively influence public perception.

For more information on NLWs, see Department of Defense Directive (DODD) 3000.03E, DOD Executive Agent for Non-Lethal Weapons (NLW), and NLW Policy, *and ATP 3-22.40 (FM 3-22.40)/MCTP 10-10A (MCWP 3-15.8)/NTTP 3-07.3.2/AFTTP 3-2.45/Coast Guard Tactics, Techniques, and Procedures (CGTTP) 3-93.2,* Multi-Service Tactics, Techniques, and Procedures for the Employment of Nonlethal Weapons.

(3) **Additional Capabilities Supporting Joint Fires**

(a) **Civil affairs (CA)** introduce civil considerations, analysis, and evaluation into the JTCB and targeting process. CA planners provide targeting options to support the commander's end state, support targeting with analysis and evaluation of second- and third-order effects, recommend measures of performance (MOPs) and measures of effectiveness (MOEs) to the JFC, and help mitigate effects on the local population. CA analysis and evaluation of civil considerations supports target development by participating in target system analysis, target folder, and target list development processes, which is the responsibility of joint fires. Targeting can include technologies designed to separate civilians from combatants, as well as those intended to influence the attitudes of the population as a whole.

For additional guidance on CA, refer to JP 3-57, Civil-Military Operations.

(b) **Electronic warfare support (ES)** refers to the division of EW involving actions tasked by, or under direct control of, an operational commander to search for, intercept, identify, and locate or localize sources of intentional and unintentional radiated electromagnetic energy, for the purpose of immediate threat recognition, targeting, planning, and conduct of future operations. ES prepares the electromagnetic environment for the commander to perform operational missions. ES synchronizes and integrates the planning and operational use of sensors, assets, and processes within a specific battle space to reduce uncertainties concerning the enemy, environment, time, and terrain. ES data can be used to produce signals intelligence, provide targeting for electronic or physical attack, and produce measurement and signature intelligence.

For additional guidance on ES, refer to JP 3-13.1, Electronic Warfare.

(c) **Public affairs** support fires by countering propaganda, misinformation, and disinformation.

For additional guidance on public affairs, refer to JP 3-61, Public Affairs.

(d) Other fires supporting military operations may include obscurant fires to mask friendly positions and illumination fires, when required for night operations.

4. Joint Fire Support Planning

a. Joint fire support planning is a continual and cyclical process that synchronizes, executes, and assesses joint fires at tactical, operational, and strategic levels with joint fire support communications systems and architectures. Prior to execution, fires planning is performed as part of the joint planning process. After OPLAN approval and during execution, fire support is planned as part of the joint targeting process using the joint targeting cycle.

b. **Joint Fire Support Planning During the Joint Planning Process.** The joint planning process is an orderly, analytical set of logical steps used by the joint force to develop, analyze, compare, and select a COA from which to produce a plan of action. Fires planners have specific responsibilities during each step in the joint planning process.

(1) **Mission analysis** helps the JFC and staff understand the problem and purpose of the operation and issue appropriate guidance to drive the rest of the planning process. As part of joint fires and the joint fires support planning process, fires planners participate in mission analysis to ensure a clear understanding of commander's objectives and assist in developing objectives that are achievable. Outputs from mission analysis include the approved mission statement, commander's intent, and planning guidance for COA development.

(a) After approving the mission statement and issuing intent, the commander provides the staff (and subordinates in a collaborative planning environment) with enough additional guidance (including preliminary decisions) to focus the staff and subordinate planning activities during COA development. This guidance may include:

1. Specific COAs.

2. Objectives and end state.

3. ISR.

4. TSTs, HVTs, and HPTs.

5. NSL, RTLs, and no-fire areas (NFAs).

6. Use of weapons effects and special munitions such as blast, fragmentation, cluster, nuclear, mines, and lasers.

7. Acceptable risks.

8. C2.

9. Commitment of the reserve force.

10. Critical events to be considered.

11. Commander's assumptions.

12. ROE.

13. Assessment.

14. Host-nation concerns.

(b) **Targeting Guidance.** The commander, in coordination with components and other agencies, develops and issues targeting guidance, including targeting priorities, TST criteria and procedures, component-critical targets, TA and identification criteria, and authorized actions against targets. Targeting, joint fires, and fire support planners use the JFC's targeting guidance to aid in COA development.

See JP 3-60, Joint Targeting, *for more information.*

(2) **COA Development.** COA development is a systematic process performed by a commander and staff to develop the best COA for a given operation. Each COA is analyzed to consider the implications of both friendly and enemy options during an operation. Joint fires planners are well versed in weapon systems employment and understand how best to synchronize the use of weapon systems and other actions to create desired effects. As such, their role in this step of the joint planning process is critical. Early in COA development (or possibly mission analysis), fires planners will assist the operational planning team in determining what effects/conditions must be created to achieve the commander's objectives. Following this, the fires planners will develop an initial scheme of fires to create those effects. The scheme of maneuver and scheme of fires are interrelated and must be mutually supportive to be effective. Joint fires planners and operational planning team members work together in developing the COAs to ensure they remain distinguishable, suitable, feasible, acceptable, and complete. At the completion of the COA development phase, joint fires planners have developed an initial scheme of fires for each of the COAs being developed.

(3) **COA Analysis and Wargaming.** Participation of joint fires planners in COA analysis and wargaming helps to understand strengths and weaknesses of each COA and associated scheme of fires. Fires planners' expertise is also critical to effectively adjudicate friendly and enemy actions that may be taken during this step.

(4) **COA Comparison.** During this step, fires planners will articulate the scheme of fires that is most supportable from an ability to execute perspective, as well as which one is most likely to create the desired effects. This may be done in the form of a fires staff estimate.

(5) **COA Approval.** During COA approval, the fires planners will submit the refined scheme of fires that supports the COA recommended for approval. The output from this step is an approved COA and approved scheme of fires for input to the plan or order development step.

For a detailed description of the joint planning process, see JP 5-0, Joint Planning.

(6) **Plan or Order Development.** Once the commander selects a COA, joint staff and fires planners:

(a) Refine named areas of interest, decision points, and HVTs/HPTs.

(b) Integrate and refine the collection, TA, and assessment plan. Collection assets are tasked and integrated to mitigate gaps in the coverage of the operational area.

(c) Develop joint fire support tasks, responsibilities, and requirements.

(d) Develop the operational fires portion of the CONOPS. Through the CONOPS, the JFC provides fires and targeting guidance, objectives, desired effects, tasks, and targeting/fires priorities. The CONOPS provides further refined guidance on what and where effects are desired by phase (e.g., deny, disrupt, delay, suppress, neutralize, destroy,

corrupt, usurp, or influence). In addition, the JFC provides guidance on munitions usage and restrictions, restricted targets, and an NSL.

(e) Develop the joint fire support plan. The commander's joint fire support plan is the product of joint and component fire support planning. The joint fire support plan is attached as appendix 6 (Joint Fire Support) to annex C (Operations) to the OPORD or OPLAN. In it, the JFC provides guidance to supporting commanders regarding the current or expected enemy, friendly, and environmental situation; the joint fire support mission, describing how to employ fires to support the CONOPS; the joint fire support priorities; and the objectives for using space, air, land, maritime, and cyberspace operations and special operations forces in a joint fire support role. Tabs to the appendix outline specific tasks and guidance for organizing and operating a JFE, coordinating fire support, deconflicting fires, integrating fire support C2 systems (e.g., AFATDS, JADOCS), conducting dynamic targeting, integrating multinational fires, and incorporating fire support liaisons.

For additional information on the contents and structure of the OPLAN or OPORD format, including content on operational fires, targeting, and the joint fire support appendix, see Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3130.03, Adaptive Planning and Execution (APEX) Planning Formats and Guidance.

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CHAPTER IV
JOINT FIRE SUPPORT EXECUTION

"No plan of operations extends with any certainty beyond the first contact with the main hostile force."

Field Marshall Helmut Carl Bernard Graf von Moltke the Elder, Chief of Staff of Prussian General Staff 1857-1871 and Great General Staff from 1871-1888

1. Introduction

Joint fire support execution begins when the supported commander issues an execute order for an operation to commence and continues until the operation is terminated or the mission is accomplished. Commanders and their staffs simultaneously execute the supported commander's plan while continuing the planning process for subsequent operations.

2. Considerations

a. **Anticipate the Dynamics of Combat Operations.** Force execution occurs when targets are engaged (or otherwise affected) and effects are created. During force execution, the operational environment changes as the enemy responds and deviates from friendly force assumptions. As individual joint fire support activities are executed, synchronization of tactical activities can become overwhelming for an operational staff. Fast-paced and geographically dispersed operations are best executed through mission command, the conduct of military operations through decentralized execution based on mission-type orders. Thorough understanding of the commander's intent at every level of command is essential to mission command.

For additional information on joint fire support execution, see JP 3-09.3, Close Air Support, *and ATP 3-09.32/MCRP 3-31.6/NTTP 3-09.2/AFTTP 3-2.6,* Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower. *See JP 1,* Doctrine for the Armed Forces of the United States, *for additional information on mission command.*

b. **Maintain SA of the Operational Environment.** To coordinate and synchronize tactical units throughout the operational environment, the JFC and staff require a high level of SA. SA enables supported and supporting commanders to share a common understanding of the operational environment and allows dynamic targeting of targets of opportunity. Dynamic targeting can provide a responsive use of on-call or re-tasked missions to exploit enemy vulnerabilities that may be of limited duration.

See JP 3-60, Joint Targeting, *for information on dynamic targeting.*

c. **Leverage Interoperable Fire Support and C2 Systems.** Digital fire support and C2 systems that are interoperable with all forces, when available, help maintain information flow between the supported and supporting commanders and their staffs. **Digitally aided fire support enables machine-to-machine exchange of required fire**

support and targeting information for efficient and effective target prosecution by joint and multinational forces. C2 and fire support systems also allow staffs to review priority of fires through battle tracking, position reports, and execution checklists.

d. **Use the Lowest Echelon Capable of Furnishing Effective Support.** To keep joint fire support responsive, the lowest level capable should deliver it. If fire support assets are inadequate, joint fire support planners and coordinators should request additional joint fire support from the appropriate echelon or component. Fire support coordination between Service and functional components should occur at the lowest possible level. When coordination cannot be accomplished at the lower levels or additional guidance is required, the next higher echelon should be consulted.

e. **Furnish the Type of Joint Fire Support Requested.** The supported commander best determines joint fire support requirements. However, the component, unit, or organization providing the joint fire support has the most expertise and is best able to determine and recommend the type and quantity of fire support to meet the supported commander's requirement.

f. **Use the Most Effective Joint Fire Support Means.** Requests for joint fire support are tasked to the force capable of delivering the most effective joint fires within the required time. When developing a recommendation for a weapon system, the joint fire support planners and coordinators should consider the nature and importance of the target, the engagement time window, the availability of attack assets, and the desired effects on the target. In some circumstances, it may be necessary to sequence the attack by fixing the enemy with immediately available joint fire support assets, while coordinating a subsequent, more detailed attack by more effective assets. It may be necessary (and advantageous) to employ fires from more than one source to create the desired effects on a target.

g. **Plan During Execution.** Planning continues during execution, with an initial emphasis on refining the existing plan and anticipating joint fire support requirements for follow-on actions, to include branches and sequels. As the operation progresses, joint planning generally occurs in three distinct but overlapping time frames: future plans, future operations, and current operations. Future plans and future operations primarily concentrate on subsequent operations or branches to current operations. This planning is performed using the joint targeting cycle. Assessment of current operations feeds these two planning efforts. Current operations addresses the immediate or very-near-term issues associated with ongoing operations, focused on execution of the operation. This normally occurs in the JOC or J-3. The nature and time frame associated with current operations planning (usually the current 24-hour period) typically require the immediate responsiveness of dynamic targeting.

h. **Synchronize Battle Rhythms.** The commander's decision cycle, encapsulated in the battle rhythm, regulates the sequencing of events during execution. The commander's battle rhythm enables the synchronization of current and future operations. Subordinate and supporting commanders synchronize their own battle rhythms with the JFC. Some of

the joint fire support activities that influence, and are influenced by, the JFC's battle rhythm include the joint targeting cycle and the joint air tasking cycle.

Refer to JP 5-0, Joint Planning, *for more information on planning during execution; JP 3-60,* Joint Targeting, *for a detailed discussion on dynamic targeting; and JP 3-0,* Joint Operations, *for more information on battle rhythms.*

i. **Determine Joint Fire Support Requirements.** As part of the joint targeting cycle, the supported commander identifies and validates the joint fire support requirements. The supported commander also determines the desired effects, along with time constraints, collateral damage and collateral effects restrictions, and acceptable levels of risk to forces. In many cases, fire support requirements may require a combination of lethal and nonlethal effects from various capabilities to create the commander's desired effects (including second- and third-order effects).

(1) Once joint fire support requirements are identified, validated, and approved, the supported commander transmits those requirements to the supporting commanders. Greater detail can shorten coordination time, but the supported commander should allow the supporting commanders latitude when deciding how to meet the requirement.

(2) The supported and supporting commanders ensure joint fire support complies with the law of war principles of military necessity, humanity, distinction, proportionality, and honor.

(3) Supporting commanders must understand all joint fire support requirements and request clarification on any ambiguities. The supporting commanders will help the supported commander comply with all law of war requirements and awareness of any contradictory or more limiting application of the law of war by other multinational forces.

j. **Allocate Joint Fire Support Resources.** The supporting commanders select and control fires that provide joint fire support based on the supported commander's requirements. The selected capability should meet time, collateral damage, and risk criteria.

(1) Supporting commanders identify any augmentation the selected capability will require to accomplish the joint fire support mission. Augmentation may include assistance to find, fix, track, or target the supported commander's requirements. Supporting commanders should also provide collateral damage/effects and risk estimates for the allocated joint fire support capability to the supported commander.

(2) The supporting commander needs reliable and redundant communications systems to receive engagement authorization from the supported commander.

3. The Joint Targeting Cycle

a. The JFC's joint fire support requirements are identified, planned, and executed as part of the joint targeting process. Joint fire support planning is a critical part of the overall

joint targeting process. Understanding the JFC's guidance, CONOPS, and intent is the most important and first activity of joint targeting because they document the objectives relevant to the present situation and set the course for all that follows. Objectives are the basis for developing the desired effects and scope of target development and are coordinated among strategists, planners, and intelligence analysts for approval by the commander.

b. The joint targeting cycle is a six-phase, iterative process that methodically analyzes, prioritizes, and assigns assets against targets to create effects that will contribute to the achievement of the JFC's objectives (see Figure IV-1). It integrates and synchronizes fires into joint operations by utilizing available capabilities, considering operational requirements and capabilities, to create specific lethal or nonlethal effects on targets. It also helps link the effects of fires to actions and tasks at the joint force component level.

c. Targeting provides the process to prioritize targets, determine the appropriate fires and which components will mission-plan and synchronize the execution of those fires, and determine whether the resulting effects are sufficient to support the JFC's objectives. Understanding the objectives, intentions, capabilities, and limitations of all actors within the operational environment enables the coordinated use of joint, interagency, and multinational means to accomplish tasks, create effects, and achieve objectives. Target development and selection are based on the JFC's objectives and the available ways and means to achieve them. In other words, the focus of targeting should be on executing those required tasks and activities to create the necessary effects on targets in support of the

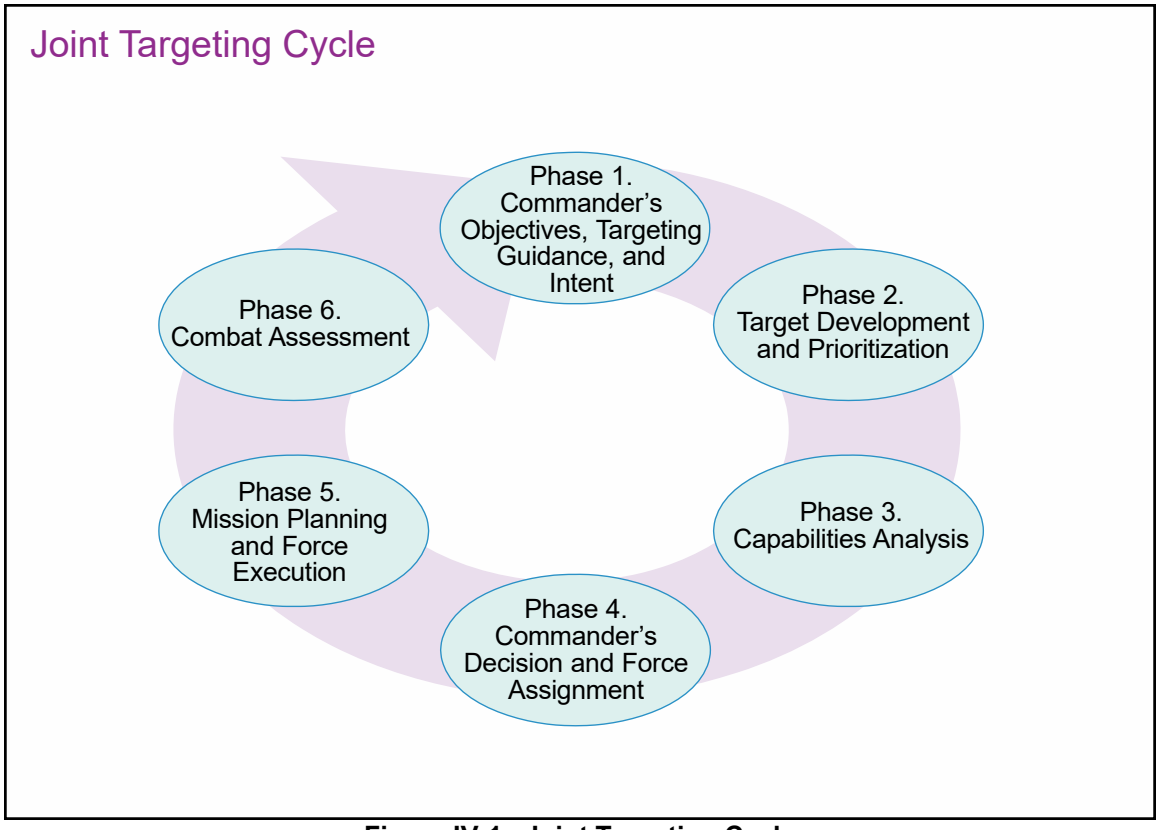

Figure IV-1. Joint Targeting Cycle

JFC's objectives rather than simply servicing a list of targets or basing targeting decisions on the availability of particular weapons, platforms, or systems. **Commanders and their staffs integrate capabilities that can create lethal and nonlethal effects and synchronize the execution of appropriate fires and activities through the joint targeting cycle.**

d. The JFC's OPLAN or OPORD provides broad guidelines for prioritizing targets, making clear which sets or systems are most important to the operation. The JFC's OPLAN or OPORD should also provide guidance on the sequencing of targeting actions or effects, which is not the same thing as priority. Although creating parallel effects is generally best, some targets are attacked sequentially to enable effects against other targets.

e. Targeting begins during pre-hostilities planning and continues throughout execution. The joint force battle rhythm and the JFC's decision cycle are two factors that affect planning in the future plans, future operations, and current operations time frames with the greatest potential impact on current operations planning. The joint targeting cycle and supporting component processes (i.e., the six-stage air tasking cycle) adapt to the joint force battle rhythm and decision cycle.

Detailed information on the joint targeting cycle can be found in JP 3-60, Joint Targeting.

f. **Targeting Considerations**

(1) **CDE.** Collateral damage is 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. Such damage is not unlawful so long as it is not excessive in light of the overall military advantage anticipated from the attack. However, even though such fires may be lawful, commanders should ensure fires do not negatively impact operational or strategic objectives. For example, in conducting counterinsurgency operations, a commander may place additional constraints on fires, beyond what might be legally required, or employ NLWs to avoid collateral damage that might bolster the local population's support for the enemy, decrease its support of US involvement, or degrade the US population's support for the operation. CDE should not be confused with risk estimate distances, which are tools used by ground commanders to make risk decisions regarding the employment of CAS or other fires near friendly forces.

(a) Under the law of war, the principle of proportionality requires that the anticipated loss of civilian life and damage to civilian property incidental to attacks not be excessive in relation to the concrete and direct military advantage expected to be gained. **Commanders, therefore, are required to take feasible precautions to minimize incidental death and injury to civilians and damage to civilian objects in the conduct of military operations, taking into account military and humanitarian considerations.** CDE is an important step in the target development process; however, it should not necessarily preclude the inclusion of valid military targets on a target list.

See CJCSI 3160.01, No-Strike and Collateral Damage Estimation Methodology, *and Office of the General Counsel,* Department of Defense Law of War Manual, *for more information.*

(b) Beyond the fundamentals of ensuring PID of the target and deriving and using properly mensurated target coordinates, **collateral damage may be minimized through various methods.** Optimizing selection of delivery system, time of delivery, munition type, warhead, warhead fuzing, delivery heading, weapon flight path to the target, weapon impact angle, impact velocity, shielding, and use of aimpoint offsets may also help reduce unintended second- and third-order effects and consequences of fires. When targeting sites containing WMD or TIMs, among other things, planners will consider the potential release and dispersal hazards.

(c) **JFCs and planners must seek to accomplish their missions through the discriminate application of fires with minimal collateral damage.** Joint standards and methods for estimating collateral damage potential provide mitigation techniques and assist commanders with weighing collateral risk against military necessity and assessing proportionality within the framework of the military decision-making process.

(2) **Target coordinate mensuration** is the measurement of a feature or location on the Earth to determine precise latitude, longitude, and elevation relative to a commonly accepted datum. Point mensuration is an important part of targeting, since the mensurated points represent the desired points of impact for coordinate-seeking munitions or desired mean points of impact for multiple non-coordinate-seeking weapons. Precise point mensuration, combined with coordinate-seeking weapons, can help minimize collateral damage caused by inaccurate weapons. When accomplished before ATO execution, point mensuration permits employment of an entire class of GPS-aided weapons, consistent with ROE and CDE guidance, and may allow JAOC personnel to significantly shorten the targeting process.

See CJCSI 3370.01, Target Development Standards, *and CJCSI 3505.01,* Target Coordinate Mensuration Certification and Program Accreditation, *for more information.*

4. Employment of Joint Fires

During execution, control of joint fire support forces is normally exercised through the J-3. The J-3 integrates and synchronizes fires with other major elements of the operation such as maneuver, information-related activities, special operations, and logistics. The JFE manages the daily joint fire support coordination responsibilities. Since the JFE is composed of representatives from operations, plans, targeting, intelligence, and each subordinate and supporting command, it can be a powerful coordination and synchronization tool for the J-3. The JFE performs the tasks outlined by the J-3. The JFE may assess joint fires and joint fire support operations, providing rapid feedback to the JFC for decision making. Joint fire support execution requires operational battle tracking of friendly forces and equipment, targets, and threats to friendly forces. This is especially important as joint fires are coordinated across components (Service or functional) and between or within operational areas. Joint fires require planning, coordination, and synchronization to maximize effectiveness and minimize risks to friendly forces. The JFE can assist the J-3 with implementing measures to reduce the risk of friendly fire incidents, to include disciplined execution of OPORDs, ACOs, ATOs, SPINS, targeting guidance,

deconfliction, ROE, CID, and PID procedures and maintain the detailed SA necessary to synchronize the joint fire support system.

a. **Battle Tracking.** Battle tracking builds and maintains a picture of the operational environment that is accurate, timely, and relevant. Battle tracking increases the probability that joint fires will be applied at the proper time and place. At the operational level, battle tracking takes advantage of digital information systems, using multiple sources to generate a coherent picture of the operational environment. Battle tracking helps maintain SA of friendly and enemy progress, reduce redundant targeting, and reduce the possibility of friendly fire incidents. The components will normally share their part of the COP with other joint forces via the GCCS [Global Command and Control System], if available, to meet the JFC's reporting criteria. This provides rapid information exchange to facilitate a shared understanding of the COP. The COP is normally generated with interfaced systems information applications used by the joint force. It is incumbent on operators to realize the accuracy, capabilities, limitations, and potential latency issues associated with the joint C2 systems architecture. Battle tracking is critical for disseminating the location of friendly forces, targets, and threats to friendly forces.

(1) **Provide FFT.** Tracking friendly forces and equipment will aid in the synchronization of maneuver and fires and in reducing the possibility of friendly fire incidents. Given the complexity inherent in joint fire support, prevention of friendly fire incidents is always a high priority. Commanders at all levels take continuous measures to reduce the potential for friendly fire incidents. Components, agencies, and multinational partners provide FFT position location information on all friendly forces (whether on land, at sea, in space, or in the air) to combatant commanders to enable the dissemination and display of accurate, timely, and actionable FFT data, including integration into the COP.

(2) **Provide Target Lists.** Targets for joint fire support can be identified and nominated in the targeting cell of the operational HQ or identified, nominated, vetted, validated, and prioritized at the point of engagement with the enemy. The COP should display targets on the JTL, as well as the RTL and NSL.

(3) **Identify and Track Threats to Friendly Forces.** Threats to friendly forces are located, tracked, and communicated to joint fire support forces. Threats to supporting forces may require synchronized operations to suppress or destroy the threats prior to joint fire support forces primary mission.

b. **Coordinating Joint Fire Support.** Joint fire support coordination during execution includes all efforts to integrate and synchronize attacks, avoid friendly fire incidents, reduce duplication of effort, and shape the operational environment. This requires that coordination procedures be flexible and responsive to the ever-changing dynamics of warfighting. Streamlined arrangements for approval or concurrence to joint fires should be established. CAS is perhaps the most mature example of joint fires, and it has taken many years to develop and refine the coordination procedures that enable the successful execution of a single CAS event. The planning, coordination, and synchronization of Service, functional, interagency, international, and multinational

capabilities adds a complexity beyond CAS, requiring a deep analysis of the process required to accomplish joint fires as more participants and capabilities are added.

(1) **Provide for Rapid Coordination.** Commanders establish procedures and responsibilities to rapidly coordinate joint fire support. Coordination of joint fire support should be detailed and done in advance, but in some instances, due to operational circumstances, coordination will be rapid and less detailed. Poor communication and collaboration procedures or inadequate FSCMs may delay the delivery or clearance of joint fires from Service, functional, interagency, international, and multinational capabilities and jeopardize the force. Joint fire support planners and coordinators should know the availability of assets, the CONOPS, the commander's intent, FSCMs and ACMs in effect, ROE, clearance of joint fires procedures, and any other operational limitations. The deconfliction processes and procedures established by the JFC take place as far forward in the JOA as possible to ensure the timely delivery of joint fires.

(2) **Employ Coordination and Control Measures.** Commanders employ permissive and restrictive coordination measures to facilitate planning and efficient execution of maneuver, air operations, and fires while simultaneously providing safeguards for friendly forces.

(a) **FSCMs** and **MCMs** are employed to expedite attack of targets; protect forces, populations, critical infrastructure, and sites of religious or cultural significance; clear joint fires; integrate and synchronize joint fire support operations; and establish conditions for future operations. Along with other control measures, FSCMs, MCMs, and their associated usages and procedures help ensure joint fire support does not jeopardize troop safety, interfere with other attack means, or disrupt operations of adjacent or subordinate units. The JFE builds restrictions annotated in the RTL and NSL into FSCMs to support the fire plan. Maneuver commanders position and adjust coordination and control measures consistent with the commander's objectives, location of friendly forces, CONOPS, and anticipated enemy actions and in consultation with superior, subordinate, supporting, and affected commanders. The primary purpose of permissive measures is to facilitate the attack of targets. The primary purpose of restrictive measures is to safeguard forces. See Appendix A, "Coordination and Control Measures," for more information on FSCMs and MCMs.

(b) **ACMs** facilitate efficient use of airspace to accomplish air operations and fires and simultaneously provide safeguards for friendly forces. Commanders ensure ACM nominations support, and do not conflict with, joint operations prior to forwarding to the JAOC. Aircraft (manned and unmanned) and fires may transit through an ACM when coordinated with the responsible airspace control element. See Appendix A, "Coordination and Control Measures," for more information on ACMs.

(c) **Waterspace Management.** Waterspace management allocates waterspace for antisubmarine warfare weapons control to permit the rapid and effective engagement of enemy submarines while preventing inadvertent attacks on friendly submarines.

For more information on waterspace management, see NTTP 3-21.2, Coordinated Submarine Operations.

(3) **Coordinate Airspace**

(a) Component commanders require freedom to use airspace to achieve the JFC's objectives and maximum flexibility to use assets (organic and joint) within that airspace. Joint doctrine recognizes the need for each Service and functional component to use the airspace with maximum availability, consistent with the JFC's acceptable level of risk. The JFC's acceptable level of risk for all airspace users (including fires) should be clearly delineated in the airspace control plan. Airspace control is enabled by responsive airspace control systems, standardization of airspace practices, minimal restrictions, and continuous integration and coordination among all airspace users. Joint planning and coordination minimize mutual interference while deploying and employing air defense and fire support assets. Many FSCMs and MCMs have a vertical component that requires consideration and coordination when traversing or firing ordnance.

See JP 3-52, Joint Airspace Control, *and JP 3-30,* Joint Air Operations, *for additional information.*

(b) Commanders, assisted by joint fire support planners and coordinators, ensure conflicts between surface-based indirect fire and air operations are minimized. For example, joint force land component attacks deep into the surface AO are cross-checked to minimize the risk that enemy air defenses are repositioned just prior to a planned air strike. Similarly, an uncoordinated air mission beyond the FSCL could influence the enemy forces to interfere with the ground scheme of maneuver.

(c) All Services operate systems for airspace control. When similar Service systems are linked with the airspace control authority by communications, standardized procedures, and liaison, they form an integrated airspace control system. The highest probability of interference between aircraft and surface-to-surface weapons occurs at relatively low altitudes in the immediate vicinity of firing locations and target impact areas. FSCMs, ACMs, and other coordination measures exist within a network of component joint FISTs, liaison parties, and fire coordination elements and are shared, understood, and managed across the entire joint force to be effective. Using coordination measures correctly can prevent friendly fire incidents and duplication of effort while increasing the effectiveness of air-to-ground and ground-to-ground ordnance.

(d) The change of established coordination measures is coordinated as far in advance as possible. All joint force coordinating agencies must inform their forces of the effective times and locations of new coordination measures. Following direction to execute the change, the component operations cells should confirm the changes to ensure affected forces are aware of new coordination measures locations and that associated positive and procedural control measures are being followed.

JP 3-52, Joint Airspace Control, *contains a detailed discussion on airspace control.*

(4) **Use the Common Global Area Reference System (GARS).** GARS provides commanders with a worldwide frame of reference to help coordinate, deconflict, integrate, and synchronize joint fires.

For more detailed information on GARS, see JP 2-03, Geospatial Intelligence in Joint Operations.

c. **Synchronizing Joint Fire Support.** Synchronization is the arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time. To synchronize joint fires, commanders and staffs require a thorough knowledge of each Service's doctrine; major systems; capabilities; limitations; and often their tactics, techniques, and procedures.

(1) Commanders and their planners should identify desired lethal and nonlethal effects early in the targeting and planning processes. A clear understanding of the problem, planning guidance, commander's intent, and the operational framework provide the necessary direction for the coherent integration of joint fire support capabilities at the operational level, while appropriately leaving synchronization of detailed execution to subordinate tactical units.

(2) Establishing fire support requirements and synchronizing fire support actions are cross-functional efforts, requiring close coordination and information sharing across all staff directorates and components. This cross-functional collaboration is best accomplished through appropriate organizational processes that are broken down into elements, functional boards, and planning teams composed of representatives from appropriate directorates and components. For example, a JFE is a subordinate component of the J-3, specifically formed to integrate and synchronize joint fires planning for the JFC. Functional boards synchronize particular functions (e.g., information activities, targeting, collection, and distribution) across multiple planning initiatives, allocate resources between ongoing and future operations, and maintain continuity across ongoing operations, in accordance with the commander's guidance and decisions. Planning teams solve problems related to specific tasks or requirements. Pre-execution, most joint fire support planning is accomplished by the future plans and future operations planning teams. Upon execution, the current operations team joins the joint fire support planning effort.

See JP 3-33, Joint Task Force Headquarters, *and JP 5-0,* Joint Planning, *for more information on JTF cross-functional staff organizations and operational activities.*

(3) Some degree of synchronization is necessary at the operational level to align actions and desired effects. However, operational-level HQs cannot synchronize every action. Such detailed synchronization is contrary to the reasoning behind mission command and mission-type orders, and it is impossible to keep up with the totality of actions occurring in the operational area. Most of the responsibility for synchronizing joint fire support actions falls to the components. For this reason, a clear understanding of the commander's intent and the overall scheme of fires is essential at all levels of the force.

d. **TA and Identification.** Joint fire support planners and coordinators should identify TA requirements for joint fire support and focus on detecting priority targets. Staffs evaluate target information from all sources and route it to the appropriate supporting commands. This includes information from all echelons and from adjacent and supporting elements.

(1) **TA**

(a) TA is the detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. TA is one component of the joint fire support system (the other components being C2 and the attack and delivery systems). TA can occur at numerous points along the execution timeline and at all levels of command, including the attack and delivery system performing the final attack. The JFC will issue SPINS to provide guidance to the force on specific TA requirements prior to target engagement. TA normally includes CID, PID, and target validation components.

(b) **TA Methods.** Detecting, identifying, and locating a target can be accomplished by a wide range of capabilities, from the simple visual identification to sophisticated electronic means. Once a target is detected, identified, and located, the target information is communicated to the attack and delivery system assigned to engage the target.

1. One method to communicate the location of intended targets is through laser designators and coordinate seeking weapons (CSW). Laser designator and CSW acquisition devices can enhance current capabilities of artillery, NSFS, and aircraft in the delivery of munitions. Both aircraft (manned and unmanned) platforms and ground-based observers can laser-designate targets for laser-guided weapons (LGWs) and provide precision coordinates for CSW. Lasers can provide fire support personnel precise target marking, enhanced visual TA, and surprise. Lasers can also reduce the weapon or sortie attack requirements. Joint fire support planners and FSCs should understand the advantages and limitations of employing lasers. Airspace control element personnel, terminal attack controllers, and fires observers consider and account for the challenges created by the unpredictable trajectories of CSW and LGWs. Additional guidance can be found in Appendix B, "Lasers and Laser-Guided Systems," and JP 3-09.3, *Close Air Support.*

2. Another method to communicate the potential location of intended targets is through thermal imagers. Thermal imagers range from mounted systems on aviation assets and vehicles to small, hand-held, or helmet-mounted devices used by the individual Service member. Thermal imaging provides a significant advantage to US troops in the field. There are, however, limitations with thermal imagers that can affect their range and/or the image produced, such as the effect of the size and power of the device on the image produced, thermal crossover (i.e., the natural phenomenon that normally occurs twice daily, usually at dusk and dawn, when temperature conditions are such that there is a loss of contrast between two adjacent objects), and battlefield obscurants. Weather can have both a positive and negative effect on thermal imagers; most thermal imaging devices can look through weather conditions during day and night. Due to

limitations, caution should be exercised when using thermal imaging as an uncorroborated method of CID.

(2) **CID.** CID is characterizing detected objects in the operational environment to support engagement decisions. The CID process complements the identification process to support application of weapons, resources, or other military options. The objective of CID is to obtain the highest confidence identification possible. This characterization may be limited to "friend," "enemy," "neutral," or "unknown." Other characterizations may be required, including, but not limited to, class, type, nationality, and mission configuration. CID characterizations, when applied with combatant commander ROE, enable engagement decisions and the subsequent use or prohibition of fires. CID is used for force posturing, C2, SA, and strike/no-strike employment decisions. Effective CID not only reduces the likelihood of friendly fire incidents but also enhances joint fire support by instilling confidence that a designated target is, in fact, as described. CID-related information exchange orients on SA for friendly and neutral forces, restricted sites and structures, and identification of threat objects. CID is acquired prior to engagement.

For detailed information regarding CID during counterair activity, see JP 3-01, Countering Air and Missile Threats, *and ATP 3-01.15(FM 3-01.15)/MCTP 10-10B/NTTP 3-01.8/AFTTP 3-2.31,* Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System.

(3) **PID.** PID is an identification derived from observation and analysis of target characteristics, including visual recognition; ES systems; non-cooperative target recognition techniques; identification, friend or foe systems; other physics-based identification techniques; or human identity-based biometric data collection devices. The JFC will issue SPINS for PID requirements for attack and delivery platforms by asset and mission type. CID and FFT processes, such as those methods noted above, should inform PID decisions. The degree of accuracy of a PID method is specific to that method and should remain a constant, whereas CID criteria can be changed by the JFC or decentralized decision maker based on ROE. Comprehensive PID training, in conjunction with effective PID procedures and available technology, can greatly reduce the risk of friendly fire incidents. The JFC's PID procedures should be developed early during planning and ROE development. When developing the JFC's PID procedures, important considerations include the missions, capabilities, and limitations of all participants, including multinational forces, other USG departments and agencies, international organizations, and NGOs. US and multinational forces use many different CID and FFT processes and systems. Early identification of common PID procedures significantly increases PID effectiveness.

(4) **FFT.** FFT is the process of fixing, observing, and reporting the location and movement of friendly forces. Inextricably linked, the composite employment of CID and FFT is requisite to effective target engagement with minimal risk of friendly fire incidents. Whereas CID emphasizes characterization of all detected objects in the target area, the FFT component seeks to positively discern and report relevant friendly force position location information to decision makers throughout the target engagement sequence. During

mission execution, CID and FFT information should be constantly coordinated and conveyed to PID decision makers in clear and concise language.

(5) **Target Validation.** Target validation ensures targets meet the objectives and criteria outlined by the commander's guidance and ensures compliance with the law of war and ROE. Target validation during dynamic targeting includes analysis of the situation to determine whether planned targets still contribute to objectives, whether targets are accurately located, and how planned actions will impact other friendly operations. Target revalidation ensures the target remains relevant to the current situation and is part of target identification. The PID decision is crucial to having a valid target.

e. **Target Engagement Authority.** The authority and responsibility to engage targets rests with the JFC responsible for the operational area. The JFC communicates engagement criteria to the force through ROE and SPINS specific to each operational area. The JFC may delegate target engagement authority to subordinate commanders.

f. **TGO** are those actions that provide electronic, mechanical, voice, or visual communications that provide approaching aircraft and/or weapons additional information regarding a specific target location. Various ground elements or aircrews conducting a wide variety of missions can search for, identify, and provide the location of targets using systems like GPS, laser designators/range finders, and aircraft targeting pods. Unless qualified as a JTAC or FAC(A), personnel conducting TGO do not have the authority to grant weapons release to attacking aircraft. These functions are done by appropriate C2 authorities or a JTAC/FAC(A). Terminal guidance is guidance applied to a weapon between midcourse guidance and arrival in the vicinity of the target and may be a function of TGO, CAS, interdiction, or other missions.

(1) TGO can be used to facilitate attacks on targets in locations where the supported commander determines that the distance from friendly forces to the target is adequate to preclude the need for a JTAC or FAC(A) to perform detailed integration of each air mission with the fire and movement of friendly forces.

(2) TGO independent of CAS (not in close proximity to friendly forces) requires personnel conducting TGO to have direct or indirect communications with the individual operating/commanding the delivery system, plus connectivity with TGO weapons release authority.

(3) For TGO to be successful, C2 is essential; ACMs and radio procedures need to be established and understood by all participating units and aircrew. TGO may leverage CAS; TST; or other tactics, techniques, and procedures to aid in execution (such as the CAS 9-line briefing format), but **TGO should not be confused with CAS requiring detailed integration performed by a qualified JTAC or FAC(A) in close proximity to friendly forces.**

5. Dynamic Targeting—Find, Fix, Track, Target, Engage, and Assess

Targets identified too late, or not selected for action in time to be included in targeting, are prosecuted using dynamic targeting procedures, often referred to as find, fix, track,

target, engage, and assess (or the "kill chain") by air and maritime component forces and the decide, detect, deliver, and assess methodology by land component forces. Dynamic targeting produces targets of opportunity that include unplanned targets and unanticipated targets and those targets that meet the criteria to achieve objectives but were not selected for action during the current joint targeting cycle. The JFC will issue SPINS for dynamic targeting, which should include minimum required criteria prior to target engagement. The timeline for engaging targets using dynamic targeting procedures could be minutes, versus hours, days, or longer, but the previously discussed procedures for TA and identification, including specific CID, FFT, PID, and target validation criteria, is still required. In some instances, a single aircrew could perform every step in the "kill chain," including being designated as the target engagement authority. Missions flown to specifically detect, locate, identify, and engage targets of opportunity include:

a. **SCAR.** Missions flown in a specific geographic area and elements of C2 used to match weapons effects with targets per the supported commander's prioritized target list through proper real-time allocation of interdiction assets. A SCAR mission is designed to effectively and efficiently destroy targets and conduct associated BDAs. SCAR interdiction assets include fixed-wing, rotary-wing, and surface-to-surface fires.

For additional information regarding SCAR, see ATP 3-60.2/MCRP 3-20D.1 (MCRP 3-23C)/NTTP 3-03.4.3/AFTTP 3-2.72, Multi-Service Tactics, Techniques, and Procedures for Strike Coordination and Reconnaissance.

b. **Airborne alert AI.** An on-call air mission that pursues unplanned or unanticipated targets of opportunity in designated areas versus planned targets tasked on an ATO. Airborne alert AI is also used against planned targets that are detected during execution by the supported commander. Airborne alert AI is referred to as armed reconnaissance in the Marine Corps.

See JP 3-03, Joint Interdiction, *for more information.*

c. **CAS.** Air action by aircraft against hostile targets that are in close proximity to friendly forces and requires detailed integration of each air mission with the fire and movement of those forces.

See JP 3-09.3, Close Air Support, *for more information.*

d. **SEAD.** An activity to neutralize or temporarily degrade enemy air defenses by destructive or disruptive means. Destructive SEAD is the activity to do the same but with destructive means. Joint SEAD is a broad term that encompasses all SEAD activities provided by components of a joint force. Opportune suppression is unplanned against surface air defense targets of opportunity and are governed by ROE (in the case of aircrew self-defense) or by procedures established by the supported commander (for missions actively seeking out previously unlocated threats). Using event-based triggers allows for greater flexibility for the fire support element and firing unit in terms of planning and SEAD.

For additional information regarding SEAD, see JP 3-01, Countering Air and Missile Threats, and *ATP 3-01.4/MCRP 3-22.2A/NTTP 3-01.42/AFTTP 3-2.28,* Multi-Service Tactics, Techniques, and Procedures for Joint Suppression of Enemy Air Defenses.

For more detailed information regarding dynamic targeting, see ATP 3-60.1/MCRP 3-31.5/NTTP 3-60.1/AFTTP 3-2.3, Multi-Service Tactics, Techniques, and Procedures for Dynamic Targeting.

6. Air Operations in Maritime Surface Warfare

a. War-at-sea strike is the execution of deliberate, offensive attacks against enemy surface combatants and materiel. War-at-sea strikes can be executed against maritime dynamic targets by air, surface, or subsurface assets.

b. Counter-fast attack craft/fast inshore attack craft is conducted in direct defense of maritime assets and requires increased integration between air- and surface-delivered fires and the movement of maritime forces. While counter-fast attack craft/fast inshore attack craft requires a level of integration higher than that of armed reconnaissance, counter-fast attack craft/fast inshore attack craft should not be interpreted as CAS in the maritime environment.

For more detailed information, refer to ATP 3-04.18/MCRP 3-25J/NTTP 3-20.8/AFTTP 3-2.74, Multi-Service Tactics, Techniques, and Procedures for Air Operations in Maritime Surface Warfare.

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CHAPTER V
JOINT FIRE SUPPORT ASSESSMENT

"Assessment is a continuous process that measures the overall effectiveness of employing joint force capabilities during military operations."

Joint Publication 3-0, *Joint Operations*

1. Introduction

Assessment is a continual process that measures the overall effectiveness of employing joint force capabilities during military operations. It involves monitoring and evaluating the current situation and progress toward mission completion. Operation assessment refers specifically to the process the JFC and staff use during planning and execution to measure progress toward accomplishing tasks, creating conditions or effects, and achieving objectives. Commanders continuously observe the operational environment and the progress of operations; compare the results to their initial visualization, understanding, and intent; and adjust planning and operations based on this analysis. Staffs monitor key factors that can influence operations and provide the commander information needed for decisions.

2. Considerations

a. Operation assessment is commander-centric. Commanders maintain a personal sense of the progress of the operation or campaign, shaped by conversations with senior and subordinate commanders, key leader engagements, and battlefield circulation. Operation assessment complements the commander's awareness by methodically identifying changes in the operational environment, identifying and analyzing risks and opportunities, and formally providing recommendations to improve progress toward mission accomplishment. Assessment should be integrated into the organization's planning (beginning in the plan initiation step) and operations battle rhythm to best support the commander's decision cycle.

b. As an essential part of the overall operation assessment, the JFC-level and component-level staff will assess joint fire support. The staffs should assess how effectively the joint fire support system supports forces in contact, supports the CONOPS and associated fire support plan, synchronizes joint fire support, and sustains joint fire support operations. Positive indicators include a continuous flow of targeting information up and down the chain of command; availability of capabilities that can create both lethal and nonlethal effects; access to the requested type of joint fire support; consistent use of the most effective joint fire support; patterns of avoiding unnecessary duplication; civilian casualties and collateral damage; efficient use of airspace; prompt joint fire support for troops in contact, along with rapid coordination methods; protecting the force; and flexible supported and supporting staffs. Negative indicators include insufficient creation of effects or achievement of objectives, patterns of friendly fire incidents, or unanticipated or unacceptable amounts of civilian casualties or collateral damage.

c. **Assessment Indicators.** As the staff develops the desired effects, objectives, and end states during planning, they should concurrently identify the specific pieces of information needed to infer changes in the operational environment supporting them. These pieces of information are commonly referred to as indicators. Indicators are relevant, observable or collectible, responsive, and resourced. For joint fire support, assessment indicators should provide data to indicate the effectiveness of joint fire support and progress toward or away from objectives; for these reasons, it is essential that baseline data be collected for later comparison as close to the outset of operations as possible. Assessment plans should include both quantitative and qualitative indicators. An example of a joint fire support assessment indicator could be the speed with which important information is communicated to, and acknowledged by, components of the joint fire support system.

d. **Combat Assessment.** Combat assessment is phase 6 of the joint targeting cycle and is conducted at all levels of warfare. Combat assessment evaluates the results of weapons and target engagement and thus provides data for joint fires and the joint targeting processes at all levels. Combat assessment is composed of three related elements: BDA, munitions effectiveness assessment (MEA), and reattack recommendation.

(1) **BDA** is an element of combat assessment and is the estimate of target damage or effect, which is based on physical damage assessment, change assessment, and functional damage assessment, as well as target system assessment, resulting from target engagement.

(2) **MEA** is conducted concurrently and interactively with BDA and is the assessment of the military force applied in terms of the weapon system and munitions effectiveness to determine and recommend any required changes to the methodology, tactics, weapon system, munitions, fuzing, and/or weapon delivery parameters to increase force effectiveness. MEA is primarily an operations responsibility, with support from intelligence as documented in the MEA CONOPS.

(3) **Reattack recommendation** is an assessment derived from the results of BDA and MEA that provides the commander systematic advice on reattack of targets and further target selection to achieve objectives. The reattack recommendation is a combined operations and intelligence function.

Refer to JP 3-60, Joint Targeting, *and CJCSM 3162.01,* Joint Methodology for Battle Damage Assessment, *for further information on combat assessment.*

3. Process

Ultimately, operation assessment is a process that measures progress toward mission accomplishment. The JFC may direct the formation of a cell, whose primary function is to develop and execute the assessment plan and to conduct assessments. The assessment cell is a cross-functional organization with representatives from applicable J-code directorates, the SJA, components, and multinational and interagency partners. The assessment cell

operates during both planning and execution phases of an operation. Joint fire support may have a subordinate assessment team or working group that feeds the assessment cell.

a. **Develop the Joint Fire Support Assessment Plan.** Joint fire support assessment is a continuous process that is refined throughout planning and execution. The building of an effective joint fire support assessment plan, including the development of collection requirements, normally begins during mission analysis after identification of the initial desired and undesired effects. Use the joint fire support planning process, planning steps, basic joint fire support tasks, and joint fire support coordination principles in the planning and execution chapters of this publication as a starting point to identify relevant, quantifiable MOEs, MOPs, and other indicators of successful joint fire support.

(1) **Develop Joint Fire Support MOEs and Indicators.** As operational-level effects are seldom created or observed instantaneously, joint fire support-related MOEs provide a framework to conduct trend analysis of joint fires effects over time, both positive and negative. The development of joint fire support MOEs and indicators can commence immediately after the identification of desired and undesired effects. MOEs help to answer questions such as: "Are we doing the right things?" "Are our actions producing the desired effects?" "Are alternative actions required?"

(2) **Develop Joint Fire Support Indicator Threshold Criteria.** Criterion development during planning establishes a consistent baseline to assess trend analysis and reduce subjectivity of reporting agencies.

(3) **Develop Joint Fire Support MOPs.** MOPs are criteria to assess friendly actions tied to measuring task accomplishment. MOPs and task-metric development are normally conducted concurrently with, or shortly following, COA development. MOPs are developed and tracked by the current operations integration cell and in individual staff sections' running estimates but are not normally part of the formal assessment plan. MOPs help to answer the following questions: "Are we doing things right?" "Was the action taken?" "Were the tasks completed to standard?" "How much effort was involved?"

(4) **Develop the Collection Plan.** Each joint fire support indicator should be matched with its source(s) in subordinate units responsible for reporting them, as well as the staff member responsible for collecting that information. They should ensure the reporting requirements for subordinate units are sustainable and they leverage other reporting requirements to minimize separate, redundant assessment reporting requirements on subordinate units and staffs. The plan should be periodically reviewed and updated.

(5) **Assign Responsibilities for Conducting Analysis and Generating Recommendations.** In addition to collection, members of the staff analyze assessment data and develop recommendations.

(6) **Identify Feedback Mechanisms.** In units with an assessment cell, both the assessment cell and the staff principal present their findings to the commander at a tempo determined by the commander's decision cycle and formalized in the commander's battle rhythm. The assessment cell presents the assessment framework with current values and

discusses key trends. Insights from the statistical analysis of the information are presented. After the assessment cell presents its framework, staff principals can agree or disagree with the values provided and present insights and factors not considered or not explicit in the formal model. The staff principal then provides actionable recommendations based on the assessment.

(7) **Write the Joint Fire Support Assessment Plan.** Incorporate joint fires into plans and orders, providing guidance and direction to subordinate organizations. The joint fire support assessment plan may be included as an appendix to the operations annex or, alternatively, in the reports annex. It should provide a detailed matrix of the MOEs associated with the desired effects, as well as subordinate indicators. The joint fire support assessment plan should identify collection means and reporting responsibilities for specific MOEs, MOPs, MOE indicators, methods to analyze and evaluate data, venues where the staff and commander can interface, and actions for improvement (see Figure V-1).

Notional Assessment Plan Development Matrix

Assessment Aspects	Task Assessment	Operational Environment Assessment	Campaign Assessment
Source (basis) for criteria	Directed tasks in operation order.	Desired conditions (operational environment) in operation order.	End state objectives (success criteria).
Criteria	Primarily measure of performance.	Primarily measure of effectiveness.	Measure of effectiveness.
Indicators	Largely quantitative (e.g., is task accomplished to standard?). May have commander qualitative input.	Balance of quantitative and qualitative input.	Balance of quantitative and qualitative input.
Collection means	Reports, significant actions, subordinate commanders, circulation.	Reports, polls, subordinate commanders, stakeholders, circulation.	Reports, polls, subordinate commanders, stakeholders, circulation.
Analysis and evaluation	Current operations-centric, hot wash, and commander qualitative.	Staff analysis and evaluation through staff-wide efforts, with focused assessment cell and working group. Commander parallel evaluation based on qualitative (opinion-based) indicators through commander crosstalk and circulation. Informed by staff efforts.	Combination of the quantitative staff efforts and commander qualitative analysis and evaluation. Trend analysis.
Commander-staff interface venues	Daily updates, hot washes.	Periodic operational environment staff assessment updates, commander post-circulation reports.	Formal assessment briefings and conferences.
Actions for improvement	Staff and subordinate commanders provide recommendations. Commander decisions.	Staff and subordinate commanders provide recommendation. Commander decisions.	Staffs and subordinate commanders provide recommendations. Commander decisions.

Figure V-1. Notional Assessment Plan Development Matrix

b. **Execute the Joint Fire Support Assessment Plan.** As part of the overall assessment, the staff's assessment measures the progress toward, or regression from, the achievement of objectives. It should begin as soon as information concerning MOPs, MOEs, and associated indicators are received. Assessment steps are:

(1) **Monitor.** Monitoring is the continuous observation of conditions relevant to the current operation. Monitoring within the joint fire support assessment process allows staffs to collect relevant information, specifically information about the current situation that can be compared with the forecasted situation described in the commander's intent and CONOPS.

(2) **Evaluate.** The staff analyzes joint fire support information, collected through monitoring, to evaluate its impact on the operation's progress. Evaluation examines criteria to judge progress toward desired conditions and to analyze the rate of progress. Evaluation helps commanders identify what works and what does not work and gain insight to better accomplish the mission. Well-devised measures can help the commanders and staffs understand the causal relationship between specific tasks and desired effects. Joint fire support-related MOEs and MOPs help identify progress toward completing tasks, achieving objectives, and attaining end state conditions. The frequency of staff assessments should be determined by the commander's decision cycle. Normally, formal staff assessments may be conducted once or twice monthly. During high-tempo operations, staff assessments may be required more frequently—weekly or even daily. Staff assessments include assessment of actions taken to create effects (MOEs), task assessment (MOPs), and, if needed, deficiency analysis.

(3) **Recommend or Direct Action.** Monitoring and evaluating are critical activities; however, joint fire support assessment is incomplete without feedback and recommendations to direct action. Assessment may diagnose problems, but unless the diagnosis recommends adjustments to joint fire support activities, its use to the commander is limited. Based on the evaluation of progress, the staff brainstorms recommendations to the joint fire support plan and makes preliminary judgments about the relative merit of those changes. Making adjustments includes assigning new tasks to subordinates, reprioritizing joint fire support, and modifying the COA. Assessment occurs during all military operations. Assessment diagnoses threats, suggests improvements to the joint fire support plan, reveals opportunities, and considers partner-nation fire support systems. Assessment also considers transition from conflict to post-conflict and actions that could impair access to joint or partner-nation fire support capabilities during the conflict phases. The staff presents the results and conclusions of its assessments and recommendations to the commander as an operation develops.

c. **Assess the Plan.** The staff should continuously evaluate the assessment plan to add missing information and eliminate duplication and unnecessary reporting. The staff should make recommendations for changes and improvement and update the plan, as required, to provide the best information possible to the commander.

4. Results and Products

a. **Results.** Assessment of the joint fire support system provides various benefits to the joint force. In addition to measuring results and progress, assessment is used to improve planning, support decision making, manage, and improve staff SA of the composition and capabilities of forces available.

(1) **Measure Results.** MOEs help evaluate the progress of operations ("Are we on track to achieve the objective?").

(2) **Measure Progress.** MOPs evaluate task execution, asking whether actions are performed as planned.

(3) **Improved Planning.** Determining how to measure the effectiveness of actions taken to create effects, or the progress toward achieving an objective, enhances conceptual understanding and leads to better-designed plans and more insightful objectives.

(4) **Support Decision Making.** Assessment conclusions and recommendations feed adjustments into the plan and give evidence to support commanders' decisions.

(5) **Support Management of Resources.** Assessment results and recommendations allow commanders to efficiently allocate resources and funds.

(6) **Increase Knowledge.** Assessment produces significant material for the identification of best practices and for the historical study of operations contributing to the development of lessons learned. (See CJCSI 3150.25, *Joint Lessons Learned Program,* and the Joint Lessons Learned Information System at https://www.jllis.mil/apps/index.cfm.)

(7) **A Means to Motivate.** Assessment helps commanders set objectives and provide specific and measurable targets to direct their staffs and forces. Assessment can confirm success or highlight failures.

b. **Products.** Assessment reports may be formal or informal. Commanders provide planning guidance on the level of detail for upcoming operations. In protracted stabilization efforts, commanders may require formal assessment plans, assessment working groups, and standard reports. In fast-paced offensive or defensive operations, or in an austere theater of operations, a formal assessment may be impractical. To assess progress in those cases, commanders rely more on reports and assessments from subordinate commanders, the COP, operation updates, assessment briefings from the staff, and their personal observations. The joint fire support assessment results will probably be combined with the assessment results from other mission areas to form a comprehensive operations and intelligence assessment report. Collection managers must be trained to provide information collection support to targeting. Priority intelligence requirements must link to commander's decision points and synchronize collection efforts in time and space to answer priority intelligence requirements. Examples of assessment report tools include:

(1) **Effects-to-Task Summary.** Desired effects may not be created after all supporting tasks are completed. In these cases, a task-to-effect analysis should be performed to determine whether the discrepancy is due to a time lag between tasks or actions completion and anticipated results or whether the tasks or actions cannot achieve the intended results. Mismatches should be investigated, and remedies should be developed and communicated.

(2) **MOE Indicator Analysis Matrix.** When there is a mismatch between tasks or action completion and the creation of the anticipated effect, a review of the associated MOE indicator data is the first step in deficiency analysis. The deficiency analysts should ensure the reported data is timely and of sufficient fidelity to support a high level of confidence in the assessment of the effectiveness of the action taken to create the desired effect.

(3) **Task Analysis Matrix.** After the effects status is verified, the status of the tasks and underlying actions should be verified. If tasks and actions are verified as completed, the analysis team determines whether sufficient time has elapsed for changes to be reflected in the indicators. If so, the team should inform the JPG, who will determine whether the OPLAN or OPORD should continue unchanged or whether additional or alternative tasks or actions are warranted.

(4) **Civilian Casualties Assessment Tracker.** All allegations of civilian casualties will be tracked and assessed for validity. Those allegations that meet a credibility assessment threshold will be tasked to the striking component for further refined assessment up to a command-directed legal investigation. Data collected will be maintained by a designated staff agency such as a civilian casualty monitoring team.

(5) **Assessment Summary.** Following the formal assessment team meeting, assessment personnel finalize the assessment summary for review by the formal assessment board (if established) and the commander. While the specific format for the assessment summary varies, at a minimum, the effects summary display should include the effect title, current assessment status, previous assessment status, and confidence level.

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APPENDIX A
COORDINATION AND CONTROL MEASURES

1. Introduction

The purpose of this appendix is to familiarize commanders and staff with coordination and control measures necessary to C2 operations as part of a joint force. Commanders and staff establish various FSCMs, MCMs, and ACMs to facilitate effective joint military operations. Commanders use these measures consistent with the location of friendly forces, the CONOPS, and anticipated enemy actions and in consultation with superior, subordinate, supporting, and affected commanders. Coordination and control measures are directives to subordinate commanders to assign responsibilities, coordinate actions, and control operations. Commanders tailor their use of control measures to conform to the higher commander's intent, their mission, and the amount of authority delegated to subordinates.

2. Fire Support Coordination Measures

a. Locations and implementing instructions for FSCMs are disseminated electronically by message, database update, and/or overlay through both command and joint fire support channels to higher, lower, and adjacent maneuver and supporting units. Typically, they are further disseminated to each level of command, to include the establishing command and all concerned joint fire support agencies. Not all measures may apply to a joint operation; however, knowledge of the various FSCMs used by each component is necessary for the effective use of joint fire support.

(1) **Planning and Coordination Considerations.** Commanders position and adjust FSCMs consistent with the operational situation and in consultation with superior, subordinate, supporting, and affected commanders. The operations cell informs coordination elements of the change and effective time. Conditions that dictate the change of FSCMs are also coordinated with the other agencies and components as appropriate. As conditions are met, the new FSCM effective time can be projected and announced. Following direction to execute the change, the operations cell should confirm with all liaison elements that the FSCM changes have been disseminated. This ensures affected units are aware of new FSCM locations and associated positive control measures are being followed, thus reducing the risk of friendly fire incidents. During target development, the J-2 may collaborate with the intelligence community to confirm the functional characterization of a target. When this vetting process leads to placing restrictions on a target, the target is placed on the RTL rather than the JTL. Entities confirmed as no-strike elements cannot become targets unless they lose their protected status through operational imperatives and established ROE, which may provide the requisite authority to engage such targets under the inherent right and obligation of self-defense. The J-2 places entities confirmed as no-strike elements on the NSL. It is imperative that the JFE establish processes and procedures to review the RTL and NSL and build appropriate FSCMs for all fire plans. Failure to develop FSCMs based on the RTL and NSL may result in incidental death or injury to civilians and/or damage to civilian objects or friendly equities in the vicinity of the target.

(2) **Multinational Considerations.** Before commencing multinational operations, joint force and component staff members verify the status of any international agreements concerning FSCMs. STANAG 2245, *Field Artillery and Fire Support Data Interoperability*, is an example of an international joint fire support agreement.

(3) Before discussing specific FSCMs, a brief background on operational environment geometry will provide a better understanding for the application of the different types of FSCMs.

(a) Operational areas may be contiguous or noncontiguous. When they are contiguous, a boundary separates them, and when noncontiguous, they do not share a boundary; the CONOPS links the elements of the force. Noncontiguous operational areas are normally characterized by a 360-degree boundary with the higher HQ responsible for the area between noncontiguous operational areas. Within both contiguous and noncontiguous areas, operations may be linear or nonlinear in nature.

1. In linear operations, commanders direct and sustain combat power toward enemy forces in concert with adjacent units, usually along lines of operations with identified forward lines of own troops. Emphasis is placed on maintaining the position of the land force in relation to other friendly forces, usually resulting in contiguous operations where surface forces share boundaries. Linear operations are normally conducted against a deeply arrayed, echeloned enemy force or when the threat to lines of communications requires control of the terrain around those lines of communications. In these circumstances, linear operations allow commanders to concentrate and integrate combat power more easily.

2. In nonlinear operations, forces orient on objectives without geographic reference to adjacent forces and are usually characterized by more operations in noncontiguous areas. Nonlinear operations emphasize simultaneous operations along multiple lines of operation from selected bases and place a premium on intelligence, mobility, and sustainment.

See JP 3-0, Joint Operations, *for more information on linear and nonlinear operations and contiguous and noncontiguous operational areas.*

(b) Within their AOs, land and maritime force commanders employ permissive and restrictive FSCMs to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces.

1. **Permissive FSCMs facilitate attacks** and include coordinated fire lines (CFLs), battlefield coordination lines (BCLs), FSCLs, free-fire areas (FFAs), and kill boxes.

2. **Restrictive measures safeguard friendly forces** and include airspace coordination areas (ACAs), restrictive fire lines (RFLs), NFAs, restrictive fire areas (RFAs), and ZFs.

b. **Permissive FSCMs**

(1) **CFL**

(a) **Purpose.** The CFL is a line beyond which conventional surface-to-surface direct fire and indirect fire support means may fire at any time within the boundaries of the establishing HQ without additional coordination **but does not eliminate the requirement/responsibility to coordinate the airspace required to conduct the mission.** The purpose of the CFL is to expedite the surface-to-surface engagement of targets beyond the CFL by not requiring coordination with the AO-owning commander to approve creating effects on identified targets. Such fires still comply with ROE and law-of-war targeting constraints; **designation of a CFL is not authorization to fire indiscriminately into the area.**

(b) **Establishment.** The CFL is usually established by a brigade or division commander equivalent, but it can also be established, especially in amphibious operations, by a maneuver battalion. It is located as close to the establishing unit as possible without interfering with the maneuver forces. There is no requirement for the CFL to be placed on identifiable terrain. However, additional considerations include the limits of ground observation, the location of the initial objectives in the offense, and the requirement for maximum flexibility in both maneuver and the delivery of supporting fires. Subordinate CFLs may be consolidated by higher HQs.

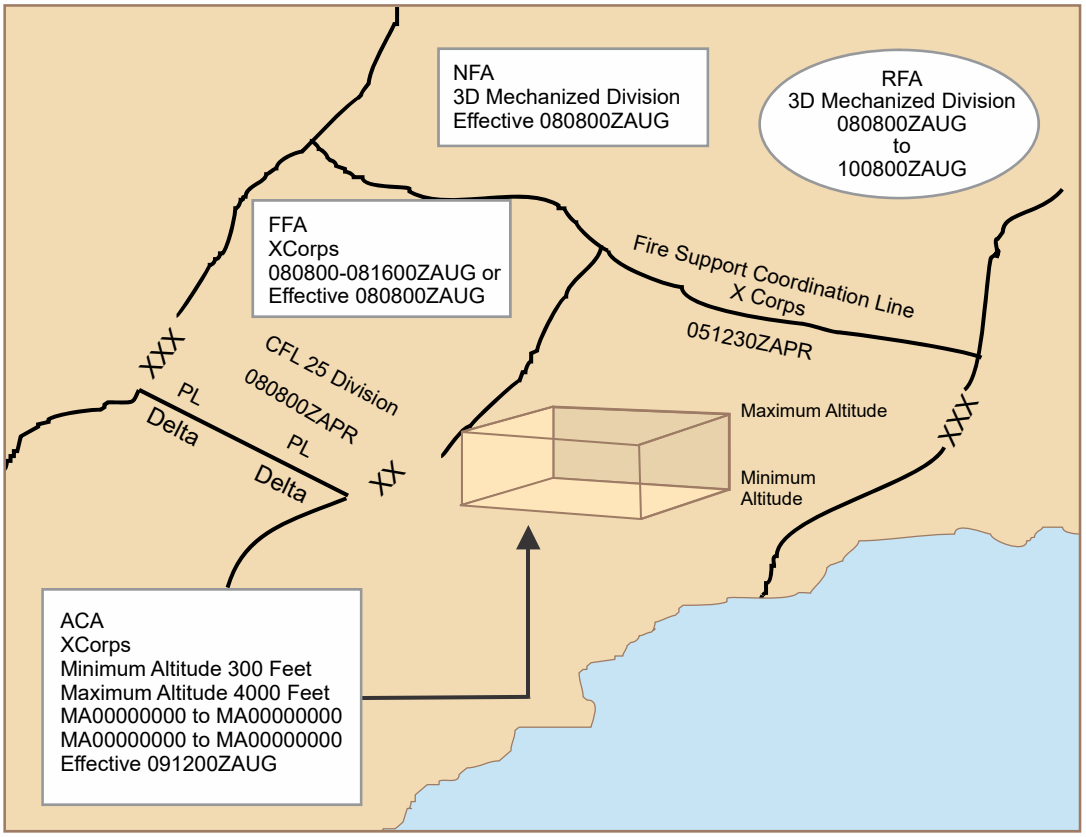
(c) **Graphic Portrayal.** The CFL is graphically portrayed by a dashed black line with "CFL," followed by the establishing HQ above the line and the effective date-time group (DTG) below the line (see Figure A-1).

(2) **BCL**

(a) **Purpose.** A BCL is a Marine Corps-specific FSCM that facilitates the expeditious attack of surface targets of opportunity between the measure (the BCL) and the FSCL. When established, the primary purpose is to allow MAGTF aviation to attack surface targets without approval of a GCE commander, in whose area the targets may be located. To facilitate air-delivered fires and deconflict air and surface fires, appropriate coordination measures, such as ACAs and kill boxes, may typically be established in the area between the BCL and the FSCL. Ground commanders may strike any targets beyond the BCL, and short of the FSCL, with artillery and/or rockets, without coordination, as long as those fires deconflict with the established ACA overhead. This includes targets in an adjacent ground commander's zone that falls within the BCL-FSCL area. Such fires must still comply with ROE and law-of-war targeting constraints; **designation of a BCL is not authorization to fire indiscriminately into the area.**

(b) **Establishment.** The MAGTF commander establishes the BCL. The BCL should follow well-defined terrain features that are easily identifiable from the air. The positioning of the BCL considers the tactical situation. This should include the scheme of maneuver or plan of defense, weather, terrain, type and source of aircraft, and overall flexibility of maneuver and fire support. The BCL is disseminated by the establishing MAGTF commander to the FSCCs of subordinate, adjacent, and higher HQs, as required. It is further disseminated at each level of command, including the establishing command,

Fire Support Coordination and Maneuver Control Measures



Legend

ACA	airspace coordination area	NFA	no-fire area
CFL	coordinated fire line	PL	phase line
FFA	free-fire area	RFA	restrictive fire area

Figure A-1. Fire Support Coordination and Maneuver Control Measures

to all concerned fire support agencies, such as the DASC, Marine TACC, fire direction center, SACC, and NSFS ships. Since the BCL typically includes airspace parameters for the safe employment of aviation assets, it has been likened to a purple kill box.

(c) **Graphic Portrayal.** BCL location is graphically portrayed on fire support maps, charts, and overlays by a solid black line with the letters "BCL," followed by the establishing HQ in parentheses above the line and effective DTG below the line.

(d) **Considerations.** Normally, Marine units prefer placing the FSCL close to the forward edge of the battle area so organic indirect fires can range most targets short of the FSCL and organic air assets have maximum freedom to engage targets beyond the FSCL. However, since, in many operations, the FSCL is controlled by the JFC, the FSCL may be placed at a significantly greater distance than the maximum range of Marine Corps indirect fire assets. This gives the enemy a sanctuary between the maximum range of

indirect fire supporting arms and the FSCL, in which aviation assets cannot freely engage without coordination and that GCE assets are unable to influence. The BCL was thus developed as a supplemental measure that may or may not be used. A key factor is the range and positioning of GCE organic weapon systems and the positioning of the FSCL. If the FSCL is placed in such a way that a sanctuary exists between the range of Marine artillery and the FSCL, the MAGTF commander can use this internal coordinating measure to facilitate the attack of targets within this area. The BCL allows MAGTF fire support assets to attack surface targets without further coordination with the GCE commander, in whose area the targets may be located. Marine aviation may strike any target beyond the BCL and short of the FSCL without further coordination, including targets in an adjacent Marine commander's zone between the BCL and FSCL. Before firing, the ground commander should coordinate with the ACE (DASC) if surface-delivered fires will violate ACAs associated with the BCL.

(3) **FSCL**

(a) **Purpose.** The FSCL delineates coordination requirements for the joint attack of surface targets. It requires the coordination of joint fires in support of common objectives beyond the measure with affected force HQ. FSCLs facilitate the expeditious engagement of targets of opportunity beyond the coordinating measure. The FSCL applies to all fires of air-, land-, and maritime-based weapon systems using any type of munition against surface targets. The FSCL is a permissive FSCM, with the permissive area being beyond the coordination measure. The air component, while recognizing this aspect of the FSCL, also views the FSCL as a restrictive FSCM when regarding the area short of the coordination measure. The JFLCC and JFMCC cannot employ fires long of the FSCL without coordination with affected commanders, and the JFACC cannot employ fires short of the FSCL without coordination with the JFLCC or JFMCC. The FSCL is a significant consideration during interdiction operations. The FSCL is primarily used to establish C2 procedures for planning and execution purposes—it does not define mission types. Interdiction can occur both short of, and beyond, the FSCL. Attacks on surface targets short of the FSCL, during the conduct of joint interdiction operations, are controlled by, and/or coordinated with, the appropriate land or amphibious force commander.

(b) **Establishment.** An FSCL is established and adjusted by the appropriate land or amphibious force commander within their boundaries, in consultation with superior, subordinate, supporting, and affected commanders. If possible, the FSCL should follow well-defined terrain features to assist identification from the air. The FSCL is oriented to air-land operations and is normally located only on land; however, in certain situations, such as littoral areas, the FSCL may affect both land and maritime areas. In amphibious operations, the FSCL is normally established by the commander, LF, after coordination with the CATF. Changes to the FSCL require notification of all affected forces within the AO in sufficient time to allow for these forces and/or components to incorporate the FSCL change. Current technology and collaboration tools between the elements of the joint force determine the times required for changing the FSCL. The JFC should establish guidance for shifting FSCLs. The decision of where to place (or whether even to use) an FSCL requires careful consideration. Placement of the FSCL should strike a balance, so as not to unduly inhibit operational tempo, while maximizing the

effectiveness of organic and joint force interdiction assets. The optimum placement of the FSCL varies with specific AO circumstances, but considerations include the ground force positions and anticipated scheme of maneuver during the effective time period of the FSCL and their indirect fire support systems' range limits, where typically the preponderance of lethal effects on the AO shifts from the ground component to the air component. In this way, the FSCL placement maximizes the overall effectiveness of the joint force, and each component will suffer only a small reduction in efficiency. The proper location for the FSCL may also shift from one phase of the operation (or campaign) to the next, depending on the scale and scope of each component's contribution during that phase. The FSCL is not a boundary—the synchronization of operations on either side of the FSCL is the responsibility of the establishing commander, out to the limits of the land or amphibious force boundary. **The establishment of an FSCL does not create an FFA beyond the FSCL.** When targets are engaged beyond the FSCL, supporting elements' engagements should not produce adverse effects on, or to the rear of, the line. Engagements beyond the FSCL are consistent with the establishing commander's priorities, timing, and desired effects and deconflicted, whenever possible, with the supported HQ.

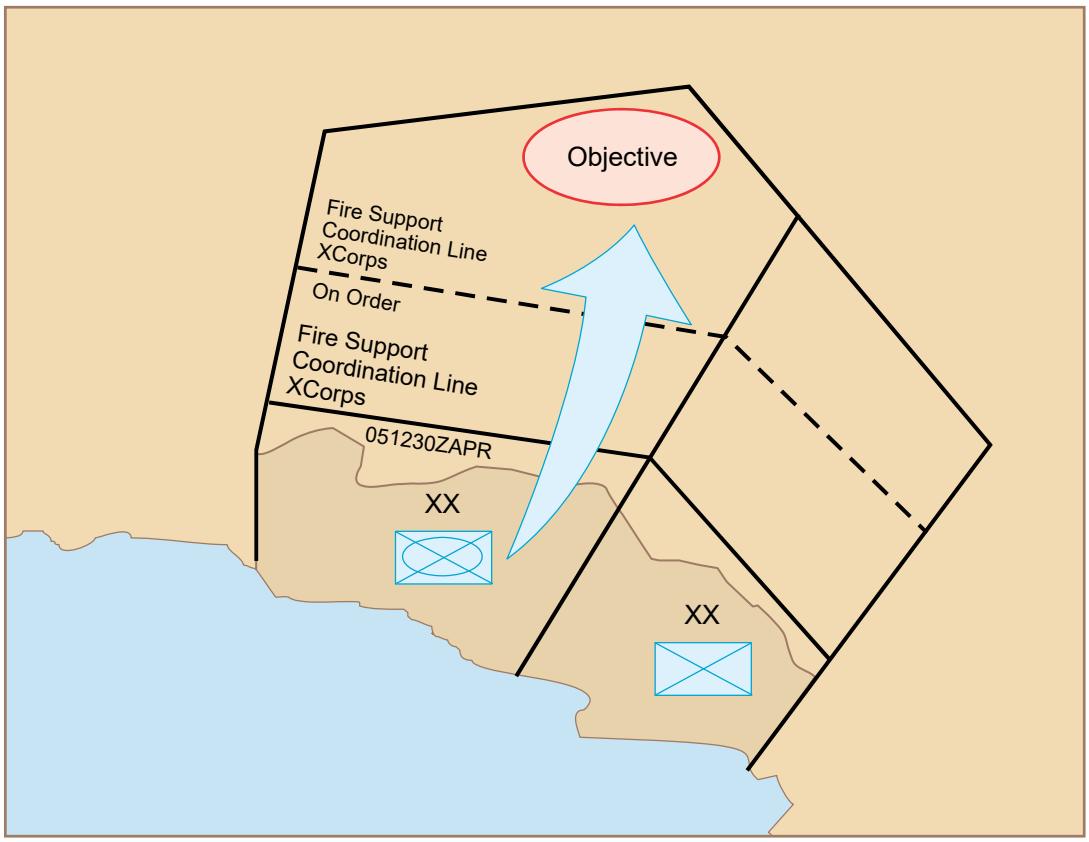
(c) **Graphic Portrayal.** The FSCL is graphically portrayed by a solid black line extending across the assigned areas of the establishing HQ. The letters "FSCL" are followed by the establishing HQ above the line and the effective DTG below the line. FSCLs do not have to follow traditional straight-line paths. Positioning the FSCL on terrain identifiable from the air is a technique that may further assist in friendly fire incident prevention. Curved and/or enclosed FSCLs have applications in nonlinear joint operations (see Figure A-2).

(d) **Considerations.** The commander's decision on FSCL location is based on estimates of the situation, CONOPS, the location of enemy forces, anticipated rates of movement, concept and tempo of the operation, organic weapon capabilities, and other factors. The FSCL is normally positioned closer to the forward line of own troops in the defense rather than in the offense; however, the exact positioning depends on the situation. Placing the FSCL at greater depths will typically require support from higher HQs and other supporting commanders. Also, when the FSCL is positioned at a greater depth, there is increased responsibility for detailed coordination placed upon the establishing commander.

1. By establishing the FSCL close in, yet at sufficient depth to avoid limiting high-tempo maneuver, land and amphibious force commanders ease the coordination requirements for target engagement within their AOs by, and with, forces not under their control, such as NSFS or AI. Unless a permissive control measure such as a kill box is established, air strikes short of the FSCL (both CAS and AI) are approved by the establishing commander in near real time, thus approving/revalidating both preplanned and dynamic missions before they engage targets. CAS missions will be conducted in accordance with terminal attack control procedures found in JP 3-09.3, *Close Air Support.*

2. Within these AOs, land and maritime commanders are designated the supported commander for the integration and synchronization of maneuver, fires, and interdiction. Accordingly, land and maritime commanders designate the target priority,

Fire Support Coordination Line



- Enhances the expeditious attack of targets and sets the stage for future operations.
- Established by appropriate level commander in consultation with superior, subordinate, and supporting commanders.
- Forces attacking targets beyond a fire support coordination line must inform all affected commanders.

Figure A-2. Fire Support Coordination Line

effects, and timing of interdiction operations within their AOs. Further, in coordination with the land or maritime commander, a component commander designated as the supported commander for theater/JOA-wide interdiction has the latitude to plan and execute JFC-prioritized missions within a land or maritime AO. Commanders executing such a mission within a land or maritime AO coordinate the operation to avoid adverse effects and friendly fire incidents. If those operations would have adverse impact within a land or maritime AO, the commander assigned to execute the JOA-wide functions readjusts the plan, resolves the issue with the land or maritime component commander, or consults with the JFC for resolution. FSCL placement is determined by the land or maritime component commander, based on mission and objectives. For targets engaged by the air component beyond the FSCL, the land or maritime commander will relay, through their BCD or naval and amphibious liaison element, their plan for priority, effects, and timing (via the joint targeting cycle's component target nomination list). Any changes to those priorities, effects, and timing desired by the land or maritime commanders will also be

relayed through their BCD or naval and amphibious liaison element to effect changes beyond the FSCL.

3. Coordination of engagements beyond the FSCL is especially critical to commanders of all types of forces (air, land, maritime, space, cyberspace, and special operations) operating beyond the FSCL. Such coordination is also important when engaging forces are employing wide-area munitions or those with delayed effects. Finally, this coordination assists in avoiding conflicting or redundant engagements.

4. The establishing commander adjusts the location of the FSCL, as required, to keep pace with operations. In high-tempo maneuver operations, the FSCL may change frequently. A series of predisseminated "on-order" FSCLs will help accelerate the coordination required. The establishing commander quickly transmits the change to higher, lower, adjacent, and supporting HQs to ensure engagements are appropriately coordinated by controlling agencies. Anticipated adjustments to the location of the FSCL are normally transmitted to other elements of the joint force sufficiently early to reduce potential disruptions of their current operations. Careful planning and coordination is essential for changes to the FSCL. This planning is necessary to minimize the risk of friendly fire incidents and to avoid disrupting operations.

5. Varying capabilities for acquisition and engagement may exist among adjacent commanders in a multinational operation. Normally, commanders at senior tactical echelons establish an FSCL to support their operations. Layered FSCLs and multiple, separate, noncontiguous corps and/or MAGTF FSCLs positioned at varying depths create a coordination and execution challenge for supporting commanders (e.g., tracking effective times, lateral boundaries, and multiple command guidance). In cases such as these, when the components share a mutual boundary, the JFC or a designated component commander may consolidate the operational requirements of subordinates to establish a single FSCL. This FSCL may be noncontiguous to reflect the varying capabilities of subordinate commands. A single FSCL facilitates air support, accommodates subordinate deep operations requirements, and eases coordination of FSCL changes.

6. The maritime AO may be contiguous or noncontiguous and normally does not employ an FSCL. However, targets may be in close proximity to friendly forces, requiring detailed integration to maximize joint fires and minimize friendly fire incidents. Depending on the phase of the operation, maritime targets may be designated as TSTs, while war-at-sea targets should be planned targets that may include other functional components.

(4) **FFA**

(a) **Purpose.** An FFA is a specific designated area into which any weapon system may fire without additional coordination with the establishing HQ. It is used to expedite joint fires and to facilitate jettison of aircraft munitions. Such fires still comply with ROE and law-of-war targeting constraints; **designation of an FFA is not authorization to fire indiscriminately into the area.**

(b) **Establishment.** An FFA may be established only by the military commander with authority over the area (usually, a division or higher commander). Preferably, the FFA should be located on identifiable terrain; however, it may be designated by grid coordinates or GARS.

(c) **Graphic Portrayal.** The FFA is graphically portrayed by a solid black line defining the area and the letters "FFA" within, followed by the establishing HQ and the effective DTG (see Figure A-1).

(5) **Kill Box**

(a) **Purpose.** A kill box is a three-dimensional FSCM, normally built through the combined use of an FSCM (for the ground) and an ACM (for the air), used to facilitate the integration of fires. A kill box is a measure, not a mission. Kill boxes are established to support interdiction efforts as part of the JFC's joint targeting process. Kill boxes allow lethal attack against surface targets without further coordination with the establishing commander and without the requirement for terminal attack control. When used to integrate air-to-surface and subsurface/surface-to-surface indirect fires, the kill box will have appropriate restrictions. These restrictions provide a three-dimensional block of airspace in which participating aircraft are deconflicted from friendly surface fires. The restrictive measures also prevent non-participating aircraft and maneuver forces from entering the kill box. The objective is to reduce the coordination required to fulfill support requirements with maximum flexibility (permissive attributes), while preventing friendly fire incidents (restrictive attributes). Fires executed in a kill box should comply with ROE and law-of-war targeting constraints; **designation of a kill box is not authorization to fire indiscriminately into the area.**

(b) **Establishment.** Supported component commanders establish a kill box in consultation with superior, subordinate, supporting, and affected commanders. Requirements for kill boxes and other control measures are determined using normal component targeting and planning processes and are established and approved by commanders or their designated staff. Information about the type, effective time, duration, and other attributes will be published and disseminated using existing voice and digital C2 systems. Component commanders, acting on JFC authority, establish and adjust kill boxes within their AO/JOA in consultation with higher, subordinate, supporting, and affected commanders.

See FM 3-09, Field Artillery and Fire Support, *and ATP 3- 09.34/MCRP 3-31.4 (MCRP 3-25H)/NTTP 3-09.2.1/AFTTP 3-2.59,* Multi-Service Tactics, Techniques, and Procedures for Kill Box Planning and Employment, *for further information.*

c. **Restrictive FSCMs**

(1) **ACA.** The ACA is the primary FSCM that reflects the coordination of airspace for use by air support and indirect joint fires.

(a) **Purpose.** ACAs are used to ensure aircrew safety and the effective use of indirect supporting surface joint fires by deconfliction through time and space. The

ACA is a block or corridor of airspace in which friendly aircraft are reasonably safe from friendly surface fires. A formal ACA (a three-dimensional box of airspace) requires detailed planning. More often, an informal ACA is established using time, lateral separation, or altitude to provide separation between surface-to-surface and air-delivered weapon effects.

For additional information on ACAs, see JP 3-09.3, Close Air Support, *and JP 3-52,* Joint Airspace Control.

(b) **Establishment.** The airspace control authority establishes formal ACAs at the request of the appropriate commander. Though not always necessary, formal ACAs should be considered. Vital information defining the formal ACA includes minimum and maximum altitudes, a baseline designated by grid coordinates at each end, the width (on either side of the baseline), and the effective times. When time for coordination is limited, an informal ACA is used. The informal ACA can be requested by the maneuver commander requesting CAS or employing helicopters and is approved at the battalion or higher level. Both types of ACAs are constructed with the assistance of the air liaison officer to ensure they meet the technical requirements of the aircraft and weapon systems.

(c) **Graphic Portrayal.** A formal ACA is shown as an area enclosed by a solid black line. Depicted inside the enclosed area are "ACA," the establishing HQ, the minimum and maximum altitudes, the grid coordinates for each end of the baseline, and the effective DTG or the words "on order." Informal ACAs are not normally displayed on maps, charts, or overlays (see Figure A-1).

(2) **RFL**

(a) **Purpose.** The RFL is a line established between converging friendly forces—one or both may be moving—that prohibits joint fires or the effects of joint fires across the line without coordination with the affected force. The purpose of the line is to prevent friendly fire incidents and duplication of engagements by converging friendly forces.

(b) **Establishment.** The commander common to the converging forces establishes the RFL, which is located on identifiable terrain when possible. In linkup operations, it is usually closer to the stationary force, to allow maximum freedom of action for the maneuver and joint fire support of the linkup force.

(c) **Graphic Portrayal.** The RFL is graphically portrayed by a solid black line, with "RFL," followed by the establishing HQ above the line and the effective DTG below the line.

(3) **NFA**

(a) **Purpose.** The purpose of the NFA is to prohibit joint fires or their effects into an area. There are two exceptions:

1. When the establishing HQ approves joint fires within the NFA on a mission-by-mission basis.

2. When an enemy force within the NFA engages a friendly force and the engaged commander determines there is a requirement for immediate protection and responds with the minimal force needed to defend the force.

(b) **Establishment.** Any size unit may establish NFAs. If possible, the NFA is established on identifiable terrain. It may also be located by a series of grids or by a radius from a center point.

(c) **Graphic Portrayal.** The NFA is graphically portrayed as an area outlined with a solid black line with black diagonal lines inside. The letters "NFA" are within, followed by the establishing HQ and the effective DTG (see Figure A-1).

(4) **RFA**

(a) **Purpose.** An RFA is an area where specific restrictions are imposed and in which joint fires, or the effects of joint fires, that exceed those restrictions will not be delivered without coordination with the establishing HQ. The purpose of the RFA is to regulate joint fires into an area according to the stated restrictions.

(b) **Establishment.** A maneuver battalion or higher echelon normally establishes an RFA. Usually, the RFA is located on identifiable terrain, by grid, or by a radius from a center point. To facilitate rapidly changing operations, on-call RFAs may be used. The dimensions, locations, and restrictions of the on-call RFA are prearranged.

(c) **Graphic Portrayal.** The RFA is graphically portrayed by a solid black line defining the area and the letters "RFA" within, followed by the establishing HQ and the effective DTG. The restrictions may be included within the graphic if space allows or reference may be made to a specific OPORD or OPLAN (see Figure A-1).

(5) **ZF**

(a) **Purpose.** A ZF is an FSCM that includes the area within which a designated ground unit or fire support ship delivers, or is prepared to deliver, joint fire support. Joint fires may or may not be observed. Land is divided into ZFs, which are assigned to gunfire support ships and units as a means to coordinate their efforts with each other and with the scheme of maneuver of the supported ground unit. Units and ships assigned ZFs are responsible for engaging known targets and targets of opportunity according to their mission and the guidance of the supported commander.

(b) **Establishment.** The commander of the maritime force providing NSFS establishes and assigns ZFs for the forces. The ZF for an artillery battalion or a ship assigned the mission of DS normally corresponds to the AO of the supported unit. The ZF for an artillery battalion or a ship assigned the mission of GS should be within the boundaries of the supported unit. When used in conjunction with naval gunfire, the size and shape of a ZF will depend on the following:

1. **Boundaries of ZF.** To permit ready identification by the spotter and the individual fire support ship, the boundaries of the ZFs should be recognizable both on the terrain and on a map and should correspond to the zones of action of the LF units supported. It may be necessary to divide a large ZF into two or more smaller zones due to considerations that follow.

2. **Size.** The size of each ZF should be such that the fire support ships, or ships assigned to observe and/or destroy targets, will be able to accomplish the mission in the time allocated. When ZFs are delineated, known or suspected targets, scheduled for destruction in each zone, are plotted, after which the number and type of targets are compared to the capability of the ship.

3. **Visibility.** Observation from seaward is a desirable feature for ZFs, since it permits a ship to deliver more accurate and rapid fire.

4. **Accessibility to Fire.** The ZFs must be accessible to the trajectory of the fire support ship(s) assigned to the zone.

(c) ZFs are also assigned to FA units by their higher HQ. The ZF for FA units assigned to a maneuver unit, or assigned the mission of DS, corresponds to the AO of the parent or supported maneuver unit. The ZF for an artillery unit assigned the mission of reinforcing corresponds to the ZF of the reinforced artillery unit. The ZF for an artillery unit assigned the mission of GS-reinforcing corresponds to the ZF of the reinforced artillery unit and is within the AO of the supported maneuver unit. The ZF for an artillery unit assigned the mission of GS corresponds to the AO of the supported maneuver unit.

(d) **Graphic Portrayal.** ZFs are delineated by the use of broken lines (solid lines if unit boundaries are used) and are designated by Arabic numerals (e.g., "ZF3").

For more information on ZF, see FM 3-09, Field Artillery Operations and Fire Support.

3. Maneuver Control Measures

Land, maritime, and amphibious commanders use MCMs to define lines of responsibility in support of movement and maneuver of friendly forces.

a. Boundaries

(1) **Purpose.** A boundary is an MCM. In land warfare, it is a line by which surface AOs between adjacent units and/or formations are defined. Boundaries designate the geographical limits of the AO of a unit. Within their own boundaries, units may execute joint fires and maneuver without close coordination with neighboring units, unless otherwise restricted. Normally, units do not fire across boundaries unless the fires are coordinated with the adjacent unit or the fires are beyond an FSCM, such as a CFL. These restrictions apply to conventional and special munitions and their effects. When fires such as obscurants and illumination affect an adjacent unit, coordination with that unit is normally required. A commander can, in certain situations, decide to fire across boundaries at positively identified enemy elements, without coordination. However, direct and

observed joint fires should be used when firing across boundaries at positively identified enemy forces when there is no time to coordinate with adjacent friendly units.

(2) **Establishment and/or Portrayal.** Any commander given an AO can establish boundaries for subordinate units. These boundaries will be respected by all Service and functional components. Boundaries are depicted as solid black lines with a symbol placed on the boundary to show the size and designation of the highest echelons that have the boundary in common. If the units are of unequal size, the symbol of the higher unit is shown and the designation of the lower unit is given completely (see Figure A-1).

b. **Phase Lines (PLs)**

(1) **Purpose.** A PL is an MCM used by land forces for control and coordination of military operations. It is usually a recognizable terrain feature extending across the zone of action. Units normally report crossing PLs but do not halt unless specifically directed. PLs can be used to identify limits of advance, monitor rates of movement, control joint fires (when dually designated as an FSCM), or define an AO. The purpose of each PL, and any actions required by forces affected by the PL, will be specified on the OPORD of the establishing HQ.

(2) **Establishment and/or Portrayal.** Any commander given an AO can establish PLs. A PL is depicted as a solid black line labeled "PL" and assigned letters, numbers, or code-name designations (see Figure A-1).

c. **Fire Support Area (FSA) and/or Fire Support Station (FSS)**

(1) **Purpose.** An FSA is an appropriate maneuver area assigned by the maritime commander to fire support ships, from which they deliver surface joint fire support to an operation ashore. An FSA is normally associated with amphibious operations but can be used whenever it is desirable to have a fire support ship occupy a certain geographic position. An FSS is an exact location at sea from which a fire support ship delivers fires. This designation is used to station ships to be able to reach certain targets. For example, a ship in an FSA may not be able to reach a certain target except when it is stationed at the FSS.

(2) **Establishment.** The officer in tactical command, typically the CATF, establishes FSAs and FSSs. In amphibious operations when attack groups are formed and separate landing areas are designated, the CATF may assign each attack group commander the responsibility for control of naval gunfire support within the area.

(3) **Graphic Portrayal.** FSAs are designated by Roman numerals (e.g., FSA I, II, III) and are shown on the NSFS operations overlay. FSSs are designated by numbers (e.g., FSS 1, 2, 3) and are shown on the NSFS operations overlay as an X, indicating the exact position of the ship.

4. Airspace Coordinating Measures

ACMs. ACMs are employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. Effectively and efficiently integrating and coordinating joint fires depends on the understanding and realization that the operational environment is a three-dimensional area, or volume of space, through which air assets operate and through which fires are employed. ACMs are nominated from subordinate HQs through component command HQs and forwarded to the airspace control authority in accordance with the airspace control plan. Additionally, some ACMs may be established to permit surface joint fires or UA operations. The component commanders ensure ACM nominations support, and do not conflict with, joint operations prior to forwarding to the airspace control authority. The airspace control authority consolidates, coordinates, and deconflicts the airspace requirements of the components and publishes the ACMs in the ACO. Simply stated, ACMs are approved by the airspace control authority and promulgated via the ACO. The ACO is published to meet the operations tempo and should be promulgated to meet the pace of the ACM request process. Expect the ACO to be distributed both separately and as a section of the ATO. ACMs also have specific usages that further help to define use and purpose to assist with effective planning, integration, and execution. ACMs that have joint fire support applicability are listed below.

a. An **air corridor (AIRCOR)** is a restricted air route of travel specified for use by friendly aircraft established for the purpose of preventing friendly aircraft from being fired upon by friendly forces. AIRCOR procedures are used to route aircraft between such areas as forward arming and refueling points, holding areas, and battle positions. AIRCOR usages include minimum-risk routing, transit corridors and routes, and low-level transit routes. Altitudes of an AIRCOR do not exceed the coordinating altitude, if established.

b. A **restricted operations zone** is airspace reserved for specific activities in which the operation of one or more airspace users is restricted. Restricted operations zones may support air-to-air refueling, CAS, personnel recovery, ATACMS, and combat air patrol. Prior to entry into an established restricted operations zone, both manned and unmanned aircraft must coordinate with the owning organization to receive authorization.

c. The **coordinating altitude** is an ACM that uses altitude to separate users and as the transition between different airspace control elements. Airspace users (e.g., manned and unmanned aircraft, direct and indirect fires) transiting the coordinating altitude must coordinate with the affected airspace control elements.

d. A **no-fly area** is airspace of specific dimensions set aside for a specific purpose in which no aircraft operations are permitted, except as authorized by the appropriate commander and controlling agency. No-fly area procedures can be used to enforce a diplomatically designated no-fly zone, which can stipulate which flights are authorized and which are prohibited. Since no-fly areas negatively impact air operations, their use is balanced against the needs of affected commanders.

e. A **high-density airspace control zone (HIDACZ)** is airspace in which there is a concentrated employment of numerous and varied weapons and airspace users. A HIDACZ has defined dimensions, which usually coincide with geographical features or navigational aids. Access to a HIDACZ is normally controlled by the maneuver commander, who can also direct a more restrictive weapons status within the HIDACZ. A HIDACZ allows ground/MAGTF commanders to restrict a volume of airspace from users not involved with ongoing operations. The restriction is necessary because of the large volume and density of fires supporting ground operations within the described geographic area.

f. A **coordination level** is a procedural method to separate fixed-wing and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly.

See JP 3-52, Joint Airspace Control, *for further information.*

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APPENDIX B
LASERS AND LASER-GUIDED SYSTEMS

1. General

a. Laser-guided systems provide the joint force with the ability to locate and engage targets with an increased first-round hit probability. Laser-guided systems can effectively engage a wide range of targets, including moving targets. LGWs can reduce the number of weapons and/or weapon systems required to create an effect to achieve an objective because of increased accuracy. Based on the threat level and environment, laser-guided systems provide additional capabilities but also have distinct limitations. Those performing laser-designation tasks should strive for simplicity and use all available resources to help ensure first-pass success.

b. **Laser Capabilities.** Laser designators radiate a narrow beam of pulsed energy. Current tactical lasers operate in the near infrared wavelength spectrum, which is not visible to the human eye. When within range, the laser designator can be aimed so the energy precisely designates a chosen spot on the target. Laser target designators mark targets for laser spot trackers (LSTs) and LGWs. Some laser systems can accurately determine target range and location. When coupled with horizontal and vertical scales, they can measure target azimuth and elevation.

c. **Laser Target Ranging and Designation Systems.** Laser target ranging and designation systems can provide accurate range, azimuth, and elevation information to locate enemy targets. These systems may vary from handheld to aircraft-mounted devices and perform similar functions with varying degrees of accuracy. In combination with GPS, lasers can provide accurate enemy target locations. In addition, lasers in combination with GPS can provide for target area analysis. This analysis can be used to fire weapons accurately at the enemy, to accurately locate future friendly observer locations, and to enable friendly forces to effectively conduct maneuver operations, as well as C2 their forces by accurate identification of terrain reference points.

d. **Laser Acquisition Devices.** Of the **two types** of laser acquisition devices, **the first, the LST, is used to aid visual and sensor acquisition of the target** to be attacked by another weapon. This type of laser acquisition device is mounted on most fixed-wing aircraft and some helicopters. **The second type of acquisition device is a seeker and guidance kit** mounted on LGWs, which guide on coded laser energy.

2. Enemy Use of Laser Countermeasures

US enemies realize the **importance of laser countermeasures** in a conflict with the US or its multinational partners. Many of the techniques for countering laser energy and sensitive electro-optical equipment are common knowledge throughout much of the world. US enemies are well-equipped to detect and counter the sophisticated laser designator and guidance systems used by the armed forces of Western nations.

3. Legal Uses of Lasers on the Battlefield

Protocol IV to the Certain Conventional Weapons Convention (Protocol on Blinding Laser Weapons) **prohibits the use of lasers specifically designed to cause permanent blindness** to unenhanced vision. For all other types of lasers, such as those used for detection, targeting, range-finding, communications, and target destruction, parties to the Protocol have an obligation to **"take all feasible precautions to avoid the incidence of permanent blindness to unenhanced vision."** It is DOD policy on blinding lasers that recognizes that accidental or incidental eye injuries may occur on the battlefield through the use of lasers for detection, targeting, range-finding, communications, and target destruction; however, it is DOD policy "to strive, through training and doctrine, to minimize these injuries."

For a discussion of laser-guided considerations for CAS, see JP 3-09.3, Close Air Support.

For additional information on laser operations, see ATP 3-09.32/MCRP 3-31.6 (MCRP 3-16.6A)/NTTP 3-09.2/AFTTP 3-2.6, Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower.

4. Laser-Equipped Unmanned Aircraft General Procedures

a. **Employment.** Laser-equipped UA utilize the same procedures and communications as an airborne laser designator operator (LDO). In some cases, the UA may also act as a strike aircraft, using the same procedures as other strike aircraft.

b. **TA Considerations.** If a laser-equipped UA is being utilized by the LDO, coordination between the UA flight crew and the attack aircrew is critical for both safety and laser geometry. LST-equipped strike aircraft should notify the LDO that they are LST-capable upon arriving on-station. The LDO, through standard communication, will then direct the UA mark onto the target. The LDO may pass the UA laser pulse repetition frequency code to the attack aircraft or the attack aircraft may pass its weapons code to the LDO.

c. **Deconfliction of Airspace.** Standard procedures used by LDOs to deconflict fixed-wing and rotary-wing aircraft apply to laser-equipped UA employed on laser designation operations. Proper laser geometry and 2,000-foot altitude blocks for the UA stationing orbit are recommended when using a UA to mark for strike aircraft.

See JP 3-09.3, Close Air Support, *for an expanded discussion of laser-guided considerations for CAS and TGO.*

APPENDIX C
POINTS OF CONTACT

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APPENDIX D
REFERENCES

The development of JP 3-09 is based upon the following primary references:

1. Department of Defense Publications

a. DODD 2311.01E, *DOD Law of War Program.*

b. DODD 3000.03E, *DOD Executive Agent for Non-Lethal Weapons (NLW) and NLW Policy.*

c. DODD 3002.01, *Personnel Recovery in the Department of Defense.*

d. DODI O-3607.02, *Military Information Support Operations (MISO).*

e. DOD Policy on Blinding Lasers (17 January 1997).

f. Office of the General Counsel, *Department of Defense Law of War Manual.*

2. Chairman of the Joint Chiefs of Staff Publications

a. CJCSI 3121.01B, *(U) Standing Rules of Engagement/Standing Rules for the Use of Force for US Forces.*

b. CJCSI 3122.06E, *(U) Sensitive Target Approval and Review (STAR) Process.*

c. CJCSI 3150.25G, *Joint Lessons Learned Program.*

d. CJCSI 3160.01C, *No-Strike and the Collateral Damage Estimation Methodology.*

e. CJCSI 3270.01B, *Personnel Recovery.*

f. CJCSI 3370.01B, *Target Development Standards.*

g. CJCSI 3505.01C, *Target Coordinate Mensuration Certification and Program Accreditation.*

h. CJCSI 3900.01D, *Requirements for Geospatial Information and Services.*

i. CJCSM 3162.01A, *Joint Methodology for Battle Damage Assessment.*

j. JP 1, *Doctrine for the Armed Forces of the United States.*

k. JP 1-04, *Legal Support to Military Operations.*

l. JP 2-0, *Joint Intelligence.*

m. JP 2-01, *Joint and National Intelligence Support to Military Operations.*

n. JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment.*

o. JP 2-03, *Geospatial Intelligence in Joint Operations.*

p. JP 3-0, *Joint Operations.*

q. JP 3-01, *Countering Air and Missile Threats.*

r. JP 3-02, *Amphibious Operations.*

s. JP 3-03, *Joint Interdiction.*

t. JP 3-05, *Special Operations.*

u. JP 3-09.3, *Close Air Support.*

v. JP 3-12, *Cyberspace Operations.*

w. JP 3-13, *Information Operations.*

x. JP 3-13.1, *Electronic Warfare.*

y. JP 3-13.2, *Military Information Support Operations.*

z. JP 3-13.3, *Operations Security.*

aa. JP 3-13.4, *Military Deception.*

bb. JP 3-14, *Space Operations.*

cc. JP 3-16, *Multinational Operations.*

dd. JP 3-30, *Joint Air Operations.*

ee. JP 3-31, *Joint Land Operations.*

ff. JP 3-32, *Joint Maritime Operations.*

gg. JP 3-33, *Joint Task Force Headquarters.*

hh. JP 3-40, *Countering Weapons of Mass Destruction.*

ii. JP 3-41, *Chemical, Biological, Radiological, and Nuclear Response.*

jj. JP 3-50, *Personnel Recovery.*

kk. JP 3-52, *Joint Airspace Control.*

ll. JP 3-60, *Joint Targeting.*

mm. JP 3-61, *Public Affairs.*

nn. JP 5-0, *Joint Planning.*

oo. JP 6-0, *Joint Communications System.*

3. Multi-Service Publications

a. ATP 3-06.1/MCRP 3-35.3A/NTTP 3-01.04/AFTTP 3-2.29, *Multi-Service Tactics, Techniques, and Procedures for Aviation Urban Operations.*

b. ATP 3-09.32/MCRP 3-31.6 (MCRP 3-16.6A)/NTTP 3-09.2/AFTTP 3-2.6, *Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower.*

c. ATP 3-09.34/MCRP 3-31.4/NTTP 3-09.2.1/AFTTP 3-2.59, *Multi-Service Tactics, Techniques, and Procedures for Kill Box Planning and Employment.*

d. ATP 3-22.40 [FM 3-22.40]/MCTP 10-10A/NTTP 3-07.3.2/AFTTP 3-2.45/CGTTP 3-93.2, *Multi-Service Tactics, Techniques, and Procedures for the Employment of Nonlethal Weapons.*

e. ATP 3-91.1/AFTTP 3-2.86, *The Joint Air Ground Integration Center.*

4. Service Publications

a. ADRP 3-09, *Fires.*

b. FM 3-09, *Field Artillery Operations and Fire Support.*

c. ATP 3-07.6, *Protection of Civilians.*

d. ATP 3-09.30, *Observed Fires.*

e. NTTP 3-21.2, *Coordinated Submarine Operations.*

f. NTTP 3-32.1, *Maritime Operations Center.*

5. Multinational Publication

STANAG 2245, *Field Artillery and Fire Support Data Interoperability.*

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APPENDIX E
ADMINISTRATIVE INSTRUCTIONS

1. User Comments

Users in the field are highly encouraged to submit comments on this publication using the Joint Doctrine Feedback Form located at: https://jdeis.js.mil/jdeis/jel/jp_feedback_form.pdf and e-mail it to: js.pentagon.j7.mbx.jedd-support@mail.mil. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

2. Authorship

a. The lead agent and Joint Staff doctrine sponsor for this publication is Joint Staff J-6, Deputy Director for Cyber and Command, Control, Communications, and Computer Integration, ATTN: Joint Fires Division.

b. The following staff, in conjunction with the joint doctrine development community, made a valuable contribution to the revision of this joint publication: lead agent, Mr. Lou Durkac, Joint Staff J-6; Joint Staff doctrine sponsor, Mr. Danny Allen, Joint Staff J-6; LCDR Jason Berwanger, Joint Staff J-7, Joint Doctrine Analysis Division; and LCDR Adam Yates, Joint Staff J-7, Joint Doctrine Division.

3. Supersession

This publication supersedes JP 3-09, *Joint Fire Support,* 12 December 2014.

4. Change Recommendations

a. To provide recommendations for urgent and/or routine changes to this publication, please complete the Joint Doctrine Feedback Form located at: https://jdeis.js.mil/jdeis/jel/jp_feedback_form.pdf and e-mail it to: js.pentagon.j7.mbx.jedd-support@mail.mil.

b. When a Joint Staff directorate submits a proposal to the CJCS that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Services and other organizations are requested to notify the Joint Staff J-7 when changes to source documents reflected in this publication are initiated.

5. Lessons Learned

The Joint Lessons Learned Program (JLLP) primary objective is to enhance joint force readiness and effectiveness by contributing to improvements in doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy. The Joint Lessons Learned Information System (JLLIS) is the DOD system of record for lessons learned and facilitates the collection, tracking, management, sharing, collaborative resolution, and dissemination of lessons learned to improve the development and readiness of the joint force. The JLLP integrates with joint doctrine through the joint doctrine

development process by providing lessons and lessons learned derived from operations, events, and exercises. As these inputs are incorporated into joint doctrine, they become institutionalized for future use, a major goal of the JLLP. Lessons and lessons learned are routinely sought and incorporated into draft JPs throughout formal staffing of the development process. The JLLIS Website can be found at https://www.jllis.mil (NIPRNET) or http://www.jllis.smil.mil (SIPRNET).

6. Distribution of Publications

Local reproduction is authorized, and access to unclassified publications is unrestricted. However, access to and reproduction authorization for classified JPs must be IAW DOD Manual 5200.01, Volume 1, *DOD Information Security Program: Overview, Classification, and Declassification,* and DOD Manual 5200.01, Volume 3, *DOD Information Security Program: Protection of Classified Information.*

7. Distribution of Electronic Publications

a. Joint Staff J-7 will not print copies of JPs for distribution. Electronic versions are available on JDEIS Joint Electronic Library Plus (JEL+) at https://jdeis.js.mil/jdeis/index.jsp (NIPRNET) and https://jdeis.js.smil.mil/jdeis/generic.jsp (SIPRNET), and on the JEL at http://www.jcs.mil/Doctrine (NIPRNET).

b. Only approved JPs are releasable outside the combatant commands, Services, and Joint Staff. Defense attachés may request classified JPs by sending written requests to Defense Intelligence Agency (DIA)/IE-3, 200 MacDill Blvd., Joint Base Anacostia-Bolling, Washington, DC 20340-5100.

c. JEL CD-ROM. Upon request of a joint doctrine development community member, the Joint Staff J-7 will produce and deliver one CD-ROM with current JPs. This JEL CD-ROM will be updated not less than semi-annually and when received can be locally reproduced for use within the combatant commands, Services, and combat support agencies.

GLOSSARY

PART I—ABBREVIATIONS, ACRONYMS, AND INITIALISMS

AADC	area air defense commander
AAMDC	Army air and missile defense command
ACA	airspace coordination area
ACE	aviation combat element (USMC)
ACM	airspace coordinating measure
ACO	airspace control order
ADRP	Army doctrine reference publication
AFATDS	Advanced Field Artillery Tactical Data System
AFTTP	Air Force tactics, techniques, and procedures
AI	air interdiction
AIRCOR	air corridor
AMD	air and missile defense
ANGLICO	air-naval gunfire liaison company
AO	area of operations
AOA	amphibious objective area
AOC	air operations center
ASOC	air support operations center
ATACMS	Army Tactical Missile System
ATCS	air traffic control section
ATF	amphibious task force
ATO	air tasking order
ATP	Army techniques publication
AWACS	Airborne Warning and Control System
BCD	battlefield coordination detachment (USA)
BCL	battlefield coordination line
BDA	battle damage assessment
C2	command and control
CA	civil affairs
CAS	close air support
CATF	commander, amphibious task force
CBRN	chemical, biological, radiological, and nuclear
CDE	collateral damage estimation
CDRUSSTRATCOM	Commander, United States Strategic Command
CFL	coordinated fire line
CGTTP	Coast Guard tactics, techniques, and procedures
CID	combat identification
CIE	collaborative information environment
CJCSI	Chairman of the Joint Chiefs of Staff instruction
CJCSM	Chairman of the Joint Chiefs of Staff manual
COA	course of action
COC	combat operations center

CONOPS	concept of operations
COP	common operational picture
CRC	control and reporting center
CSW	coordinate seeking weapons
DACAS	digitally aided close air support
DASC	direct air support center
DCO-RA	defensive cyberspace operations-response actions
DOD	Department of Defense
DODD	Department of Defense directive
DODI	Department of Defense instruction
DS	direct support
DTG	date-time group
DTRA	Defense Threat Reduction Agency
EA	electronic attack
EMS	electromagnetic spectrum
ES	electronic warfare support
EW	electronic warfare
FA	field artillery
FAC(A)	forward air controller (airborne)
FE	fires element
FECC	fires and effects coordination center (USMC)
FFA	free-fire area
FFT	friendly force tracking
FIST	fire support team (USA)
FM	field manual (USA)
FOS	forward observer system
FSA	fire support area
FSC	fire support coordinator (USMC)
FSCC	fire support coordination center (USMC)
FSCL	fire support coordination line
FSCM	fire support coordination measure
FSCOORD	fire support coordinator (USA)
FSS	fire support station
GARS	Global Area Reference System
GCE	ground combat element (USMC)
GMLRS	Global Positioning System Multiple Launch Rocket System
GPS	Global Positioning System
GS	general support
HIDACZ	high-density airspace control zone
HIMARS	High Mobility Artillery Rocket System

HPT	high-payoff target
HQ	headquarters
HVT	high-value target
INS	inertial navigation system
ISR	intelligence, surveillance, and reconnaissance
J-2	intelligence directorate of a joint staff
J-3	operations directorate of a joint staff
JACCE	joint air component coordination element
JACE	joint air coordination element
JADOCS	Joint Automated Deep Operations Coordination System
JAGIC	joint air-ground integration center
JAOC	joint air operations center
JASSM	joint air-to-surface standoff missile
JFACC	joint force air component commander
JFC	joint force commander
JFE	joint fires element
JFHQ-C	joint force headquarters-cyberspace
JFLCC	joint force land component commander
JFMCC	joint force maritime component commander
JFO	joint fires observer
JFSOCC	joint force special operations component commander
JIPTL	joint integrated prioritized target list
JOA	joint operations area
JOC	joint operations center
JP	joint publication
JPG	joint planning group
JSOA	joint special operations area
JSOAC	joint special operations air component
JSOTF	joint special operations task force
JSTARS	Joint Surveillance Target Attack Radar System
JTAC	joint terminal attack controller
JTCB	joint targeting coordination board
JTF	joint task force
JTL	joint target list
JTWG	joint targeting working group
LCE	logistics combat element (USMC)
LDO	laser designator operator
LF	landing force
LGW	laser-guided weapon
LST	laser spot tracker
MAGTF	Marine air-ground task force
Marine TACC	Marine tactical air command center

MARLE	Marine liaison element
MCM	maneuver control measure
MCRP	Marine Corps reference publication
MCTP	Marine Corps tactical publication
MCWP	Marine Corps warfighting publication
MEA	munitions effectiveness assessment
MILDEC	military deception
MISO	military information support operations
MLRS	multiple launch rocket system
MOC	maritime operations center
MOE	measure of effectiveness
MOP	measure of performance
NATO	North Atlantic Treaty Organization
Navy TACC	Navy tactical air control center
NFA	no-fire area
NGO	nongovernmental organization
NLW	nonlethal weapon
NSFS	naval surface fire support
NSL	no-strike list
NTTP	Navy tactics, techniques, and procedures
OCO	offensive cyberspace operations
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
PID	positive identification
PL	phase line
RFA	restrictive fire area
RFL	restrictive fire line
ROE	rules of engagement
RTL	restricted target list
SA	situational awareness
SACC	supporting arms coordination center (USMC)
SCAR	strike coordination and reconnaissance
SDB	small diameter bomb
SEAD	suppression of enemy air defenses
SFCP	shore fire control party
SJA	staff judge advocate
SJOA	space joint operating area
SOCCE	special operations command and control element
SOF	special operations forces
SOJTF	special operations joint task force

SOLE	special operations liaison element
SOP	standard operating procedure
SOTF	special operations task force
SPINS	special instructions
STANAG	standardization agreement (NATO)
STO	special technical operations
STT	special tactics team
TA	target acquisition
TAC(A)	tactical air coordinator (airborne)
TACP	tactical air control party
TACS	theater air control system
TAIS	Tactical Airspace Integration System
TAOC	tactical air operations center (USMC)
TBMCS	theater battle management core system
TGO	terminal guidance operations
TIM	toxic industrial material
TLAM	Tomahawk land-attack missile
TST	time-sensitive target
UA	unmanned aircraft
USG	United States Government
USMC	United States Marine Corps
WMD	weapons of mass destruction
ZF	zone of fire

PART II—TERMS AND DEFINITIONS

chief of fires. The senior organic fires Army staff officer at division and higher headquarters level who advises the commander on the best use of available fire support resources, provides input to necessary orders, and develops and implements the fire support plan. Also called **COF.** (DOD Dictionary. Source: JP 3-09)

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. Source: JP 3-09)

coordinated fire line. A line beyond which conventional surface-to-surface direct fire and indirect fire support means may fire at any time within the boundaries of the establishing headquarters without additional coordination but does not eliminate the responsibility to coordinate the airspace required to conduct the mission. Also called **CFL.** (Approved for incorporation into the DOD Dictionary.)

counterfire. Fire intended to destroy or neutralize enemy weapons. (DOD Dictionary. Source: JP 3-09)

defilade. 1. Protection from hostile observation and fire provided by an obstacle such as a hill, ridge, or bank. 2. A vertical distance by which a position is concealed from enemy observation. 3. To shield from enemy fire or observation by using natural or artificial obstacles. (DOD Dictionary. Source: JP 3-09)

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. Source: JP 3-09)

fires. The use of weapon systems or other actions to create specific lethal or nonlethal effects on a target. (DOD Dictionary. Source: JP 3-09)

fire support. Fires that directly support land, maritime, amphibious, space, cyberspace, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives. (Approved for incorporation into the DOD 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. Source: JP 3-09)

fire support coordination. The planning and executing of fire so targets are adequately covered by a suitable weapon or group of weapons. (Approved for incorporation into the 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.** (Approved for incorporation into the 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.** (Approved for incorporation into the DOD Dictionary.)

fire support coordinator. 1. The officer in charge of the fire support coordination center. Also called **FSC.** 2. The brigade combat team's organic fires battalion commander. Also called **FSCOORD.** (Approved for incorporation into the DOD Dictionary.)

fire support element. That section of the tactical operations center at every echelon above company responsible for targeting coordination and for integrating fires under the control or in support of the force. Also called **FSE.** (Approved for incorporation into the DOD Dictionary.)

fire support officer. The field artillery officer, from the operational to tactical level, responsible for advising the supported commander or assisting the senior fires officer of the organization on fires functions and fire support. Also called **FSO.** (Approved for incorporation into the DOD 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.** (Approved for incorporation into the DOD Dictionary.)

free-fire area. A specific region into which any weapon system may fire without additional coordination with the establishing headquarters. Also called **FFA.** (Approved for incorporation into the DOD Dictionary.)

friendly force tracking. The process of fixing, observing, and reporting the location and movement of friendly forces. Also called **FFT.** (DOD Dictionary. Source: JP 3-09)

grid coordinates. None. (Approved for removal from the DOD Dictionary.)

inertial navigation system. None. (Approved for removal from the 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. Source: JP 3-09)

laser-guided weapon. A weapon that uses a seeker to detect laser energy reflected from a laser-marked/designated target and provides guidance commands to a control system that guides the weapon to the target. Also called **LGW.** (Approved for incorporation into the DOD Dictionary.)

laser rangefinder. A device that uses laser energy for determining the distance from the device to a place or object. (DOD Dictionary. Source: JP 3-09)

laser spot. The area on a surface illuminated by a laser. (DOD Dictionary. Source: JP 3-09)

laser spot tracker. A device that locks on to the reflected energy from a laser-marked or designated target and defines the direction of the target relative to itself. Also called **LST.** (DOD Dictionary. Source: JP 3-09)

laser target designator. A device that emits a beam of laser energy that is used to mark a specific place or object. Also called **LTD.** (Approved for incorporation into the DOD Dictionary.)

naval gunfire support. Fire provided by Navy surface gun systems in support of a unit or units tasked with achieving the commander's objectives. Also called **NGFS.** (DOD Dictionary. Source: JP 3-09)

nonlethal weapon. A weapon, device, or munition that is explicitly designed and primarily employed to incapacitate personnel or materiel immediately, while minimizing fatalities, permanent injury to personnel, and undesired damage to property in the target area or environment. Also called **NLW.** (Approved for incorporation into the DOD Dictionary.)

phase line. An easily identified feature in the operational area utilized for control and coordination of military operations. Also called **PL.** (Approved for incorporation into the DOD Dictionary.)

restrictive fire area. A location in which specific restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters. Also called **RFA.** (Approved for incorporation into the DOD Dictionary.)

restrictive fire line. A specific boundary established between converging, friendly surface forces that prohibits fires or their effects from crossing. Also called **RFL.** (Approved for incorporation into the DOD Dictionary.)

schedule of fire. Groups or series of fires that are fired in a definite sequence according to a definite program. (DOD Dictionary. Source: JP 3-09)

scheme of fires. The detailed, logical sequence of targets and fire support events to find and engage targets to support the commander’s objectives. (DOD Dictionary. Source: JP 3-09)

shore fire control party. A specially trained unit that controls naval gunfire in support of troops ashore. Also called **SFCP.** (Approved for incorporation into the DOD Dictionary.)

spotter. A trained individual positioned to observe and report results of naval gunfire to the firing agency and who may also designate targets. (Approved for incorporation into the DOD Dictionary.)

supporting fire. Fire delivered by supporting units to assist or protect a unit in combat. (DOD Dictionary. Source: JP 3-09)

terminal guidance operations. Actions using electronic, mechanical, voice, or visual communications that provide approaching aircraft and/or weapons additional information regarding a specific target location. Also called **TGO.** (DOD Dictionary. Source: JP 3-09)

time of flight. In artillery, mortar, and naval gunfire support, the time in seconds from the instant a weapon is fired, launched, or released from the delivery vehicle or weapons system to the instant it strikes or detonates. (Approved for incorporation into the DOD Dictionary.)

zone of action. A tactical subdivision of a larger area. (Approved for incorporation into the DOD Dictionary.)

zone of fire. An area into which a designated ground unit or fire support ship delivers, or is prepared to deliver, fire support. Also called **ZF.** (DOD Dictionary. Source: JP 3-09)

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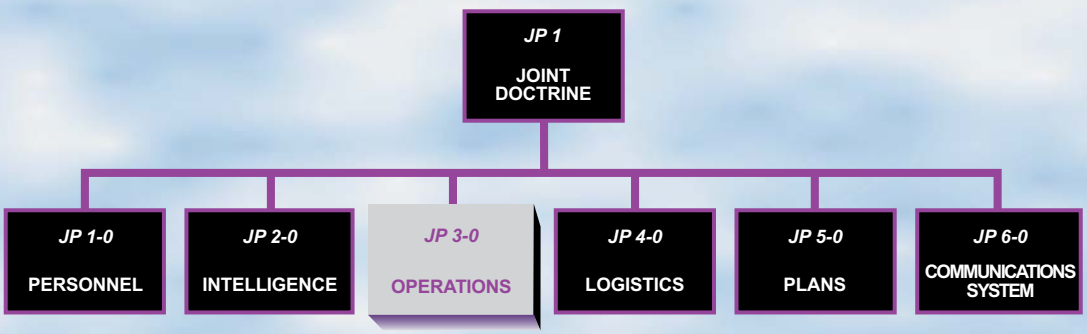

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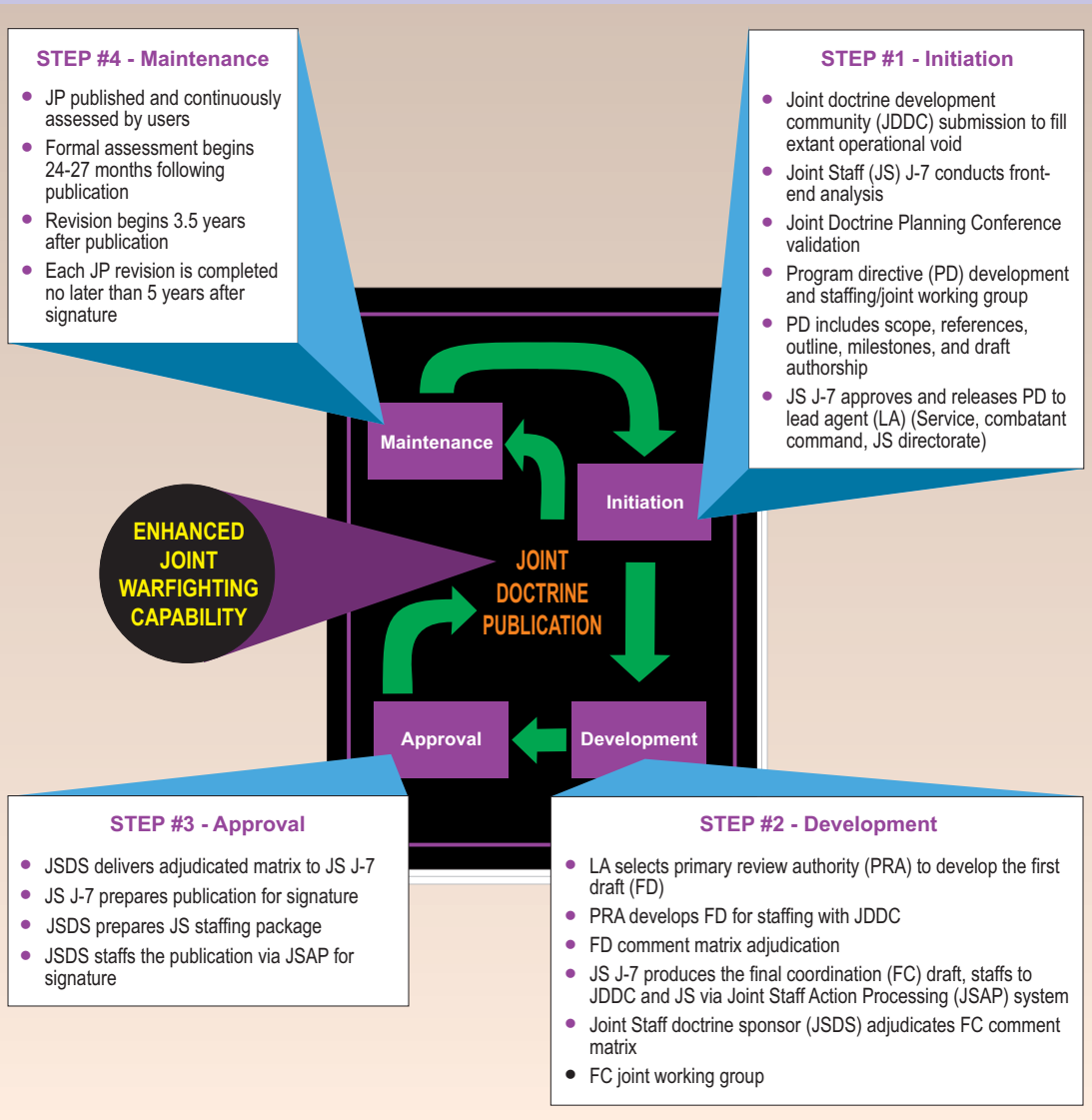


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