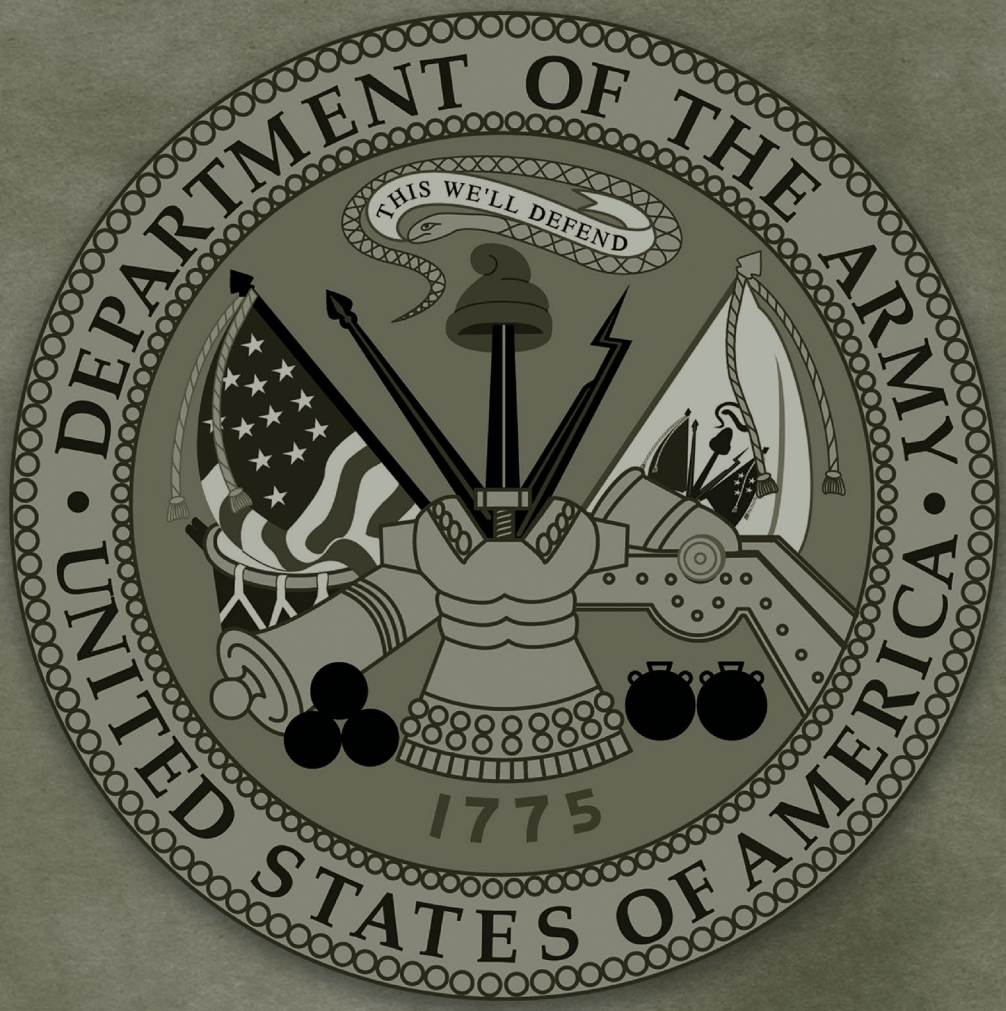
ADP 3-19
FIRES



JULY 2019

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This publication supersedes ADP 3-09, dated 31 August 2012 and ADRP 3-09, dated 31 August 2012.

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Fires

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Preface

ADP 3-19 Fires defines and describes the fires warfighting function in terms of its major tasks, capabilities, functions, and processes, and describes the integration of capabilities and their associated effects through the targeting and operations processes. The successful employment of fires depends on the integration and synchronization of all elements of fires across domains and in concert with the other warfighting functions. This manual forms the foundation for training and Army education curricula on fires.

Readers of ADP 3-19 should first understand the nature of operations and the fundamentals of unified land operations described in ADP 3-0. Readers should also understand how Army forces, as part of a joint team, shape operational environments, prevent conflict, prevail during large-scale combat, and consolidate gains as described in FM 3-0. The scope of this publication is broad in order to cover fires as a complete entity. It gives equal treatment to the diverse assets that contribute to the fires warfighting function.

The term "fires" in this document includes lethal and nonlethal effects, as delivered by Army, joint, and multinational capabilities. To create effects in multi-domain operations, Army leaders must consider the fires warfighting function in an inclusive manner, integrating assets and effects to meet the commander's objectives.

ADP 3-19 replaces ADP 3-09 as the Army's fundamental publication for fires. The 3-09 series of publications is hereafter renamed, "Fire Support." The purpose of renumbering fires doctrine is to remove the implication that fires applies only to one or two branches, and to become more inclusive of all elements of fires.

The principal audience for ADP 3-19 is all members of the profession of arms. Commanders and staffs of Army headquarters (HQ) serving as joint task force or multinational HQ should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army will also use this manual.

Commanders, staffs, and subordinates ensure their decisions and actions comply with applicable United States, international, and, in some cases, host-nation laws and regulations. Commanders at all levels ensure their Soldiers operate in accordance with the law of war and the rules of engagement (ROE). (See FM 27-10.) ADP 3-19 uses joint terms where applicable. Selected joint and Army terms and definitions appear in the glossary and the text. Terms for which ADP 3-19 is the proponent publication (the authority) are italicized in the text and marked with an asterisk (*) in the glossary. Definitions for which ADP 3-19 is the proponent publication appear boldfaced in the text. For other definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition.

ADP 3-19 applies to the Active Army, Army National Guard/Army National Guard of the United States, and U.S. Army Reserve unless otherwise stated.

The proponent for this publication is the United States Army Fires Center of Excellence. The preparing agency is the United States Army Fires Center of Excellence and Fort Sill. Send comments and recommendations on Department of the Army (DA) Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Directorate of Training and Doctrine, 700 McNair Avenue, Suite 128 ATTN: ATSF-DD, Fort Sill, OK 73503; by email to sill.fcoe.mbx.dotd-doctrine-inbox@mail.mil; or submit an electronic DA Form 2028.

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Introduction

Success in large-scale combat operations is dependent on the Army's ability to employ fires. Fires enable maneuver. Over the past two decades, potential peer threats have invested heavily in long-range fires and integrated air defense systems, making it even more critical that the U.S. Army possess the ability to maneuver and deliver fires in depth and across domains. ADP 3-19 is consistent and nested with ADP 3-0 and FM 3-0 Operations. It is rooted in time-tested principles and fundamentals, while accommodating new technologies and concepts. This ADP establishes a common frame of reference and language that commanders and staffs use for the employment of fires in support of unified land operations. Commanders integrate and employ fires across and in support of all domains. Fires capabilities are integrated, synchronized, and employed across all domains and across the range of military operations.

The Army continuously prepares for large-scale combat while simultaneously shaping the security environment around the world. ADP 3-19 provides the underlying fundamentals and principles of how Army forces integrate fires in support of unified land operations (see introductory figure, on page vii). This revised ADP 3-19 includes the following changes:

- Combines information from ADP 3-09 and ADRP 3-09 into one publication.
- Redesignates publication as ADP 3-19 and supersedes ADP 3-09/ADRP 3-09.
- Redefines the fires warfighting function.
- Includes discussion on all capabilities that contribute to create effects, including Army, joint, and multinational capabilities

ADP 3-19 contains three chapters:

Chapter 1 introduces the definition of the fires warfighting function and describes fires within the context of unified land operations. It describes those fires tasks necessary to create effects to achieve the commander's desired objectives, and sets the framework for a discussion of the various capabilities that contribute to the fires warfighting function.

Chapter 2 describes the tasks and capabilities commanders use to execute fires across the five domains and the information environment. It discusses surface-to-surface fires, air-to-surface fires, surface-to-air fires, cyberspace operations and electronic warfare (EW), space operations, multinational fires, special operations, and information operations.

Chapter 3 describes the processes used by the commander and staff to synchronize the force. It addresses how fires planners pull from intelligence preparation of the battlefield and information collection processes to prioritize targets, effects, and resources for the commander based on the entire suite of tools available.

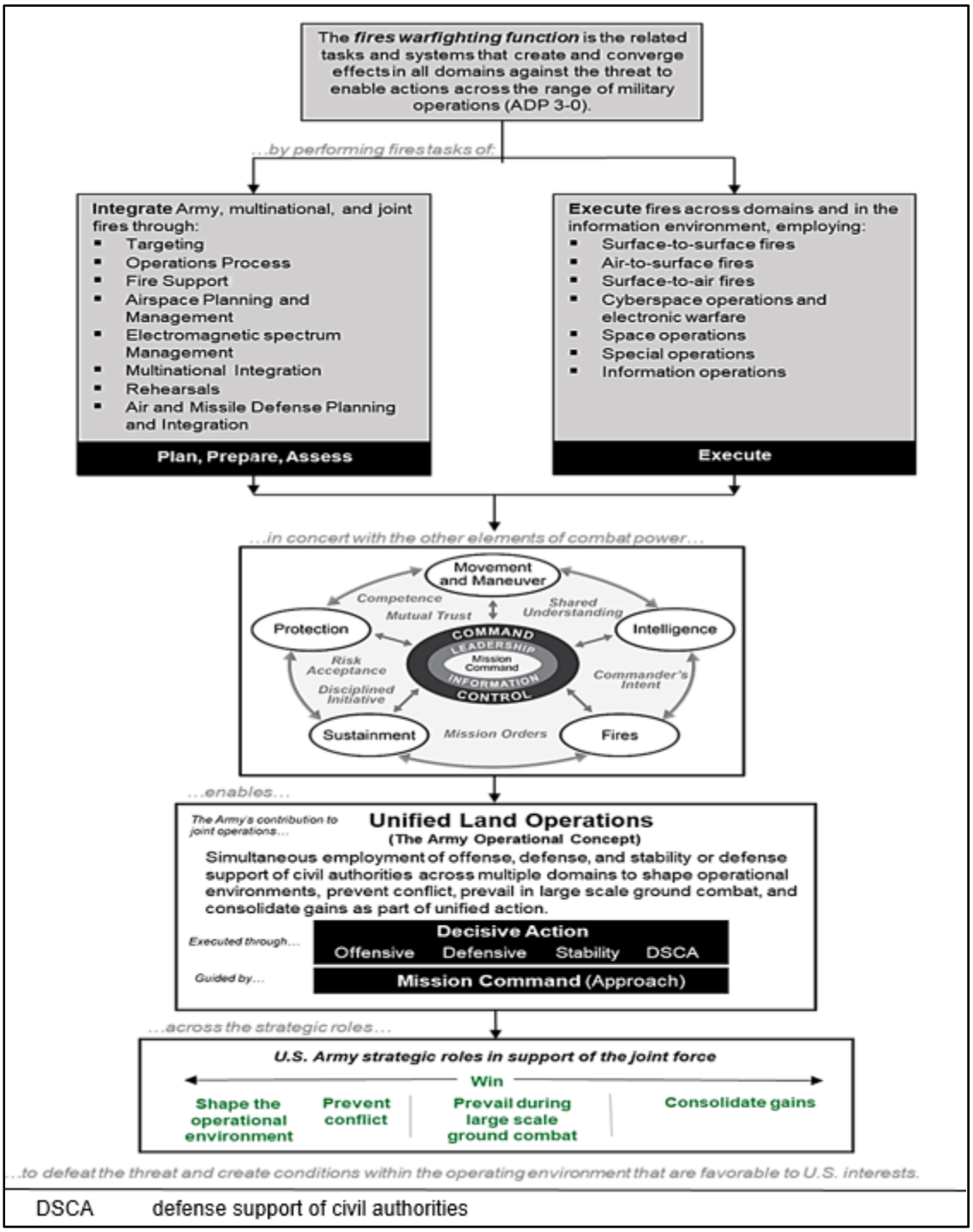
Based on current doctrinal changes, certain terms for which ADP 3-19 is the proponent are added, rescinded, or modified. The glossary contains acronyms and defined terms. New, modified, and rescinded terms are listed in the introductory table-1, on page vi. Modified and rescinded acronyms are listed in the introductory table-2, on page vi.

Introductory Table-1. New modified, and rescinded Army terms

Terms	*Reasoning*
air and missile defense	Army definition no longer used. Adopted joint definition.
air defense artillery	Army definition no longer used. Adopted joint definition.
chief of fires	Term modified and defined.
combat observation and lasing team	Rescinded.
cross-domain fires	Term added and defined.
field artillery	FM 3-09 becomes proponent.
fire support coordinator	FM 3-09 becomes proponent.
fire support officer	FM 3-09 becomes proponent.
fire support team	FM 3-09 becomes proponent.
fires brigade	Rescinded.
force field artillery headquarters	FM 3-09 becomes proponent.
force fires headquarters	Rescinded.
multi-domain fires	Term added and defined.
priority of fires	FM 3-09 becomes proponent.

Introductory Table-2. New, modified, and rescinded Army acronyms

Acronym	*Full-Form*	*Reasoning*
COLT	Combat observation and lasing team	Rescinded
FIB	Fires brigade	Rescinded



Introductory figure. ADP 3-19 Logic chart

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Chapter 1
Introduction to Fires

This chapter introduces the definition of the fires warfighting function and describes fires within the context of unified land operations. It describes those fires tasks necessary to create effects to achieve the commander's desired objectives, and sets the framework for a discussion of the various capabilities that contribute to the fires warfighting function.

FIRES WARFIGHTING FUNCTION

1-1. A *warfighting function* is a group of tasks and systems united by a common purpose that commanders use to accomplish missions and training objectives (ADP 3-0). Warfighting functions are the physical means that tactical commanders use to execute operations and accomplish missions assigned by higher level commanders. The purpose of warfighting functions is to provide an intellectual organization for common critical capabilities available to commanders and staffs at all echelons and levels of warfare. Commanders integrate and synchronize these capabilities with other warfighting functions to achieve objectives and accomplish the mission.

1-2. The *fires warfighting function* is the related tasks and systems that create and converge effects in all domains against the threat to enable actions across the range of military operations (ADP 3-0). These tasks and systems create lethal and nonlethal effects delivered from both Army and Joint forces, as well as other unified action partners. The fires warfighting function does not wholly encompass, nor is it wholly encompassed by, any particular branch or function. Many of the capabilities that contribute to fires also contribute to other warfighting functions, often simultaneously. For example, an aviation unit may simultaneously execute missions that contribute to the movement and maneuver, fires, intelligence, sustainment, protection, and command and control warfighting functions. Additionally, air defense artillery (ADA) units conduct air and missile defense (AMD) operations in support of both fires and protection warfighting functions.

1-3. Commanders must execute and integrate fires, in combination with the other elements of combat power, to create and converge effects and achieve the desired end state. Fires tasks are those necessary actions that must be conducted to create and converge effects in all domains to meet the commander's objectives. The tasks of the fires warfighting function are:

- Integrate Army, multinational, and joint fires through:
  - Targeting.
  - Operations process.
  - Fire support.
  - Airspace planning and management.
  - Electromagnetic spectrum management.
  - Multinational integration.
  - Rehearsals.
  - Air and missile defense planning and integration.
- Execute fires across all domains and in the information environment, employing:
  - Surface-to-surface fires.

- Air-to-surface fires.
- Surface-to-air fires.
- Cyberspace operations and EW.
- Space operations.
- Multinational fires.
- Special operations.
- Information operations.

1-4. The fires tasks are discussed further in Chapter 2 (Execute Fires) and Chapter 3 (Integrate Army, Multinational, and Joint Fires).

THE OPERATIONAL ENVIRONMENT

1-5. Commanders at all levels must understand the dynamics of their operational environment (OE) to understand the challenges and opportunities they will meet and exploit to achieve objectives. An *operational environment* is a composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander (JP 3-0). The tasks of the fires warfighting function present the essential capabilities that a commander may use to influence the OE and create and exploit positions of relative advantage across domains.

1-6. In operations short of armed conflict, the United States has adversaries. An *adversary is a* party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged (JP 3-0). During these operations, commanders may shape the OE with fires to promote regional stability or set conditions in the event of escalation to conflict. They may also prevent conflict, deterring the actions of an adversary escalating towards conflict by using fires to change an adversary's risk calculus and raising the costs of continuing activities that threaten U.S. interests. For example, deploying a Patriot battery to a forward location can reduce the ability of the adversary to create effects with long range fires and demonstrate U.S. resolve to support an ally or partner.

1-7. The authorities to employ fires during operations to shape and prevent will typically rest at a higher level, to allow close management of escalation at the appropriate level. During operations to shape and prevent, commanders mainly employ nonlethal assets, but the arrival and positioning of lethal assets can shape the information environment to accomplish strategic objectives. Use of fires in these conditions must be in concert with the other warfighting functions as well as the instruments of national power (diplomatic, information, military, and economic.)

1-8. If efforts to prevent escalation fail, the OE will transition to a state of conflict. The United States enters into conflict against an enemy. An *enemy* is a party identified as hostile against which the use of force is authorized (ADP 3-0). During conflict, commanders continue to employ fires to shape the OE and prevent further escalation, but will also use fires in support of large-scale combat operations and to consolidate gains. Authorities for employment of fires during conflict should be delegated as low as possible to allow for responsive fires. However, the delegation of authorities must be balanced against the level of effects the assets can create. Authorities for employment of some assets, such as offensive cyberspace operations, must be retained at a higher level due to their operational or strategic nature. Ultimately, the goal of operations during conflict is to return the OE to a state of competition that is advantageous to the U.S. and our allies and partners.

1-9. A peer threat is an adversary or enemy able to effectively oppose U.S. forces world-wide while enjoying a position of relative advantage in a specific region. These threats can generate equal or temporarily superior combat power in geographical proximity to a conflict area with U.S. forces. A peer threat may also have a cultural affinity to specific regions, providing them relative advantages in terms of time, space, and sanctuary. They generate tactical, operational, and strategic challenges an order of magnitude more challenging militarily than other adversaries.

1-10. Peer threats can employ resources across multiple domains to create lethal and nonlethal effects with operational significance throughout an OE. They seek to delay deployment of U.S. forces and inflict significant damage across multiple domains in a short period to achieve their goals before culminating. A

peer threat uses various methods to employ their instruments of power to render U.S. military power irrelevant. Five broad methods, used in combination by peer threats, include:

- Information warfare.
- Preclusion.
- Isolation.
- Sanctuary.
- Systems warfare.

1-11. Threats will employ information warfare throughout competition and conflict to gain an advantage in the information environment and achieve their objectives. Adversaries and enemies employ lethal and non-lethal fires as part of their overall information warfare effort. Information warfare is a broad category that may include activities such as cyberspace operations, perception management, deception operations, EW, physical destruction, and operations security. Threats will combine all of these with other effects to overwhelm friendly forces and give themselves a position of relative advantage within the information environment. During competition, friendly forces must be prepared to employ fires to counter adversary information warfare with our own information operations. Military information operations during operations to shape and prevent must be incorporated into a whole of government approach at the strategic level. Friendly forces must also use operations to shape and prevent to develop enemy targets and a plan to create a broader range of effects against those targets if competition escalates to conflict.

1-12. Threats preclude to keep something from happening by taking action in advance. Peer threats will preclude a friendly force's ability to shape the OE and mass and sustain combat power. Anti-access (A2) and area denial (AD) are two examples of preclusion activities. The enemies' integrated air defense systems and integrated fires command is employed using their sensor-to-shooter networks. Threats will conduct A2 activities by employing long-range capabilities to prevent an enemy force from entering an operational area. Threats will conduct AD activities through shorter range actions and capabilities to limit friendly force freedom of action within an operational area to the point that their mission is severely limited or unachievable. The joint force employs fires to defeat A2/AD capabilities to allow entry and building of combat power within the operational area. They may also employ fires to defeat A2/AD activities to allow joint force freedom of action.

1-13. Peer threats will attempt to isolate friendly forces in all domains and the information environment to force friendly forces to culminate prior to accomplishing their mission. Examples of enemy operations to isolate include disruption of friendly communications, deception operations, operations to separate allies diplomatically, or operations to physically fix units. The threat will employ their fires in an attempt to isolate friendly units. In large-scale combat operations, peer threats will attempt to isolate tactical forces to prevent their mutual support, allowing the defeat of friendly forces in detail. Commanders create effects with fires that remove the threat's ability to isolate by destroying, disrupting, or otherwise defeating the threat's means to isolate friendly forces.

1-14. Threats employ political, legal, and physical boundaries to create sanctuary for a portion of their forces, protecting them from action by the friendly force commander. Sanctuary can pose particular challenges to the employment of lethal fires to create effects against critical enemy assets. Sanctuary may also pose challenges to the creation of nonlethal effects in cyberspace and the information environment. Commanders must either expand their operational area to include the sanctuary, cause the target to move out of sanctuary, or mitigate the risk from the system in sanctuary.

1-15. Like us, peer threats view the battlefield, their own instruments of power, and an opponent's instruments of power as a collection of complex, dynamic, and integrated systems composed of subsystems and components. They will employ systems warfare to identify and isolate critical subsystems or components that give friendly forces the capabilities necessary to accomplish their mission. Their integrated fires complexes and air defense systems represent a significant systems warfare capability. To counter these tactics, commanders must examine their own systems to identify potential vulnerabilities that the enemy may attempt to exploit and develop plans to protect those vulnerabilities. Commanders must also analyze adversary and enemy systems, identifying critical vulnerabilities and applying resources against them. For a more detailed discussion of the OE and threats, see ADP 3-0 and FM 3-0.

1-16. The Army operates within all domains: land, air, maritime, space, and cyberspace (including the electromagnetic spectrum) as well as in the information environment. Throughout this publication, where the domains are referenced, the information environment must also be considered, as commanders and forces may create effects within the information environment independent of or in conjunction with effects in any domain.

1-17. Commanders use fires to create effects in support of Army and joint operations. ***Cross-domain fires* are fires executed in one domain to create effects in a different domain.** Cross-domain fires provide commanders with the flexibility to find the best system to create the required effect and to build redundancy into their plan. Cross-domain fires also present a more complex problem to the adversary or enemy than fires within a single domain.

1-18. ***Multi-domain fires* are fires that converge effects from two or more domains against a target.** Multi-domain fires may produce synergistic effects that are greater than the sum of the individual effects that would have been created separately. Surface-based fires converged with other effects across domains creates multiple dilemmas, taxing the enemy's ability to effectively respond. For example, a commander may employ offensive cyberspace operations to attack an enemy air defense network while surface-to-surface fires destroy enemy air defense radars and air-to-surface fires destroy the air defense command and control nodes. The converged effects provide reduced risk to allied operational aircraft.

1-19. Commanders and staff must anticipate and account for collateral effects of fires within one domain crossing into other domains. These cross-domain collateral effects may present unintended consequences and negate intended effects. Commanders, or their representatives, will conduct all operations in compliance with Law of War (known as LOW) principles of military necessity, humanity (unnecessary suffering), distinction, proportionality, and honor and with due regard for the protection of human life, and also follow this guidance when authorizing strikes, or deciding whether to elevate a targeting decision.

1-20. The *land domain* is the area of the Earth's surface ending at the high water mark and overlapping with the maritime domain in the landward segment of the littorals (JP 3-31). The joint force land component commander (JFLCC) is the supported commander within the land area of operations (AO) designated by the joint force commander (JFC). Within the designated AO, the JFLCC has the authority to designate target priority, effects, and timing of fires in order to integrate and synchronize maneuver, fires, and interdiction. Army commanders operating from the land domain have several options they may use to create effects from the land domain, including rockets, missiles, cannon artillery, and mortars. For more information on the land domain, see JP 3-31.

1-21. The *air domain* is the atmosphere, beginning at the Earth's surface, extending to the altitude where its effects upon operations become negligible (JP 3-30). The JFC normally assigns joint force air component commander responsibilities to the component commander having the preponderance of forces and the ability to effectively plan, task, and control joint air operations. In addition, as all component commands will need to utilize the air domain to some extent, the JFC normally designates the joint force air component commander as the airspace control authority to promulgate airspace coordinating measures to deconflict the multiple users on behalf of the JFC. The employment of air capabilities and forces in support of the joint force or supported components requires a degree of air superiority to effectively accomplish operations in the other physical domains. Army commanders may employ rotary-wing assets or fixed-wing assets to create effects from the air domain. Surface-to-surface and surface-to-air fires are integrated with other operations in the air domain and require airspace coordination with other users (see FM 3-52). The Army air-ground system is the Army's system to synchronize, coordinate, and integrate air-ground operations, joint air support, and airspace (see ATP 3-52.2). For more information on the air domain and joint air operations, see JP 3-30.

1-22. The *maritime domain* is the oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals (JP 3-32). Naval and maritime forces operate on (surface), under (subsurface), or above the sea (air). Fires from the maritime domain support the land scheme of fires with traditional naval surface fires, and joint fires to include cruise missile and anti-ship missiles, as well as protecting global shipping lanes and friendly maritime assets to maintain freedom of maneuver. For more information on the Maritime Domain, see JP 3-32.

1-23. The *space domain* is the space environment, space assets, and terrestrial resources required to access and operate in, to, or through the space environment (FM 3-14). Space is a physical domain where military operations are conducted. Space capabilities include the ability to access information collection; environmental monitoring; early warning, satellite based sensors and communications; and positioning, navigation, and timing. Enemy forces will attempt to deny, degrade, and disrupt the Army's ability to use these capabilities. To ensure commanders always have the ability to employ fires, units must be prepared to operate without the benefit of space capabilities. Peer threats are also becoming increasingly reliant on these capabilities, and creating effects against their space-based capabilities may benefit friendly operations.

1-24. *Cyberspace* is a global domain within the information environment consisting of the interdependent networks of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers (JP 3-12.) Cyberspace includes all friendly and adversary networks, computers, cell phone networks and social media to include the technical infrastructures. Commanders will generally create effects in the cyberspace domain through offensive and defensive cyberspace operations. However, they may also create effects on the physical network layer of cyberspace. For example, they may employ surface-to-surface fires to attack a key cyberspace node for the enemy.

FIRES IN UNIFIED LAND OPERATIONS

1-25. The Army operational concept for conducting operations as part of a joint team is unified land operations. *Unified land operations* is the simultaneous execution of offense, defense, stability, and defense support of civil authorities across multiple domains to shape operational environments, prevent conflict, prevail in large-scale ground combat, and consolidate gains as part of unified action (ADP 3-0). The goal of unified land operations is to achieve the JFC's end state by applying landpower as part of unified action. Commanders employ fires to set conditions for the successful employment of other elements of combat power to conduct unified land operations. The targeting process can help commanders and staffs to prioritize and integrate assets to create effects that allow for achievement of the commander's objectives within unified land operations.

1-26. The Army's primary mission is to organize, train, and equip its forces to conduct prompt and sustained land combat to defeat enemy ground forces and seize, occupy, and defend land areas. During the conduct of unified land operations, Army forces support the joint force through four strategic roles:

- Shape OEs.
- Prevent conflict.
- Prevail during large-scale ground combat.
- Consolidate gains.

FIRES IN SUPPORT OF OPERATIONS TO SHAPE

1-27. Army operations to shape consist of various long-term military engagements, security cooperation, and deterrence missions, tasks, and actions intended to assure friends, build partner capacity and capability, and promote regional stability. Operations to shape typically occur in support of the geographic combatant commander's theater campaign plan or the theater security cooperation plan. These operations help counter actions by adversaries that challenge the stability of a nation or region contrary to U.S. interests. (see FM 3-0).

1-28. Operations to shape begin at home station. These activities include maintaining operational readiness through training and contingency planning. Army organizations and personnel are forward based or deploy in support of operations to shape a theater. Operations to shape set the conditions to stabilize a nation or region and potentially deter adversarial aggression or attacks. During operations to shape, commanders employ fires to counter adversary attempts to gain positions of advantage as well as participate in regional security cooperation operations and security force assistance, key leader engagements, and training, advising, and equipping foreign forces.

1-29. Units conduct combined arms exercises and interoperability training with joint and multinational units. Interoperability training is essential to finding technical solutions to integrate fires, for example by

establishing integrated fire control networks. In addition to conducting military exchange and liaison programs, personnel and schools train foreign students at home station and abroad. Foreign military sales contribute to multinational interoperability and enhance partner capacity.

1-30. Security cooperation is all department of defense interactions with foreign security establishments to build security relationships that promote specific United States security interests, develop allied and partner nation military and security capabilities for self-defense and multinational operations, and provide United States forces with peace time and contingency access to allied and partner nations (see JP 3-20). Commanders support security cooperation with fires by providing technical and tactical assistance in organization, training, education, and other various functions to assist foreign partners and security forces. Select units provide security force assistance with fires tasks to foreign units. An example is fire support personnel assigned to a security force assistance brigade.

1-31. Army units, key leaders and specific subject matter experts plan, coordinate, and participate in joint and multinational training exercises with bi-lateral and multinational partners on a continual basis. These exercises provide a platform for gaining feedback and insight on interoperability within the fires warfighting function. Information exchanged provides data and identifies capability gaps, lessons learned, and technical and tactical insight towards integrating fires as part of a joint or multinational force. Training exercises are conducted at all levels of command.

1-32. Institutional training of Army, joint, and multinational students is conducted at home station. This training includes officer leader development, military occupational specialty producing schools, new equipment training, and functional course training on various systems. The training includes curricula for systems and processes that enable the execution of fires tasks.

1-33. Operations to shape also includes operational training provided to units pre- and post-deployment on the modification and upgrade of equipment as well as new equipment training. Mobile training teams, selected units, and security force assistance brigades provide this training to ensure units are fully prepared to employ fires within operations.

1-34. Planners combine sensors, shooters, munitions, command and control systems, and personnel into organizations designed to employ fires to accomplish specific mission sets from strategic- to tactical-level. This includes tailoring forces for task organization and contingency planning. Contingency planning is an ongoing effort that begins at home station and is modified as required until the contingency becomes an operation. Contingency planning also requires leaders and forces to interact with and advise allied and friendly military partners to integrate capabilities for fires, protection, improving information exchange and intelligence sharing. This provides U.S. forces with peacetime and contingency access, and the ability to mitigate conditions that could lead to a crisis.

1-35. During operations to shape, targeting is generally focused on target development and assigning delivery assets against targets so that the targets can be executed immediately as part of an operation plan or contingency plan if competition escalates to conflict. Commanders may choose to execute the targeting process for nonlethal fires assets that they have the authority to employ during competition, including the creation of effects and assessment of those effects.

FIRES IN SUPPORT OF OPERATIONS TO PREVENT

1-36. The purpose of operations to prevent is to deter adversary actions contrary to U.S. interest. Operations to prevent are conducted in response to activities that threaten unified action partners and require the deployment or repositioning of credible forces in a theater to demonstrate the willingness to fight if deterrence fails (see FM 3-0).

1-37. Leaders at all echelons develop plans and apply the fundamental principles of fires to help prevent conflict. Fires capabilities are employed in operations to protect and defend host nation civilian populations, infrastructure, and friendly operating forces from attacks. Nonlethal capabilities are integrated into operations through targeting to create effects, particularly in the information environment, to accomplish the commander's deterrence objectives. At the operational and strategic levels, effects created by the military

must be synchronized with the diplomatic, informational, and economic instruments of national power. Army forces utilize fires while performing the following major activities during operations to prevent:

- Execute flexible deterrent options and flexible response options.
- Set the theater.
- Tailor Army forces.
- Project the force.

Flexible Deterrent And Response Options For Fires

1-38. Ultimately, the aim is to prevent conflict through the early shaping of environments, while maintaining the capability to deter and defeat peer threats. The threat will employ traditional, unconventional, and hybrid strategies to threaten U.S. security and vital interests. Forces that create effects in support of the force may be forward deployed and regionally aligned in support of geographic combatant commanders' contingency plans. They provide force protection and counter anticipated threats. ADA forces are a preeminent means of deterrence in support of the U.S. commitment to preserve the peace by providing assurance of protection for our forces and allies. Forward stationed ADA units, such as Patriot battalions, further serve as a deterrent to our enemies by dramatically reducing their expectation of success.

1-39. Lethal and nonlethal fires capabilities provide a commander with the ability to threaten adversary freedom of action across all domains, deterring them from taking offensive action. For example, long-range indirect fires assets provided by a field artillery brigade or division artillery can deploy to a theater to provide a response option against a threat's assets. Nonlethal capabilities may also complicate or degrade the ability of a threat to employ their assets offensively.

1-40. During operations to prevent, targets are continuously refined, updated and added to relevant joint target databases as required. Army HQ in the roles of a joint task force or land component commander (LCC) must ensure fires and intelligence personnel within their formation are properly trained and certified to integrate into targeting work centers capable of basic, intermediate, and advanced target development to the joint standards outlined in joint doctrine and Chairman of the Joint Chiefs of Staff instructions. Targeting HQ, particularly those supporting operations above the brigade level, must be prepared to integrate non-Army fire support assets into the fire support plan in support of the joint HQ.

Fires In Support of Setting the Theater

1-41. The purpose of setting a theater is to establish favorable conditions for the rapid execution of military operations and the support requirements for a specific operation plan during crisis or conflict. Setting the theater involves significant sustainment, AMD, engineering, information collection, and communications activities focused on countering a specific threat (see FM 3-0).

1-42. Commanders’ use fires capabilities and effects to set the theater by defending force generation assets from air and missile attack and integrating information collection assets into theater level targeting. Commanders employ fires to provide continuous land-based theater AMD capabilities to protect forces. Commanders and their fire support staff develop deliberate targets for current and future operations. These deep actions at the operational level set conditions for future successful combined arms operations. While conducting these actions, the force will be attacked in all domains, and especially in the information environment, and must take defense in other domains under consideration throughout operations to shape and prevent conflict.

Tailoring Fires Capabilities

1-43. Force tailoring is the selection and sequencing of forces for deployment. Army force packages are primarily developed by the Department of the Army and its subordinate commands based on the requirements determined by the theater army. These requirements may be part of either security cooperation plans or contingency plans to react to a crisis. When analyzing the mission to determine what fires capabilities are required, staffs should examine their target list with the commander to receive guidance on the commander’s objectives and what effects must be created against each target. Additionally, the staff should review the defended asset list (DAL) with the commander to determine what assets are required to defend against air and missile threats. These discussions should inform what fires capabilities are required. The commander

and staff must also determine when those capabilities are likely to be required. As discussed above, commanders may use fires as flexible deterrent and response options, and deployment of these capabilities should be prioritized to allow the commander to either deter escalation or respond to aggression.

1-44. When preparing for deployment, the theater army will also provide a desired task organization, recommended deployment sequence, and required pre-deployment training. An example of fires pre-deployment training is theater specific training on defense design that includes DAL, friendly force locations, adversary air avenues of approach, and enemy air and missile threat types. This information allows precise tailoring of fires force packages in size and types. Fires forces that provide protection from enemy attack are among the very first recommended for early deployment sequence into a theater and in and of themselves may be all that is needed to deter an adversary from further escalation. Another example of additional fires pre-deployment training may be higher-level training on joint target development, particularly for personnel in operational level HQ, to allow them to better execute the joint targeting cycle.

1-45. The task organization initially used during force tailoring may not be the same as that used for combat, as it is the primary purpose of this initial task organization is to allow control of the forces through deployment and reception, staging, onward movement and integration. However, when possible, units should receive their command and support relationships to their gaining higher HQ prior to deployment to allow for early integration. This can assist with ensuring that fires tasks are executed competently according to a commonly understood standard operating procedures. Additional task organization will occur once the deploying Army forces have completed reception, staging, onward movement and integration and operational control passes to the JFC.

Fires In Support Of Force Projection

1-46. The Army projects national power by maintaining a viable, visible, and expeditionary land combat capability. Commanders support this competency with a highly capable, expeditionary land force that deters threat aggression and enables commanders to achieve and maintain overmatch. This land force includes both the active and reserve components; the reserve component provides or augments critical capabilities necessary for the employment of the total force.

1-47. Commanders use fires to set the conditions for successful operations by suppressing threat capabilities, disrupting threat operations, destroying or attriting threat formations, and defending friendly critical assets. Assets and capabilities that integrate and deliver fires are essential joint enablers. These enablers are used to build partner capacity in advance of hostilities and to defend forces and critical assets. This assures access to contested areas as part of the forward-stationing peacetime construct or employed as part of national power projection operations.

FIRES IN SUPPORT OF LARGE-SCALE COMBAT OPERATIONS

1-48. The Army, as part of the joint force, conducts large-scale combat operations. The preponderance of large-scale combat operations will consist of offensive and defensive operations initially, although some. stability operations will occur simultaneously as part of consolidating gains. Commanders employ fires as part of large-scale combat operations by creating effects to enable joint force freedom of action.

1-49. Commanders use Army and joint targeting to select and prioritize targets, integrating lethal and nonlethal effects from different capabilities in support of large-scale combat operations. Commanders may converge effects from multiple systems, either simultaneously or in close succession, to create an even greater effect than would have been achieved if each effect was created individually. Convergence is the massing of capabilities from multiple domains to create effects in a single domain. Convergence overwhelms the enemy, giving them too many dilemmas to address simultaneously, which creates gaps for exploitation by the joint force. The convergence of multiple effects within an area requires careful synchronization prior to execution to ensure effects don't interfere with one another or pose a risk to the force.

1-50. To effectively enable joint force freedom of action during large-scale combat operations, commanders must synchronize the effects created with fires with the actions of the rest of the joint force. This synchronization initially takes place during planning, where commanders and their staffs determine the timing of the creation of the effect and link that timing to a clearly defined, conditions-based trigger.

Commanders must also plan for assessment of the effects and determine alternate courses of action if the effects are not created as planned.

1-51. During large-scale combat operations, domains are likely to have a high volume of users, which will require close coordination and integration during planning to bring maximum combat power to bear while mitigating risk to the force. In the physical domains, this may be accomplished through the use of graphical control measures such as maneuver control measures, fire support coordination measures (FSCMs), and airspace coordinating measures (ACMs). In cyberspace, the electromagnetic spectrum, and the information environment, this may be accomplished through spectrum management and the delegation or retention of authorities.

1-52. During large-scale combat operations, multiple Army echelons must synchronize and deconflict their activities, including the creation of effects. The use of deep and close areas can help with dividing responsibilities among echelons within an AO. The *close area* is the portion of the commander's area of operations where the majority of subordinate maneuver forces conduct close combat (ADP 3-0). The *deep area* is where the commander sets conditions for future success in close combat (ADP 3-0). Commanders may focus the effects of fires in their deep area to execute shaping operations against enemy forces not in contact with friendly forces in the close area, while subordinate units are responsible for creation of effects in the close area the commander has assigned to them. When assigning an AO to a subordinate commander, commanders must consider the fires capabilities available to the subordinate unit and should avoid assigning them an AO that is too large for them to effectively influence with organic or supporting assets.

FIRES IN SUPPORT OF OPERATIONS TO CONSOLIDATE GAINS

1-53. *Consolidate gains* are the activities to make enduring any temporary operational success and set the conditions for a stable environment allowing for a transition of control to legitimate authorities (ADP 3-0). Operations to consolidate gains require decisive action that increases emphasis on security and stability tasks over time. They will likely involve significant combat operations against bypassed enemy forces and remnants of defeated units initially. These operations often begin concurrently with large-scale combat operations and continue after large-scale combat operations are complete. Both security tasks and stability tasks are required to consolidate gains, and commanders support both with fires.

1-54. During the initial phases of operations to consolidate gains, the majority of a unit's efforts are focused on defeating remaining enemy resistance and area security tasks, which include activities to protect friendly forces, installations, and movement routes and lines of communications within a specific area. Units responsible for consolidating gains will continue to use lethal and nonlethal fires to enable freedom of action and accomplish their objectives, but there may be some differences in how those fires are employed.

1-55. Commanders use fires in security operations to protect friendly forces and target bypassed enemy formations including irregular forces, equipment, ammunition stockpiles, and areas of sanctuary. Targeting and fires planning in support of area security operations will tend to be a much more deliberate process than that used as part of large-scale combat operations. To create lethal effects against a target while mitigating the risk of collateral damage requires extensive target development and careful selection of a delivery asset that can create the required effect without creating unwanted secondary effects.

1-56. As security increases within the consolidation area and, eventually, the entire AO, the focus on stability operations will also increase. The six stability tasks are establish civil security, establish civil control, restore essential services, support governance, support economic and infrastructure development, and conduct security cooperation. Stability tasks shape the OE to set conditions for a transition to legitimate authorities assuming responsibility for the area. Commanders and staffs use a targeting methodology to determine what effects must be created and how to create them in order to shape the environment for successful transition to civil control. This begins during planning, as leaders determine the desired end state and objectives as well as the effects that they must create in order to achieve those objectives and reach that end state.

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Chapter 2

Execute Fires Across the Domains

The commander is responsible for the integration of fires within the AO. The commander consults the fire support coordinator, chief of fires, air liaison officer, fire support officer, and experts on AMD, cyberspace, EW, space, special operations, and information operations for advice on the allocation, integration, and use of available fires resources. Fires in all domains require detailed coordination and planning to support the commander's objectives. Employment of these systems requires the use of common terminology and coordination measures across the joint force. It includes surface-to-surface fires, air-to-surface fires, and nonlethal means that the commander uses to support the concept of the operation.

SURFACE-TO-SURFACE FIRES

2-1. Army surface-to-surface indirect fires includes cannon, rocket, and missile systems as well as mortars organic to maneuver elements. *Field Artillery* is the equipment, supplies, ammunition, and personnel involved in the use of cannon, rocket, or surface-to-surface missile launchers (JP 3-09). The role of the field artillery (FA) is to destroy, neutralize, or suppress the enemy by cannon, rocket, and missile fire and to integrate and synchronize all fire support assets into operations. *Fire support* is fires that directly support land, maritime, amphibious, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives (JP 3-09).

2-2. At times, the FA must enable fires in other domains through the employment of surface-to-surface fires converged with effects in other domains. For example, surface-to-surface capabilities contribute significantly to counterair operations, targeting and destroying enemy air and missile weapons, command and control elements, and supporting infrastructure, ultimately reducing the threats that Army, joint, and multinational air-to-surface assets must face.

2-3. Army surface-to-surface capabilities are:

- 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 high-payoff targets. 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 Guided Multiple Launch Rocket System 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 (referred to as 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.
- Missiles. The Army Tactical Missile System (ATACMS) provides long-range, surface-to-surface fire support. ATACMSs are fired from an MLRS (two missiles) or high mobility artillery rocket system 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 Guided multiple launch rocket system, target engagements require detailed airspace coordination and integration. For more discussion on MLRS/High Mobility Artillery Rocket System and ATACMS, see ATP 3-09.60.

- Cannon Artillery. Cannon artillery is usually the most available fire support system within the AO, capable of performing counterfire, interdiction, and suppression of enemy air defenses. Cannon artillery provides near immediate response times, 24-hour availability, and 360-degree coverage. Cannon artillery offers both area fires and precision fires (such as the Excalibur and precision guidance kit). For more on cannon artillery, see ATP 3-09.23, ATP 3-09.50, and ATP 3-09.70.
- Mortars. Army maneuver formations have organic mortar platoons and sections. The primary role of mortars is to provide immediate, responsive, indirect fires in support of maneuver companies or battalions. The mobility of mortar systems makes them well suited for close support of maneuver. Mortars can also be used for final protective fire, obscuration, and illumination. U.S. 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 operations. For more on mortars, see TC 3-22.90.

2-4. FA cannon, rocket, and missile systems organic, assigned, attached, or operational control to the FA battalions of brigade combat teams, division artillery, and field artillery brigades provide continuously available fires under all weather conditions and in all types of terrain. FA can shift and mass fires rapidly from dispersed locations and displace rapidly to new position areas. FA units are positioned to provide continuous fires.

2-5. Army surface-to-surface fires are applied to deliver effects in concert with all other fires capabilities. Fires are integrated through the targeting process, fire support planning, unit airspace plan (UAP), and military decision making process (MDMP). Surface-to-surface fires are integrated with other airspace users to facilitate massing of effects.

2-6. The integration of surface fires is a critical factor in the success of operations. The commander is responsible for the integration of fires within the AO. The fire support coordinator, chief of fires, and fire support officer advise the commander on the allocation and use of available indirect fires and fire support resources. The ***chief of fires*** **is the senior fires staff officer at echelons above corps who advises the commander on the best use of available fires resources and provides input to the necessary orders.**

2-7. Commanders integrate fire support into the concept of operations during planning. FA commanders assisted by fire support personnel and organizations at all echelons integrate Army, joint, interagency and multinational fires capabilities during the operational process for use at the designated place and time. Fires are critical to accomplishing offensive and defensive tasks. However, nonlethal effects are also important contributors to decisive action, regardless of which element dominates. Accomplishing the mission by creating an appropriate mix of effects remains an important consideration for every commander.

2-8. Naval surface fire support 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.

AIR-TO-SURFACE FIRES

2-9. Army and joint forces employ various types of air-to-surface capabilities, to include fixed-wing aircraft, rotary-wing aircraft, and unmanned aircraft systems (UASs). These systems provide lethal and nonlethal effects, standoff weapons, and target acquisition capabilities that can be employed to detect and create integrated effects against adversary targets.

- Fixed-Wing Aircraft. Fixed-wing aircraft provide flexibility, range, speed, lethality, precision, and the ability to mass fires at a desired time and place. The capacity of aircraft to deliver precision guided munitions can limit collateral damage, as well as strike otherwise inaccessible targets. Aircraft also provide surveillance and combat assessment.

- Rotary-Wing Aircraft. Rotary-wing aircraft employ a variety of weapons. They provide attack, reconnaissance, and terminal guidance for other weapon platforms. Army attack aviation conducts 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.
- UAS. The long endurance of UAS necessary to support their intelligence, surveillance, and reconnaissance missions enables them to provide extended support to many types of missions. UAS can participate in supporting close air support (CAS), air interdiction, and other joint fires missions. Specific tasks may include target acquisition and marking, terminal guidance of ordnance, providing precision coordinates for Global Positioning System (GPS)-aided munitions, delivery of onboard precision-guided ordnance, battle damage assessment, signal intelligence, communication data relays, and retargeting such as shoot-look-shoot missions. UAS 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). See JP 3-09, JP 3-09.3, and ATP 3-60.2 for additional information on joint missions and UAS integration.

2-10. Air Force assets, with their inherent speed, range, and precision attack capabilities, are combat multipliers for the ground commander. The destruction of decisive points, forces, and capabilities by striking enemy military targets such as fielded land forces, command and control (C2) nodes, vital logistics, or supporting infrastructure degrades the enemy system and contributes to an enemy incapable of effective resistance. Detailed integration of air and surface capabilities create synergistic effects that are greater than the sum of individual air and surface operations. Ground commanders are the ultimate authority for the use of all supporting fires in their respective operational area. Air operations are not associated with a particular type of aircraft. Each weapons system has unique characteristics that should be considered based on the nature of the threat, targets to be attacked, desired effects, and environmental conditions. Many of the assets used to interdict forces deep in the enemy rear area can also be used to support the close fight. Fighters, bombers, and remotely piloted aircraft/UAS are examples of joint air assets that can achieve desired effects for the supported commander. There are two distinct types of air operations for engaging enemy land forces that are typically coordinated with the ground scheme of maneuver to maximize effects on the enemy.

- *Air interdiction* is defined as "air operations conducted to divert, disrupt, delay, or destroy the enemy's military surface capabilities before it 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." (JP 3-03) Air forces employ such weapons as projectiles, missiles, unguided munitions, precision-guided munitions, EW systems, and sensors from airborne platforms in the air interdiction role. Submission of a preplanned air support request allows the request to process from the Army and enter into the joint air tasking cycle. Air interdiction missions can be executed in a number of tactics, techniques, and procedures, or methods to include strike, coordination and reconnaissance, and kill box operations.
- CAS is defined as "air action by fixed- and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces." (JP 3-09.3) Based on threats and the availability of other means of fire support, synchronizing CAS in time, space, and purpose with supported ground forces requires detailed and continuous integration. The supported commander establishes the target priority, effects, and timing of CAS fires. The terminal attack controller either a (joint terminal attack controller or forward air controller (Airborne) is qualified to talk-on CAS aircrew to the target and issue weapons release clearance to attacking aircraft. CAS provides commanders with flexible and responsive fire support. Using CAS, commanders can take full advantage of battlefield opportunities by massing firepower to maintain the momentum of an offensive action or reduce operational and tactical risks. The mobility and speed of aircraft provide commanders with a means to strike the enemy swiftly and unexpectedly. CAS distribution begins with the senior ground forces commander's inputs to the JFC's broad air apportionment decision. CAS is tasked to support ground forces based on the preplanned air support requests. During the joint air tasking cycle planners adhere to the apportionment decision by the JFC. The number of air support requests for CAS that are sourced is limited by the JFC air apportionment decision and the joint

force air component commander's interpretation of that JFC decision (allocation), and anticipated number of air support requests (ASRs) for CAS provided from the ground component. The senior ground forces commander (corps, JFLCC) then makes a distribution decision for use of CAS. The CAS distribution decision is the ground commander's guidance for the employment of CAS assets among competing requirements and how each air support operations center will source immediate ASRs from CAS missions on the air tasking order. For example if 1AD is the main effort and has the preponderance of CAS dedicated by the senior ground forces commander (LCC) in the CAS distribution decision gives the air support operations center guidance on first call on resources. The distribution decision only affects those sorties assigned as CAS missions that are provided to support the Army.

2-11. The Army process preplanned and immediate ASRs through the Army air-ground system to identify air support requirements to the supporting air component. Pre-planned ASRs are processed per the battle rhythm in sufficient time to meet the planning stages of the joint air tasking cycle and sourced on the initial published air tasking order. Immediate ASRs arise after the air tasking order is published and must be sourced by assets already tasked on the air tasking order. Scheduled and/or on-call air missions are tasked to support preplanned ASRs. Scheduled missions are planned against targets on which air attacks are delivered at a specific time. On-call missions (X-airborne alert and G-ground alert) are planned against target types for which a need can be anticipated for a timeframe. On-call air missions are preferably tasked to support immediate ASRs to satisfy dynamic targeting requirements.

SURFACE-TO-AIR FIRES

2-12. Surface-to-air fires capabilities include active defense weapons that are employed in both area and point defenses. ADA delivers precision surface-to-air missiles to defend friendly forces, fixed and semi-fixed assets, population centers and key infrastructure against air and missile threats. ADA executes Army AMD operations in support of joint counterair efforts. The role of ADA is to deter and defeat the range of aerial threats in order to assure allies, ensure operational access, and defend critical assets and deployed forces in support of unified land operations (FM 3-01).

2-13. The air defense officer serves as the AMD expert for the maneuver commander at every echelon. Within BCTs, that service member is the senior air defense officer located in the Brigade ADAM Cell. The senior air defense officer in Divisions and Corps will be assigned to the AMD section within the G3. The senior air defense officer has the responsibility for AMD coordination and integration, which supports the critical asset list/defended asset list development process for the commander. See FM 3-01.

2-14. Ground units also take active and passive measures to defend against aerial threats when limited air defense assets are available. Active measures include small arms engagement of aerial threats. Passive measures include camouflage, concealment, or deception to prevent detection from aerial threats. Together, these measures are referred to as combined arms for air defense. For more information on combined arms for air defense, see FM 3-01 or ATP 3-01.8.

2-15. Surface-to-air weapons are normally used in a defensive role and offer optimal fires against aerial threats at different ranges and altitudes, especially upon entering a pre-planned and fully established engagement zone. ADA forces operate these weapon systems based on directives and guidelines established by fire control orders, ROE, and weapons control status. ADA weapon systems and personnel are employed at strategic, operational, and tactical levels to defend the force against the full range of air and missile threats. ADA performs the AMD functions of planning, coordinating and executing surface-to-air fires for supported commanders. ADA forces are expeditionary in nature, forward stationed, and operate these systems worldwide during joint combined arms operations. ADA capabilities include both high-to-medium air defense (also known as HIMAD) and short-range air defense (SHORAD) systems.

- High-to-medium air defense (also known as HIMAD) capabilities include Patriot, Terminal High Altitude Area Defense system, and AN/TPY-2 forward-based mode radar system batteries. Patriot is a multi-mission system that provides AMD of combat land forces and other critical assets. Patriot forces are capable of defending against ballistic missiles, cruise missiles, unmanned aircraft, tactical air-to-surface missiles, large-caliber rockets, and fixed- and rotary-wing aircraft. Terminal High Altitude Area Defense system is an upper tier system that provides the capability to engage and negate the short-, medium- and intermediate-range ballistic missile threats within

and outside the atmosphere. The AN/TPY-2 is a high precision, long range, phased-array radar. In its forward-based mode of deployment, the AN/TPY-2 radar detects ballistic missiles early in their flight and provides precise tracking information. All of these systems are considered land-based contributors to the ballistic missile defense program. They are deployed to joint areas of operations to protect national and strategic interests, defend the force and other critical assets, and act as deterrent while simultaneously providing active AMD.

- SHORAD capabilities include Avenger; Stinger; counter-rocket, artillery, and mortar; and Sentinel. Avenger is a mobile lightweight weapon system used to counter enemy reconnaissance, surveillance, and target acquisition efforts and low-level fixed- and rotary-wing threats. Stinger is an infra-red homing, fire-and-forget missile. It is mounted in missile pods on the Avenger and is employed by dismounted Stinger teams. Counter-rocket, artillery, and mortar is a system that consists of sensor, interceptor, and C2 systems. It is a fast reacting, short-range system used to detect and destroy incoming rockets and artillery and mortar rounds in the air before they hit their ground targets, or simply to provide early warning. The Sentinel radar is a 360-degree phased array radar that provides persistent air surveillance and fire control quality data. It can acquire, track, and classify cruise missiles, UAS, and fixed- and rotary-wing aircraft. SHORAD forces are positioned with maneuver formations in the close area, where maneuver force commanders plan to conduct decisive operations. Air defense airspace management (known as ADAM) cell personnel in the brigade combat team, for instance, plan and coordinate the support of SHORAD or other ADA forces and relay pertinent AMD information and early warning of enemy air activity to subordinate maneuver formations. Short-range-air defense forces generally defend assets in the division and brigade areas, while Patriot and Terminal High Altitude Area Defense units maintain coverage of assets in the division, corps, and theater areas.

2-16. Surface-to-air fires defend the force and support complementary efforts of Army and joint surface-to-surface, air-to-surface, and other fires and effects coordinated with cyberspace operations and electronic attack. Networked surface-to-air and air-to-surface capabilities assist commanders with the ability to surveil deep into enemy territory allowing friendly forces to see first, assume a safe posture, provide alert, and support attack operations. ADA systems also have a capability to provide launch point determinations to support attack operations (offensive counterair).

2-17. The defending force's surveillance and firepower must be capable of defending throughout the entire AO in all directions. Surface-to-air fires may be challenged by series of complex or multiple integrated attacks in geographic areas where an advanced military or competing threat resides. These attacks may vary depending on region. Complex integrated attacks may include a mix of capabilities such as coordinated air-to-surface missiles, surface-to-surface weapons, unmanned aircraft systems, fixed-wing aircraft, and rotary-wing aircraft. Complex integrated attacks will likely be supported by enemy activities in other domains, such as jamming efforts and special operations forces' attacks in the land domain.

2-18. All of the surface-to-air systems use a common engagement sequence to defend against aerial threats. The sequence begins with the surveillance of the airspace by electronic or visual means, followed by the detection of an aerial object. The object is tracked and then subjected to identification procedures which may be electronic or manual (visual identification). Once the object has been identified as a hostile (enemy), an evaluation is conducted of its intended target, predicted impact point, and expected time of arrival. The best weapon, paired with an appropriate sensor, is assigned to engage the target and, after the engagement, an assessment is conducted of the need for reengagement.

2-19. ADA personnel provide planning expertise at all echelons. These tasks include integrating procedures and positioning surface-to-air assets in support of operations plans. AMD planning establishes optimum layered defenses and allows for quick and efficient responses against air attacks defending friendly forces and critical infrastructure over considerably large geographic areas. Surface-to-air fires correctly classify, discriminate, and identify threatening air and missile targets, then engage designated threats with the appropriate number and type of interceptors.

CYBERSPACE OPERATIONS AND ELECTRONIC WARFARE

2-20. Friendly, enemy, adversary, and host nation networks, communications systems, computers, cellular phone systems, social media websites, and technical infrastructures are all part of cyberspace. Cyberspace

operations are the employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace (JP 3-0). The interrelated cyberspace missions are Department of Defense information network operations, defensive cyberspace operations, and offensive cyberspace operations. For more information on cyberspace operations, see FM 3-12 and JP 3-12 (R).

2-21. Electronic attack involves the use of electromagnetic energy, directed energy, or anti-radiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Electronic attack includes:

- Actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum.
- Employment of weapons that use either electromagnetic or directed energy as their primary destructive mechanism.
- Offensive and defensive activities, including countermeasures.

SPACE OPERATIONS

2-22. Many lethal and nonlethal fires capabilities depend on space capabilities to support, integrate, and deliver fires. Army space capabilities are integrated throughout the fires warfighting function, providing robust and reliable planning, contributing to target development, and providing positioning, navigation, and timing (PNT), satellite communications, imagery, geolocation, weather, and terrain capabilities.

- GPS enables precision guided munitions, command and control systems, and near real-time situational awareness for lethal and nonlethal fires.
- Satellite communications enables real time communications between commanders and forces to enable immediate redirection of fires over extended distances to shape the operations.
- Weather satellites provide a variety of data points necessary for predicting effects of meteorological conditions on fires.
- Combined, PNT and satellite communications supports fires through the systems interfaces on the Advanced Field Artillery Tactical Data System.

2-23. In space operations, the fires warfighting function includes space control operations that create a desired effect on enemy space systems and across multiple domains. Space control plans and capabilities use a broad range of response options to provide continued, sustainable use of space. Space control contributes to space deterrence by employing a variety of measures to assure the use of space and attribute enemy attacks. These include terrestrial fires to defend space operations and assets. A capability for, or employment of, fires may deter threats and/or contain and de-escalate a crisis.

2-24. *Offensive space control* are offensive operations conducted for space negation (JP 3-14). *Negation* in space operations, are measures to deceive, disrupt, degrade, deny, or destroy space systems. (JP 3-14). Offensive space control actions targeting an enemy’s space-related capabilities and forces could employ reversible or nonreversible means, and are considered a form of fires.

2-25. As with other operational areas, when deliberate, nonlethal fires are directed into the space domain, they must be coordinated between the affected combatant commands if time permits. By honoring the boundaries of the space domain, combatant commanders help preserve space situational awareness, spacecraft life span, and space system performance.

2-26. The information maintained within the space running estimate supports a commander’s ability to develop targets and conduct targeting. Examples of fires-related information tracked within the space running estimate includes:

- Predicted periods when GPS is degraded which may affect PNT accuracy, employment times, and locations for GPS aided munitions. This directly supports fires by assessing the proper employment of munitions (precision guided munitions vice conventional munitions) at specific times and locations.
- Supports input to the fires estimate, attack guidance matrix, and target synchronization matrix for use of GPS-aided munitions, employment of unmanned aerial systems for attack missions, employment of GPS-enabled field artillery firing platforms, and impacts on GPS-enabled target acquisition systems.

2-27. *Navigation warfare* is deliberate defensive and offensive action to assure and prevent positioning, navigation, and timing information through coordinated employment of space, cyberspace, and electronic warfare operations (JP 3-14). Naviagation warfare (NAVWAR) is necessarily a collaborative effort used to ensure unimpeded access to PNT signals while denying the same to the enemy. It also includes support activities such as surveillance, reconnaissance, and electromagnetic spectrum management to ensure the availability and integrity of PNT information. NAVWAR may be effectively executed in a localized area or across a theater of operations, for short or long durations, with impacts to all domains and mission areas. NAVWAR should be a consideration in all joint planning efforts.

2-28. The ability to understand, visualize, and describe the local PNT environment is characterization. Characterization includes accurate and timely assessments of the OE, including terrestrial, aerial, and space environments, and the potential impact of these conditions in order to plan and conduct unified land operations. The Army must characterize the environment to assess the likelihood of NAVWAR impacting the mission. Characterization requires a persistent and integrated network of surveillance and reconnaissance systems and information processing to fuse the data into a cohesive picture. It includes the capability to determine the effects of the environment on sensors, weapons, and munitions to deliver fires. For more on offensive space control, refer to FM 3-14.

SPECIAL OPERATIONS

2-29. Special operations forces execute a diverse set of missions across warfighting functions to produce scalable lethal and nonlethal effects, either in support of a combatant commander's campaign plan or as part of a joint, Army, or other Service effort. Army special operations forces contribute to the fires warfighting function by providing unique contributions for understanding the OE, nominating and developing targets and recommending effects, and providing specific lethal and nonlethal capabilities such as psychological operations, civil affairs, or surgical strike capabilities to the supported commander.

2-30. A special operations task force may establish a joint fires element. A *joint fires element* is an optional staff element that provides recommendations to the operations directorate to accomplish fires planning and synchronization (JP 3-60). When the joint fires element is established, it becomes the fires coordination link between commands. The joint fires element is responsible for planning joint fires and executing the targeting process within the special operations task force. It is part of the current operations division and consists of organic intelligence, sustainment, plans, communications, aviation, Special Forces, civil affairs, Ranger, and psychological operations personnel; conventional force liaisons; representatives of attached units; and augmentees from the Services, multinational partner units, and government agencies that can achieve lethal and nonlethal effects, integrate into the targeting process, and advise on their organizations' capabilities.

2-31. Establishing liaisons between special operations and conventional force fires elements helps mitigate the tempo of armed conflict and the subsequent rapid information flow. Liaisons efficiently prioritize and pass critical information from one element to another vice relying on an element's capability to sift through vast quantities of data to retrieve the right information at the right time. Liaisons are a solution to mitigate interoperability challenges and to fulfill the need to inform elements of opportunities that may be fleeting.

2-32. Whether special operations are being conducted in support of large-scale combat operations or in support of the commander's campaign plan below the level of armed conflict, special operations forces consider political, military, economic, informational, and psychological effects on the enemy's capabilities, morale, and popular support base; on relevant populations; and on other relevant actors. Special operations units share the results of these considerations through the targeting process and through information and intelligence processes and systems in order to support shared understanding across the force. The knowledge produced by sharing considerations and analyses facilitates a comprehensive approach, identification of potential restricted targets, and the selection of the best capability to achieve the desired effects.

2-33. For more on Special Operations, see JP 3-05, ADP 3-05 and FM 3-05.

INFORMATION OPERATIONS

2-34. *Information operations* is the integrated employment, during military operations, of information-related capabilities in concert with other lines of operation to influence, disrupt, corrupt, or usurp the decision-making of adversaries and potential adversaries while protecting our own (JP 3-13).

2-35. Information operations, as an integration and synchronization staff function, plans and oversees the coordinated delivery of information-related capabilities to achieve cognitive effects against adversary and enemy decision-makers across the conflict continuum while simultaneously establishing the conditions that allow for more timely and better-informed friendly decision-making. Intrinsic information related capabilities include (FM 3-13):

- Military deception.
- Cyberspace electromagnetic activities (to include: cyberspace operations, EW, and spectrum management operations).
- Military information support operations.
- Special technical operations.
- Space Operations.
- Public Affairs.
- Combat camera.
- Civil Affairs.
- Operations security.
- Soldier and leader engagements, to include police engagement.

2-36. Commanders can also designate other enabling information related capabilities (both lethal and nonlethal) to control the flow of information to adversary/enemy decision-makers and protect friendly command and control means. These activities and capabilities include:

- Physical attack (to include lethal fires and maneuver).
- Presence, posture, and profile.
- Communication synchronization.
- Cybersecurity.
- Foreign disclosure.
- Physical security.
- Special access programs.
- Civil military operations.
- Intelligence.

2-37. For more information on Information Operations, see JP 3-13 and FM 3-13.

Chapter 3
Integrate Army, Multinational, and Joint Fires

This chapter describes the processes used by the commander and staff to synchronize the force. It addresses how fires planners work within the operations process to integrate fires assets into planning, preparation, and assessment, then discusses the integrating process of targeting (Army and joint targeting) as the means to prioritize targets, effects, and resources for the commander based on the entire suite of tools available.

FIRES IN THE OPERATIONS PROCESS

3-1. The fires warfighting integrates with the other warfighting functions as part of the operations process. The *operations process* is the major command and control activities performed during operations: planning, preparing, executing, and continuously assessing (ADP 5-0). As part of the operations process, commanders and staffs plan to execute fires through subordinate planning processes such as fire support planning, airspace planning and management, electromagnetic spectrum management, multinational integration, and air and missile defense planning and integration. Leaders further synchronize fires through rehearsals.

INTEGRATING FIRES INTO PLANNING

3-2. Integration of fires begins during mission analysis, supported by continuously updated estimates, and incorporates post-execution assessment. Commanders at all levels are responsible for the effective integration of fires. The scheme of fires, part of the concept of the operation developed during the military decision-making process, specifies how the commander wants to shape the OE in support of his requirements and objectives.

3-3. *Fire support planning* is the continuous process of analyzing, allocating, integrating, synchronizing, and scheduling fires to describe how the effects of fires facilitate maneuver force actions (FM 3-09). This process facilitates the maneuver commander's ability to synchronize fire support with maneuver and employ fire support resources to achieve their objectives. Coordination of fire support begins with the commander's intent and concept of the operation and continues simultaneously with the development of the scheme of maneuver. For more information on fire support planning, see FM 3-09.

3-4. Planning for the integration of fires flows from higher echelons to lower echelons. When building their plan, higher echelons should attempt to anticipate the needs of their subordinates for fires capabilities and request and allocate those capabilities on behalf of the subordinate HQ as much as possible. This allows the subordinate commander and staff to plan with known assets instead of building a plan with requested assets that may need to be altered significantly if those requests aren't approved. Commanders should also generally avoid assigning fires tasks to fires assets that are organic, assigned, or in direct support to subordinate units to allow the subordinate commander maximum flexibility in their own planning.

3-5. When integrating fires into their plan, each echelon must consider both the needs of their own commander, as well as their role in executing the plan of the echelons above them. Lower echelons will generally have more tactical information available to them and are therefore responsible for refining and executing their portion of the plan of the higher echelon to ensure that the intent of the higher commander is met. An example of this type of refinement is refinement of the location of a target from a general location to a specific location based on the subordinate commander's understanding of the terrain and use of obstacles. To integrate fires with the other elements of combat power, planners must build an environment that is permissive for the use of fires capabilities. In the physical domains, this is accomplished primarily through the use of control measures to delineate responsibilities. A *control measure* is a means of regulating forces

or warfighting functions (ADP 6-0). This delineation of responsibilities begins with the assignment of an AO. An *area of operations* is an operational area defined by a commander for land and maritime forces that should be large enough to accomplish their missions and protect their forces (JP 3-0). Unit responsibilities within their assigned AO include:

- Terrain management.
- Information collection.
- Civil military operations.
- Movement control.
- Clearance of fires.
- Security.
- Personnel recovery.
- Airspace control
- Minimum essential stability tasks.

3-6. Commanders responsible for an AO will typically be the primary creator of effects within that AO. Therefore, commanders must take care not to assign subordinate commanders an AO that is larger than their *area of influence*, which is a geographical area wherein a commander is directly capable of influencing operations by maneuver or fire support systems normally under the commander's command or control (JP 3-0). An AO that is too large may create a gap within the AO that an enemy can operate from relatively free from the effects of friendly forces while limiting the ability of the higher HQ to create effects in that same terrain.

3-7. Once a commander has been assigned an AO, they use additional control measures to create an environment that enable the use of fires capabilities. These control measures may be permissive or restrictive in nature. They will primarily consist of maneuver control measures, FSCMs, ACMs, and air defense measures (ADMs). For more on the use of FSCMs, see FM 3-09.

3-8. Effects created in the cyber domain, including the electromagnetic spectrum, as well as the space domain and information environment also require careful planning and management to avoid duplication of effort and the creation of unintended effects. The use of fires in these domains can easily create effects outside of a commander's AO. Therefore, they are typically constrained by using authorities. The authority to create effects in these domains will normally be held at a higher level, including the theater or national strategic level for some effects. Commanders must balance the authorities needed to create effects in these domains by subordinate commanders with the potential risks associated with creating unintentional effects.

Airspace Planning and Integration

3-9. Airspace planning occurs throughout the operations process (planning, preparing, executing and assessing of operations) by consolidating the requirements of airspace users. Airspace control is a continuous activity of the operations process and an integral part of risk management. All warfighting functions and liaisons represented in a commander's staff are integral to the integration of airspace use and users. Units' fires cell and airspace element coordination is vital to effective air-ground integration. See FM 3-52 (Airspace Control) for additional information.

3-10. The UAP is the integrated set of ACMs to support Army operations submitted to the airspace control authority for integration into a future ACO. The UAP is developed throughout the operations process by consolidating ACM contributions from participating warfighting functions. See ATP 3-52.1 for more on UAP development.

3-11. All commanders inherently have airspace management responsibilities to control their assigned airspace users and to coordinate the use of airspace. Commanders assigned an AO are responsible for performing airspace management of Army and supporting airspace users and to process a UAP to their higher HQ. The Army air-ground systems enables Army commanders and staffs to coordinate and integrate the actions of Army airspace users over the AO regardless of whether they have been assigned airspace control responsibility for a volume of airspace. (See FM 3-52)

3-12. A commander who meets specific criteria may exercise airspace control when delegated an assigned volume of airspace by the airspace control authority. One common criteria requires the implementation of a joint air-ground integration center (JAGIC) supported with an Air Force air support operations center. Airspace planning with the airspace element is essential to responsive fires. The JAGIC is the execution node for fires and airspace control. See ATP 3-91.1 (The Joint Air-Ground Integration Center) for more information about JAGIC.

3-13. Close coordination is required to integrate airspace use with the employment of fires. Fire support agencies normally establish FSCMs. Integration and deconfliction of airspace and joint fires normally occurs during mission planning where FSCMs, ACMs, and other appropriate coordination measures are disseminated through command, airspace control, air and missile defense, and fire support channels. Real-time coordination, integration, and deconfliction of airspace and joint fires with airspace control elements and C2 nodes are essential in developing situations. For more information on fire support coordination and FSCMs, see FM 3-09.

Integrating Multinational Fires

3-14. The U.S. conducts multinational operations as part of an alliance or coalition. U.S. commanders must integrate multinational fires capabilities in concert with all other elements of combat power from all contributing allies and partners. *Multinational operations* is a collective term to describe military actions conducted by forces of two or more nations, usually undertaken within the structure of a coalition or alliance (JP 3-16).

3-15. A coalition is an arrangement between two or more nations for common action. Nations usually form coalitions for specific, limited purposes. A coalition action is an action outside the bounds of established alliances, usually in a narrow area of common interest. Army forces may participate in coalition actions under the authority of a United Nations' resolution. An *alliance* is the relationship that results from a formal agreement between two or more nations for broad, long-term objectives that further the common interests of the members (JP 3-0). Military alliances, such as the North Atlantic Treaty Organization, allow partners to establish formal, standard agreements.

3-16. Each ally or coalition partner can bring unique fires capabilities to any operation, and these capabilities come with important considerations, employment options, caveats, and challenges. Understanding multinational capabilities and all associated considerations allows commanders to employ multinational fires assets in concert with U.S. fires assets to create effects and achieve objectives.

3-17. *Interoperability* is the ability to act together coherently, effectively, and efficiently to achieve tactical, operational, and strategic objectives (JP 3-0). Multinational interoperability for fires must incorporate human, procedural, and technical means to create effects from within a multinational force.

3-18. Human interoperability addresses the fundamental interaction of people from multiple nations to achieve common objectives. Multinational organizations must develop a program to exchange liaison officers and rely on human interaction in addition to any digital liaison. Important human interoperability considerations include:

- Liaison and exchange officers at appropriate echelon.
- Integration of embedded officers into appropriate organizations such as the JAGIC (see ATP 3-91.1 for additional information on the JAGIC).
- Language skills among partners and allies and the use of interpreters.
- Authorities vested in exchanged personnel.

3-19. Procedural interoperability is the relevant coordination and synchronization of multinational assets to create the desired effects according to established and agreed upon protocol. Planners must understand when procedure differs between nations and within multinational organizations, and adhere to the correct protocol in employing multinational assets. Some procedural interoperability considerations include:

- Common understanding of accepted procedures (U.S., North Atlantic Treaty Organization, American, British, Canadian, Australian, and New Zealand Armies Program, or other agreements).
- Common understanding of the ROE.

- Common coordination measures to include maneuver control measures, FSCMs, and ACMs.
- Common risk management, collateral damage estimation, and battle damage assessment methodology.
- Centralized or decentralized command and control.
- Use of and entry into the joint targeting cycle.
- National approval processes and the role of host nation authorities.
- Integration of multinational capabilities into planning and execution.
- Counterfire procedures.
- Force protection (including countering UAS).
- Joint terminal attack controller and joint fires observer authorities for multinational CAS.

3-20. Technical interoperability includes the interface of systems used to link platforms to acquire targets and create effects while providing command and control across the multinational enterprise. Technical interoperability is usually the most difficult to achieve due to the varied approaches among nations to technical challenges, and the necessarily restrictive information sharing policies between allies and partners. Some important technical interoperability considerations are:

- Levels of interoperability among nations (deconflicted, compatible, or integrated).
- Common operating picture across the multinational force.
- Multinational sensor-to-shooter links (integrated fires network).
- Collaborative target development.
- Integrated sensor management.
- Integrated terrain and airspace management.
- Integrated AMD capabilities.
- Ammunition interoperability.

3-21. All of the considerations for multinational interoperability listed above require extensive discussion, agreement, and exercise to function and improve across any multinational force. Frequent multinational and bilateral exercises will produce lessons learned for all allied and partner nations to implement better understanding, and sustain and enhance multinational cooperation and interaction to develop and practice a common approach to creating effects for a multinational force. For more on multinational operations, see JP 3-16 and FM 3-16.

FIRES PREPARATION

3-22. *Preparation* consists of those activities performed by units and Soldiers to improve their ability to execute an operation (ADP 5-0). Preparation begins during planning with activities that are required to set conditions for the execution of operations such as information collection, movement of forces, terrain management, and sustainment preparation. These activities will continue after completion of the operation order brief to subordinate units with a confirmation brief, which is used to ensure subordinates the commander's intent, the mission, and the concept of operations. Preparation activities also include rehearsals, which allow confirmation of a shared understanding as well as synchronization of operations prior to execution. The four types of rehearsals are the backbrief, the combined arms rehearsal, the support rehearsal, and the battle drill or standard operating procedures rehearsal.

3-23. Backbriefs occur after subordinates have made their own plans and allow the commander to ensure subordinates understand intent, mission, and the concept of operations. Commanders may use backbriefs to ensure that units that will employ fires to create effects understand the timing and requirements. They can also use backbriefs to begin synchronization of the effects created by subordinate units with each other and the plan.

3-24. Support rehearsals typically focus on one warfighting function or capability. Personnel that will employ fires to create effects should attend the other support rehearsals to ensure the fires warfighting function is properly synchronized with the other warfighting function. The fires rehearsal should be used to synchronize all elements that will be used to execute the fires portion of the plan, including all sensors, delivery assets, and command and control assets. Support rehearsals can be executed prior to the combined

arms rehearsal to allow for detailed synchronization of the warfighting function prior to combining them. They can also be conducted after the combined arms rehearsal to work out final details of any issues identified during the combined arms rehearsal.

3-25. The combined arms rehearsal brings together all subordinate units to rehearse the plan with the commander and staff. The effects of fires must be fully synchronized with the other warfighting functions during the combined arms rehearsal. In particular, this is the best time to ensure fires is synchronized with maneuver. The combined arms rehearsal must include timings and triggers for the creation of effects. The commander should also take advantage of the combined arms rehearsal to rehearse branches to the plan if some effects aren't created as planned.

3-26. During battle drill or standard operating procedures rehearsals, commanders and staffs should rehearse battle drills they are likely to use. Within the fires warfighting function, this should include the processing of missions to create effects from the sensor to the delivery system. These should include technical rehearsals that test the ability of the unit to use their primary, alternate, contingency, and emergency means of communication to command and control assets within the fires warfighting function.

FIRES ASSESSMENT

3-27. *Assessment* is the determination of the progress toward accomplishing a task, creating an effects, or achieving an objective (JP 3-0). Assessment takes place throughout the operations process, allowing the commander and staff to analyze collected information to make decisions that allow the unit to create required effects and achieve objectives. Assessment consists of three activities: monitoring, evaluating, and recommending or directing action for improvement. *Monitoring* is continuous observation of those conditions relevant to the current operation (ADP 5-0). It begins during planning as the staff gathers available information to conduct analysis. *Evaluating* is using criteria to judge progress toward desired conditions and determining why the current degree of progress exists (ADP 5-0).

3-28. Assessment requires determination of the required measures of performance (MOPs) and measures of effectiveness (MOEs) for the desired effects. A *measure of performance* is a criterion used to assess friendly actions that is tied to measuring task accomplishment (JP 3-0). An example of a MOP may be a question like "Was this target engaged with in accordance with pre-determined target selection standards and the attack guidance matrix?" A *measure of effectiveness* is a criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effects (JP 3-0). An example of a MOE may be a question like "Did degradation of enemy air defense command and control systems allow the air component freedom of maneuver during the required time period?" Collection requirements for MOPs and MOEs must be built into the unit's information collection plan.

3-29. Monitoring contributes to target development, gathering information about designated targets to allow for engagement of those targets. This will include describing the target as well as how the target is linked to other targets and capabilities within the OE. The commander and staff will use this information to determine where and when to strike the target and with what delivery system in order to create the required effect.

3-30. During and after engagement of a target, assessment continues with the confirmation of effects created against the target and an initial BDA. The three components of BDA are the physical damage assessment, the functional damage assessment, and the target system assessment. The physical damage assessment is the quantitative extent of physical damage to the target. The functional damage assessment weights the ability of the target to perform its mission against the mission objective established against the target. Target system assessment is a broad assessment of the effectiveness of all types of engagement against a target system. The initial BDA will focus on physical damage assessment while the remaining BDA are developed later. BDA should drive several decisions by the commander, including the need to reattack the target, adjustments to attack guidance to improve effectiveness in the future, and the need to shift to a branch plan if the required effect could not be created.

TARGETING

3-31. Commanders and staffs integrate the warfighting functions and synchronize the force to adapt to changing circumstances throughout the operations process. They use several integrating processes to do this.

An integrating process consists of a series of steps that incorporate multiple disciplines to achieve a specific end. For example, during planning, the MDMP integrates the commander and staff in a series of steps to produce a plan or order. Key integrating processes that occur throughout the operations process include:

- Intelligence preparation of the battlefield.
- Information collection.
- Targeting.
- Risk management.
- Knowledge management.

3-32. These processes drive decisions, resource allocation, and critical staff actions throughout the operations process. For further discussion on the other integrating processes, see ADP 5-0.

3-33. *Targeting* is the process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities (JP 3-0). Targeting helps integrate and synchronize fires with other Army and joint functions (C2, intelligence, movement and maneuver, protection, sustainment, and information). Targeting encompasses many processes, all linked and logically guided by the joint targeting cycle. Units may use the Army targeting process or the joint targeting cycle as appropriate according to organizational echelon to integrate and synchronize fires into operations, creating the desired effects in time and space. Using targeting, fires cells recommend targeting guidance to the commander, develop targets, select targets for attack, and coordinate, integrate, and assign allocated joint, interagency, and multi-national fires to specific targets and target systems (see ATP 3-60 and JP 3-60 for more information on the Army targeting process and the joint targeting cycle).

3-34. The decide, detect, deliver, and assess (D3A) methodology is a process which allows tactical level commanders to engage targets within their OE. When a target presents which the tactical level commander is unable to engage either due to range or capability, the target is nominated to a higher HQ for potential prosecution their assets.

3-35. A goal of targeting is to leverage a systematic method to remove key capabilities from the enemy to set favorable conditions. In addition to the removal of key systems or equipment, targeting in the deep area is the most effective means to influence enemy capabilities and set favorable force ratios enabling subordinate formations to realize mission success. Targeting is a synchronizing function to support the management of operational tempo and reach.

3-36. Targeting in support of deep operations enables the commander and staff to take initiative when selecting high-payoff targets in support of operations against the enemy's uncommitted forces or key systems. Through targeting, the commander prioritizes resources, solves emerging problem sets, synchronizes the staff and subordinate unit operations, and manages the overall tempo of operations. Detailed planning and integration across all warfighting functions allows the application of joint fire support and effects in the deep area, which facilitates surprise, concentration, and audacity. 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.

3-37. Since many joint capabilities are not organic to Army forces, commanders and staffs plan, coordinate, and integrate joint and unified action partner capabilities in a multi-domain approach to operations. Integration and synchronization between the Army targeting process of D3A and joint targeting cycle are critical in securing joint and unified partner capabilities for Army commanders whose organizations operate at the tactical, operational, and strategic levels of warfare.

3-38. The LCC may request Joint fires from the JFC through the joint targeting cycle. In certain situations, the JFC may task the LCC to provide surface to surface fires in support of a JFC target.

3-39. At the LCC level, outputs from the Joint targeting cycle are translated into actions conducted by tactical units. LCCs also contribute to the joint targeting cycle by nominating their own targets specific to their own environment and mission within the JFC's intent. Such targets could be outside their own AO.

3-40. The paragraphs below will outline the Army targeting process, the joint targeting cycle, how the Army targeting process integrates into the joint targeting cycle, and how targeting influences planning for all warfighting functions.

ARMY TARGETING PROCESS

3-41. The Army targeting process organizes the efforts of the commander and staff to accomplish key targeting requirements. This methodology is referred to as the D3A. D3A assists the commander and staff decide which targets must be acquired and engaged and to help develop options to engage those targets. Options may include lethal or nonlethal, organic or supporting assets at all levels, including maneuver, electronic attack, psychological operations, attack aircraft, surface-to-surface fires, air to surface fires, other information-related capabilities, or a combination of these options.

3-42. The D3A methodology is an integral part of the MDMP. As the MDMP is conducted, targeting becomes more focused based on the commander's guidance and intent. Certain targets may require special considerations or caution, because engaging them improperly could create unintended effects. Examples include targets that should be handled with sensitivity due to potential political and or diplomatic repercussions and targets located in areas with a high risks of collateral damage, to include weapons of mass destruction facilities. These measures are incorporated in the coordinating instructions and appropriate annexes of the operation plan or operation order.

Decide

3-43. Decide is the first function in targeting and occurs during the planning portion of the operations process. It is the most important function, requiring close interaction between the commander, intelligence, plans, operations, the fires cell, and staff judge advocate. It begins during the mission analysis portion of the MDMP and continues throughout the operation. The staff develops (decide) information to address:

- What are the commander's objectives?
- What targeting effects are required to accomplish the commander's mission objectives?
- What are our high payoff targets?
- What high payoff targets should be acquired and engaged to support the commander’s mission objectives?
- When and where are the targets likely to be found?
- How do the ROE impact target selection?
- How long will the target remain once acquired?
- Who or what can locate and track the targets?
- What accuracy of target location will be required to attack or engage the target?
- What are the priorities for reconnaissance, surveillance, target acquisition, sensor allocation, and employment?
- What are the priority intelligence requirements that support engagement of the high payoff targets?
- When, where, how, and in what priority should the targets be engaged?
- What are the measures of performance and measures of effectiveness that determine whether the high payoff target has been successfully engaged and whether the commander's desired effects have been generated by doing so?
- Who or what can engage targets, how should the engagement be conducted (for example, number or type of engagement assets) to generate desired effects, and what are the required assets or resources based on commander's guidance?
- What or who will obtain assessment or other information required for determining the success or failure of the engagement? Who must receive and process that information, how rapidly, and in what format?
- Who has the decision-making authority to determine success or failure, and how rapidly must the decision be made and disseminated?
- What actions will be required if an engagement is unsuccessful and who has the authority to direct those actions?
- What civil considerations analysis and evaluation requirements are essential to the targeting effort, and how and by when the civil information is collected, processed, produced and disseminated?

Detect

3-44. Detect is the second function in targeting and occurs initially during the prepare portion of the operations process, continuing throughout the operation. A key resource for fires planning and targeting is the intelligence generated through information collection to answer the targeting information requirements. Commanders express requirements for target detection and action as priority intelligence and information requirements. During large-scale combat operations, it might be challenging to prioritize the detection of targets and could require the opening of windows of opportunity for specific collection capabilities in support of fires. High-payoff targets must be integrated and support associated priority intelligence requirements. Their priority depends on the importance of the target to the friendly course of action and target acquisition requirements. Targets are prioritized through a quantitative and qualitative valuation methodology. An example of a valuation methodology is the target value analysis process that prioritizes targets based on the target's criticality, accessibility, recuperability, vulnerability, effect, and recognizability. Targeting working groups incorporate priority intelligence and information requirements that support acquisition of high-payoff targets into the overall information collection plan along with named areas of interest, target areas of interest, and engagement areas.

3-45. The detect function continues during the execution of the operations process. Target acquisition assets acquire on-call targets and report their locations back to their controlling HQ for target validation. Validated targets are then engaged by the appropriate agency as determined by the attack guidance matrix. Some collection assets provide actual targets, while other assets must have their information processed to produce valid targets. The target priorities developed in the decide step are used to expedite the processing of targets. Target tracking is imperative because situations arise where the attack, upon location and identification of a target, is either impossible (for example, out of range) or undesirable (outside of but moving toward an advantageous location for the attack). Track critical targets that cannot be attacked or that they choose not to attack in accordance with the attack guidance to ensure they are not lost. Tracking suspected targets expedites execution of the attack guidance and keeps them in view while under validation. Planners and executers must keep in mind that assets used for target tracking may be unavailable for target acquisition. As targets are validated, task appropriate weapon systems in accordance with the attack guidance and location requirements of the system.

Deliver

3-46. Deliver is the third function in targeting and occurs primarily during the execution portion of the operations process. The main objective is to engage targets in accordance with the commander's guidance or engagement authority's direction. The selection of a weapon system or a combination of weapons systems leads to the tactical decision of time of engagement and then the technical solution for the selected weapon.

3-47. Targeting products approved during the decide function of the targeting process simplify and expedite fires delivery decisions during the deliver function. The Target Synchronization Matrix aligns targets with their planned detection assets, planned delivery platform, and method of assessment. The high-payoff target list offers a prioritized list of targets by category. The attack guidance matrix aligns target types with delivery platforms to expedite the engagement of targets of opportunity. Lastly, the Target Selection Standards offers criteria for target engagement, such as, target size, disposition, and target decay times.

Assess

3-48. Assess is the fourth function of targeting and occurs throughout the operations process. The commander and staff assess the results of mission execution. The assessment process is continuous and directly tied to the commander's decisions throughout planning, preparation, and execution of operations. Staffs help the commander by monitoring the numerous aspects that can influence the outcome of operations and provide the commander timely information needed for decisions. The following are key considerations in assessment:

- Assess the results of mission execution. Targeting must continue to focus on the target(s) involved if assessment reveals that the commander's guidance has not been met. This feedback may result in changes to original decisions made during the target selection.

- Conduct combat assessment. Combat assessment is composed of three elements, battle damage assessment, munitions effectiveness assessment, and reattack recommendation. See ATP 3-60 for more on combat assessment.
- Assess at each Level. As a rule, the level at which a specific operation, task, or action is directed should be the level at which such activity is assessed. Even in operations that do not include combat, assessment of progress is just as important and can be more complex than traditional combat assessment.

3-49. The outcome of the assess function must offer the commander the residual enemy capability relating to relative risk to mission and risk to forces. This information directly informs the commander during the decide function of the next iteration of the targeting process.

JOINT TARGETING

3-50. Joint targeting is dependent in part on joint planning through publication of the campaign or contingency plan, operation order, or fragmentary order. Plans and orders provide the context for targeting. Geographic combatant commands maintain a database for targets within their areas of responsibility that relate to their campaign plans and contingency plans. Detailed foundational intelligence products to include dynamic threat assessments, joint intelligence preparation of the operational environment, and country assessments facilitate detailed targeting, beginning with target systems analysis. Many products used to support a contingency or military operation are developed, maintained, and continuously updated as foundational information for specific targets. A combatant command can normally provide a subordinate JFC with a list of targets, and perhaps target folders, applicable to a plan for a joint operations area within their area of responsibility.

3-51. The joint targeting cycle is a six-phase iterative process:

- Phase 1—Commander's objectives, Targeting guidance, and intent. The JFC develops and issues targeting guidance. This guidance includes targeting priorities, time-sensitive targets criteria and procedures, component critical targets, target acquisition and identification criteria, authorized.
- Phase 2—Target development and prioritization. Target development is the systematic examination of potential target systems and their components, individual targets, and even elements of targets to determine the necessary type and duration of the action that must be exerted on each target to create an effect that is consistent with the commander's specific objectives.
- Phase 3—Capabilities analysis. This phase of the joint targeting cycle involves evaluating all available capabilities against targets' critical target elements to determine the appropriate options available to the component commander for target engagement and developing the best possible solution under given circumstances.
- Phase 4—Commander's decision and force assignment. The force assignment process at the component level integrates previous phases of joint targeting and fuses capabilities analysis with available forces, sensors, and weapons systems.
- Phase 5—Mission planning and force execution. Upon receipt of component tasking orders, detailed unit-level planning must be performed for the execution of operations. The joint targeting process supports this planning by providing component planners with direct access to detailed information on the targets, supported by the nominating component's analytical reasoning that linked the target with the desired effect (phase 2).
- Phase 6—Combat assessment. The combat assessment phase is a continuous process that assesses the effectiveness of the activities that occurred during the first five phases of the joint targeting cycle.

INTEGRATING ARMY TARGETING WITH JOINT TARGETING

3-52. LCCs contribute to the joint targeting cycle by assisting the JFC in formulating guidance, integrating land component fires with other joint fires to support JFC operations, conducting target development, synchronizing and coordinating the use of collection assets, engaging targets, and providing feedback as part of the assessment process. These functions remain constant regardless of how the joint force is organized

(functional or Service components). Coordination and communication between the components, theater analyst, and multinational partners is critical executing fire plans and engaging targets of opportunity.

3-53. The LCC HQ is responsible for integrating the D3A targeting processes into the joint targeting cycle. Additional target development steps are required when nominating a target into the joint targeting cycle.

3-54. The LCC HQ consolidates subordinate tactical level targeting nominations (developed through D3A) for inclusion into the joint targeting cycle while bridging the target development gaps required for phases II and III of the joint targeting cycle (see JP 3-60 and also see figure 3-1 for more information). A critical intelligence gap between D3A and joint targeting cycle is the capability to conduct intermediate, and advanced target development on tactical target nominations in accordance with CJCSI 3370.01C. Target nominations must meet the JFC's target validation criteria through the joint targeting decision board. The joint integrated prioritize target list is used by all components to task assets available to best create the desired effects against targets.

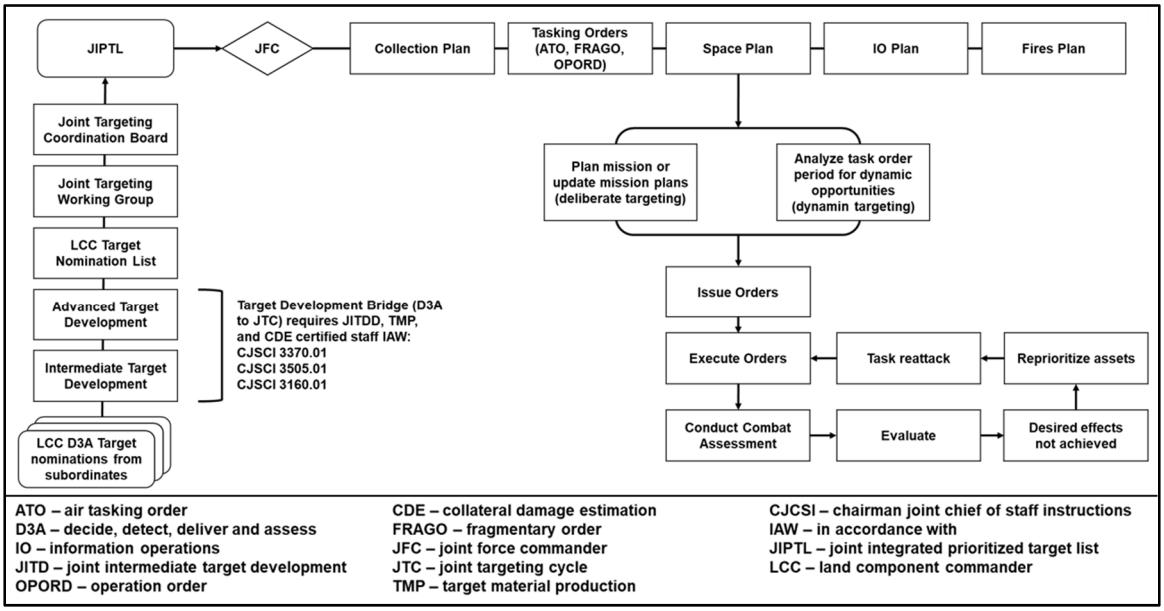


Figure 3-1. Example LCC D3A Target nominated to joint targeting cycle

3-55. In order to meet the requirement for intermediate target development within phase II of the joint targeting cycle the LCC staff must certify intelligence staff in joint intermediate target development (JITD) guidance as defined by the current updated Chairman of the Joint Chiefs of Staff Instruction on target development.

3-56. In order to meet the requirement for advanced target development within phase III of the joint targeting cycle the LCC staff must certify intelligence staff and establish accredited target material production work centers according to guidance defined by the current updated CJCSIs on target development and collateral damage methodology.

3-57. Local standard operating procedures generally guide target development done at tactical echelons within the Army. That is, target products (such as folders, targeting materials, and graphics) often vary from one command to the next. Conversely, joint policy, instructions, and doctrine govern joint target development. Joint target development is rigid, rigorous, and standardized to ensure target materials created by one analyst or component is understood, recognizable, retrievable, and re-creatable by members of the JIM team.

3-58. Target development in a joint environment generally requires the following things:

- Component analysts trained and certified in joint intermediate target development, target material production, collateral damage estimation, weaponeering, and battle damage assessment.

- Component analysts require training and require access to intelligence and targeting databases and repositories (many found only on Top Secret architecture). This includes training on the creation and maintenance of electronic target folders which are databased in the Modernized Integrated Database (referred to as the MIDB). The two interfaces for the Modernized Integrated Database are the National production Workshop and the Joint Targeting Toolbox.
- Training on all three steps in target development:
  - Target system analysis.
  - Entity level target development.
  - Target list management

3-59. Analysts trained on these functions possess valuable and perishable skill sets. Often, certification currency requires laborious sustainment training requirements. Commanders should strongly consider whether "dual-hatting" these analysts or tasking them outside of their target development role is advantageous to the command.

3-60. For more on Joint Target Development, reference CJCSI 3370.01 *Target Development Standards* and JP 3-60 *Joint Targeting*.

AIR AND MISSILE DEFENSE PLANNING AND INTEGRATION

3-61. Surface-to-air planning and integration considers the activities and capabilities of Army, joint, and multinational AMD elements. AMD operations are often joint efforts to which all Services contribute and which are integrated at the theater level to accomplish the JFC's counterair related missions.

PLANNING

3-62. AMD planning begins at the theater level and addresses the various aspects of AMD capabilities and airspace requirements. ADA staff personnel from the Army air and missile defense command participate in the development of war plans to shape specific regions well in advance of conflict; they ensure the surface-based counterair capabilities are integrated with the other domains and performed continuously throughout an operation.

3-63. AMD planning considerations are based on capabilities of projected air and missile threats, sensor coverage by various AMD air and ground assets, sharing of air picture information, and networking requirements to support and coordinate the engagement of targets. These considerations are addressed throughout all phases of a joint operation as operations expand or tactical circumstances change. The intelligence preparation of the battlefield process assists the planners in visualizing the OE, assessing adversary air and missile capabilities (how good are they, how many are there by type that may be used against friendly assets, and how do they operate), and identifying the adversary's probable intent and attack locations. This information will drive expected AMD design requirements and provide inputs to support attack operations by surface-to-surface and air-to-surface elements.

3-64. The JFC provides the guidance and prioritization of key assets to be defended. Two prioritized lists of assets are developed and approved from the commander's guidance. A *critical asset list* is a prioritized list of assets or areas, normally identified by phase of the operation and approved by the joint force commander that should be defended against air and missile threats (JP 3-01). A *defended asset list* is a listing of those assets from the critical asset list prioritized by the joint force commander to be defended with the resources available. (JP 3-01). These are theater-level lists. Similar type lists, such as the protected asset list, are developed at each subordinate echelon within Army, joint, and multinational forces.

3-65. Based on this planning, the Army air and missile defense command task organizes the subordinate ADA formations and assigns missions to them. The Army air and missile defense command staff coordinates planning to ensure the overall Army AMD effort within the AO is integrated and synchronized.

3-66. ADA planners review the initial DAL to ensure that sufficient resources are available and allocated to provide adequate protection. ADA planners review and revise the list continuously throughout an operation, in accordance with changes in missions, threat capabilities, available ADA forces, and related factors. For instance, when a mission changes, subordinate commanders and their staffs may nominate additional assets

for inclusion into a re-prioritized list. The updated DAL then becomes the basis for revised AMD planning and defense design.

3-67. While the above focuses on planning at the theater level, AMD planning is being performed concurrently at all subordinate echelons of command. Resident ADA personnel, in conjunction with the protection and/or fires cell personnel, consider the echelon's assets that that commander deems critical and begin to plan protection requirements. Allocated or organic ADA forces are assigned missions in defense of these assets. Adjustments are made to the assignment of forces to an asset or the assets to be defended based on ADA force availability. Additional ADA assets may be requested as required. If active AMD capabilities (shooters) are unavailable, planners consider the use of passive defense measures in lieu thereof. Continuous coordination is conducted by all entities to ensure the protection of critical assets and forces from air and missile attack and surveillance.

3-68. Integrating surface-to-air capabilities requires extensive preparation and collaboration throughout planning development within the ADA force and with other fires elements. Integration is also a key enabler for managing and sustaining resources. Deconfliction between airspace users, for example, is required to maximize fires potential within an AO. FA, aviation, and ADA personnel must account for airspace control and fire coordination measures in their planning and complementary actions in their operations.

PREPARING

3-69. The ADA commanders assigned to defend designated critical assets at the various Army echelons translate the defense plan into defense designs. They plan integrated defense designs to maximize coverage against projected aerial threats and to execute AMD engagements. Defense considerations include early warning of aerial threats, to trigger passive defense measures by affected units; situational awareness of the airspace in the areas of operations, with respect to both friendly and enemy usage; and active defense (engagements) against surveilling or attacking aerial platforms. Coordination is effected with the supported commander of the fixed/semi-fixed asset or maneuver formation to ensure reciprocal understanding of the availability and use of supporting capabilities and the supported commander's intent and plans. Collaboration between commanders is also effected in positioning ADA assets in the design of defenses. Responsibilities for "who does what" are inherent in the command or support relationship between the ADA units and the defended assets.

3-70. ADA sensor and weapon placements are selected to maximize surveillance, tracking, and engagements. In designing a defense, sensors are positioned to provide surveillance and tracking sufficient to protect assigned assets and prevent gaps in the coverage. Sensors are emplaced on terrain that provides the best longest range line-of-sight in all directions. Shooters are then positioned to optimize the defense of the defended assets, enabling lethal coverage over the assigned assets and extending firepower through as much of the defense coverage area as possible. The AMD employment tenets and latest intelligence reports further inform the defense design. Higher altitude, longer range AMD forces may use a weighted defense to counter ballistic missile threats from known locations or areas, or a balanced defense when there is a potential for multiple types of threats coming from various approaches. Because of the nature of their target set, the SHORAD forces may be able to rely more heavily on the tendency of low flying threats to be canalized by terrain due to their flight level and maneuverability. This may allow the SHORAD forces to predict the air avenues of approach for enemy air threats and position forward of the defended asset, weight coverage, and achieve early engagement before the threat is able to reach its ordnance release line. A major consideration in all designs is the establishment of "keep out" areas around the defended assets, where ADA systems are capable of engaging threat aerial platforms or munitions before the threats can launch or create effects on the asset.

3-71. Active AMD by dedicated ADA units can be augmented by non-dedicated AMD capabilities in maneuver formations. These capabilities, commonly referred to as combined arms for air defense, include organic crew-served weapons and Stinger missiles in some units, to provide an additional layer of AMD, generally for self-defense.

3-72. A well-executed defense design provides the highest levels of enemy deterrence and asset protection. The longer range and higher altitude ADA systems focus on the defense of the JFC's priority assets against potential ballistic and cruise missile attacks. These systems may also be assigned to protect the higher

maneuver echelons (corps and division), though maneuver formations are generally defended by SHORAD systems. The shorter range systems positioned in division and below formations provide defense against lower altitude, shorter range air threats, to include cruise missiles, since these are the primary and most likely aerial threats to these formations.

3-73. Once units are deployed, they conduct rehearsals of AMD actions (such as crew drills) focused on their AO and defense of their designated assets. These actions, in general, have been ongoing as continuous training events prior to deployment and mission assignment, but now are conducted in coordination with the supported unit or site and other AMD elements in the area for defense of a specific asset. For example, ADA commanders and staffs may participate in maneuver units' staff exercises and ADA crews may concentrate their training on the expected aerial threats and firing doctrine to be employed in given situations in coordination with other supported or supporting AMD forces. Rehearsing actions is a continuous process that is conducted throughout the deployment.

EXECUTING

3-74. AMD command and control actions are executed by Army and joint commanders. Command of ADA units is exercised by Army commanders. Control of AMD fires is exercised in accordance with the JFC's directives or by delegated authorities.

3-75. JFC directives will stipulate positive and procedural measures of control. Positive control relies on positive identification, tracking, and detection of aerial objects conducted with electronic means and is executed through specific fire control orders, such as "engage" or "hold fire". Procedural control relies upon agreed and published orders and procedures. These include air defense warnings, ROE, published identification criteria, and weapons control status. The directives will also identify levels of control – which commander at which echelon can authorize engagements of what type threats (different levels of control may, for instance, be established for ballistic missiles and manned aircraft) – and modes of control – generally centralized at higher echelons or decentralized to lower echelons, such as ADA firing units, in accordance with the aerial situation.

3-76. The JFC is the designated engagement authority in theater, though engagement authorization is typically delegated to a subordinate commander. The subordinate commander, the area air defense commander, may in turn further delegate the authority to execute engagements; further delegation is based on mission, enemy, terrain and weather, troops and support available, time available, and civil considerations. The kill chain is the successive linkages of commanders who can authorize engagements of air and missile threats. The kill chain begins with a joint authority, such as the area air defense commander, and may include ADA commanders down to battery level. The kill chain is involved in all engagement decisions whether centralized or decentralized.

3-77. Engagements of ballistic missiles, cruise missiles, and fixed-wing aircraft are generally directed by, and under the positive control of, a joint engagement authority in the kill chain. AMD information and engagement directions are transmitted to ADA firing units by ADA fire control officers positioned with that joint authority.

3-78. Engagements of shorter range, lower altitude threats, such as UAS, rotary-wing aircraft, and rockets, artillery, and mortars, are conducted procedurally, using the established ROE. Engagements of these threats are often time sensitive; there is insufficient time for further direction from higher HQ in the kill chain. Thus, engagement authority for UAS and rotary-wing aircraft generally resides with the ADA platoon leader. The base commander or ADA platoon leader authorizes engagements of rockets, artillery, and mortars through the operation center while on a base or other fixed/semi-fixed installation.

ASSESSING

3-79. The assessment process continuously collects and evaluates all available information on friendly and enemy forces to support decisions made by the commander. Assessments are embedded in all planning, preparing, and executing activities to ensure timely and appropriate actions consistent with current or evolving situations. ADA commanders and staffs evaluate plans and operations, modifying them as necessary; new priorities designated for defense or different levels of protection specified for assets, for example, may dictate the movement of ADA resources. Branches and sequels to evolving plans are also

considered for contingencies. Defense designs are adjusted to account for tactics being or anticipated to be employed by the enemy, the availability of ADA forces, and the flow of friendly operations. Control of AMD firing units during periods of high intensity enemy air activities may necessitate the decentralization of engagement authority for all air and missile threats to battery commanders. Assessments of engagement results, a fundamental step in the ADA engagement sequence, confirm the kill of the target or need for reengagement.

Glossary

The glossary lists acronyms and terms with Army or joint definitions. Where Army and joint definitions differ, (Army) precedes the definition. The glossary lists terms for which ADP 3-19 is the proponent with an asterisk (*) before the term. For other terms, it lists the proponent publication in parentheses after the definition.

SECTION I – ACRONYMS AND ABBREVIATIONS

A2	anti-access
AD	area denial
ACM	airspace coordinating measure
ADA	air defense artillery
ADP	Army doctrine publication
ADRP	Army doctrine reference publication
AMD	air and missile defense
AO	area of operations
ASR	air support request
ATACM	Army Tactical Missile System
ATP	Army techniques publication
C2	command and control
CAS	close air support
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
D3A	decide, detect, deliver, and assess
DA	Department of the Army
DAL	defended asset list
EW	electronic warfare
FA	field artillery
FSCM	fire support coordination measure
GPS	global positioning system
HQ	headquarters
JAGIC	joint air ground integration center
JFC	joint force commander
JFLCC	joint force land component commander
LCC	land component commander
MDMP	military decision making process
MLRS	multiple launch rocket system
MOP	measure of performance
MOE	measure of effectiveness
NAVWAR	navigation warfare

OE	operational environment
PNT	positioning, navigation, and timing
ROE	rules of engagement
SHORAD	short-range air defense
UAS	unmanned aircraft system
UAP	unit airspace plan
U.S.	United States
TC	training circular

SECTION II – TERMS

adversary

A party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged. (JP 3-0).

air domain

The atmosphere, beginning at the Earth's surface, extending to the altitude where its effects upon operations become negligible. (JP 3-30)

air interdiction

Air operations conducted to divert, disrupt, delay, or destroy the enemy's military surface capabilities before it 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. (JP 3-03)

area of operations

Is an operational area defined by a commander for land and maritime forces that should be large enough to accomplish their missions and protect their forces. (JP 3-0)

assessment

Determination of the progress toward accomplishing a task, creating a condition, or achieving an objective. (JP 3-0)

***chief of fires**

The senior fires staff officer at echelons above corps who advises the commander on the best use of available fires resources and provides input to the necessary orders

close area

The portion of the commander's area of operations where the majority of subordinate maneuver forces conduct close combat. (ADP 3-0)

consolidate gains

Activities to make enduring any temporary operational success and to set the conditions for a sustainable security environment allowing, allowing for a transition of control to other legitimate authorities. (ADP 3-0)

control measure

Is a means of regulating forces or warfighting functions. (ADP 6-0)

critical asset list

A prioritized list of assets or areas, normally identified by phase of the operation and approved by the joint force commander, that should be defended against air and missile threats. (JP 3-01)

***cross-domain fires**

Fires executed in one domain to create effects in a different domain.

cyberspace

A global domain within the information environment consisting of interdependent networks of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers. (JP 3-12)

deep area

Where the commander sets conditions for future success in close combat. (ADP 3-0)

defended asset list

A listing of those assets from the critical asset list prioritized by the joint force commander to be defended with the resources available. (JP 3-01)

enemy

A party identified as hostile against which the use of force is authorized. (ADP 3-0)

field artillery

Equipment, supplies, ammunition, and personnel involved in the use of cannon, rocket, or surface-to-surface missile launchers. Also called FA. (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. (JP 3-09)

fire support planning

The continuous process of analyzing, allocating, integrating, synchornizing, and scheduling fires to describe how the effects of fires facilitate maneuver force actions. (FM 3-09)

fires warfighting function

The related tasks and systems that create and converge effects in all domains against the adversary or enemy to enable operations across the range of military operations. (ADP 3-0)

information operations

The integrated employment, during military operations, of information-related capabilities in concert with other lines of operation to influence, disrupt, corrupt, or usurp the decision-making of adversaries and potential adversaries while protecting our own. (JP 3-13)

joint fires element

An optional staff element that provides recommendations to the operations directorate to accomplish fires planning and synchronization. (JP 3-60)

land domain

The area of the Earth's surface ending at the high water mark and overlapping with the maritime domain in the landward segment of the littorals. (JP 3-31)

maritime domain

The oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, includeing the littorals. (JP 3-32)

measure of effectiveness

An indicator used to measure a current system state, with change indicated by comparing multiple observations over time. Also called MOE. See also combat assessment; mission. (JP 5-0)

measure of performance

Is a criterion used to assess friendly actions that is tied to measuring task accomplishment. (JP 3-0)

***multi-domain fires**

Fires that converge effects from two or more domains against a target.

navigation warfare

Is deliberate defensive and offensive action to assure and prevent positioning, navigation, and timing information through coordinated employment of space, cyberspace, and electronic warfare operations. (JP 3-14)

negation

In space operations, are measures to deceive, disrupt, degrade, deny, or destroy space systems. (JP 3-14)

offensive space control

Offensive operations conducted for space negation. (JP 3-14)

operational environment

A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. (JP 3-0)

operations process

The major command and control activities performed during operations: planning, preparing, executing, and continuously assessing the operation. (ADP 5-0)

preparation

Consists of those activities performed by units and Soldiers to improve their ability to execute an operation. (ADP 5-0)

space domain

The area above the altitude where atmospheric effects on airborne objects become negligible. (JP 3-14)

targeting

The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. (JP 3-0)

unified land operations

Simultaneous execution of offense, defense, stability, and defense support of civil authorities across multiple domains to shape operational environments, prevent conflict, prevail in large-scale ground combat, and consolidate gains as part of unified action. (ADP 3-0)

warfighting function

A group of tasks and systems united by a common purpose that commanders use to accomplish missions and training objectives (ADP 3-0).

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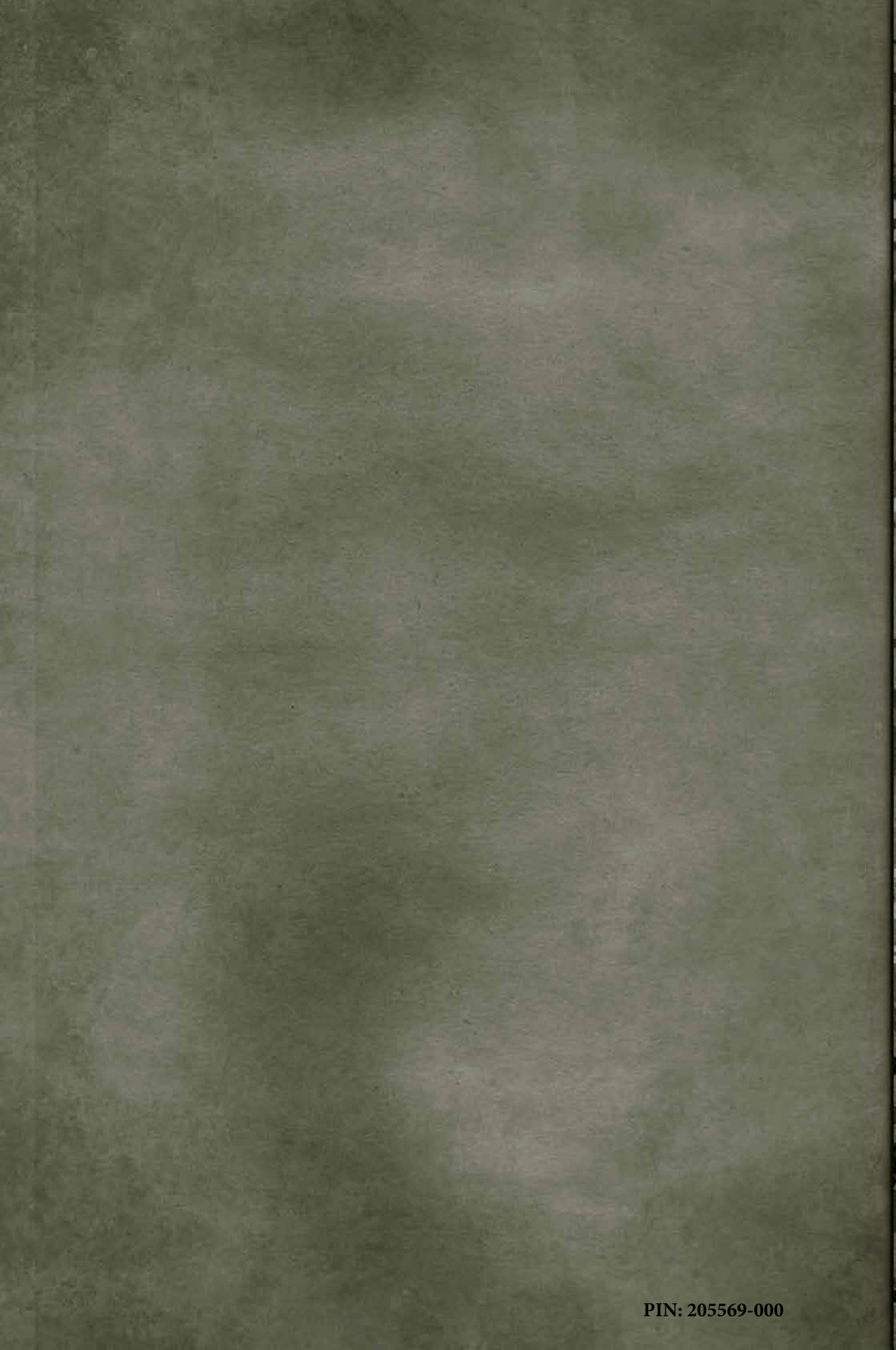
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