

FM 3-04

ARMY AVIATION



APRIL 2020

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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Army Aviation

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Preface

FM 3-04 is the Army's capstone doctrinal publication for conducting aviation operations. Its purpose is to provide the context for employing and integrating Army Aviation into unified land operations. It describes how Army Aviation forces, as part of the combined arms team, shape operational environments (OEs), prevent conflict, conduct large-scale combat operations (LSCO), and consolidate gains against a peer threat. FM 3-04 provides a foundation for subordinate training doctrine, professional military education, leader development, and individual and collective training. Together with ADP 3-0, ADP 3-90, and FM 3-0, this manual provides the foundation for how Army Aviation forces conduct prompt and sustained LSCO.

FM 3-04 is applicable to all members of the Army Profession: leaders, Soldiers, and Army civilians. The principle audience for FM 3-04 is commanders, staffs, and leaders at all echelons of the combined arms team. Army headquarters commanders and staffs serving as joint or multinational task force headquarters 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 also use this publication.

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 according to the Law of War and rules of engagement. (See FM 6-27.)

FM 3-04 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. Terms for which FM 3-04 is the proponent publication (the authority) are italicized in the text and are marked with an asterisk (*) in the glossary. Terms and definitions for which FM 3-04 is the proponent publication are 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.

FM 3-04 applies to the active Army, Army National Guard/Army National Guard of the United States, and United States Army Reserve unless otherwise stated.

The proponent of FM 3-04 is the United States Army Aviation Center of Excellence; the preparing agency is the Directorate of Training and Doctrine, United States Army Aviation Center of Excellence. Send comments and recommendations on Department of the Army (DA) Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Commander, United States Army Aviation Center of Excellence, ATTN: ATZQ-TDD, Fort Rucker, Alabama 36362-5263; by e-mail to usarmyrucker.avncoe.mbx.doctrine-branch@mail.mil; or submit an electronic DA Form 2028.

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Introduction

To understand FM 3-04, the reader must understand the doctrinal fundamentals contained in ADP 3-0, ADP 3-90, ADP 5-0, and ADP 6-0. The reader should also be familiar with the tactics described in FM 3-0, FM 3-90-1, FM 3-90-2, FM 3-98, and FM 3-99 to understand how Army Aviation integrates with the combined arms team. This enables them to successfully prosecute operations short of conflict, prevail in LSCO, and consolidate gains to win enduring strategic outcomes after conflict has concluded.

FM 3-04 describes the core competencies, organizations, operations, sustainment, capabilities, tactics, and procedures of Army Aviation forces. This manual updates previous doctrine and describes how Army Aviation forces, as part of the combined arms team, shape OEs, prevent conflict, conduct LSCO, and consolidate gains against peer competitors. This publication focuses on the employment of Army Aviation through air-ground operations in support of unified land operations. Additionally, FM 3-04 encompasses not only large-scale operations, but all aspects of aviation support to unified land operations.

FM 3-04 contains five chapters:

- Chapter 1** introduces Army Aviation's role in unified land operations. It describes the core competencies of Army Aviation and presents unique aspects of aviation operations throughout the multi-domain operational environment.
- Chapter 2** provides an overview of each of the various organizations and unique staff officers in Army Aviation. It also provides references for commanders and staffs on command and support relationships, command post operations, and integration of Army Aviation with joint airspace users.
- Chapter 3** discusses and provides examples of the various missions which may be conducted by Army Aviation units. It adds discussion of aerial-delivered mine operations and considerations for aviation operations in a contested airspace environment.
- Chapter 4** provides an overview of Army Aviation's requirements for and contributions to sustainment operations. It includes expanded discussion of forward arming and refueling points in the LSCO environment.
- Chapter 5** provides basic discussion of the capabilities, requirements, and limitations of each of the aircraft and unique support systems operated by Army Aviation units.

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Chapter 1

Army Aviation's Role in Unified Land Operations

SECTION I – UNIFIED LAND OPERATIONS

1-1. *Unified land operations* are simultaneous offensive, defensive, stability, or Defense Support of Civil Authorities' (DSCA) tasks to seize, retain, and exploit the initiative to shape the OE; prevent conflict; consolidate gains; and win our nation's wars as part of unified action (ADP 3-0). Army Aviation integrates into unified land operations by conducting air-ground operations as the aviation maneuver force of the combined arms team. ***Air-ground operations (AGO) are the simultaneous or synchronized employment of ground forces with aviation maneuver and fires to seize, retain, and exploit the initiative.*** Employing the combined and complimentary effects of air and ground maneuver and fires through AGO presents the enemy with multiple dilemmas: increasing combat power, mission effectiveness, agility, flexibility, and survivability of the entire combined arms team. AGO ensure that all members of the combined arms team, whether on the ground or in the air, work toward common and mutually supporting objectives to meet the higher commander's intent.

1-2. Effective AGO requires the full integration of aviation and ground maneuver as a combined arms team. As a key component of the ground scheme of maneuver, Army Aviation achieves interdependence with ground forces through shared understanding of the operational environment, an integrated or synchronized scheme of maneuver and fires, clearly defined triggers and conditions for employment, shared understanding of the commander's intent, clear command and support relationships, and clearly defined roles and responsibilities that maximize the capabilities of each element of the combined arms team, while offsetting the others' limitations. Although AGO demands integration of aviation tactical tasks into the ground scheme of maneuver, this does not mean that greater planning times are always required. More detailed planning and rehearsals are required when the combined arms team is newly formed. Agility, speed of action, and mission success are significantly enhanced when—

- Effective habitual relationships are established.
- Liaisons are embedded throughout the operations process.
- Procedures are standardized and practiced.
- A common operational picture is maintained.
- Mutual trust is built through effective relationships and shared understanding.

SECTION II – CHALLENGES FOR ARMY AVIATION

1-3. Army Aviation forces must be organized, trained, and equipped to meet worldwide challenges against a full range of threats; however, readiness to conduct LSCO against a peer threat is the greatest challenge to our force today. LSCO against a peer threat is incredibly demanding in terms of operational tempo and lethality. Every domain (air, land, maritime, space, and cyberspace) may be contested by a capable adversary who has likely invested significant resources learning from recent United States operations. State and non-state actors threaten with conventional and unconventional weapons, potentially including chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) weapons capabilities. The enemy also employs anti-access and area denial tactics which restrict freedom of maneuver through the use of advanced radar, infrared, and laser air defense systems. On the ground, support nodes and assembly areas are vulnerable to precession long range fires, threat aviation, and improvised explosive devices (IEDs) alike.

1-4. Army Aviation must be lethal, survivable, and adaptable in order to provide combat power to the ground commander in LSCO. See FM 3-0 for more details.

Current Lethality Challenges: Russian Integrated Defense in Depth

Since Operation Barbarossa in 1941, Soviet and Russian military thinkers have prized area denial tactics. Emerging from World War II, Soviet Deep Battle doctrine required synchronization of precise ground and air fires with maneuver in order to mass on critical targets at a decisive moment. Deep Battle endured throughout the Cold War and continues to influence current Russian doctrine. Russia's current concept applies Deep Battle in a defensive nature to protect a critical asset in three dimensions.

In practice, however, Russia's current approach employs not a single protective layer, but multiple mutually-supporting capabilities which include man-portable-, short-, medium-, and long-range air defense systems; manned and unmanned aircraft; tube and rocket artillery; ballistic and cruise missiles; direct fire systems; and information warfare capabilities. The sum of these systems is an integrated network of combined arms capabilities designed to deter enemy attack or inhibit freedom of action from the tactical to the strategic levels.

At the tactical level, integrated air defenses attempt to deter or defeat low altitude rotary wing (RW) and unmanned systems operations. An integrated fires complex employs artillery systems for counter-fire and fire support, and electronic warfare (EW) assets seek to disrupt enemy communications and operations.

At the operational level, air defense systems employ a blend of short- and medium-range missiles alongside long-range precision fires. Attacks target deep critical assets such as aviation headquarters, tactical assembly areas, and sustainment sites. Russia's intent at the operational level is to prevent brigade-sized elements from effectively concentrating combat power, resupplying, or reorganizing.

At the strategic level, the Russian integrated defense in depth combines lethal and non-lethal capabilities to target major air and seaports, assembly areas, high-level headquarters, regional networks and communications, high-performance aircraft, and surface ships. Cyber and other information warfare elements attempt to disrupt operations or deny access to information anywhere in the theater through targeted or mass attacks. This multi-layered network seeks to deter enemy attack by presenting a prohibitively costly theater of operations; if deterrence fails, it seeks to impede an enemy force from ever organizing to challenge Russian actions.

SECTION III – CORE COMPETENCIES OF ARMY AVIATION

1-5. As a fully-integrated component of the combined arms team, Army Aviation forces are organized, trained, and equipped to defeat a full range of threats. Army Aviation forces provide an asymmetric maneuver advantage through amplified reach, protection, lethality, and situational understanding. Army Aviation's inherent mobility, speed, range, flexibility, lethality, precision, and persistent reconnaissance capabilities provide the combined arms team with multiple options to seize, retain, and exploit the initiative to gain and maintain a position of relative advantage through the following competencies executed individually, simultaneously, or sequentially across multiple domains. Army Aviation is unique in that, in addition to its ability to maneuver in the third dimension, it is able to operate in all six warfighting functions in support of commanders' missions and objectives.

PROVIDE ACCURATE AND TIMELY INFORMATION COLLECTION

1-6. The Army executes intelligence, surveillance, and reconnaissance through the operations and intelligence process and information collection. *Information collection* is an activity that synchronizes and integrates the planning and employment of sensors and assets as well as the processing, exploitation, and dissemination of systems in direct support (DS) of current and future operations (FM 3-55). A successful information collection effort results in the timely collection and reporting of relevant and accurate information, which either supports the production of intelligence or is disseminated as combat information.

1-7. Army Aviation should be utilized in every step of the information collection planning and execution process. Effective planning for aviation capabilities may enable the combined arms team to determine the enemy's intent and answer the commander's critical information requirements by observation or fighting for information as required. This enables the commander to confirm or deny an enemy course of action (COA) and concentrate combat power at the time and place of the maneuver commander's choice to seize or retain the initiative.

1-8. Through the conduct of zone, route, and/or area reconnaissance; movement to contact; or reconnaissance in force (when task-organized), Army Aviation provides the commander with accurate and timely information on enemy force disposition, composition, strengths, and weaknesses. Army Aviation also provides information on population patterns of life, ground routes and mobility corridors, dense urban terrain and infrastructure, and man-made or natural obstacles in order to answer a commander's priority intelligence requirements (PIR). In addition to answering PIR, Army Aviation's speed and flexibility provide a unique ability to answer friendly force information requirements for forces that are geographically dispersed increasing shared understanding.

1-9. Army Aviation attack and reconnaissance units conduct reconnaissance as a maneuver force with manned and unmanned systems maneuvering interdependently. ***Manned unmanned teaming (MUM-T) is the integrated maneuver of Army Aviation RW and unmanned aircraft systems (UAS) to conduct movement to contact, attack, reconnaissance, and security tasks.*** MUM-T enables increased depth and breadth of aviation reconnaissance and maneuver, increased persistence over the reconnaissance objective, increased ability to gain and maintain enemy contact, increased survivability, and more options to develop the situation with enhanced maneuver, fires, and command and control (C2).

1-10. Army Aviation assault units may conduct infiltration and extraction of dismounted reconnaissance elements conducting detailed reconnaissance of designated reconnaissance objectives. They may also emplace remote sensors on key avenues of approach and terrain features; conduct route, area, and limited zone reconnaissance; evacuate captured enemy personnel for intelligence exploitation; or conduct continuous resupply of ground reconnaissance elements to enable continuous maximum reconnaissance forward.

1-11. The commander can task Army Aviation units and assets with the mission to provide multi-intelligence sensor data and information from manned and unmanned systems to the Army intelligence enterprise. Some examples of sensor data include full-motion video, synthetic aperture radar/moving target indications, and signals intelligence. To meet these requirements, Army Aviation units must be augmented with the appropriate communications capabilities in order to connect to the larger intelligence architecture. Signal and military intelligence units coordinate and augment Army Aviation units in order to establish the necessary communication connections and implement reporting procedures. Together, these units position the communication systems and processing, exploitation, and dissemination capabilities at the most effective locations to ensure sensor data and information are effectively analyzed across the Army intelligence enterprise.

PROVIDE REACTION TIME AND MANEUVER SPACE

1-12. Army Aviation security operations provide the combined arms team early and accurate warning of enemy activities, reaction time, and maneuver space to prevent surprise, and the ability to rapidly develop the situation upon gaining enemy contact.

1-13. Army Aviation attack and reconnaissance units perform security tasks as part of the combined arms team. They may operate as a sub-element of a larger combined arms security force conducting screen, guard, cover, or area security tasks. When properly task-organized, they may conduct screen or guard tasks as a separate maneuver force in an assigned area of operations (AO). Employing MUM-T enables the security force to expand the breadth and depth of the screen to maintain continuous surveillance of avenues of approach, locate lead enemy elements, and maintain enemy contact to enable increased early warning, reaction time, and space for the main body to develop the situation while preventing early deployment of friendly forces.

1-14. As the situation develops, Army Aviation attack and reconnaissance units can quickly transition from the screen to conduct attacks to destroy or repel enemy reconnaissance, and/or lead security elements with the necessary agility, long range acquisition and fires without becoming decisively engaged. Army Aviation units also support the consolidation of gains by conducting area security tasks for the supported commander.

DESTROY, DEFEAT, DISRUPT, DIVERT, OR DELAY ENEMY FORCES

1-15. Army Aviation conducts attacks during the execution of offensive, defensive, and stability operations in support of the combined arms team throughout the depth and breadth of the AO. Army Aviation attacks to destroy, defeat, disrupt, divert, or delay the enemy, who may be either in contact or out of contact with friendly ground forces. Regardless of whether the enemy is in contact with friendly ground forces or not, attacks are executed as deliberate or hasty operations.

1-16. Through the integration of MUM-T to support attacks, Army Aviation extends the reach of the combined arms team through increased acquisition ranges, persistent reconnaissance, enhanced positive identification, greater capability to maintain enemy contact, greater lethality, precision targeting of high-value enemy capabilities, extended communications, and real-time battle damage assessment (BDA).

1-17. When enemy forces are in close contact with friendly ground maneuver forces, Army Aviation attack and reconnaissance units attack to destroy, defeat, disrupt, divert, or delay enemy forces to enable the combined arms team to seize, retain, or exploit the initiative. The ground maneuver commander in contact is responsible for the detailed integration and synchronization of Army Aviation in the overall scheme of maneuver, and controls the distribution and synchronization of Army Aviation maneuver and fires. Airspace coordination is required with the appropriate airspace control authority.

1-18. When enemy forces are not in close contact with friendly ground maneuver forces, Army Aviation attack and reconnaissance units maneuver independently from ground maneuver forces to attack to destroy, defeat, disrupt, divert, or delay enemy capabilities before they can be brought to bear effectively against friendly forces. The Army Aviation maneuver commander controls Army Aviation maneuver and fires within an assigned AO, but the attack is still synchronized and/or integrated with the overall higher ground scheme of maneuver. Based on the complexity of the targeted enemy force and OE, Army Aviation attacks against enemy forces out of friendly contact are frequently higher risk operations that require detailed planning by the supported ground maneuver headquarters for the proper allocation, synchronization and integration of joint fires, collection assets, and other enabling capabilities.

1-19. When task-organized with adequate ground maneuver forces and fires, Army Aviation can operate as the tactical combat force (TCF) in the support area to defeat Level I, II, and III threats.

1-20. Army Aviation attacks against enemy forces in or out of contact with friendly ground forces can be the decisive or shaping operation at the tactical or operational level, and may enable the combined arms team to maintain initiative or consolidate gains while presenting multiple dilemmas to the enemy.

AIR ASSAULT GROUND MANEUVER FORCES

1-21. Army Aviation conducts air assaults during offensive, defensive, and stability operations throughout the depth and breadth of the AO. Air assaults are combined arms operations conducted to gain a positional advantage, envelop, or turn enemy forces that may or may not be in a position to oppose the operation. At

the tactical level, air assault operations emphasize seizing terrain, destroying enemy forces, and interdicting enemy withdrawal routes.

1-22. Army Aviation assault and heavy lift units, supported by attack and reconnaissance units, rapidly reposition personnel and equipment to enable the combined arms team to strike over extended distances and terrain to attack the enemy where and when it is most vulnerable. Air assaults extend the tactical and operational reach of the combined arms team by overcoming the effects of terrain, achieving surprise, and isolating, dislocating, or destroying enemy forces by rapidly massing combat power at the maneuver commander's time and place of choice.

1-23. The air assault task force (AATF) is the entire combined arms team conducting the air assault. The AATF commander (normally the ground maneuver brigade or battalion commander whose subordinate echelon constitutes the main combat force [FM 3-99]) commands the combined arms team through all phases of the air assault. When task-organized with ground maneuver forces and fires, an Army Aviation battalion or brigade commander can operate as the AATF commander. The aviation task force commander (or a designated subordinate leader for air assaults below battalion level) serves as the air mission commander and commands the aviation forces through all phases of the air assault and follow-on ground tactical plan. The ground tactical commander is the commander of the largest ground maneuver force inserted during the air assault and assumes command of the ground tactical force in the landing zone (LZ) and upon initiation of the ground tactical plan.

1-24. Army Aviation attack and reconnaissance units utilizing MUM-T conduct reconnaissance, security, and hasty or deliberate attacks against enemy forces in and out of friendly contact under the control of the air mission commander during the assault and may transition to the control of the ground tactical commander upon initiation of the ground tactical plan. When task-organized with ground maneuver forces and fires, Army Aviation battalions, squadrons, or brigades can operate as the AATF.

1-25. Army Aviation provides the combined arms team with the agility, mobility, lethality, and the element of surprise to rapidly mass combat forces and equipment, regardless of terrain, to seize the initiative by attacking enemy forces or seizing objectives to exploit tactical and operational opportunities and enemy forces when most vulnerable.

AIR MOVEMENT OF PERSONNEL, EQUIPMENT, AND SUPPLIES

1-26. Army Aviation assault, general support (GS), heavy lift, and fixed-wing (FW) units conduct air movement of personnel, leaders, critical supplies, equipment, and systems during the conduct of offensive, defensive, stability, and DSCA operations throughout the depth and breadth of the AO.

1-27. Army Aviation RW aircraft conduct air movement using both internal and external (sling) loads. The supported unit provides pickup zone (PZ) and LZ control, load rigging, ground movement, and certification. Army Aviation FW aircraft conduct air movement with internal loads between improved airfields to move limited critical personnel and supplies in the AO or area of interest. The loading and ground movement of critical supplies and personnel for FW operations is typically controlled and executed through the arrival/departure airfield control group.

1-28. Air movement operations can be conducted in support of a variety of operations, to include—

- Foreign humanitarian assistance.
- Foreign disaster relief.
- Homeland defense.
- Non-combatant evacuation.
- Routine and emergency resupply of combat units.
- Movement of barrier materials and munitions in the defense.
- Movement of fuel, ammunition, and personnel over extended lines of communications (LOCs) to support the offense.
- Battlefield circulation of key leaders.

1-29. Air movement operations reduce risk to ground logistics units through economy of force, enable operations in areas with limited ground LOCs, allow faster repair and sustainment of combat power, and support forward positioning of key leaders to exercise mission command.

EVACUATE WOUNDED OR RECOVER ISOLATED PERSONNEL

1-30. As a vital component of the overall health service support (HSS) mission, medical evacuation (MEDEVAC) provides the linkage between roles of medical care. MEDEVAC is performed by dedicated platforms (ground or air) with medical professionals capable of providing timely, efficient movement and en-route care of the wounded, injured, or ill. DA is the sole component directed to provide intra-theater aeromedical evacuation (AE) in the patient movement system within the Department of Defense. Intra-theater AE is conducted by Army air ambulance units in support of the joint force while conducting offensive, defensive, stability, and DSCA operations throughout the depth and breadth of the AO. Army Aviation brigades and battalions provide oversight of Army medical air ambulance units conducting intra-theater AE according to combatant commander priorities, theater evacuation policies, and Department of Defense directives.

1-31. The speed, flexibility, and en-route care capabilities of Army AE provides HSS more options in the allocation of medical treatment facilities (MTFs) by mitigating the effects of extended distances between points-of-injury and MTFs, or between MTFs while maintaining a continuum of care. AE is a non-combatant, humanitarian mission and is provided special protections under the Law of War and the Geneva Conventions.

1-32. Army Aviation utility, heavy lift, and FW units may conduct casualty evacuation (CASEVAC) when required in support of the joint force during offensive, defensive, stability, and DSCA operations. CASEVAC, as a secondary component to the patient movement system, is the unregulated movement of wounded, injured, or ill personnel using non-medical assets that are dedicated to or designated in support of CASEVAC operations. Opportune use of non-dedicated platforms is the lowest level of CASEVAC operations. In contrast to MEDEVAC assets, CASEVAC assets may or may not include the provision of en-route care, depending on the availability of medical augmentation personnel and equipment. CASEVAC may include carry-on medical equipment to accompany medical personnel, but the equipment and supplies are dependent upon availability at the time of the mission. As a non-medical platform, CASEVAC aircraft retain their legal combatant status in an AO; therefore, use of these assets includes the acceptance of additional risk to the patient (who is a non-combatant). Without standardized equipment or en-route medical care, CASEVAC generally lacks the assurance of continuity of care when moving a patient to a MTF. Even with these limitations, CASEVAC is an essential part of the overall patient movement system, and may be the first step in moving an injured Soldier from the point of injury. MEDEVAC and CASEVAC support requires detailed assessment and planning in order to achieve an effective patient movement plan.

1-33. Army commanders designate, train, and posture their units to effect recovery of isolated personnel. Personnel recovery (PR) missions are joint operations and may require the employment of the full range of unified action partner capabilities prior to and during execution. Aviation units are often tasked to support the recovery of isolated personnel by transporting PR security elements or recovery forces during immediate, deliberate, or external supported recoveries. This support may also include AE, attack, reconnaissance, UAS, and C2 support assets to support the PR methods of unassisted, immediate, deliberate, and external supported recovery.

1-34. Evacuation missions can be conducted in support of a variety of operations, to include foreign humanitarian assistance, foreign disaster relief, DSCA, non-combatant evacuation, and all combat operations across the range of military operations and conflict continuum. Evacuation and recovery operations reduce risk and increase survivability of the combined arms team while enabling greater freedom of action.

ENABLE COMMAND AND CONTROL OVER EXTENDED RANGES AND COMPLEX TERRAIN

1-35. Army Aviation enhances C2 by enabling the maneuver commander to better understand, visualize, describe, direct, lead, and assess operations over extended ranges and in complex terrain. Army Aviation enhances shared understanding of the OE through—

- Execution of movement to contact, attack, reconnaissance and security operations.
- Accurate and timely reporting via long range communications.
- Dedicated C2 support platforms.
- UAS communications relay packages.
- Distribution of full motion video sensor information.
- Management of controlled airspace through air traffic services (ATS).
- Employment of aviation liaisons.
- Embedded aviation staff elements at brigade and above headquarters.
- Battlefield circulation of key leaders.

1-36. Attack and reconnaissance units conducting movement to contact, attack, reconnaissance, and security operations reporting via long-range communications and full motion video provide the maneuver commander with timely and accurate information to enable the commander to understand and visualize the terrain, friendly and enemy forces. Army Aviation liaisons and embedded staffs assist the maneuver commander with visualizing and describing how best to employ Army Aviation as a member of the combined arms team. Use of Army Aviation dedicated C2 support aircraft enables the maneuver commander to position forward to visualize, direct, lead, and assess ongoing operations. MUM-T enables the maneuver commander to visualize and assess operations through timely BDA and detailed reconnaissance throughout the depth of the AO, and across multiple domains.

SECTION IV – ARMY AVIATION IN THE OPERATIONAL FRAMEWORK

1-37. To clearly visualize and articulate Army Aviation operations, commanders apply the four components of the operational framework. This framework is a cognitive tool to develop shared understanding and describe the commander's visualization of how Army Aviation operates in time, space, purpose, and resources while considering the physical, temporal, virtual, and cognitive aspects in an AO, area of influence, and area of interest. The following four components of the operational framework do not limit any of the seven core competencies of Army Aviation:

- Commanders assign subordinate units an AO for the conduct of operations.
- Commanders designate close, deep, support, and consolidation areas.
- Commanders establish decisive, shaping, and sustaining operations to articulate an operation in terms of purpose.
- Commanders designate main and supporting efforts to designate shifting and prioritization of resources.

AREA OF OPERATIONS

1-38. The AO is a designated area that commanders are assigned to conduct operations. From this designated area, they assign subordinate units smaller AOs based on the commander's visualization of the operation. Smaller unit AOs are established with regard to the unit's ability to influence what happens within the area. Within the AO, commanders use control measures to coordinate fires and maneuver and organize operations.

1-39. When task-organized appropriately, Army Aviation battalions or brigades can be assigned an AO and serve as the maneuver task force headquarters conducting reconnaissance and security operations, or during offensive or defensive operations in an economy of force. Assigning an AO to an aviation unit streamlines aviation maneuver and enables detailed integration with supporting assets such as joint fires or FW

aviation. When aviation units are assigned their own AO, they accept the following responsibilities for the duration of the assignment:

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

1-40. Aviation units typically operate across the entire AO of the supported unit. Maneuver throughout the AO is governed by phase lines (PLs), airspace control areas, standard use Army Aviation flight routes, or other control measures which permit simultaneous operations and converging of effects against the enemy. If an aviation unit is operational control (OPCON) or tactical control (TACON) to a supported maneuver force, the aviation unit operates within that unit's boundaries unless other coordination is made. The Aviation unit develops air and ground plans in conjunction with the supported unit. If an aviation unit is not OPCON or TACON to a supported unit, it must coordinate not only airspace and terrain management but also locations for forward arming and refueling points (FARPs), command posts (CPs), and radio retransmission sites.

CLOSE, DEEP, SUPPORT, AND CONSOLIDATION AREAS

1-41. The close, deep, support, and consolidation framework describes the physical arrangement of forces in time, space, and purpose (figure 1-1).

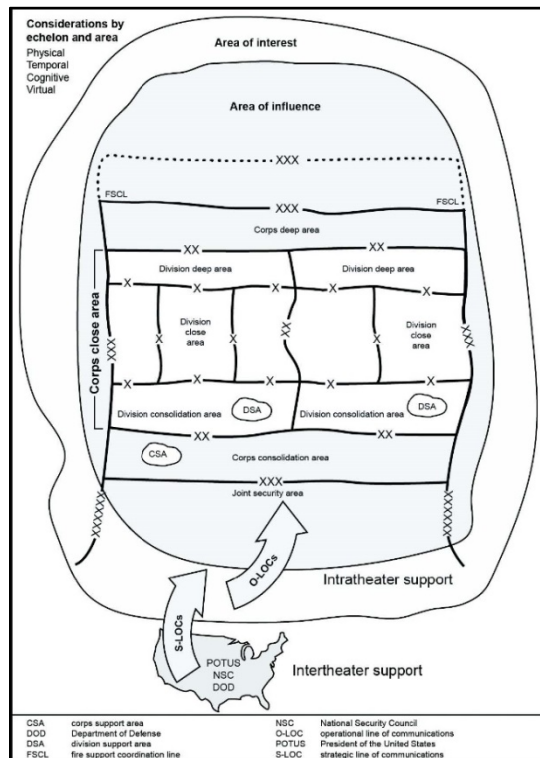


Figure 1–1. Close, deep, support, and consolidation areas

1-42. Operations in close areas are conducted within a subordinate commander's AO. These AOs can be contiguous or non-contiguous. Operations conducted in close areas are usually against enemy forces in immediate contact and are often the decisive operation (ADP 3-0). Army Aviation executes AGO in the close area as a member of the combined arms team. Army Aviation can conduct all missions and tasks when operating in the close area, to include—

- Movement to contact.
- Attack.
- Reconnaissance.
- Screen.
- Air assault.
- Air movement.
- Command and control support.
- Evacuation missions.

1-43. Deep operations involve actions to divert, disrupt, delay, or destroy enemy forces and capabilities before they can be used effectively against friendly forces. They may set the conditions for success in the close area or enable future operations. Operations in the deep area might disrupt the movement of operational reserves; prevent an enemy from employing long-range cannon, rocket, or missile fires; or attack a high payoff target. Enemy forces in deep areas are not necessarily out of contact in a multi-domain environment. Deep areas can also include the spaces between non-contiguous AOs or beyond the designated boundaries of ground maneuver units in contiguous AOs. Fire support coordination measures are critical considerations when planning and conducting deep operations. For more information on deep operations, see ATP 3-94. 2.

1-44. Aviation operations in deep areas may include—

- Attacks to destroy, defeat, disrupt, divert, or delay enemy forces or high value capabilities that are out of friendly contact using MUM-T or independent UAS attack-reconnaissance operations.
- Reconnaissance operations by manned and/or unmanned aircraft to obtain combat information to answer PIR on the terrain, enemy, or civilian populations.
- Air assaults of conventional or special operations forces to seize an objective or key terrain or destroy an enemy force.
- Insertions of conventional and special operations forces to recover isolated personnel, emplace sensors, conduct raids, establish special reconnaissance positions, or to conduct partisan linkup.
- Recovery of designated personnel in deep areas.

1-45. A *support area* is the portion of the commander's area of operations that is designated to facilitate the positioning, employment, and protection of sustainment assets required to sustain, enable, and control operations (ADP 3-0). In a contiguous AO, the support area extends from the rear boundary of the higher unit to the rear boundary of the next subordinate unit. In a non-contiguous AO, the commander designates the support area (ADP 3-0). Army Aviation operations in the support area typically include air movement, MEDEVAC, and C2 support, but may also include reconnaissance, attacks, and security operations if there is a threat to the support area. When conducting attacks, reconnaissance, and security operations, Army Aviation typically operates as a combined arms team with the TCF. If properly task-organized with ground maneuver or security forces, Army Aviation can operate as the TCF headquarters for the support area.

1-46. The *consolidation area* is the portion of the commander's area of operations that is designated to facilitate the security and stability tasks necessary for freedom of action in the close area and to support the continuous consolidation of gains (ADP 3-0). During operation plan refinement, the additional Army Aviation forces of the combined arms team must be forecasted to conduct consolidation of gains activities. Army Aviation units in the consolidation area provide speed, flexibility, and increased freedom of action for the commander, thereby enabling decisive operations in the close area. Possible aviation tasks in the consolidation area span the entire range of core competencies, from attacks against bypassed forces to air movements, air assaults, or evacuation missions. While a Corp consolidation area is typically assigned to a division with an organic aviation brigade, a division consolidation area is typically assigned to a subordinate brigade that is supported by a battalion-sized aviation unit. Commanders must balance the

amount of aviation forces assigned to consolidation missions with the need for concentration in the close and/or deep areas.

DECISIVE, SHAPING, AND SUSTAINING OPERATIONS

1-47. The decisive, shaping, and sustaining framework element lends itself to a broad conceptual orientation and defines the desired purpose of each component. *Decisive operations* are those that directly accomplish the mission (ADP 3-0). The decisive operation is the focal point around which commanders design an entire operation and accomplish the commander's intent. Army Aviation forces are often used to increase the combat power applied to the decisive operation and conducts all missions in DS, GS, TACON or OPCON to the ground maneuver force tasked with accomplishing the decisive operation. Aviation operations may be designated as decisive; in this case aviation units are typically task-organized with ground maneuver forces as the combined arms team maneuver headquarters.

1-48. *Shaping operations* are operations that establish conditions for the decisive operation through effects on the enemy, other actors, and the terrain (ADP 3-0). During unified land operations, Army Aviation conducts all missions and tasks in DS, GS, TACON, or OPCON to the ground maneuver forces tasked with accomplishing shaping operations. Army Aviation units can also be assigned to accomplish shaping operations without ground forces. During these operations, Army Aviation units conduct movement to contact, attacks, reconnaissance, and/or screens to prevent the enemy from gaining a position of relative advantage. Finally, Army Aviation can conduct shaping operations in support of the joint task force and air or maritime component commanders.

1-49. *Sustaining operations* as those operations at any echelon that enable the decisive operation or shaping operations by generating and maintaining combat power (ADP 3-0). Sustaining operations occur throughout the AO, not just in the support area, and determine how quickly Army forces reconstitute and exploit success is LSCO. Army Aviation conducts reconnaissance, attack, screen, air movement, MEDEVAC, and C2 support when in support of a unit tasked with sustaining operations. Army Aviation units typically are not sustaining operations headquarters.

MAIN AND SUPPORTING EFFORTS

1-50. The use of main and supporting efforts provides prioritization of support and resources among subordinate units. The *main effort* is a designated subordinate unit whose mission at a given point in time is most critical to overall mission success (ADP 3-0). The designated main effort is typically weighted heavily with Army Aviation combat power to achieve their mission. Army Aviation units may also be designated as the main effort during specified phases of an operation when assigned as the maneuver headquarters operating independently from ground maneuver or task-organized as the maneuver headquarters of the combined arms team.

1-51. A *supporting effort* is a designated subordinate unit with a mission that supports the success of the main effort (ADP 3-0). Commanders provide supporting efforts with the minimum combat power necessary to accomplish the mission; consequently, supporting efforts may be resourced with less Army Aviation combat power than the main effort. Army Aviation units may also be designated as the supporting effort during specified phases of an operation when assigned as the maneuver headquarters operating independently from ground maneuver or task-organized as the maneuver headquarters of the combined arms team assigned as a supporting effort.

SECTION V – OPERATIONAL ENVIRONMENT

1-52. To shape the OE, prevent conflict, succeed in LSCO, and consolidate gains, Army Aviation leaders and units must be enabled with the training, leadership, and technologies necessary to accomplish the mission. Trained leaders and formations that are fully capable of operating under ambiguous and often unknowable conditions, equipped with advanced technologies and capabilities, ensure that Army Aviation remains a unique and asymmetric advantage for the Army and the United States.

1-53. The *OE* 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 OE comprises many interrelated variables which include the physical domains as well as the information environment, the electromagnetic spectrum, and other more cognitive areas such as global or regional trends. The OE should be expected to be complex and dynamic, where aspects of it may be unknown and constantly changing. Additionally, the OE may be analyzed differently from the different levels of warfare. Some aspects of warfare continue to evolve based on missions, emerging technologies, or the enemy's capabilities, objectives, or resolve. However, Army Aviation leaders should anticipate these changes alongside continuities such as the principles of war, the tenets of unified land operations, and Army Aviation's core competencies.

1-54. Commanders and staffs initially analyze an OE using the eight operational variables (see FM 6-0). Leaders employing Army Aviation forces must also understand the unique opportunities and constraints of aviation operations in the context of the threat and the multi-domain battlefield.

THREAT

1-55. A *threat* is any combination of actors, entities, or forces that have the capability and intent to harm United States forces, United States national interests or the homeland (ADP 3-0). Within the OE, Army Aviation can expect to encounter a wide range of threats. The intermixing of multiple threat elements, coupled with the operational and mission variables create a complex and dynamic OE. Threats seek to disrupt Army Aviation operations through terrain denial, air route interdiction, and intentional disruption of aviation AOs such as FARPs, LZs, PZs, tactical assembly areas, and airfields.

1-56. Threats can include nation-states, national alliances, paramilitary or military forces, and/or individuals or groups of individuals. When threats execute their intent to do harm to the United States, they become enemies. The diversity of threats across the land, air, maritime, space, and cyberspace domains to United States security and vital interests increases the need for Army forces to be prepared to conduct operations short of conflict as well as succeed during LSCO when required.

PEER THREATS

1-57. Peer threats are competitors or enemies with capabilities to oppose United States forces across multiple domains world-wide or in a specific region where they enjoy a position of relative advantage. When preventing conflict with a peer threat fails, Army Aviation must be ready to penetrate enemy systems throughout the depth of the operational area to enable operational and tactical maneuver. This penetration and subsequent destruction, dislocation, disintegration, or isolation of enemy capabilities contributes toward the achievement of the joint force commander's (JFC's) strategic objectives.

1-58. These adversaries typically employ their resources to attack friendly vulnerabilities using various combinations of the five broad methods described below. For more on these methods, see FM 3-0.

- **Information warfare.** Information warfare is a term used to refer to the threat's use of activities such as cyberspace operations, EW, deception, or psychological operations to manipulate the information environment. Peer threats attempt to manipulate or distort information to present false narratives and disrupt friendly decision making.
- **Preclusion.** Peer threats take specific actions to preclude certain operations. Examples of preclusion include employing tactics and systems to prevent friendly entry into an operational area (anti-access) or to impede friendly freedom of action within an operational area (area denial).
- **Isolation.** Peer threats may attempt to isolate friendly forces in various ways in order to prevent them from accomplishing the mission. Isolation may involve action in a physical domain, or it may involve space or cyberspace as well. This may be accomplished through denying mobility with obstacles or CBRNE weapons. It may also be accomplished through preventing or limiting the flow of information, or by conducting deception operations.
- **Sanctuary.** Sanctuary refers to a method of putting threat forces beyond the reach of friendly attack, and is accomplished by some combination of political, legal, and physical boundaries that restrict friendly freedom of action. Peer threats may exploit air defense networks, complex

terrain, dispersion, international borders, or information to protect some or all of their forces for a specific period of time.

- **Systems warfare.** Using a systems approach to warfare means the peer threat identifies specific critical capabilities for attack in order to affect failure in a larger friendly system. Examples of this might include the use of EW to disrupt UAS operations or CBRNE attacks against specific ports of entry to prevent friendly forces from flowing into theater.

1-59. Peer threats to aviation include guided or unguided projectiles, anti-aircraft artillery, man-portable air defense systems (MANPADS), surface-to-air missiles (SAMs), EW capabilities, cyber, CBRNE, and manned or unmanned aircraft. Peer threats present significant challenges to employment of any unmanned aircraft, or manned aircraft above terrain flight levels. Some peer threat systems and techniques are described below.

- **Anti-access and area denial.** Anti-access strategies use long-range capabilities and systems to prevent the joint force's penetration into an operational area, while area-denial strategies seek to hinder subsequent operations within the operational area. Combined, these actions and capabilities create the effect of standoff, which prevents friendly influence in an AO. Peer threats employ multi-layered integrated air defense systems (IADS) with long-range precision fires and other systems to challenge the joint force. Army Aviation is particularly vulnerable to area denial tactics due to the requirement for large tactical assembly areas and sustainment nodes, and IADS targeting aircraft during operations.
- **IADS.** IADS target aircraft during all phases of an operation. These systems traditionally employ anti-aircraft artillery or SAMs. Anti-aircraft artillery systems provide the capability to fire-exploding rounds of 20 millimeter or greater which use visual, electro-optical, infrared (IR), or radar for acquisition and ballistic solutions that can engage aviation systems up to high altitudes. SAMs are short- to long-range air defense systems using radar and/or electro-optical/IR acquisition and/or guidance. SAMs are capable of engaging all types of aviation systems up to high altitudes. SAMs are typically mounted on dedicated platforms, including stationary sites, wheeled or tracked vehicles, or maritime platforms. SAMs have the potential for employment as a component of an integrated air defense system with supporting early warning and acquisition radars providing cueing; however, a number of systems are fielded that can operate autonomously with on board acquisition and targeting/guidance capabilities. Key to any IADS is the employment of an integrated radar network with the capability to detect incoming targets and then employ the appropriate engagement platform at the lowest possible echelon.
- **MANPADS.** MANPADS are shoulder-fired, point-defense guided missile systems using the IR or ultra-violet spectrum with IR, ultra-violet, laser, or optical guidance that can engage aviation systems. MANPADS can be employed dismounted or mounted on ground vehicles, manned and unmanned aircraft, or maritime platforms, and are generally limited to the operator's ability to visually acquire and track aircraft prior to initiating launch. Peer threat maneuver divisions typically employ MANPADS in a ratio of six MANPADS launchers per maneuver battalion, plus an additional 18 launchers in the air defense brigade (short range). Response time of a MANPADS gunner can be significantly reduced if the systems are integrated into the IADS.
- **Enemy aircraft.** In addition to air-to-air capabilities designed to find and destroy Army aircraft, FW and RW threat systems may be employed to attack aviation assembly areas, LZ/PZs, and FARPs with aerial-delivered fires to disrupt aviation maneuver and C2 across the AO. UAS pose additional unique threats to include reconnaissance and surveillance of Army Aviation ground and air operations, employment as IEDs against stationary and slow moving aircraft or ground operations, and hazards to flight in congested areas such as airfields and high use air corridors.
- **Cyber and electronic warfare.** The Army's modernized equipment relies heavily on space-based or internet-connected assets which include navigation, communications, and battle tracking systems. A space-based global positioning system (GPS) provides critical information for all warfighting function information systems. Army Aviation employs numerous advanced systems, many of which may be built into aircraft or ground control stations. Other systems are critical pieces of C2 equipment in unit CPs. Peer threat capabilities to deny, degrade, disrupt friendly access to information will greatly hinder the ability to maintain tempo by conducting C2

of dispersed forces. In addition to disrupting access to information systems, a peer threat may employ more traditional EW techniques such as meaconing, interference, jamming, or intrusion (MIJI) on radio systems. Units should utilize appropriate communications security methods to minimize susceptibility to electronic attacks. For further operations in denied, degraded, or disrupted space operating environments, refer to FM 3-14 or the Center for Army Lessons Learned.

- **CBRNE.** Both state and non-state actors may employ CBRNE attacks as a method to deny access to a given area or to create mass casualty events for friendly forces. Recent proliferation of missile technology has enabled many states to acquire delivery systems which can deter action, deny access to specific regions, or strike friendly locations directly. Army Aviation is particularly susceptible to CBRNE attacks given its large footprint, vulnerability when on the ground, and the increased risk conducting CBRNE aviation operations, and the difficulty in fully decontaminating aircraft after an attack.
- **Anti-radiation munitions.** Anti-radiation munitions are active homing projectiles designed to detect and home on a radio emission source. Although initially intended for active engagement of emitting radar systems, ARMs may be programmed and used to attack emitters employed on Army Aviation aircraft. Anti-radiation munitions may be employed from threat RW and FW aircraft, as well as ground and maritime surface platforms to engage aviation systems up to high altitudes.
- **Directed energy.** Directed-energy threats include laser designators, laser range finders, and missile guidance in beam-riding munitions. Directed energy weapons, to include anti-personnel, anti-sensor, and anti-material, use transmitted energy to disrupt, deny, or destroy an aircraft or aircrew member. The scope of directed energy weapons ranges from commercial off-the-shelf handheld laser pointers to high power/frequency acoustic and radio frequency transmitters. The employment of anti-sensor and anti-material systems is normally for point defense of crucial equipment or facilities with employment from vehicles or fixed positions.

HYBRID THREATS

1-60. The term hybrid threat captures the complexity and blurring of the traditional elements of conflict. A *hybrid threat* is the diverse and dynamic combination of regular forces, irregular forces, terrorist forces, or criminal elements unified to achieve mutually benefitting threat effects (ADP 3-0). The hybrid threat employs traditional, unconventional, and hybrid strategies to threaten Army Aviation operations in support of the combined arms team. Hybrid threats to aviation may include IEDs, cyber capabilities, anti-tank guided missiles, passive detection, and directed energy weapons. Hybrid threats also seek to exploit constrained rules of engagement (ROEs), weather and environmental limitations, multinational caveats, and other influencing political factors, while simultaneously disrupting friendly use of precision navigation and information networks. Coupling traditional and non-traditional threat weapons, hybrid threats constantly seek to adapt their tactics, techniques, and procedures (TTP) to gain asymmetric advantages to overcome Army Aviation's overmatch at the point of contact.

1-61. Hybrid threats traditionally employ unguided weapons such as small arms, heavy machine guns (12.7 to 14.5 millimeter), rocket propelled grenades, and modified air-to-surface rockets against Army aircraft. These systems generally have reduced probabilities of hit against aircraft operating at higher altitudes in more permissive environments. Hybrid threats have fairly limited access to more sophisticated weapons, but may also employ anti-tank guided missiles, MANPADS or anti-aircraft IEDs. Hybrid threats continue to seek low-cost commercial capabilities to disrupt/degrade communications, navigation, and precision munitions employment. In addition to commercial off-the-shelf adaptation, peer and near-peer threats possess specific capabilities dedicated to jamming and interference. Hybrid threat aviation capabilities may include military and civilian RW and FW aircraft and military or commercial off-the-shelf UAS. Hybrid threats may also target aviation forces on the ground with IEDs, direct fire, or indirect fire.

MULTI-DOMAIN EXTENDED BATTLEFIELD

1-62. Army forces conduct operations synchronized across multiple domains to converge the effects necessary to succeed during operations short of conflict, as well as during LSCO. Aviation operations are inherently multi-domain in nature, and Army Aviation leaders require a thorough understanding of the OE to identify opportunities and risks related to their operations. Army Aviation's ability to project power throughout the physical domains (land, air, and maritime), as well as operate in space and cyberspace are vital to joint operations.

PHYSICAL DOMAINS

1-63. Army Aviation must be able to fight under all conditions and in any of the physical domains (air, land, or maritime) as a member of the combined arms team. Understanding and exploiting the unique capabilities presented by the physical environment, while mitigating risks and limitations, are essential throughout the operations process.

Expeditionary Operations

1-64. With regard to Army Aviation, expeditionary operations can be considered those operations that require rapid deployment of a task-organized force via land, air, and/or sea into austere and/or immature theaters with the requisite mobility, lethality, protection, sustainment, and C2 capability to operate as part of the joint, interagency, intergovernmental, and/or multinational team to conduct unified land operations against peer competitors in LSCO. Army Aviation forces must be prepared to operate as part of the joint force and overcome anti-access and area denial capabilities in order to open a window of relative advantage. Specific considerations for expeditionary aviation operations may include—

- **Mission sets.** Aviation units must be ready to conduct the full range of decisive action operations up to, and including, LSCO against peer or near-peer threats.
- **Duration.** Units must be prepared to operate with limited external resupply and sustainment for days to weeks while conducting continuous operations.
- **Unit of employment.** The lowest echelon of employment is the company/troop, supported by a battalion or battalion task force headquarters.
- **Operations timeline.** Units must be prepared to conduct operations in support of the joint force within 24 to 72 hours of arrival. This time may be adjusted (more or less) based on mission variables.
- **Unit movement.** Units must be prepared to relocate frequently throughout the conduct of operations for survivability and to remain engaged in the fight. Movement frequency is dictated by mission variables.
- **Split operations.** Units must be prepared to conduct split operations depending on mission variables and unit of employment.

Mountain Operations

1-65. **Capabilities.** Army Aviation is ideally suited to conduct combat operations in mountainous terrain. Providing the combined arms team with increased mobility, speed, and range, Army Aviation can effectively overcome the limitations imposed on traditional ground mounted and dismounted maneuver in compartmentalized and complex terrain. Mountains provide visual and audio masking that may limit threat acquisition ranges enabling aviation maneuver forces to achieve greater tactical surprise and protection from long-range observation and engagements. The use of air assault and air movement operations enable the combined arms team to rapidly reposition forces and materials at decisive points to retain greater freedom of action over the enemy while achieving economy of force over large expanses of complex terrain with limited ground LOCs. The mobility and lethality of attack and reconnaissance helicopters and UAS provide ground maneuver forces with precise direct fire and persistent reconnaissance beyond ground inter-visibility lines and in broken terrain, reducing enemy freedom of action and the likelihood of enemy forces achieving tactical surprise. MEDEVAC capabilities in remote locations with limited or no-road infrastructure increase the combined arms team's survivability and freedom of action. Army Aviation's

over-the-horizon communication capabilities and ability to rapidly reposition ground maneuver leaders enhance the combined arms team's ability to perform C2 over extended distances and beyond line of sight (LOS).

1-66. **Limitations.** Operations in high, hot mountainous environments can limit aviation maneuver due to reduced load carrying capacity and maneuver power margins of aircraft. Depending upon the severity of the altitudes and temperatures, trade-offs may be necessary between aircraft loads (weapons, cargo, and personnel) and fuel carried, as well as adjustments to TTP which can impact station time, maneuver in the objective area, LZ and PZ selection, and aircraft ranges. Additionally, trade-offs may require additional FARP locations and/or more aircraft to complete a mission. Canalizing terrain reduces LOS communications, may limit the size or freedom of maneuver of aviation formations, and can drive predictable flight patterns that can be targeted by the enemy. Detailed planning, varying mission timelines, choosing longer or multiple routes, and employing non-line of sight or communications relay packages on UAS can mitigate canalizing terrain limitations. Several unique weather factors also influence operations in mountainous terrain. Unpredictable wind speeds, varying wind directions and frequent up and downdrafts, combined with high density altitude, low ceilings that obscure terrain, increased frequency of turbulence and reduced night time illumination due to shadows and terrain masking of the moon or man-made light sources requires more detailed planning, more experienced crews and adjustments to TTP. Severe cold weather is also prevalent during the winter in mountainous terrain. Severe cold temperatures, snow, and ice increase time requirements for aircraft preparation and launch due to deicing and snow removal, increased maintenance due to cold soaked seals and electronics, and increased flight hazards due to white-out, icing of blades and wings and loss of visibility due to falling or blowing snow. Aviation operations above 10,000 feet mean sea level for more than an hour, above 12,000 feet for more than 30 minutes, above 14,000 feet for any period of time, require the use of supplemental oxygen for all Army RW aircraft. Additionally, depending upon the height of terrain, UAS service ceilings may reduce the height above ground for UAS operations which can increase their likelihood of visual or audio detection which could compromise the ground scheme of maneuver while increasing UAS vulnerability to engagement. Finally, all aircraft have weather restrictions as outlined in Army Regulation 95-1; UAS takeoff and landing operations may be especially limited due to weather patterns in mountainous areas.

Desert Operations

1-67. **Capabilities.** Army Aviation provides the combined arms team with enhanced capabilities to operate in desert environments. The extended sensor, communications, and weapons ranges of attack and reconnaissance RW and UAS enable long-range engagement of targets and collection of combat information to confirm or deny the commander's PIR at the extended visual ranges typically associated with desert environments. Use of air assaults through the depth of the AO to seize typically limited key terrain or road networks can enable the combined arms team to counter the advantage of increased enemy ground maneuver speeds due to open and trafficable terrain afforded in a desert environment. Use of air movements to reposition supplies, ammunition and fuel over typically extended LOCs enables greater tempo and agility, while reducing operational risk to ground logistics and maneuver units. Use of aviation reconnaissance and security operations forward or to the flanks of ground maneuver forces to identify obstacles, enemy forces and the most suitable routes or axis of advance enables the combined arms team to maintain the tempo of operations while protecting friendly units through economy of force. These examples above highlight how Army Aviation's speed, range, lethality and versatility enable the combined arms team to gain, maintain and exploit a position of relative advantage in the desert environment.

1-68. **Limitations.** Blowing dust, sand, high temperatures, reduced visibility, low contrast and extended observation ranges all present unique challenges to aviation operations in the desert environment. Much like mountainous environments, extremely high temperatures can reduce the load carrying capacity of aircraft, requiring trade-offs between fuel, cargo, personnel, and munitions. High temperatures, along with dust and sand, increase maintenance requirements. The expansion and contraction of seals during extreme temperature swings increases the frequency of leaks and electronic component failures. Abrasion on rotor blades and other dynamic surfaces requires more frequent cleaning, and can reduce component life, especially blades, bearing assemblies and engines. Reduced visibility due to blowing sand, coupled with low contrast, increases the risk of brown-out during takeoffs and landings, especially in larger formations

of aircraft which requires experienced crews and detailed planning in the selection of LZs and PZs. During degraded visual environment operations, height above terrain and obstacles is more difficult to judge and may require higher flight altitudes and/or more experienced crews to reduce the likelihood of controlled flight into terrain or obstacles. Sensors and terminal weapon effects are also impacted by reduced visibility and surface conditions in the desert environment which may reduce weapon engagement ranges or increase the amount of munitions expended to achieve target effects.

Jungle Operations

1-69. **Capabilities.** Much like in mountainous terrain, Army Aviation provides the combined arms team with a significant mobility and firepower advantage over enemy ground maneuver forces in restricted terrain that is characterized by dense vegetation, complex hydrography, and jungle canopy. Using air assault and air movement operations, the combined arms team can rapidly reposition forces to interdict limited enemy ground routes or seize objectives with less risk due to reduced threat visual and audio acquisition and direct fire engagement windows. Attack and reconnaissance helicopters and UAS provide the combined arms team with mobile and responsive reconnaissance and fires to support typically small, decentralized ground operations in remote locations that may be out of the range of friendly artillery or against enemy targets that may be more difficult to locate or attack with FW close air support (CAS). MEDEVAC and air movement of supplies and personnel enables greater flexibility for distributed ground operations in remote locations, increasing the combined arms team's freedom of action and ability to maintain pressure on enemy forces and/or sustained engagement with local populations over larger AOs. The employment of special patrol or fast-rope insertion and extraction system, hoist, aerial-delivered resupply, and paradrop capabilities enables Army Aviation to conduct infiltration and extraction of small teams, casualties, and emergency supplies in remote locations without the benefit of LZs or PZs.

1-70. **Limitations.** Although dense jungle vegetation reduces enemy observation and direct fires of Army Aviation while en route, the lack of LZ/PZs, limited improved road infrastructure, and the distributed nature of small population centers typical of jungle AOs can result in greater predictability for the enemy to target aviation operations. Pathfinders, detailed LZ/PZ reconnaissance, LZ preparatory fires, attack or reconnaissance helicopters, and UAS in support of infiltration and extraction and deception operations can mitigate this risk. The jungle canopy and dense vegetation provide the enemy with greater cover and concealment, reduce stand-off ranges, and increase the vulnerability aircraft operating at low altitudes. Jungle canopy and dense vegetation can also negatively affect terminal guidance of precision munitions or cause early warhead detonation, requiring specialized fusing or greater expenditure of munitions to achieve target effects. Jungle environments also have unique and dynamic weather patterns that can impact aviation operations. Higher temperatures and altitudes can reduce aircraft loads which impacts ordnance carried, aircraft performance, and station time. Frequent rain showers and thunderstorms reduce visibility by obscuring terrain and obstacles, while increasing possible maintenance actions due to corrosion of aircraft components and sensitivity of electronics to humidity and visible moisture. Fog and mist in low lying littoral areas or inland river systems, especially during dawn and dusk, can limit aviation operations at terrain flight altitudes and reduce sensor and weapon employment ranges. Low ceilings and unpredictable thunderstorms may also impact the employment of UAS.

Maritime Operations

1-71. **Capabilities.** Army Aviation provides the combined arms team and joint force with enhanced capabilities to operate in and from the maritime domain. Army Aviation operates in the maritime domain by using seabasing as a method of projecting force into the land domain or by using seabasing or land basing to project combat power in DS of joint forces in the maritime domain. As a force projection platform, seabasing enables Army Aviation to conduct operations from over the horizon into the land domain in support of the combined arms team or over water in support of joint naval forces. Using seabasing to conduct air assaults, air movement, attacks, or MEDEVAC from beyond the horizon into the land domain allows the combined arms team to overcome anti-access measures prior to seizing and establishing a lodgment. Based on the depth of anti-access measures, seabasing provides Army Aviation the ability to expand the options for entry into an AO due to the mobility of the basing platforms and the inherent speed and range of Army Aviation. When appropriate, continued seabasing after seizing the

lodgment can also serve as an economy of force by reducing the aviation land footprint, sustainment and force protection requirements. In support of joint or multinational naval forces, using Army Aviation to conduct reconnaissance and attack operations over water enables the joint or multinational force commander to defeat small boat and small surface combatant threats, counter piracy and drug threats, protect individual ships or sea convoys, or attack area denial capabilities in the littorals. This enables the joint or multinational force commander to maintain open sea LOCs, protect maritime infrastructure (oil rigs, offshore terminals, and harbors) and shipping, or deny enemy freedom of action in maritime choke points (straits, sea lanes, and littorals).

1-72. **Limitations.** Rapidly changing weather conditions, sea state, low visibility, low contrast, and extended observation ranges over water present challenges to Army Aviation in the maritime environment. In some maritime areas, high temperatures may cause commanders to make load decisions between fuel, cargo, passengers, and munitions. Extended operations in a salt water environment results in increased corrosion of critical parts and will cause increased maintenance requirements. En route, during low light and low contrast conditions, height above the water is more difficult to judge and may require higher flight altitudes to reduce the likelihood of controlled flight into the water. Additionally, the size and number of the seabasing platforms directly impacts the overall size of the aviation force and the number of aircraft that can operate simultaneously. This can impact the combined arms team's ability to mass and maintain adequate aviation tempo in support of operations over land. If area denial measures are robust, stand-off of seabasing capabilities will require longer routes, reducing station time in the objective unless additional FARPs are employed on land in the AO. Sea basing also does not currently enable Army Aviation to employ organic UAS due to launch and recovery limitations. Operating from ships and other maritime platforms requires specialized deck landing and helicopter egress qualification and proficiency training as well as overwater flight proficiency, especially during night operations. The storage of munitions on ships also requires specialized munitions, procedures, training, and safety.

Urban Operations

1-73. **Capabilities.** Urban areas are primarily the epicenters of human activity and generate much of the friction in future conflict. Urban operations range from operations in and around small built-up areas, towns, and small cities, to dense urban terrain. Army Aviation can effectively overcome many of the limitations imposed on traditional ground mounted and dismounted maneuver in this complex environment. Army Aviation's inherent speed, mobility, precision fires, and persistent reconnaissance capabilities provide the combined arms team with a number of options to reduce the complexity of operations in an urban environment. The use of Army Aviation to air assault small ground maneuver elements to secure infrastructure, isolate urban areas, seize limited objectives, kill or capture high value targets, seize key terrain, or to conduct cordon and search operations reduces the enemy's freedom of action while economizing force and reducing risk to ground movements. The use of persistent reconnaissance and precision fires by attack and reconnaissance RW aircraft and UAS along key LOCs, named areas of interest, key infrastructure, or in support of small unit mounted and dismounted ground maneuver increases the combined arms team freedom of action, protects the force, and reduces the enemy's ability to attain tactical overmatch at the point of contact. Use of air ambulances equipped with rescue hoists to extract casualties from secured, compartmented, and congested areas enables the rapid evacuation of casualties, increasing the ground maneuver force tactical reach while reducing the requirement to secure ground movement. Using extended-range and non-LOS communications, Army Aviation can provide enhanced C2 capabilities to the combined arms team through the use of UAS communications relay packages or airborne C2 aircraft to overcome the limitations of ground maneuver LOS communications in urban terrain.

1-74. **Limitations.** Each urban area is unique, and the challenges to successful aviation operations increase based on the scale, makeup, and complexity of the urban area. The availability of LZs/PZs are frequently limited to sports fields, major roads, highway medians, rooftops, transition areas (unimproved open areas), vacant lots, and urban green spaces. These areas are routinely cluttered with debris or other loose impediments that can become airborne hazards during landings and takeoffs. The lack of LZ/PZs also enables easier enemy pattern analysis of aviation operations to emplace ambushes or use IEDs. Significant vertical obstacles (such as light poles, power lines, and antennas), coupled with the height of adjacent buildings, may limit approach and departure paths for aircraft, restrict freedom of maneuver in the objective

area and limit the number of aircraft that can simultaneously operate in the LZ/PZs requiring greater power margins to maintain aircraft combat maneuver capabilities. Adjacent buildings and structures also provide cover and concealment for enemy forces and extend fields of view and fire from above the landing areas. Roof-top landing areas are typically cluttered with vertical obstructions (such as antennas and building mechanical systems) that may limit the size of touchdown areas, and based on the quality of the construction, may or may not be suitable to handle aircraft weights upon landing. The presence of sub-terrain structures (such as tunnels, subways, and sewers), as well as vast road networks bounded by vertical structures enables the enemy to rapidly reposition with cover and concealment from observation and fires. During night operations, high intensity lighting may reduce the effectiveness of using image-intensifying night vision devices, degrading the ability to acquire obstacles to flight and other aircraft, as well as limiting target acquisition capabilities for non-forward-looking infrared equipped aircraft. In heavily industrialized urban areas, power generation plants and other heavy industry can create localized areas of low to no visibility or layers of obscurants that impact both RW flight and UAS sensor employment. During attack and reconnaissance operations, high population densities in urban areas allow the hybrid threat to more easily blend in, increasing the difficulty of positive identification, and increasing the risk of collateral damage during engagements. Urban landscape surfaces can increase direct fire fragmentation effects due to less blast and fragmentation absorption of soft surfaces. This may increase target effect but also increases the danger of ricochets that risk fratricide or collateral damage. During engagements of structures, shaped-charge warheads on certain missile models are less effective in penetrating structures and achieving internal blast effects which may require greater expenditure of ordnance to achieve desired target effect. The prolific use of modern communications provides the enemy with early warning of operations, limiting the advantage of surprise. Measures to consider for mitigating risk in urban areas include—

- Detailed technical reconnaissance of landing areas and obstacles.
- Use of UAS conducting persistent reconnaissance.
- Maximizing use of precision munitions.
- Operating during the hours of darkness at higher altitudes.
- Conducting detailed rehearsals of actions on the objective.
- Use of special patrol or fast-rope insertion/extraction systems for small team infiltration and extraction, using common graphic control measures tailored for floor and room identification in buildings and increasing flight altitudes are all.

Other Environments

1-75. Pandemic zones. A pandemic zone is a geographical area infected with a pandemic disease. Within the pandemic environment, Army Aviation can conduct reconnaissance, convoy security, air movement of medical supplies and construction materials, air movement of medical, survey or security teams, aeromedical operations, and C2 support. Key considerations when operating in a pandemic zone are the difficulties associated with decontamination or sterilization of aircraft and ground support equipment and the limitations imposed on aircrews flying in personal protective equipment.

1-76. Post-Disaster zones. A post-disaster zone is an area that has been struck with a natural, technological, or sociological disaster. As in a pandemic zone, Army Aviation can provide a wide range of capabilities to overcome the lack of available road networks and other infrastructure impacted in the disaster zone. Key considerations include challenges to radio communications with local authorities, limited availability of host-nation fuel support, damage to airfields and other supporting infrastructure, limited LZ/PZs due to debris, and deconfliction with other civil or non-governmental aviation operations in the disaster zone.

1-77. CBRNE environments. Operations in CBRNE environments challenge aviation operations due to the lack of aircraft pressurization and the difficulty of conducting aircraft decontamination when exposed to radiological or persistent forms of chemicals or biological agents. Aircrew and support personnel performance is significantly degraded when operating in full protective posture. Key considerations before deliberately conducting aviation operations in a CBRNE environment include the following:

- Impact to future mission support due to long duration contamination of aircraft and support equipment.
- Performance impacts (especially in hot environments) on crews and support personnel.
- Difficulties using night vision devices in addition to CBRNE protective equipment.
- Necessity of segregating or isolating contaminated aircraft, and the impact of maintaining this equipment.
- Ability to spot decontaminate aircraft and equipment to reduce the hazard of contamination transfer.

1-78. To minimize the chances of being targeted by CBRNE weapons, commanders should consider tactics that minimize detection of large fixed sites through camouflage or dispersion, retain mobility and the ability to rapidly reorganize, and anticipate attacks and adjust mission oriented protective posture accordingly. FM 3-11 provides more information on CBRNE operations.

CYBER DOMAIN

1-79. The cyber domain consists of interdependent networks of information technology systems and infrastructures which friendly, adversary, and other entities use transfer information. Computer networks, cellular phone systems, social media, and other technical infrastructures are all part of cyberspace. Army Aviation operates many C2 systems through cyberspace, and commanders must protect access to critical capabilities or information. Commanders should also be aware that any public presence on social media or other cyberspace platform may be used to help or hinder operations; this presence should be managed accordingly.

SPACE DOMAIN

1-80. The *space domain* defined as the area above the altitude where atmospheric effects on airborne objects become negligible (JP-3-14). While Army Aviation forces carry out their tactical operations in the physical domains, they are critically enabled by space-based position, navigation, and timing capabilities. In addition, many UAS control systems and other voice or digital communications capabilities utilize satellite or other non-LOS capabilities in the space domain. Peer competitors have developed capabilities which may deny, degrade, or disrupt guaranteed access to information via the space domain. As such, commanders must plan to operate in a degraded or disrupted space operating environment. For instance, aircrews must be competent when navigating without precise GPS assistance; staffs must understand how to communicate using minimum time and bandwidth; and commanders at all levels must embrace a mission command philosophy which prizes decentralized execution and disciplined initiative.

INFORMATION ENVIRONMENT AND THE ELECTROMAGNETIC SPECTRUM

1-81. Information enables decision making, leadership, and combat power; it is also key to seizing and retaining the initiative, and to consolidating gains in an OE. The *information environment* is the aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information (JP 3-13). The information environment has three dimensions: physical, informational, and cognitive. The information environment is global and permeates every OE; it is highly congested and contested. Whenever Army Aviation supports operations in the information environment, the information operations (IO) officer and the IO working group provide critical synchronization and execution. Commanders conduct IO to create effects in the information environment to seize and retain advantage therein. Army Aviation can be employed to help create these effects. For example, Army Aviation can—

- Attack physical C2 nodes or communications infrastructure.
- Support military information support operations in the delivery of leaflets.
- Conduct a show of force to influence adversary decision making.

1-82. The electromagnetic spectrum is an infinite range of frequencies of electromagnetic radiation which crosses all domains. Peer competitors seek to disrupt friendly access to information through interfering with or blocking certain transmissions. They may also target Army Aviation units based on their unique

electromagnetic transmissions. Consequently, commanders must be aware of the various types of energy radiating from their C2 systems, aircraft, and sustainment nodes. Commanders must ensure their units take efforts to mitigate or lessen electromagnetic signatures whenever possible.

SECTION VI – AVIATION IN DECEPTION PLANNING

1-83. As part of the information environment, it is important to consider deception operations, especially during planning. Aviation contributions to the higher headquarters plan most often consist of standard tactical tasks conducted for an alternate purpose. Deception planning is an inherent part of nesting operations with higher echelons. ATP 3-04. 1 addresses deception operations as part of development of the concept of operations, within company mission planning products to support the higher headquarters, within the company maneuver planning cell as part of understanding the ground tactical plan, and within the company protection and contingency mission planning cell.

1-84. In addition to deception planning nested with higher, aviation units routinely incorporate deception planning at the lowest echelons as part of internal survivability and protection risk mitigation measures. Examples of deception in routine aviation mission planning include, but are not limited to—

- False landing or pickup zones.
- Deception routes that include flying multiple alternate routes.
- Deception fires that include deception suppression of enemy air defense, feints, or conducting false task organization movements.

1-85. Deception in aviation mission planning both supports the higher headquarters deception plan and decreases tactical risk by improving survivability during mission execution.

Chapter 2

Army Aviation Organizations and Command and Control

SECTION I – OPERATIONAL FRAMEWORK

2-1. Army Aviation formations are organized, trained, and equipped to support the combined arms team at the tactical and operational levels. Figure 2-1 displays typical operational reach for larger aviation formations. The Army Aviation modified table of organization and equipment (MTOE) force structure consists of four types of brigade-level aviation maneuver organizations and two types of enabling group-level organizations. Brigade-level aviation maneuver organizations include the—

- Combat aviation brigade (CAB).
- Expeditionary combat aviation brigade (ECAB).
- Theater aviation brigade (assault) (TAB-A).
- Theater aviation brigade (general support) (TAB-GS).

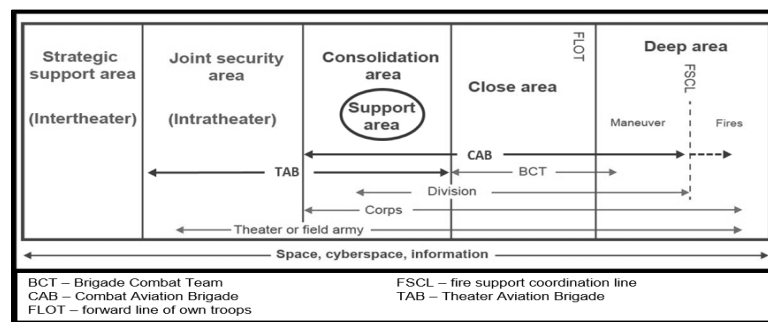


Figure 2-1. Operational framework

2-2. The enabling group-level aviation organizations provide the necessary support and sustainment operations to ensure the aviation maneuver brigades are capable of completing their missions. These organizations include the—

- Theater airfield operations group (TAOG).
- Theater aviation sustainment maintenance group (TASMG).

2-3. The battalion- and squadron-level organizations of Army Aviation consist of the—

- Air cavalry squadron (ACS).
- Attack battalion (AB).
- Assault helicopter battalion (AHB).
- General support aviation battalion (GSAB).
- Aviation support battalion (ASB).
- Security and support battalion (SSB).
- Airfield operations battalion (AOB).

2-4. Although the above organizations are multi-functional, given the complexity of the OE and mission variables requirements, aviation brigades and battalions are usually further task-organized to meet the requirements of an assigned mission. Task organization is routinely multi-component and can include any combination of platoons, companies, and battalions organized under the aviation brigade, aviation squadron task force (ASTF), or aviation battalion task force (ABTF) headquarters. Aviation brigades and

squadrons/battalions can also be task-organized with ground maneuver, joint aviation, and other non-aviation joint and Army units.

SECTION II – AVIATION BRIGADES

2-5. This section provides details of the organization and capabilities of aviation brigades. The three brigade-sized formations in Army Aviation are—

- CAB.
- ECAB.
- Theater aviation brigade (TAB).

COMBAT AVIATION BRIGADE

2-6. The core competencies of the CAB are to—

- Provide accurate and timely information collection.
- Provide reaction time and maneuver space.
- Destroy, defeat, disrupt, or delay enemy forces.
- Air assault maneuver forces.
- Position personnel, supplies, and equipment.
- Evacuate casualties and conduct PR.
- Enable C2 in support of the combined arms team.

2-7. The CAB is organized to synchronize operations of multiple aviation squadrons/battalions or ASTF/ABTF, ground maneuver battalions, or companies and joint aviation units. The CAB is an Active Duty or Army National Guard (ARNG) organization.

ORGANIZATION

2-8. The CAB consists of a headquarters and headquarters company (HHC), ACS, AB, AHB, GSAB, a Gray Eagle company equipped with 12 MQ-1C unmanned aircraft (typically a division asset), and an ASB. Figure 2-2 provides standardized CAB organization.

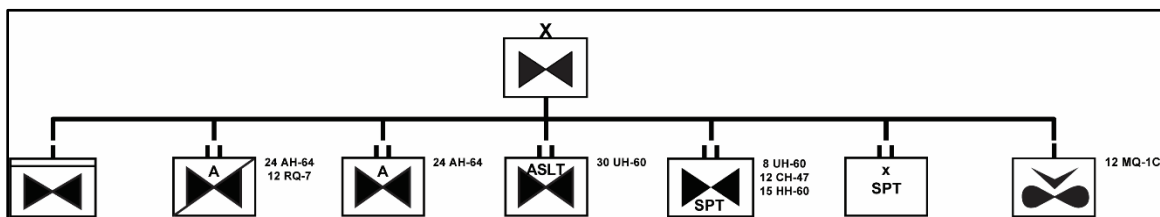


Figure 2-2. Combat aviation brigade

2-9. The CAB is designed to be modular and tailorable, and may be task-organized as required to support offensive, defensive, stability, or DSCA operations. The CAB is designed to operate as four aviation maneuver battalions, or battalion/squadron task forces, and one ASB, based on mission variables. The CAB receives up to two additional aviation battalions/squadrons or task forces without staff augmentation but requires additional maintenance personnel and equipment.

CAPABILITIES

2-10. The CAB performs the following mission tasks—

- Movement to contact.
- Attack.
- Reconnaissance.

- Security.
- Air assault.
- Aerial C2.
- Air movement.
- AE.
- Aerial CASEVAC.
- PR.
- Aerial-delivered mine operations.

2-11. The Gray Eagle Company is organic to the CAB and is dependent on the AB for staff planning, integration, and coordination in joint and combined arms operations. It provides dedicated multi-mission tactical UAS capability to divisional brigades according to the division commander's priorities. When operating as a division asset, the Gray Eagle Company conducts the following tasks:

- Surveillance.
- Zone, route, and area reconnaissance.
- Attack.
- BDA.
- Command and control support.

2-12. When tasked by the division to support the CAB, the Gray Eagle Company maneuvers independently or with AH-64s from the AB or ACS using MUM-T. MUM-T significantly enhances the survivability; depth, breadth, and persistence of the reconnaissance effort; and increases lethality by locating and attacking enemy forces with autonomous or remote fires. When supporting the CAB, the Gray Eagle Company or subordinate elements conduct the following tasks:

- Zone, route, and area reconnaissance.
- Attack.
- BDA.
- Command and control support.

2-13. A CAB may be required to support the corps or theater-level headquarters in immature theaters until the arrival of the theater aviation brigade (TAB) and other assets, or to fill gaps in TAB capabilities. TABs are typically comprised of Army National Guard and Reserve units that may require a period of mobilization. In the interim, a CAB may be tasked to fulfill the role of higher echelon support. Tasked mission sets may vary, but likely include shaping, theater establishment, and sustainment operations. Tasks include, but are not limited to, the following:

- Air movement of personnel and equipment from the port of entry to the support and consolidation areas.
- Movement of sustainment supplies and repair parts to ensure continuous operations and building of combat power.
- Battlefield circulation for key leaders, aerial evacuation, air assaults, security, reconnaissance, and offensive operations for shaping.

2-14. Some higher echelon tasks may be in direct support of the theater or corps, while others may shape lower echelon operations. These CAB missions may continue until the TAB or other assets arrives in theater to complete handover and provide support. The CAB may also be expected to conduct simultaneous mission planning and balance of battle rhythm events with its parent headquarters while providing higher echelon support or fulfilling the role as a theater aviation brigade. Commander to commander dialogue is vital to ensure assets are not spread too thin nor reach early culmination while supporting the division and higher echelons simultaneously.

EXPEDITIONARY COMBAT AVIATION BRIGADE

2-15. The core competencies of the ECAB are to air assault maneuver forces; position personnel, supplies, and equipment; evacuate casualties and conduct PR; and enable C2 in support of the combined arms team.

When task-organized with an AB/ACS, ECABs also provide accurate and timely information collection, provide reaction time and maneuver space, and destroy, defeat, disrupt, or delay enemy forces. The ECAB is an ARNG or United States Army Reserve (USAR) organization.

ORGANIZATION

2-16. The ECAB consists of an HHC, two AHBs, a GSAB, and an ASB. Figure 2-3 provides ECAB organization.

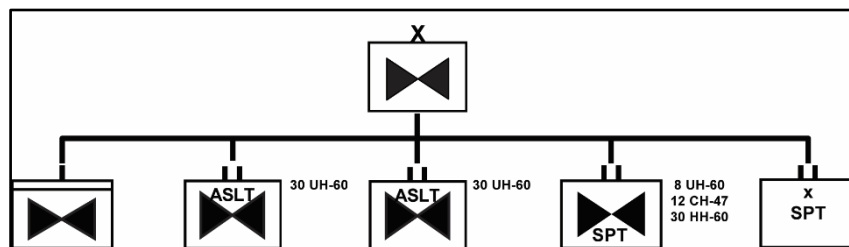


Figure 2–3. Expeditionary combat aviation brigade

CAPABILITIES

2-17. The ECAB is designed to be modular and tailorable, and is typically task-organized as required to support offensive, defensive, and stability operations in support of ground maneuver forces or during DSCA. The ECAB is designed to split into three maneuver battalions or battalion task forces, and one ASB, based on mission variables. The ECAB receives up to two additional ASTFs/ABTFs without staff augmentation but requires additional maintenance personnel and equipment. The ECAB performs the following tasks:

- Air assault.
- Aerial C2.
- Air movement.
- AE.
- Aerial CASEVAC.
- PR.
- Aerial-delivered mine operations.

2-18. When the ECAB is augmented with attack or reconnaissance units, its capabilities are increased. Appropriate training time, staff, maintenance, and logistics support are critical in the development of these capabilities prior to conducting operations. When augmented, the ECAB may perform the following additional tasks:

- Movement to contact.
- Attack.
- Reconnaissance.
- Security.

THEATER AVIATION BRIGADE

2-19. The TAB-GS provides accurate and timely reconnaissance; positions personnel, supplies, and equipment; evacuates casualties; conducts search and rescue; and enables C2 during DSCA operations. The TAB-GS is an ARNG or USAR organization.

2-20. The TAB-A augments other aviation brigades or operates autonomously at the theater level to air assault maneuver forces; position personnel, supplies, and equipment; evacuate casualties and conduct PR; and enable C2. The TAB-A is an ARNG organization.

ORGANIZATION

2-21. The TAB-GS includes an HHC, six SSBs, and a non-standard GSAB. The TAB-A includes an HHC, four GSABs, and one ASB. Figure 2-4 and figure 2-5 provide the organizational structure for the TAB-GS and TAB-A.

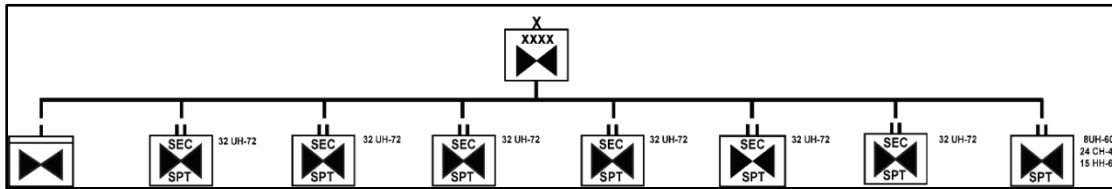


Figure 2-4. Theater aviation brigade (general support)

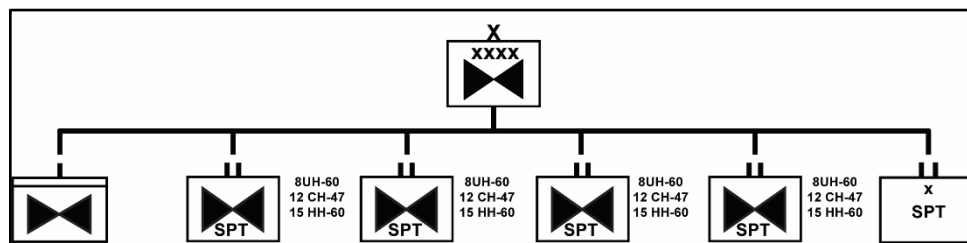


Figure 2-5. Theater aviation brigade (assault)

2-22. Although the TAB-GS headquarters with the GSAB and the ASB has the capability of deploying in support of global operations, the TAB-GS is a Northern Command asset and typically operates in decentralized elements from the team to battalion level conducting DSCA.

CAPABILITIES

2-23. The TAB-GS conducts the following tasks:

- Permissive zone, route, and area reconnaissance.
- Air movement.
- AE.
- Aerial CASEVAC.
- Search and rescue.
- Aerial C2.

2-24. The TAB-A is a deployable operational-level organization that typically reinforces other aviation commands with subordinate battalions and companies or provides theater support autonomously. The TAB-A may also be task-organized with other aviation units to accomplish other traditional CAB or ECAB missions and core competencies but requires C2, staff, and maintenance augmentation.

2-25. The TAB-A conducts the following tasks:

- Air assault.
- Air movement.
- AE.
- Aerial CASEVAC.
- Aerial C2.
- PR.

2-26. When the TAB-A is augmented with attack or reconnaissance units, its capabilities are increased. Appropriate training time, staff, maintenance, and logistics support are critical in the development of these capabilities prior to conducting operations. When augmented, the TAB-A may perform the following additional tasks:

- Movement to contact.
- Attack.
- Reconnaissance.
- Security.

SECTION III – ENABLING AVIATION GROUPS

2-27. This section provides details of the organization and capabilities of enabling aviation groups. The two groups in Army Aviation are—

- TAOG.
- TASMG.

THEATER AIRFIELD OPERATIONS GROUP

2-28. The TAOG provides airfield and ATS support to the combined arms team. The TAOG, when deployed with AOBs, conducts airfield management operations, provides local airspace control for the AO in a joint environment, and provides oversight, sustainment, and maintenance support to the theater ATS assets. The TAOG is an Active Duty or ARNG organization.

ORGANIZATION

2-29. The TAOG consists of an HHC and up to three AOBs. Figure 2-6 provides the organizational structure of a TAOG.

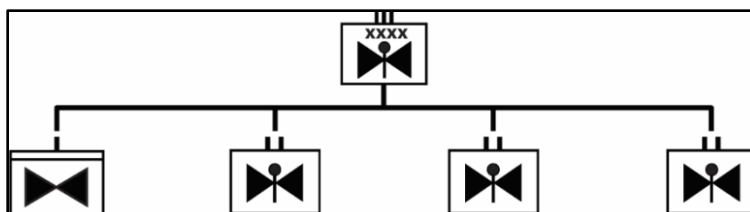


Figure 2-6. Theater airfield operations group

2-30. The TAOG and its subordinate ATS organizations are an enabling component of the modular, scalable, and tailored Army Aviation force and can support forcible and early entry contingency missions, as well as sustained theater aviation operations. Air traffic operations are conducted overseas within contiguous and noncontiguous areas, throughout the range of military operations. The ATS organizations support DSCA missions in response to natural or man-made disasters, accidents, and incidents within the United States and its territories.

CAPABILITIES

2-31. The TAOG, the AOB, and the sub-element ATS units are optimized for theater aviation support and deploy in total or are task-organized by teams based on operational requirements. The TAOG is organized and equipped to facilitate early deployment by establishing expeditionary airfields in support of Army, joint, and multinational operations. The TAOG supports reception, staging, onward-movement, and integration requirements for aviation assets arriving in the operations area, to include operation of heliports and helipads at seaports and aerial ports of debarkation.

2-32. The air traffic services standardization element (ATSSE) is a unique organizational design of the TAOG. This element provides oversight, technical expertise, standardization to Army airfields at theater level and quality assurance for training and certification of controllers and ATS maintenance personnel. It develops airspace for restricted areas, transition areas and control zones. The ATSSE serves as the primary staff coordinator for ATS matters within the theater area. The element is capable of splitting into two teams for modularity and support of five AOBs employed across a wide geographical area throughout the theater.

THEATER AVIATION SUSTAINMENT MAINTENANCE GROUP

2-33. The TASMGM is resourced to provide aviation sustainment maintenance and limited depot sustainment support at the theater level. The TASMGM performs repairs and returns components/end-items to their supported units or the supply system through the National Maintenance Program. The TASMGM is an ARNG organization.

ORGANIZATION

2-34. The TASMGM consists of a headquarters and headquarters detachment, an aviation support company (ASC), and a group support company. Figure 2-7 provides TASMGM organization.

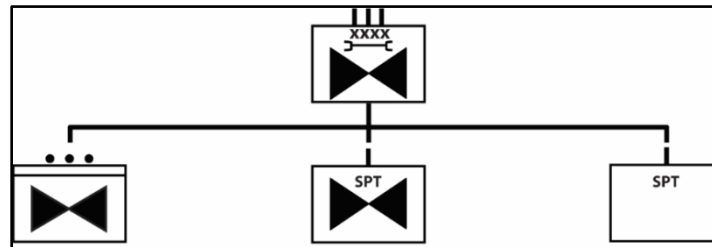


Figure 2-7. Theater aviation sustainment maintenance group

CAPABILITIES

2-35. When deployed, the TASMGM is attached to the joint force sustainment headquarters or expeditionary support command and sets up at a secure location within an AO. It establishes and provides 24-hour, fixed-base aviation field and sustainment maintenance, logistics, and other essential aviation sustainment support to aviation units. The TASMGM performs field maintenance, depot-level crash and battle damage repair, and sustainment/depot-level repair of major end items. It also performs sustainment-level maintenance for aircraft and aviation ground support equipment at fixed-land or sea-based locations. The TASMGM assists deploying aviation operational units with port operations. See ATP 3-04. 7 for more information.

SECTION IV – AVIATION BATTALIONS AND SQUADRONS

2-36. This section provides details of the organization and capabilities of the aviation battalions and squadrons.

AIR CAVALRY SQUADRON

2-37. As an element of the CAB, the ACS provides accurate and timely information collection, provides reaction time and maneuver space, and destroys, defeats, delays, diverts, or disrupts enemy forces in support of the combined arms team. Although the ACS is fully capable of conducting attacks, the integration of RQ-7B UAS at the troop level makes the ACS the best formation for conducting reconnaissance, security, and movement to contact as primary missions, with attack operations as a secondary mission. The ACS typically employs its aircraft in formations as small as Scout weapons teams (SWTs) of two aircraft to as large as troop or squadron formations. The ACS is an Active Duty organization.

ORGANIZATION

2-38. The ACS consists of a headquarters and headquarters troop, three air cavalry troops (ACTs) equipped with eight AH-64s and four RQ-7B Shadow unmanned aircraft each, an aviation maintenance troop (AMT), and a forward support troop. Figure 2-8 provides ACS organization.

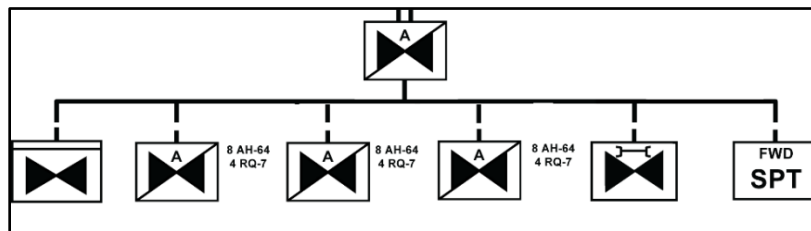


Figure 2–8. Air cavalry squadron

CAPABILITIES

2-39. The ACS conducts the following tasks:

- Zone, route, and area reconnaissance.
- Reconnaissance in force (when task-organized).
- Screen.
- Guard and area security (when task-organized).
- Movement to contact.
- Attack.

ATTACK BATTALION

2-40. As an element of the CAB, the AB provides accurate and timely information collection, provides reaction time and maneuver space, and destroys, defeats, delays, diverts, or disrupts enemy forces in support of the combined arms team. Although the AB is fully capable of conducting reconnaissance, security and movement to contact operations, it has less overall reconnaissance capability than the ACS due to the lack of organic UAS at the company level, unless the Gray Eagle company is released partially or in total from division control to conduct dedicated MUM-T in support of the AB. The AB typically employs its aircraft in formations as small as attack weapons teams (AWTs) of two aircraft to as large as company or battalion formations. The AB is an Active Duty and ARNG organization. The AB also provides staff planning, integration, and coordination for joint and combined arms operations for the Gray Eagle UAS company.

ORGANIZATION

2-41. The AB consists of an HHC, three attack companies (ACs) equipped with eight AH-64s each, an aviation maintenance company (AMC), and a forward support company (FSC) (figure 2-9).

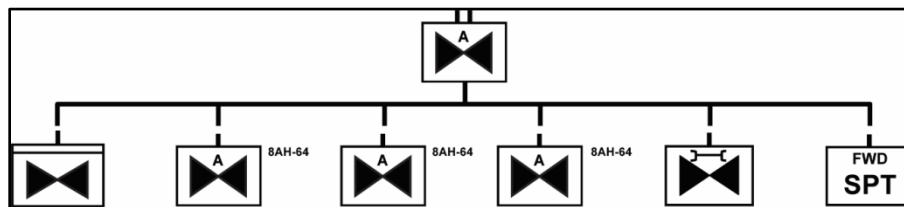


Figure 2–9. Attack battalion

CAPABILITIES

2-42. The AB conducts the following tasks:

- Attack.
- Zone, route, and area reconnaissance.
- Screen.
- Guard and area security (when task-organized).
- Movement to contact.
- Reconnaissance in force (when task-organized).

ASSAULT HELICOPTER BATTALION

2-43. As a subordinate element of the CAB and ECAB, the AHB air assaults maneuver forces; positions personnel, supplies, and equipment; conducts CASEVAC; conducts PR; and enables C2 in support of the combined arms team. The AHB is an Active Duty, ARNG, and USAR organization.

ORGANIZATION

2-44. The AHB consists of an HHC, three assault helicopter companies of 10 UH-60s each, an AMC, and a FSC. Figure 2-10 provides AHB organization.

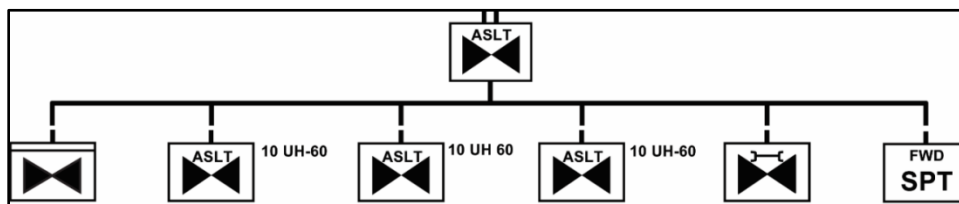


Figure 2-10. Assault helicopter battalion

CAPABILITIES

2-45. The AHB conducts the following tasks:

- Air assault.
- Air movement.
- Aerial CASEVAC.
- Aerial C2.
- PR.
- Reconnaissance.
- Aerial-delivered mine operations.

GENERAL SUPPORT AVIATION BATTALION

2-46. The GSAB is a subordinate element of the CAB, ECAB, and TAB. The GSAB air assaults maneuver forces; positions personnel, supplies, and equipment; evacuates casualties; conducts PR; and enables C2 in support of the combined arms team. The GSAB is an Active Duty, ARNG, and USAR organization.

ORGANIZATION

2-47. The GSAB in the CAB and TAB-A consists of an HHC, a command aviation company (CAC) of 8 UH-60s, a heavy lift company with 12 CH-47s, an air ambulance company of 15 HH-60s, an AMC, a FSC, and an ATS company. Figure 2-11, page 2-10, provides CAB and TAB-A GSAB organization.

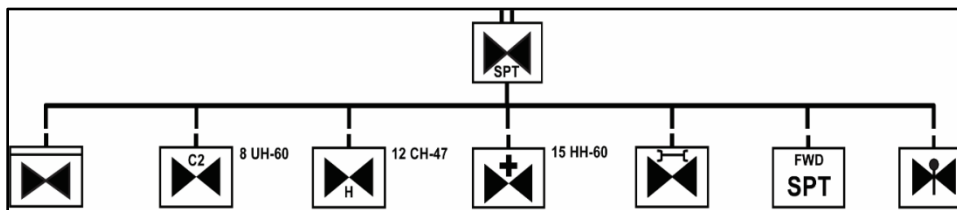


Figure 2–11. General support aviation battalion (CAB)

2-48. The GSAB in the ECAB consists of an HHC, a CAC of 8 UH-60s, a heavy lift company with 12 CH-47s, 2 air ambulance companies of 15 HH-60s each, an AMC, a FSC, and an ATS company. Figure 2-12 provides ECAB GSAB organization.

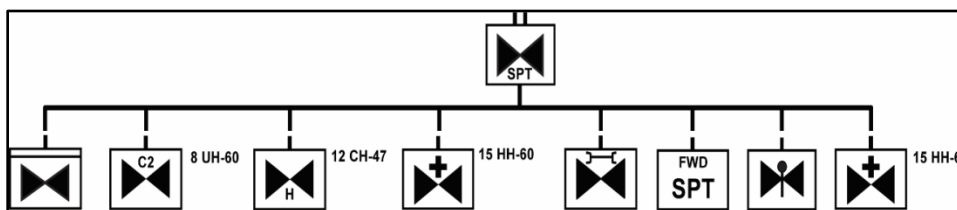


Figure 2–12. General support aviation battalion (ECAB)

2-49. The GSAB in the TAB-GS consists of an HHC, a CAC of 8 UH-60s, 2 HLCs with 12 CH-47s each, an air ambulance company of 15 HH-60s, an AMC, and a FSC. Figure 2-13 provides TAB-GS GSAB organization.

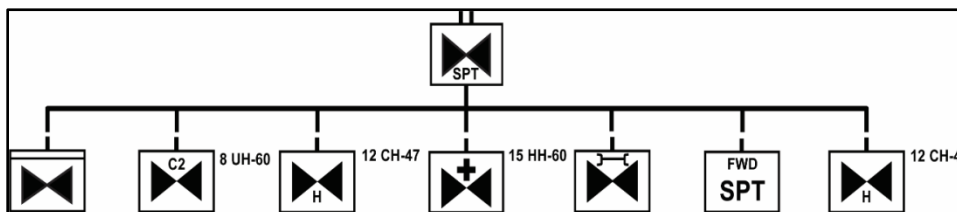


Figure 2–13. General support aviation battalion (TAB-GS)

CAPABILITIES

2-50. The GSAB conducts the following tasks:

- Air movement.
- Aerial FARP support.
- Air assault.
- PR.
- Aerial C2.
- AE.
- Aerial CASEVAC.
- ATS.

AVIATION SUPPORT BATTALION

2-51. The ASB is an element of the CAB, ECAB, and TAB. It provides aviation and ground field maintenance, network communications, resupply, and medical support. The ASB provides maintenance

augmentation to aviation battalions when required. The ASB is an Active Duty, ARNG, and USAR organization.

ORGANIZATION

2-52. The ASB consists of an HHC, a distribution company, an ASC, and a network support company. Figure 2-14 provides ASB organization.

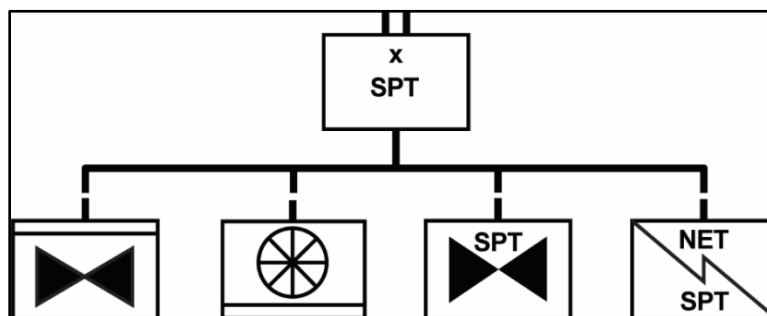


Figure 2–14. Aviation support battalion

CAPABILITIES

2-53. The ASB performs the following tasks:

- Ground vehicle and aviation maintenance and recovery operations.
- Signal and network support to the CAB for C2.
- Conducts sustainment as a warfighting function for the CAB when functioning as an organic CAB.
- Provides deployment support to the CAB during embarkation and debarkation.
- Distribution management operations within the aviation brigade.
- Role 1 Army HSS for the aviation brigade.

SECURITY AND SUPPORT BATTALION

2-54. The SSB is an element of the TAB-GS. It is a multi-purpose aviation unit that supports a variety of federal and state missions in permissive environments by providing accurate and timely reconnaissance information; positioning personnel, supplies, and equipment; evacuating casualties; search and rescue; and enabling C2 in DSCA operations. The SSB is an ARNG organization.

ORGANIZATION

2-55. The SSB consists of an HHC, three security and support companies of eight UH-72s, and an air ambulance company of eight UH-72s. Figure 2-15 provides SSB organization.

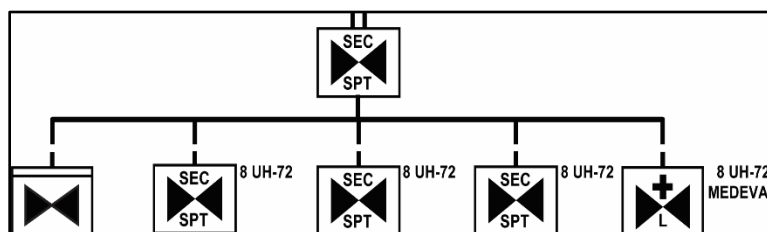


Figure 2–15. Security and support battalion

CAPABILITIES

2-56. The SSB provides a geographically-dispersed readily-available, light-utility aviation capability for federal or state authorities and combatant commanders. It primarily supports homeland security/defense, but can also deploy and operate world-wide in permissive environments. The SSB is capable of operating as a separate battalion, an ABTF, or task-organizing into company or platoon elements to support assigned missions. The SSB conducts the following tasks in permissive environments only:

- Air movement.
- Reconnaissance and observation in support of counter-narcotic, drug interdiction, and law enforcement agencies.
- Aerial observation of terrain or man-made features.
- AE.
- Aerial CASEVAC.
- Civil search and rescue operations.

AIRFIELD OPERATIONS BATTALION

2-57. The AOB provides airfield management including airfield operations, flight dispatch services, and ATS. The AOB is an Active Duty and ARNG organization.

ORGANIZATION

2-58. The AOB consists of a headquarters element, an airfield management element, and an ATS company. Figure 2-16 provides the organizational structure of an AOB.

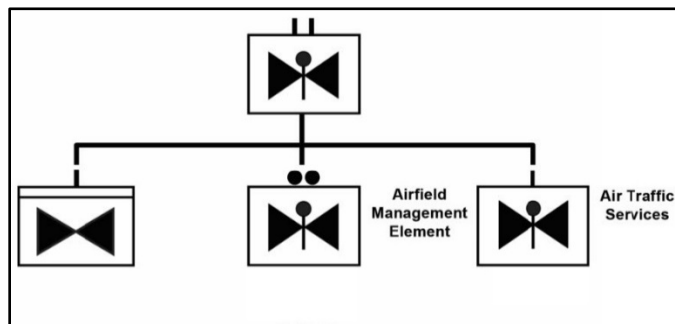


Figure 2–16. Airfield operations battalion

CAPABILITIES

2-59. The AOB is capable of deploying to expeditionary or mature theaters to conduct airfield management and ATS.

2-60. The AOB may relieve CAB ATS companies in place to allow CABs to reposition forward during offensive operations or during sustained operations when additional airfields are required in the theater. The AOB conducts ATS and airfield management.

THEATER FIXED-WING BATTALION

2-61. The theater FW battalion provides long-range air movement for inter-theater, intra-theater, and garrison operations. The theater FW battalion is an ARNG and USAR organization.

ORGANIZATION

2-62. The theater FW battalion consists of an HHC and three theater aviation companies. One of the theater aviation companies consists of eight C-12s, while the other two differ based on whether they are ARNG or USAR. The USAR theater aviation companies consist of four C-12s and four UC-35s, while the ARNG companies consist of eight C-12s (figure 2-17).

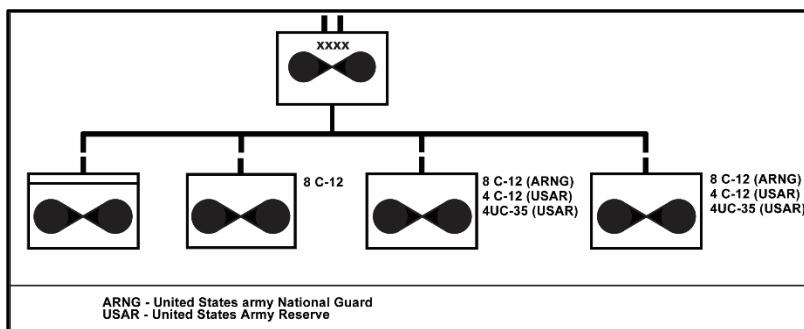


Figure 2–17. Theater fixed-wing battalion

CAPABILITIES

2-63. The theater FW battalion is designed to operate as a separate battalion, an ABTF, or task-organize into company or platoon elements to support assigned missions. The theater FW battalion conducts the following tasks:

- Air movement.
- Aerial C2 support.
- Aerial CASEVAC.

SECTION V – AVIATION SQUADRON/BATTALION TASK FORCES

2-64. Army Aviation is a modular force that may task-organize as a mission tailored ASTF/ABTF to conduct operations. This task organization may be OPCON or attached to cover the length of an operation or deployment.

2-65. The configuration of the ASTF/ABTF varies widely and is driven by mission variables. In general, an ASTF/ABTF consists of an aviation squadron/battalion headquarters troop/company with its organic AMT/AMC (typically augmented) and forward support troop/company, and two to five organic and non-organic aviation maneuver companies and/or platoons. Based on the requirements of the mission, the aviation maneuver companies/troops and platoons are typically a tailored mix of attack, reconnaissance, assault, heavy lift, UAS, and MEDEVAC assets.

2-66. An ABTF that supports an infantry unit conducting frequent air assaults requires more assault and heavy lift aircraft than an ABTF with other mission requirements. An ASTF/ABTF that supports an armor unit tasked with a covering force mission typically requires more attack aircraft. During semi-permanent task organization, the mix of aviation maneuver troops/companies and platoons (and specific numbers and types of aircraft) is tailored to meet the predominant numbers and types of missions required for the supported unit. When task-organized as an ASTF/ABTF to accomplish one mission, the ASTF/ABTF is specifically tailored for the mission.

2-67. Regardless of whether the task organization is OPCON or attached, maintenance (and possibly staff) personnel and equipment augmentation is required from another aviation maneuver squadron/battalion that detaches the troop/company or platoon to the ASTF/ABTF. The ASB may also provide additional maintenance and sustainment equipment and personnel based on mission variables.

2-68. Figure 2-18 is an example of an ASTF that is built on an ACS headquarters, AMT (augmented for task force aircraft) and forward support troop with two organic ACTs, an attached assault helicopter company (AHC), and forward support MEDEVAC platoon. This depicted ASTF is capable of conducting sustained reconnaissance, security, movement to contact, MEDEVAC, attack, air movements, or air assaults.

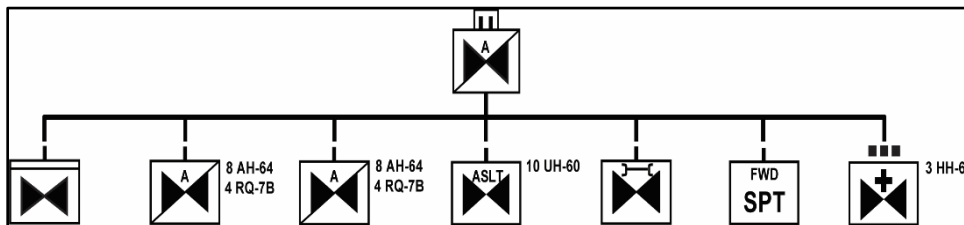


Figure 2–18. Air cavalry squadron task force

2-69. Figure 2-19 is one example of the composition of an attack-heavy ABTF. The foundation of the ABTF is built on an AB HHC, AMC (augmented for task force aircraft), FSC, two organic ACs, an attached Gray Eagle platoon, one AHC, and one forward support MEDEVAC platoon. The depicted ABTF is capable of conducting attack, movement to contact, MEDEVAC, reconnaissance, security operations, air movements, or air assaults.

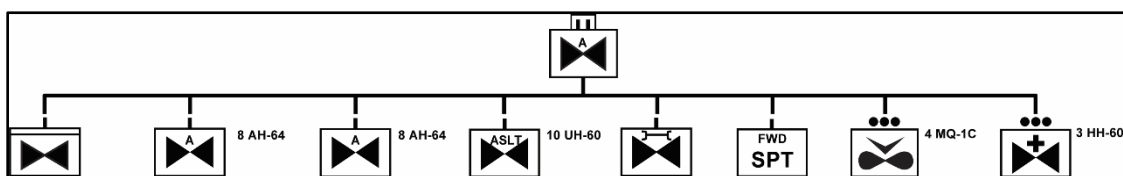


Figure 2–19. Attack battalion task force

2-70. Figure 2-20 is an example of an assault-heavy ABTF. The foundation of the ABTF is built on an AHB, HHC, AMC (augmented for task force aircraft), a FSC, two organic AHCs, an attached attack company (AC), one Gray Eagle platoon, a heavy lift platoon, and a forward support MEDEVAC platoon. The depicted ABTF is capable of conducting greater than a company-sized air assault or air movement, MEDEVAC, and limited-duration reconnaissance, security, and attack operations.

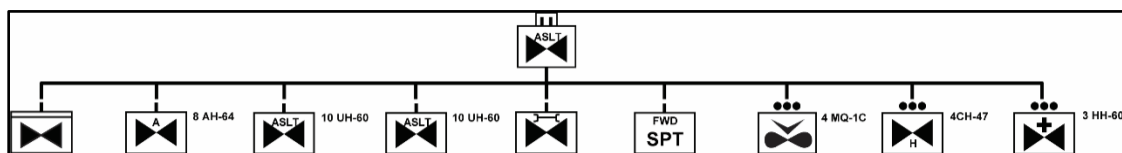


Figure 2–20. Assault aviation battalion task force

SECTION VI – COMMAND AND SUPPORT RELATIONSHIPS

2-71. Commanders build combined arms organizations using command and support relationships. Command relationships define command responsibility and authority. Support relationships define the purpose, scope, and effect desired when one capability supports another. Properly-established command and support relationships are critical to effective AGO. During LSCO, commanders must evaluate appropriate command or support relationships for each subordinate echelon during each phase of an operation. These reviews properly enable AGO through all phases of the operation, and best equip subordinate units to accomplish the commander's intent. Operations orders placing units under command of a different headquarters for any length of time must include a detailed summary of the relationship

between the unit, its new headquarters, and its parent unit. Typically, the smallest element Army Aviation detaches is a company-sized element with the exception of air ambulance units, which typically operate at the platoon level. However, elements as small as platoons, teams, and even individual aircraft may be cross-attached from one aviation formation to another.

COMMAND RELATIONSHIPS

2-72. Command relationships specify superior and subordinate headquarters responsibilities. The type of command relationship selected corresponds to the duration of the mission and it serves to clarify duties of gaining and losing headquarters. Table 2-1 provides more information on command relationships. Refer to FM 3-0 for additional information.

Table 2-1. Command relationships

If relationship is—	Then inherent responsibilities:							
	Have command relationship with—	All organic forces organized with the HQ	Organic HQ	Are assigned position or AO by—	Provide liaison to—	Establish and maintain communications with—	Have priorities established by—	Can impose on gained unit further command or support relationship of—
Organic			Army HQ specified in organizing document	Organic HQ	N/A	N/A	Organic HQ	Attached; OPCON; TACON; GS; GSR; R; DS
Assigned	Gaining unit	Gaining HQ	Gaining Army HQ	OPCON chain of command	As required by OPCON	As required by OPCON	ASCC or Service-assigned HQ	As required by OPCON HQ
Attached	Gaining unit	Gaining unit	Gaining Army HQ	Gaining unit	As required by GU	Unit to which attached	Gaining unit	Attached; OPCON; TACON; GS; GSR; R; DS
OPCON	Gaining unit	Parent unit and GU; GU may pass OPCON to lower HQ1	Parent unit	Gaining unit	As required by GU	As required by GU and parent unit	Gaining unit	OPCON; TACON; GS; GSR; R; DS
TACON	Gaining unit	Parent unit	Parent unit	Gaining unit	As required by GU	As required by GU and parent unit	Gaining unit	TACON; GS; GSR; R; DS

Note. ¹ In NATO, the gaining unit may not task-organize a multinational force. (See TACON.)

Table 2–1. Command relationships, continued

ADCON-administrative control AO-area of operations ASCC-Army Service component command DS-direct support GS-general support GSR-general support–reinforcing GU-gaining unit	HQ-headquarters N/A-not applicable NATO-North Atlantic Treaty Organization OPCON-operational control R-reinforcing TACON-tactical control
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ORGANIC

2-73. Organic forces form an essential part of a military organization as a part of its design. A CAB has five battalions, plus a headquarters company organic to it. If, for example, the AB is task-organized under a brigade combat team (BCT) headquarters for a temporary mission, it would return to the control of the CAB upon completion.

ASSIGNED

2-74. Subordinates are assigned in order to place units or personnel in an organization where such placement is relatively permanent, and/or where such organization controls or administers the unit or personnel for the primary functions of the unit. Due to sustainment, standardization, and safety requirements, aviation battalions or ASTFs/ABTFs typically remain assigned to their parent CAB. This relationship includes administrative control unless specifically stated otherwise.

ATTACHED

2-75. Subordinates are attached when the placement of units or personnel in an organization is relatively temporary. The commander of the unit that receives the attachment is responsible for the sustainment and logistical support that is beyond the capability of the attached unit. An example of this relationship is an aviation maneuver company attached to a sister aviation battalion to form an ASTF/ABTF. The gaining headquarters normally assumes administrative control requirements, particularly sustainment unless stated otherwise.

OPERATIONAL CONTROL

2-76. OPCON is a command relationship that gives a commander authority over subordinate forces to organize and employ those forces, designate objectives, assign tasks, and give direction regarding accomplishment of the mission. The commander exercising OPCON authority has no responsibility for logistical sustainment of the supporting unit. A CAB may place an ABTF or company-sized unit OPCON to a ground force for a specific mission requirement, usually of limited and short duration where no enduring sustainment is required.

TACTICAL CONTROL

2-77. TACON is a command relationship that gives a commander authority over assigned or attached forces or commands, or military capability or forces made available for tasking, which is limited to and is usually local direction and control of movements or maneuvers necessary to accomplish assigned missions. Notably, only the parent unit may further task-organize a unit that has been assigned TACON to another headquarters. The CAB frequently employs TACON during stability operations for short duration operations requiring a high degree of AGO, such as area security or air assaults.

SUPPORT RELATIONSHIPS

2-78. Support relationships are DS and GS. The aviation brigade or an ABTF may employ utility and heavy lift assets in a GS role to conduct aerial sustainment by the movement of personnel and equipment, or air ambulance assets when area coverage of multiple units and AOs is required. An ABTF is traditionally employed as DS to a brigade or higher headquarters. Table 2-2 depicts support relationships.

DIRECT SUPPORT

2-79. DS is a support relationship requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance. Army Aviation units may operate in a DS relationship allowing operations to be coordinated directly with the supported ground unit expediting synchronization and improving effectiveness of the relationship. DS is typically the relationship established when an ABTF is supporting a brigade or higher headquarters for an extended duration. This enables the CAB to effectively sustain the ABTF and maintain the appropriate levels of safety, standardization, and mission oversight.

GENERAL SUPPORT

2-80. GS is support that is given to the supported force as a whole and not to any particular subdivision thereof. Army Aviation units may be placed in GS of several units. They receive GS missions from their parent headquarters based upon support priorities established by the higher commander. When Army Aviation units operate in a GS role, the ground maneuver unit must request support from the parent higher headquarters of the aviation force.

Table 2–2. Support relationships

If relation- ship is—	Then inherent responsibilities—							
	Have comman d relation- ship with-	May be task- organize d by-	Receive sustain- ment from-	Are assigned position or an AO by-	Provi de liaiso n to-	Establis h and maintai n commun ications with-	Have priorities establishe d by-	Can impose on gained unit further support relationshi p of-
Direct support¹	Parent unit	Parent unit	Parent unit	Supported unit	Supported unit	Parent unit; supported unit	Supported unit	See note ¹
Reinforc- ing	Parent unit	Parent unit	Parent unit	Reinforced unit	Reinforced unit	Parent unit; reinforced unit	Reinforced unit; then parent unit	Not applicabl e
General support- reinforcing	Parent unit	Parent unit	Parent unit	Parent unit	Reinforced unit and as required by parent unit	Reinforced unit and as required by parent unit	Parent unit; then reinforced unit	Not applicabl e
General support	Parent unit	Parent unit	Parent unit	Parent unit	As require d by parent unit	As required by parent unit	Parent unit	Not applicabl e
Note. ¹ Commanders of units in direct support may further assign support relationships between their subordinate units and elements of the supported unit after coordination with the supported commander.								
AO-area of operations								

SECTION VII – AVIATION COMMAND POSTS

2-81. Aviation units typically operate from a main command post and a tactical command post while conducting operations. Throughout planning, preparation, and execution, it is crucially important that commanders and staffs consider the survivability of each of these C2 nodes.

MAIN COMMAND POST

2-82. The *main command post* is a facility containing the majority of the staff designed to control current operations, conduct detailed analysis, and plan future operations (FM 6-0). It contains the necessary enablers to execute the operations process and to control current operations. See FM 6-0 or ATP 6-0. 5 for more on CPs and CP survivability. The main CP is the primary C2 structure for the brigade and battalion. Its primary missions are to control operations, maintain situational understanding, inform the commander's decisions, and prepare and publish orders and plans. It also provides detailed analysis, planning, and coordination for the tactical CP. The commander operates from the main CP when not operating from the tactical CP, command vehicle, or an aircraft; however, when the commander operates from a forward position, the unit executive officer or deputy commander leads operations in the main CP. The main CP's primary functions include the following:

- Communicates and informs subordinate, higher, and adjacent units.
- Informs and assists the commander and subordinate commanders.
- Prepares and issues fragmentary orders, operation orders, operational plans, intelligence summaries, intelligence reports, and situation reports.
- Operates on a 24-hour basis.
- Conducts future planning continuously.
- Maintains running estimates continuously.
- Maintains situational understanding and a common operational picture across the Army warfighting functions.
- Receives, evaluates, and processes combat information from subordinate units and higher headquarters.
- Maintains the necessary products to further the commander's situational understanding.
- Processes information into intelligence.
- Performs limited video exploitation or Phase 1 processing, exploitation, and dissemination for UAS and AH-64 sensor data.
- Conducts fire support planning.
- Conducts airspace control planning and coordination.
- Coordinates terrain management.
- Coordinates and tracks sustainment requirements (logistics, air and ground maintenance capabilities, and status).
- Makes recommendations to the commander.
- Plans and orchestrates briefings, debriefings, and rehearsals.
- Coordinates with Division joint air-ground integration center (JAGIC) in order to plan and execute air operations in division-assigned airspace.
- Provides a CAB liaison officer (LNO) to the JAGIC.
- If assigned or attached to a tactical corps command post, provides liaison and coordinates directly with the integration centers within the corps current operations cell.

TACTICAL COMMAND POST

2-83. The *tactical command post* is a facility containing a tailored portion of a unit headquarters designed to control portions of an operation for a limited time (FM 6-0). The tactical CP is established to enhance C2 of current operations. It can be deployed to higher or subordinate headquarters to facilitate parallel planning

or when extended distances preclude operation from the CP. The tactical CP must communicate with higher headquarters, adjacent units, employed subordinate units, and the main CP. The tactical CP relies on the main CP for planning, detailed analysis, and coordination.

2-84. The tactical CP is fully mobile and small in size to facilitate security and frequent hasty displacement. Its organizational layout, personnel, and equipment is mission variable dependent and should be detailed in the unit standard operating procedures (SOPs).

2-85. While the operations section is responsible for the tactical CP, the tactical CP is normally comprised of the command group, and personnel from the intelligence, operations, and fires staff cells. Augmentation may include the standardization officer, aviation mission survivability officer, aviation safety officer, aviation LNO, and the personnel staff officer and/or logistics staff officer (if the main CP is displacing).

COMMAND POST SURVIVABILITY

2-86. CP survivability is crucial to the success of any mission. During LSCO, commanders may direct frequent relocations of CPs in order to prevent detection, ensure survivability, and remain postured to support ground maneuver forces. Depending on threat and operational tempo, commanders must tailor their CPs to consider a balance between effectiveness and survivability. Dispersion, reduced size, redundant systems and processes, and enhanced mobility all provide potential increases to CP survivability.

2-87. Aviation CPs are faced with the challenge of requiring significant amounts of equipment and space to effectively conduct operations. Commanders and staffs must consider what equipment is absolutely mandatory to conduct effective operations, how each piece of equipment is moved, and what options may exist to minimize signature. Examples of minimizing signature include—

- Dispersed or camouflaged elements are harder to detect.
- Parking aircraft away from dusty areas minimizes their signature when taking off or landing.
- Enforcing light discipline makes the CP harder to locate.
- Displacing frequently makes the unit harder to track.

SECTION VIII – AVIATION BRIGADE SPECIAL STAFF

2-88. Aviation brigades have a variety of unique special staff to assist the commander and other staff members in performing their functional responsibilities. Below is a description of key personnel found in the brigade headquarters. For more information about aviation brigade staff positions, see the Force Management System website.

AVIATION SAFETY OFFICER

2-89. The aviation safety officer is the primary advisor to the commander and staff on all matters pertaining to aviation and ground safety. The aviation safety officer monitors and conducts hazard analysis of plans, training, operations, and unit functional areas to advise commanders on recommended corrective actions, policies, objectives, and priorities to improve performance. This is a CW5 MTOE position.

AVIATION STANDARDIZATION OFFICER

2-90. The aviation standardization officer is the primary advisor to the commander for the aircrew training program. The standardization officer is unique to aviation units in that he or she monitors and provides assistance to the commander in the development and implementation of aircrew training programs and standardized execution of unit mission essential tasks. This is a CW5 MTOE position.

UNMANNED AIRCRAFT SYSTEM STANDARDIZATION OPERATOR

2-91. The UAS standardization operator is senior advisor to the brigade commander and command staff on all brigade UAS operations, personnel, and system statuses. This position requires a SFC MTOE position in the CAB who is a qualified IO and selected by the unit commander. The standardization operator is

qualified and current in at least one of the UAS assigned to the unit. The standardization operator provides technical supervision of the UAS program for the brigade along with assisting the brigade SP with supervision and maintenance of the aircrew training program.

2-92. The standardization operator provides oversight and updates for all assigned UAS at all levels to the brigade commander and command staff. He or she administers training and evaluation in specified standardization operator duties as described in the aircrew training module and Training Circular (TC) 3-04. 11. He or she is also responsible for providing guidance, mentorship, training, and evaluations to all assigned operators and IOs in the designated unmanned aircraft per approved aircrew training tasks. The standardization operator maintains the brigade's UAS standardization program and conducts inspections for assigned battalion, company, and troop UAS programs to include IO continuation training. Additional information can be found in AR 95-1, UAS training modules, and associated TCs.

AVIATION MISSION SURVIVABILITY OFFICER

2-93. The aviation mission survivability officer is the primary advisor to the commander on the aviation mission survivability program. This program encompasses combat survivability and combat aviation mission analysis and planning. Combat survivability includes aircraft survivability equipment and countermeasures, characterizing threat capabilities and limitations affecting the vertical scheme of maneuver, and the combat TTPs of aviation forces. This is a CW5 MTOE position.

AVIATION MASTER GUNNER

2-94. Assigned to the CAB tactical command post, the aviation master gunner is the primary advisor to the commander for aircraft gunnery training programs to include helicopter door gunnery and UAS gunnery. While deployed in theater, the master gunner manages helicopter gunnery training and sustainment and advises the commander and staff in the selection of weapons and employment techniques during the mission planning process. The aviation master gunner is assigned to the CAB as well as the AB/ACS. At the CAB level, the aviation master gunner is a CW4 MTOE position.

BRIGADE AVIATION MAINTENANCE OFFICER

2-95. The brigade aviation maintenance officer (BAMO) is the commander's primary advisor on generating aviation combat power. This is a CW5 MTOE position. See chapter 4 for more information on the BAMO.

FLIGHT SURGEON

2-96. The flight surgeon advises the commander on all aviation medicine matters to include flight status qualification, support to aircrews, medical aspects of aircrew training, and monitoring the fit and use of aviation life support equipment. This is a Major MTOE position.

MEDICAL OPERATIONS OFFICER

2-97. The medical operations officer advises the commander and staff on MEDEVAC operations. He or she is responsible for planning MEDEVAC operations, maintaining liaison with the medical brigade and division patient movement cells, operating a MEDEVAC control cell, and advising on aircraft and patient movements. This is a Captain MTOE position.

SECTION IX – BRIGADE AVIATION ELEMENT

2-98. The brigade aviation element (BAE) is a planning and coordination cell organic to all BCTs whose purpose is to incorporate aviation into the ground maneuver commander's scheme of maneuver. The BAE focuses on providing employment advice and initial planning for aviation missions, UAS, airspace planning and coordination, and synchronization with the tactical air control party and fires cell.

ORGANIZATION

2-99. The BAE is comprised of the following aviation personnel:

- Brigade aviation officer.
- Assistant brigade aviation officer.
- Aviation mission survivability officer.
- UAS officer.
- Operations sergeant.
- Assistant operations sergeant.
- Operations specialist.

CAPABILITIES

2-100. The BAE performs the following tasks:

- Integration and synchronization of aviation into the supported unit's scheme of maneuver with guidance from the CAB as necessary.
- Employment planning advice for the employment of all manned and unmanned Army Aviation units designated to support the BCT.
- Tracking of the status of aviation assets in support of the BCT.
- Direct coordination with CAB and aviation task forces.
- Close integration and synchronization with LNOs and fire support officers.
- Airspace control planning and execution.
- Enabling C2 of current operations.

SECTION X – AVIATION LIAISONS

2-101. An LNO or liaison team represents the supporting CAB or ASTF/ABTF at the supported maneuver headquarters to conduct detailed planning and unit-to-unit coordination for the duration of a specific operation. LNOs facilitate coordination for operations with higher headquarters and/or supported ground maneuver units. Although a BAE conducts many of the functions traditionally performed by an LNO, the aviation LNO remains a critical part of the operations process and execution of AGO. ECAB and TAB headquarters each contain an aviation LNO position, but CABs do not contain this position by MTOE. Aviation battalions typically contain a two-person LNO element to represent their units as directed to facilitate planning and execution of AGO.

DUTIES

2-102. LNOs participate in the supported unit's operations process and ensure aviation is effectively integrated into planning. LNOs ensure supportability of COAs and relay a clear task and purpose to the parent aviation unit. Unit commanders empower LNOs to act on their behalf and ensure liaison teams are fully resourced. LNOs maintain positive two-way communications with their parent aviation unit and do not commit assets or approve changes to a plan without coordinating with the unit operations officer or commander. LNOs perform the following tasks:

- Understand and incorporate capabilities, limitations, and tactical employment of aviation assets.
- Assist in the preparation of aviation estimates, plans, orders, and reports.
- Assist in planning aviation missions.
- Coordinate with airspace users and the higher airspace element for airspace management.
- Maintain the operational status of aviation assets and their impacts on the supported unit's mission.
- Inform appropriate aviation units of current and possible future operations.
- Maintain continuous communications with aviation units supporting the ground unit.

2-103. In general, the CAB sends a battalion-level LNO team to a supported ground maneuver battalion, since ground maneuver battalions do not possess a BAE expert at that level. The LNO team should have commissioned or warrant officers with operational experience in the employment of aviation assets for all seven aviation core competencies. Their employment is temporary and mission-specific since LNO team members perform other functions within the ASTF/ABTF or CAB staffs.

CAPABILITIES

2-104. LNOs have access to current battalion status information to provide the most accurate common operational picture of aviation capabilities. LNOs or liaison teams should be equipped and manned to support 24-hour operations. Minimum equipment includes the following:

- Compatible automation equipment to provide connectivity between the supported unit and the aviation battalion headquarters.
- Necessary vehicles and equipment required to operate on the move.
- Two single-channel ground and airborne radio systems and supporting antennas/equipment to monitor command nets and communicate with aviation units.
- Map of the AO with supporting battle-tracking tools and equipment.
- Appropriate FMIs, ATPs, TCs, SOPs, charts, and checklists to assist in aviation planning and integration.

SECTION XI – AIRSPACE CONSIDERATIONS

2-105. Airspace control is an additional task of the C2 warfighting function. It is a continually refined activity within the operations process. Each operational area has specific requirements for airspace control. If or when assigned responsibility for a volume of airspace, maneuver commanders exercise airspace control within their assigned AOs through the integration of positive and procedural airspace control. Airspace elements provide airspace control expertise in planning efforts, with a focus on enabling the commander flexibility while reducing risk. Commanders must ensure detailed planning and coordination with next higher airspace element in order to integrate their aircraft (manned and unmanned) requirements into the airspace control plan and airspace control order. See FM 3-52 for more information.

2-106. When maneuvering, Army Aviation RW assets normally operate below the coordination level using airspace coordination areas or phase lines supporting an operation. Aviation units avoid using restricted operation zones (ROZs) when possible in order to permit other nearby operations to continue simultaneously. UAS assets normally operate above the coordination level using an air route, airspace coordination area, ROZ, or kill box. A *kill box* is a three-dimensional, permissive fire support coordination measure with an associated airspace coordinating measure (ACM) used to facilitate the integration of fires (JP 3-09). When a division is assigned a volume of airspace, that division's JAGIC and subordinate brigade's air defense airspace management (ADAM)/BAE integrate manned and unmanned Army aircraft using enhanced procedural control—a combination of prescribed ACMs and voice and digital advisories that ensure integration and simultaneity of effects. The JAGIC's enhanced procedural control compliments the mission orders aviators and UAS operators receive from their respective maneuver command posts. When manned or unmanned Army aircraft operate in division airspace without a subordinate brigade AO assignment (such as ahead of a forward boundary) the JAGIC provides enhanced procedural control using appropriate coordination measures and C2 systems.

2-107. Airspace elements continuously monitor all airspace users to support their operations and those transiting through the airspace over their AOs. This continuous situational awareness ensures that commanders can react to any situation requiring immediate use of airspace to include unplanned aircraft launch, aerial delivery of fires, immediate ACMs, and indirect fire missions. When conducting the MUM-T TTP, UAS-extended endurance and unique launch/recovery requirements may require AWTs to link up in flight. Once linked up, the AWT air mission commander assumes responsibility for the maneuvering of the UAS and directing the UAS crew's tactical focus. The UAS aircraft commander is still responsible for coordinating his or her movement with the appropriate airspace element. Coordination between UAS and AWT aircrews to determine scheme of maneuver, engagement area development, frequency management,

and crew coordination prior to mission execution is critical to successful MUM-T operations. When conducting MUM-T and required to engage with an armed UAS, the air mission commander is responsible for coordinating airspace (if not coordinated through pre-mission planning) that encompasses the UAS location, missile flight route, and target location. When supporting a ground maneuver unit, the air mission commander coordinates with the ground maneuver commander and BCT ADAM cell. When assigned an AO, the air mission commander coordinates through the CAB ADAM cell. The CAB ADAM cell must communicate regularly with the BCT ADAM cell to coordinate and relay ACMs required to maintain situational awareness for the CAB commander.

2-108. ACMs must enable airspace users to operate effectively and safely, but must also provide the commander flexibility to continue operations throughout the AO. A simple airspace control plan is more easily understood and applied by all airspace users, and more-easily lends itself to immediate ACM implementation. Airspace planners must consider all ground and air units involved in an operation and ensure war gaming analyzes contingencies which involve airspace usage, to include operating with degraded communications or C2 systems. Simple, well understood procedural controls which do not require positive communications with a C2 node may provide the most redundant and effective method of airspace coordination. Common ACMs and fire support coordination measures for Army Aviation shown in figure 2-21 are as follows:

- The coordinating altitude is an ACM that uses altitude to separate users and as the transition between airspace control elements (JP 3-52).
- The coordination level is a procedural method to separate FW and RW aircraft by determining an altitude below which FW aircraft normally will not fly (JP 3-52).
- An airspace coordination area, a fire support coordination measure, is a three-dimensional block of airspace in a target area in which friendly aircraft are reasonably safe from friendly-surface fires.
- A ROZ is airspace reserved for specific activities in which the operations of one or more airspace users are restricted.
- Standard use Army aircraft flight routes are routes established below the CL to facilitate the movement of Army Aviation assets; they are normally located in the Corp through brigade rear AOs and do not require approval by the airspace control authority.
- All airspace users must coordinate with the appropriate airspace elements when flying or firing through a coordinating altitude or coordination level.

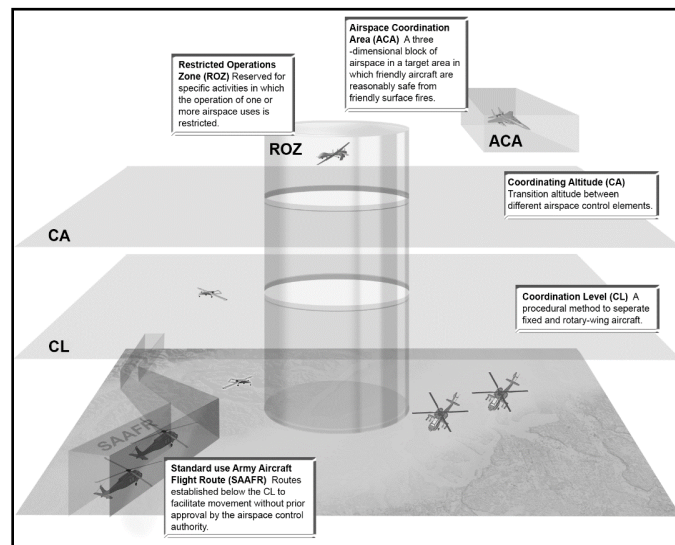


Figure 2–21. Common Army airspace coordinating measures

2-109. The airspace element in the CAB is the ADAM cell, located in the brigade main CP. The airspace element in the BCT is the ADAM/BAE. The ADAM cell has established links within the theater air ground system, through the next higher airspace element, and up to the airspace control authority normally located at an established air operations center. The ADAM cell integrates information systems (air defense systems integrator) with joint networks (Link-16) to provide a joint, integrated, three dimensional near-real-time air common operational picture. With these systems, the ADAM cell coordinates immediate and pre-planned ACMs as required to support operations. The ADAM cell receives airspace requirements from brigade elements and coordinates these ACMs with the next headquarters airspace element. Pre-planned ACMs are published on the airspace control order. Immediate ACMs are requested from subordinate brigade elements via voice or digital communication and coordinated with the appropriate airspace element and depicted on the common air picture when approved. The ADAM cell must continuously plan for and monitor the operations of all airspace users that may affect CAB or BCT operations.

Chapter 3

Army Aviation Operations

SECTION I – CORE COMPETENCIES

3-1. Army Aviation conducts AGO as the aerial maneuver force of the combined arms team, or as an independent maneuver force in support of ground forces conducting offensive, defensive, stability, and DSCA operations. Regardless of the type of mission performed by the ground force, most aviation operations are offensive in nature and designed to provide an asymmetric advantage. Aviation operations are most effective when assets are task organized to correctly support the higher headquarters mission.

3-2. All aviation operations are planned and executed according to the operations process. The methods for employing attack or reconnaissance units in section III are applicable to most Army Aviation operations. When evaluating options for employing Army Aviation, commanders balance the need for flexible and rapid response to a contingency against deliberate employment as a massed force. Mass enables the combined arms team to gain and maintain situational understanding; control operational tempo; achieve the element of surprise; seize, retain, and exploit the initiative; present the enemy with multiple dilemmas; gain positions of relative advantage over an enemy force; and/or prevent an enemy force from gaining a position of relative advantage. During the planning and preparation phases of a massed operation, commanders should provide subordinate units time to recover from previous missions or prepare for upcoming tasks; this may necessitate lapses or reductions in AGO depending on the amount of preparation required.

3-3. The following are the seven core competencies of Army Aviation:

- Provide accurate and timely information collection on the enemy, terrain, local populations and friendly forces.
- Provide reaction time and maneuver space.
- Destroy, defeat, disrupt, divert, or delay enemy forces.
- Air assault ground maneuver forces.
- Air movement personnel, equipment, and supplies.
- Evacuate wounded or recover isolated personnel.
- Enable C2 over extended ranges and complex terrain.

3-4. These core competencies are executed through the following tactical, enabling, and sustaining tasks: movement to contact, attack, reconnaissance, security, air assault, C2 support, PR, air movement, and AE. For more information on the conduct of aviation operations, see ATP 3-04. 1.

SECTION II – MOVEMENT TO CONTACT

3-5. A movement to contact is an offensive task designed to develop the situation and establish or regain contact. It prevents the premature commitment of friendly combat power. Executing a movement to contact enables freedom of action to develop the situation and creates favorable conditions to conduct subsequent tactical or enabling tasks either by the force conducting the movement to contact or a follow-on main body force. The speed, range, lethality, long-range communications, and persistent reconnaissance capabilities of Army Aviation attack or reconnaissance units, using MUM-T, make them ideally suited to conduct movement to contact. Army Aviation executes movement to contact at the platoon to battalion or squadron level, either independently, or as a member of the combined arms team. In either case, the movement to contact is organized with the smallest acceptable security force forward to initially gain and maintain contact with the enemy and a separate force capable of developing the situation based on the size of the

expected enemy force and commander's intent. The following fundamentals of the aviation movement to contact provide the framework for planning and execution:

- Focus all efforts on finding the enemy.
- Gain enemy contact early with the smallest reconnaissance force within the allotted time.
- Maintain contact and fix the enemy while retaining the freedom of maneuver to prevent premature commitment of the protected force.
- Maintain adequate follow-on combat power to rapidly develop the situation after gaining enemy contact.
- Destroy, defeat, disrupt, divert, or delay enemy forces within capability or conduct battle handover or bypass in accordance with the commander's intent.

3-6. Attack or reconnaissance units plan and execute a zone reconnaissance with an enemy force oriented focus as their part of a larger unit movement to contact. To maintain continuous reconnaissance, the attack or reconnaissance unit rotates aircraft as necessary. Continuous rotations of these teams in conjunction with UAS increases the depth and breadth of this aviation reconnaissance effort. It also enhances the survivability of aviation assets, enables persistent reconnaissance in zone with increased capability to gain and maintain enemy contact, and provides more options to develop the situation with maneuver and fires.

3-7. Once the attack or reconnaissance unit gains contact with the enemy, its aircraft deploy into locations where they may continue to maintain contact and report the situation. The unit commander evaluates and develops the situation. The commander then chooses a follow-on COA based on the size and composition of the enemy force and higher commander's intent. The aviation unit executes the selected COA while simultaneously recommending a COA to the higher commander. If the size or composition of the enemy force meets bypass criteria, the enemy is reported and bypassed to continue the movement to contact. Normally the unit keeps the bypassed force under observation. This observation can be maintained using unmanned systems. If the size and composition of the enemy force meets engagement criteria, the aviation unit commander may attack to disrupt, defeat, or destroy the enemy. The unit may transition to a screen if the enemy force is too large, or conduct a battle handover to a ground maneuver force to further develop the situation. Figure 3-1 provides an example of movement to contact.

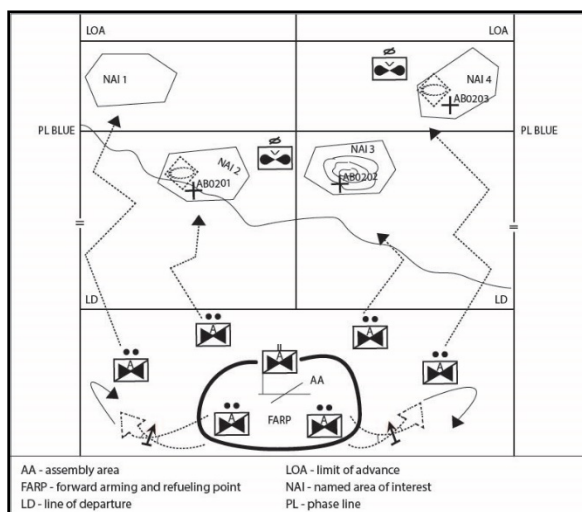


Figure 3–1. Air cavalry squadron conducts movement to contact using MUM-T

3-8. The aviation unit's intelligence preparation of the battlefield (IPB) effort focuses on determining the characteristics of the AO that influence friendly and enemy operations. This includes determining the likely composition, capabilities, and most likely and most dangerous COA of the enemy force. When the expected enemy contact is a mounted enemy force that is expected to be moving, IPB focuses on high speed avenues of approach and cross-mobility corridors to gain greater understanding of the physical

environment to enable rapid execution. When the enemy force is dismounted and expected to be on the move, IPB is focused on determining dismounted avenues of approach or infiltration routes. When operating against a defending or stationary enemy force, IPB focuses on the best defensible terrain or areas that the enemy may use as cover and concealment for the main body and security elements. IPB should also focus on natural obstacles, known man-made obstacles and the terrain that is best suited for the emplacement of enemy obstacles that may disrupt friendly ground maneuver. If a battle handover to ground units is expected, IPB should also focus on the terrain that enables effective battle handover on terrain most favorable for friendly ground maneuver forces to develop the situation.

3-9. When planning the scheme of maneuver, the aviation commander controls the operation by using phase lines, objectives, contact points, checkpoints, and named areas of interest. Such control measures allow for decentralized actions and small-unit initiative to the greatest extent possible. The aviation commander controls the depth of the movement to contact by using a limit of advance (LOA) or a forward boundary and may designate one or more objectives to orient the force or limit the extent of the movement to contact.

3-10. The supported higher commander delineates bypass criteria, engagement criteria, and battle handover criteria, as well as a desired end state to enable disciplined initiative in execution. This guidance is tied to how the movement to contact enables the main body to accomplish subsequent tasks. Considerations for determining these criteria include: available combat power, the anticipated size and capability of the enemy force, proximity of friendly forces and their capabilities to further develop the situation, depth and breadth of the AO, and availability of Army and joint fires. Based on the complexity of the OE and expected size of the enemy force, the planning, prioritization, and use of joint fires may be required to successfully complete the mission and prevent premature decisive engagement or commitment of the follow-on force.

3-11. The aviation unit commander determines the location and number of FARPs and UAS launch and recovery locations based on the depth and breadth of the AO, time allocated, size of the aviation force and the supported commander's intent. The FARP and UAS launch and recovery locations support relief on station to maintain continuous reconnaissance and develop the situation to transition to subsequent tasks.

3-12. The inherent risks with movement to contact are driven by the unknown enemy situation, complexity of continuous reliefs on station, battle handover transitions, and the hasty nature of developing the situation while in contact. To mitigate risk, aviation commanders should—

- Use the minimal security force required to gain contact while accomplishing the mission within the allotted time.
- Maximize the use of UAS forward to provide reaction time and maneuver space.
- Provide subordinates with control measures for not only their own AOs but also adjacent AOs to control and deconflict maneuver and fires.
- Develop and coordinate ACMs to enable freedom of action of manned and unmanned systems.
- Plan and employ joint fires throughout the depth of the zone.
- Employ communications relay packages, Army airborne C2 system aircraft or airborne battle command console aircraft to maintain communications over extended distances.
- Position FARPs, UAS launch locations, and holding areas (HAs) forward to enable rapid turns of combat power once enemy contact is gained.
- And most importantly, use speed and audacity to develop the situation upon gaining contact.

SECTION III – ATTACK.

3-13. Army Aviation attack or reconnaissance units, employing MUM-T, conduct attacks in support of offensive, defensive and stability operations throughout the depth of the AO. This is done either as a decisive or shaping operation in support of ground forces. Army Aviation conducts attacks at multiple echelons. These can range from elements as small as attack or Scout weapons teams using MUM-T, or a single armed UAS, up to battalion or squadron level.

3-14. Army Aviation attacks are executed against enemy forces in close friendly contact, or out of friendly contact. Both can be executed as either hasty or deliberate operations, and they are typically supported with

integrated joint fires. The methods of employment are solely driven by whether a friendly ground maneuver force is in direct contact with the targeted enemy force or not; this factor determines who controls the aviation maneuver and fires. Regardless of the methods employed, the tactical task assigned to the attack or reconnaissance unit is attack to destroy, defeat, disrupt, divert, or delay. The higher commander's choice of operational framework is not used to describe the type of attack.

3-15. To ensure success, Army Aviation attacks with the necessary combat power, tempo and intensity to overwhelm the enemy force. Audacity, speed, concentration of combat power at the right time and place, violence of execution, simultaneity of joint fires with ground and air maneuver, and maximizing the element of surprise are all essential components of successful Army Aviation attacks.

ATTACKS AGAINST ENEMY FORCES IN CLOSE FRIENDLY CONTACT

3-16. As a member of the combined arms team, Army Aviation conducts attacks against enemy forces in close friendly contact to enable friendly ground maneuver forces to seize, retain, or exploit the initiative. These attacks can be either hasty or deliberate, based on the amount of time available. The ground maneuver commander controls the synchronization and integration of Army Aviation maneuver and the distribution and de-confliction of Army Aviation fires.

3-17. Attacks against an enemy force in close friendly contact enable the higher commander to bring Army Aviation combat power to bear simultaneously with other elements of the combined arms team. The combined effects of aerial and ground fire and maneuver increase the combined lethality and protection of the combined arms team, enabling the commander to present the enemy with multiple dilemmas while dictating the tempo of operations to gain and maintain a position of relative advantage.

3-18. Hasty or deliberate attacks against enemy forces in close friendly contact are executed at each Army Aviation maneuver echelon from an AWT/SWT or a single armed UAS up to elements as large as a battalion or squadron. Ground commanders that plan for the possible employment of both hasty and deliberate attacks throughout the depth of their close fight scheme of maneuver increase the likelihood of success and reduce the risk of fratricide. Hasty attacks provide the combined arms team with the agility, mobility and firepower to rapidly respond to unexpected enemy contact. However, hasty attacks should be in extremis and not relied on to overcome a lack of planning for the employment and full integration of Army Aviation attacks in the ground scheme of maneuver during the operations process. Deliberate attacks are interdependent and fully integrated in the ground scheme of maneuver. This integration enables the maneuver commander to maximize all available combat power at the chosen place and time.

3-19. The continuum of attacks against enemy forces in close friendly contact ranges from hasty attacks by an AWT against an enemy force, to a deliberate attack with an AB/ACS as part of the combined arms scheme of maneuver in the close fight. Some examples of this continuum include, but are not limited to—

- An AWT using MUM-T attacks to destroy an enemy platoon in close contact with a Stryker Scout platoon conducting security operations as the lead element of a battalion movement to contact. During the operations process, the Stryker battalion staff conducts detailed planning to integrate Army Aviation attacks on known and templated enemy forces throughout the depth of the battalion's AO. To ensure agility, freedom of action, and disciplined initiative, the Stryker battalion staff, in coordination with the supporting aviation staff or LNO team, plans detailed control measures in zone, to include ACMs, attack by fire positions, attack routes, fire support coordination measures, HAs, engagement criteria, and triggers and conditions for employment. Once triggered, the AWT maneuvers along preplanned routes to an attack by fire position to destroy the enemy platoon, enabling the Stryker battalion's elements to maintain tempo and freedom of action to continue to maneuver and gain contact with the enemy main body (figure 3-2, page 3-5).

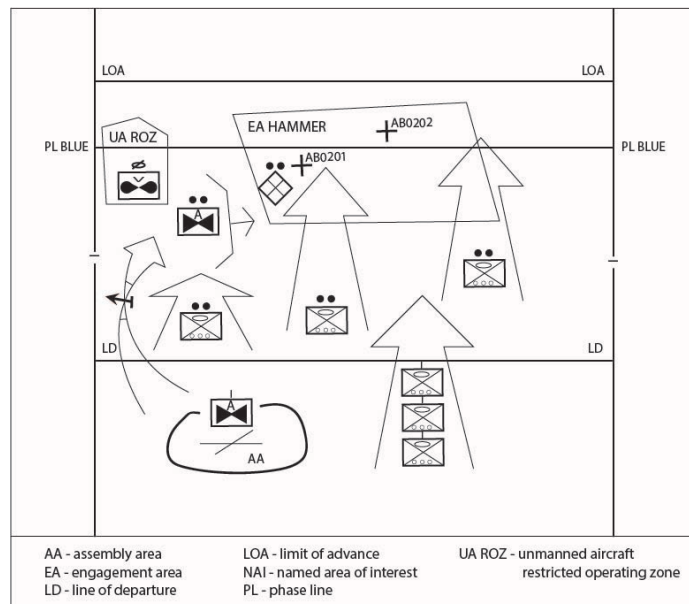


Figure 3–2. Deliberate attack by an attack weapons team in support of a Stryker battalion conducting a movement to contact

- An AWT using MUM-T conducting area reconnaissance is dynamically re-tasked by the supported higher headquarters to conduct a hasty attack in reaction to an unexpected enemy attack on a friendly convoy. Upon re-tasking, the air mission commander directs the UAS aircraft commander to continue the area reconnaissance mission and repositions the AWT to the location of the contact. The friendly convoy commander uses the standard Army attack aviation call for fire to enable the team to conduct the hasty attack. The AWT gains situational understanding of the friendly and enemy forces and attacks to destroy the enemy force under the control of the ground commander in contact. The destruction of the enemy force enables the convoy to break contact and continue the mission (figure 3-3). Following the attack, the AWT air mission commander provides BDA, reports to higher headquarters and repositions to continue the area reconnaissance mission as directed.

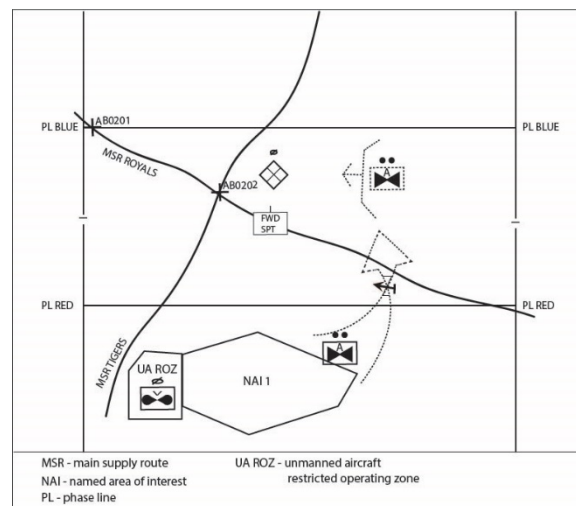


Figure 3–3. Hasty attack by an attack weapons team reacting to troops in contact

- An AC employing MUM-T attacks in support of an area defense to destroy the advance guard of an attacking enemy force in a preplanned engagement area located in the BCT's main battle area. The purpose of the attack is to prevent the enemy from penetrating the defense and gaining a position of relative advantage. The BCT staff, in coordination with the supporting AB staff or aviation LNO team, plans the attack with pre-planned attack routes with timed passage of lines, engagement areas with layered target reference points (TRPs), integrated joint fire, and multiple attack by fire positions to effectively engage and destroy the advancing enemy force throughout the depth of the engagement area. The movement of the enemy force in relation to UAS-observed named areas of interest triggers the timing of the attack (figure 3-4). The detailed planning and support from higher echelons of command enables the success of this interdependent and fully integrated deliberate attack against an enemy force in close contact with friendly forces.

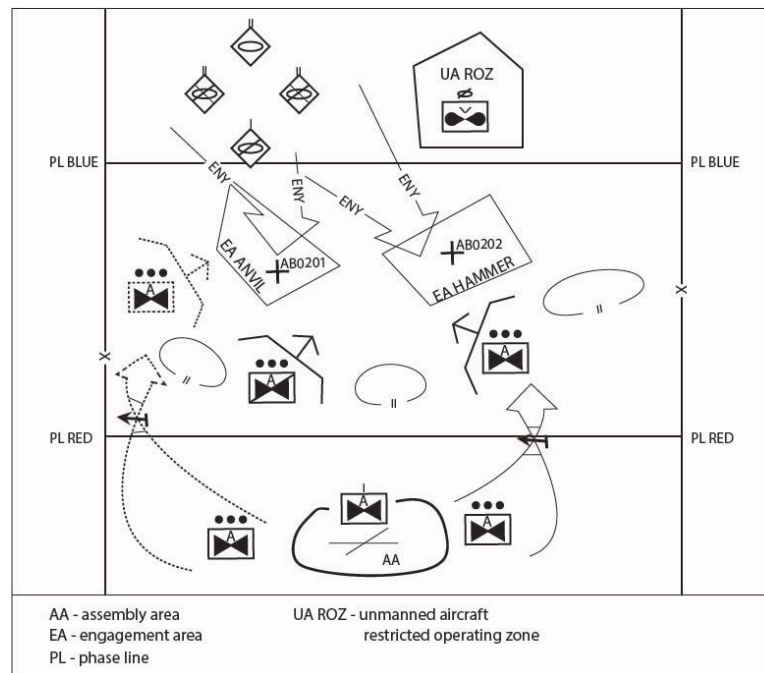


Figure 3–4. Deliberate attack by an attack company in support of a BCT's area defense

3-20. During the planning process, the ground maneuver commander integrates the employment of attack or reconnaissance unit attacks into the scheme of maneuver to ensure their responsiveness, synergy, and agility during actions on the objective or upon contact with the enemy. Pre-mission development of control measures provides a foundation for the successful integration of Army Aviation into the unit's operations. Among these control measures are engagement criteria; the triggers and conditions for execution; and fire coordination measures (such as TRPs, engagement areas, and ACMs [such as aerial ingress and egress routes and ROZs]).

3-21. Shared understanding within the combined arms team, through known standardized procedures and habitual training, increases the likelihood of successful employment of attack or reconnaissance units against enemy forces in close contact with friendly forces. However, during in extremis situations, Army Aviation attack or reconnaissance units may conduct hasty attacks in support of all friendly ground units regardless of their training level or habitual relationship, but with greater risk. The use of the standardized Army attack aviation call for fire ensures the minimum mission essential information is provided from the ground commander in contact to the attack air mission commander.

3-22. To maintain shared understanding and prevent burdening the commander in contact during execution, the attack or reconnaissance unit conducting hasty and deliberate attacks against enemy forces in close friendly contact monitors the primary supported ground unit voice command net and uses C2 information systems (such as Blue Force Tracker) to gain and maintain situational understanding of friendly forces. Use of these systems and effective pre-mission planning enables Army Aviation attack or reconnaissance units to rapidly execute actions on contact and mitigates the risk of fratricide.

3-23. When conducting attacks against enemy forces in close friendly contact, targets may range from hundreds of meters to several thousand meters from friendly forces. The attack or reconnaissance unit uses terrain and the mutual protection of ground maneuver forces to vary attack headings to remain unpredictable and limit exposure to enemy fires. Once the engagement is complete, the attack or reconnaissance unit air mission commander provides the ground commander with BDA. The air mission commander also provides a follow-on recommendation, such as re-attack, execution of a follow-on task, or end-of-mission.

ATTACKS AGAINST ENEMY FORCES OUT OF FRIENDLY CONTACT

3-24. Army Aviation attack and reconnaissance units, maneuvering independently against an enemy force not in close contact with friendly ground maneuver forces, conducts hasty or deliberate attacks to divert, disrupt, delay, or destroy enemy capabilities before they can be brought to bear on friendly forces. The Army Aviation air mission commander controls the maneuver and fires of Army Aviation within an AO assigned by a higher headquarters, but the attack is still synchronized and/or integrated with the overall higher ground scheme of maneuver. The higher headquarters assigning the attack mission coordinates the required airspace with the appropriate airspace element.

3-25. These attacks are conducted at such a distance from friendly ground forces that detailed integration with them during actions on the objective is typically not required. Based on the nature of the target and complexity of the OE, Army Aviation attacks out of contact may be conducted as hasty attacks, but they are most often deliberate attacks. Deliberate attacks against enemy forces out of friendly contact require detailed planning and the simultaneous or sequential employment of many enabling assets to mass effects and achieve the commander's intent.

3-26. Based on mission and operational variables, attacks against enemy forces out of friendly contact range from relatively low risk to extremely high-risk operations. They may be conducted by attack or reconnaissance elements ranging in size from a single armed UAS up to one or more AB or ACS. Increasing the distance from friendly forces increases the threat to the attack or reconnaissance unit. Likewise, low target fidelity or increased mission complexity also increases mission risk, and more detailed planning and integration is required by the assigning headquarters. Higher mission risk requires the supported higher headquarters to prioritize required enabling capabilities to provide continuous reconnaissance, continuous target development, and in depth integration of joint fires with detailed rehearsals and conditions checks prior to execution. Consideration must also be given to how long attack assets are committed to higher-risk attacks and weighed against the totality of the operational risk to other ongoing or pending operations. The decision to execute attacks against enemy forces out of friendly contact must be based on the overall operational risk versus the reward of successful execution within the higher headquarters scheme of maneuver.

3-27. These attacks are typically deliberate attacks, but they may be executed as hasty attacks against emerging enemy targets of opportunity based on mission variables. If the enemy target is high payoff and outweighs the risk of friendly losses or if the enemy threat to aviation is known to be acceptable for hasty operations, hasty attacks against enemy forces out of contact can be effective in seizing emerging opportunities to prevent the enemy from gaining a position of relative advantage.

3-28. Army Aviation units conduct attacks against enemy forces out of friendly contact throughout the depth and breadth of an AO. They may be conducted beyond the forward line of own troops (FLOT) in linear, contiguous AOs; in deep areas between non-linear and non-contiguous AOs; in close or rear areas inside large non-linear and contiguous AOs where ground forces are not present or not in contact with the targeted enemy force; or in joint or special operations AOs where friendly ground or surface forces are not present or not in contact with the targeted enemy force.

3-29. Hasty and deliberate attacks against enemy forces out of friendly contact are executed in support of higher headquarters that can develop target fidelity, provide enablers to support the attack, and assign a subordinate AO to the attack or reconnaissance unit. This is usually no smaller than a ground maneuver battalion and is more typically a BCT, division, corps, or joint task force headquarters. Examples of hasty and deliberate attacks against enemy forces out of friendly contact, from generally the lowest risk with the least required planning and synchronization efforts, to very high risk operations requiring detailed planning and the full range of joint fires and intelligence capabilities include, but are not limited to, the following:

- An AWT using MUM-T conducts a hasty attack to destroy a dismounted enemy team located by UAS while emplacing mines along a high speed avenue of approach in a deep area between non-contiguous AOs. With the threat assessment estimated as low, the higher headquarters assigns an AO for the AWT to conduct the attack and establishes ACMs. The air mission commander maneuvers the AWT to the AO and determines the fire control and method of attack for the

team. Relaying information via the UAS, the AWT conducts the engagement and destroys enemy force out of contact before their capabilities can be brought to bear effectively on friendly forces (figure 3-5). Upon destruction of the enemy force, the air mission commander provides BDA to the higher headquarters and proceeds as directed to a follow-on mission or mission complete.

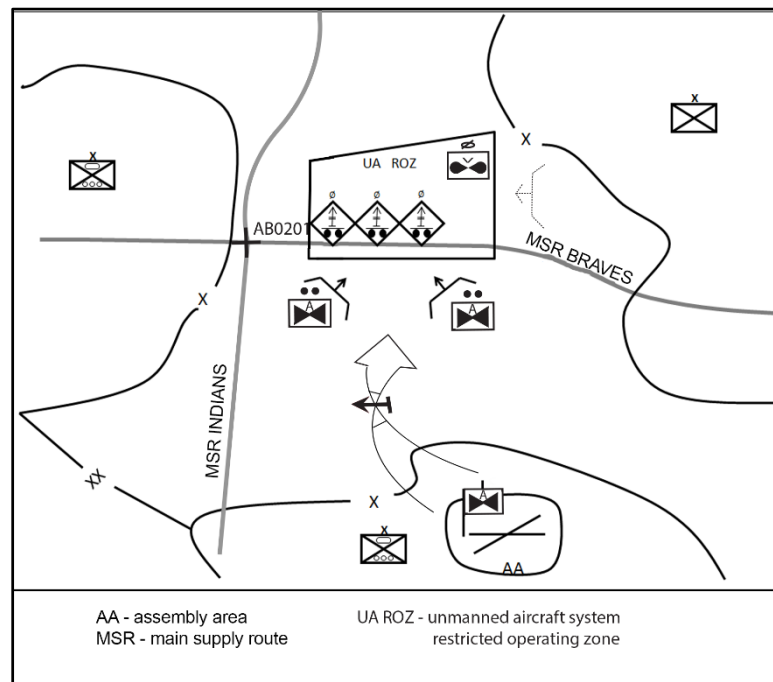


Figure 3–5. Hasty attack by an attack weapons team against an enemy force out of contact

- An attack platoon using MUM-T attacks to destroy a convoy of technical vehicles that are not in friendly contact and are repositioning along a high speed avenue of approach in a deep area between BCT AOs. Assessing the threat to aviation as low in the area and seizing upon this emerging opportunity to prevent the enemy force from gaining a position of advantage between BCT AOs in a non-contiguous AO, the division headquarters tasks an attack platoon to conduct a hasty attack. The division staff coordinates airspace measures and assigns an engagement area to the attack platoon to execute the attack. En route to the engagement area, the air mission commander coordinates the platoon attack while gaining situational awareness and understanding via the UAS observing the enemy convoy. As the convoy approaches the engagement area, the air mission commander's teams are set in their attack by fire positions, have positive identification of the enemy convoy, and initiate the attack (figure 3-6, page 3-9).

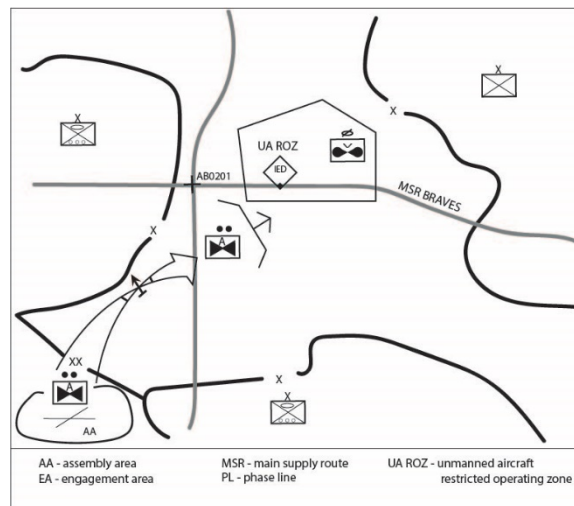


Figure 3-6. Hasty attack by an attack platoon

- An AC using MUM-T attacks to defeat an enemy mechanized company, maneuvering to counter-attack the flank of a friendly combined arms battalion. During the operations process, the combined arms team conducts detailed planning to integrate attacks to defeat expected counter-attacks along the friendly route of march. A second AC screens the flank of the friendly ground maneuver force, as UAS conducts reconnaissance along key enemy avenues of approach. A coordinated staff effort with the higher headquarters and the supporting aviation attack unit or LNO team establishes an engagement area and attack by fire positions, and the combined arms team conducts rehearsals prior to executing the operation. The proper timing of an aerial passage of lines on the ground maneuver force's left flank, synchronization of fire and maneuver, and specific triggers enable the AC executing the attack to occupy their attack by fire positions as the enemy begins to enter the engagement area. The air mission commander initiates the attack from the attack by fire positions, and the enemy force is unable to make contact and bring its capabilities to bear on the friendly main body. Detailed planning enables the combined arms team to attack with speed and surprise, while maintaining tempo throughout the operation (figure 3-7).

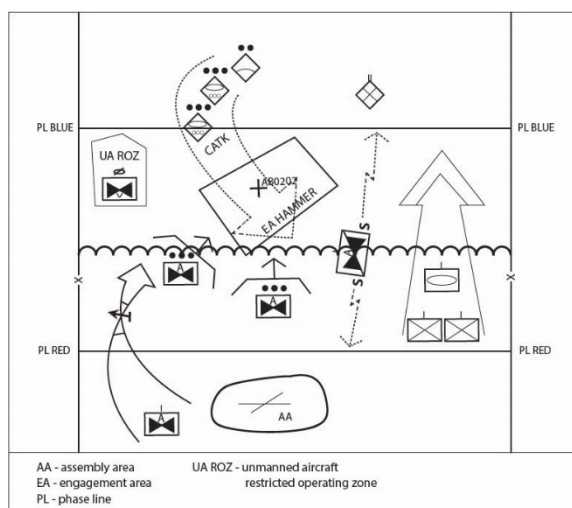


Figure 3–7. Deliberate attack by an attack company to defeat an enemy counter-attack

- An AB attacks across the FLOT to disrupt an enemy mechanized regiment that is conducting an approach march under the protection of organic air defense systems (figure 3-8). Enemy capabilities, actions, and positions are identified through continuous information collection and target development thus facilitating the deliberate planning of the attack. The supported higher headquarters identifies the most dangerous and most likely enemy COAs and plans these attacks based on information derived during the IPB. Further coordination must be made by the higher headquarters to ensure a successful passage of lines and synchronization and timing of preplanned joint fires and suppression of enemy air defense (SEAD) to achieve the desired massing of effects, and enable AB movement to attack by fire positions, respectively. Simultaneously, the AB plans maneuver, attack by fire positions, and methods of attack in parallel to nest with the higher headquarters' plan. The resultant attack disrupts enemy capabilities before they can be brought to bear effectively on friendly forces, thereby providing the friendly main body reaction time and maneuver space.

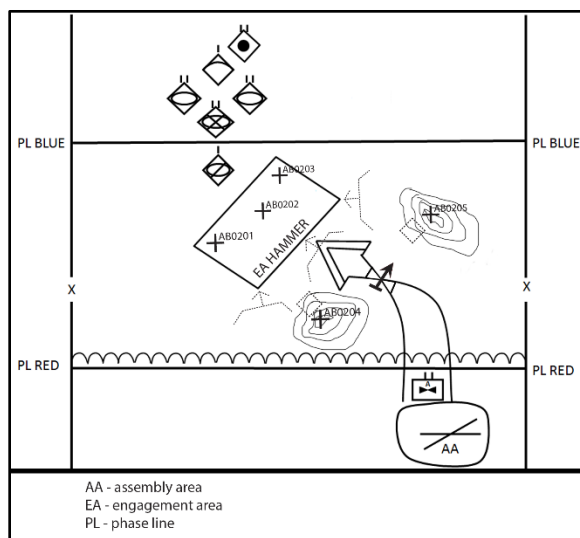


Figure 3–8. Deliberate attack by an AB to disrupt enemy mechanized regiment in deep area of linear area operations

3-30. Based on the depth of the attack against enemy forces out of friendly contact, time allocated, echelon and size of the attack aviation force, and the supported commander's intent, FARPs, UAS launch and recovery locations, and forward C2 nodes are positioned forward to support relief on station to maintain sustained attacks or attacks at extended ranges.

3-31. The inherent risks with hasty and deliberate attacks against enemy forces out of friendly contact are driven by the fidelity of the enemy situation en route to, from, and in the AO; the depth and duration of the attack; the size and capabilities of the enemy force being attacked; the fidelity of the target location; the proximity and capabilities of adjacent enemy forces; the time of day and weather conditions; and the proximity and capabilities of friendly ground maneuver forces. To mitigate risk and when time is available, the assigning higher headquarters and attack aviation staffs focus the operations process on the following:

- Target development, location, and refinement.
- Integration of joint fires and other enablers.
- Maximizing the use of UAS forward to confirm target location and disposition. During early phases of shaping prior to an attack, armed UAS may provide critical intelligence and targeting capabilities of enemy air defenses. During execution phases, tactical UAS flying ahead of attack helicopters may locate surviving air defense systems prior to them targeting manned aircraft.
- Maximizing the use of terrain to mask maneuver along attack routes and in attack by fire positions.
- Developing and coordinating ACMs to enable freedom of action for MUM-T and other ongoing friendly operations.
- Planning the integration of joint fires and enablers to allow continuous target refinement, joint SEAD and joint EW—all of which limit enemy freedom of action.
- Planning and developing triggers and conditions to initiate the attack.
- Employing radio retransmission sites, aerial communications relay packages, and/or forward UAS ground control stations to maintain situational understanding over extended distances.
- Positioning multiple FARPs forward to maximize weapons loads and station time while considering FARP survivability and capability.
- Maximizing the element of surprise by attacking from unexpected directions and unexpected times with speed and audacity.
- Executing during hours of limited visibility.
- Conducting detailed rehearsals and employing appropriate decision support tools such as conditions checks, go/no-go criteria, abort criteria, and decision support matrices.

EMPLOYMENT METHODS

3-32. Timing is critical to successful employment of attack or reconnaissance units. Employed too early, the attack may culminate because of aircraft low on fuel. Aircraft arriving to their attack by fire positions too late may miss all or part of the targeted unit and fail to achieve mission success.

3-33. The commander plans an attack after detailed coordination with subordinate units, support elements, and higher headquarters to ensure shared understanding of higher intent and the capabilities of the attack unit. The commander may employ subordinate units in the following methods, which are described below:

- Continuous attack.
- Phased attack.
- Maximum destruction attack.

3-34. It is important to note that these methods of employment are applicable to missions other than attacks. While the examples below describe employment of ACs in an AB, the concepts may be scaled down to platoon or AWT/SWT operations or up to battalion/squadron level. The factors described below should be considered whenever Army Aviation units are employed in various combinations.

CONTINUOUS ATTACK

3-35. To exert constant pressure on the enemy force, the battalion commander employs companies using the continuous attack method (figure 3-9, page 3-12). This method ensures at least one company is in the battle at all times. While one company is engaged in the battle, the other two companies prepare to relieve the engaged company by positioning at the HA or FARP, or maneuvering to the battle position or attack by fire position. The continuous attack method provides the commander with the most flexibility as well as the most efficient operation of the FARP. Depending on sustainment capabilities, operational tempo, and numbers of aircraft committed to an operation, an AB may be able to sustain a continuous operation for several days.

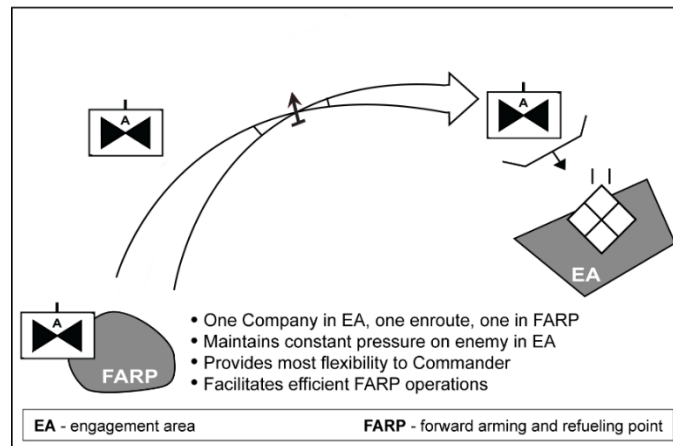


Figure 3–9. Continuous attack

PHASED ATTACK

3-36. To exert increased firepower on the enemy force, the battalion commander employs one company as a shaping operation to begin attacking the enemy and then quickly phases in a second company from a different battle position or attack by fire position (figure 3-10). The third company is phased into the fight as a reserve element when either of the other companies is low on fuel or ammunition. The commander may choose to modify this method of employment. For example, one company may be employed to shape for the other companies to exploit as the main body. During the phased attack, it is important to minimize aircraft turnaround time at the FARP. Generally, due to FARP limitations, the phased attack eventually reverts to the continuous attack method. An AB typically conducts a phased attack for less than 24 hours and requires up to 24 hours following the operation in order to resume operations.

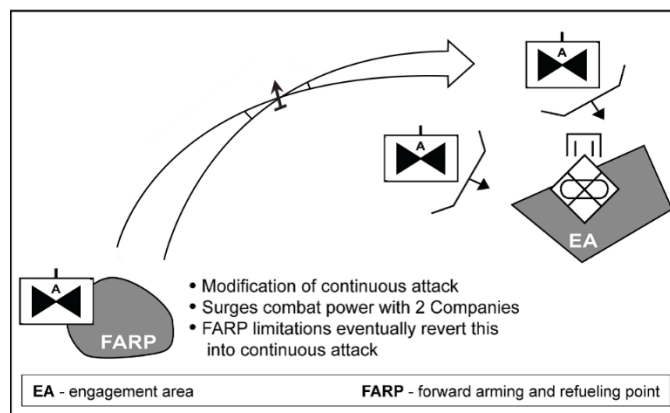


Figure 3–10. Phased attack

MAXIMUM DESTRUCTION ATTACK

3-37. To exert maximum combat power on the enemy force, the commander employs the maximum destruction method (figure 3-11, page 3-13). To overwhelm the enemy force with massed fires, the battalion attacks with all three companies simultaneously. While employing this method, it is important for the supported commander to understand the entire battalion may be out of the fight for 45 to 90 minutes at the completion of the initial attack. The time away from the fight is dependent on the distance to the FARP and time required for refueling and rearming after the initial engagement. Employing a maximum destruction attack may result in a large portion of the AB being unable to conduct further missions for at least 24 hours following the completion of the mission.

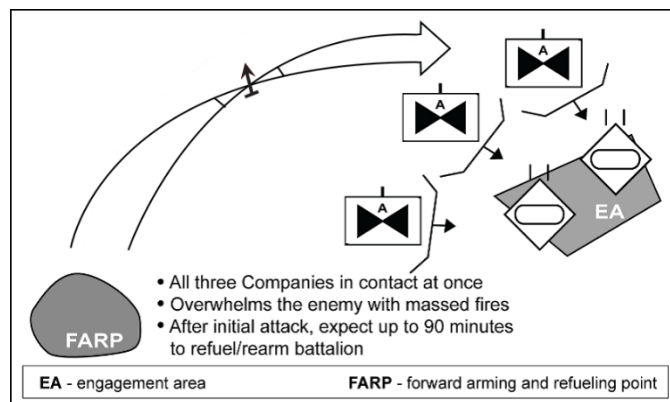


Figure 3–11. Maximum destruction attack

STRIKE COORDINATION AND RECONNAISSANCE TACTICS, TECHNIQUES, AND PROCEDURES

3-38. *Strike coordination and reconnaissance (SCAR)* is a mission flown for the purpose of detecting targets and coordinating or performing attack or reconnaissance on those targets (JP 3-03). SCAR missions are flown in a specific geographic area and are used to match weapons effects with targets per the supported commander's prioritized target list. A SCAR mission is designed to effectively and efficiently destroy targets and conduct associated BDA. A SCAR aircrew coordinates the identification of targets and subsequent attacks using multiple reconnaissance and strike assets. Army aircrews perform SCAR by conducting attacks against enemy forces out of friendly contact with friendly maneuver forces. If required

to serve as a SCAR aircrew, aircrews must be prepared to cycle multiple assets through the target area, provide prioritized targeting guidance, and monitor enemy air defenses to maximize the effects of each sortie.

ROTARY-WING CLOSE AIR SUPPORT

3-39. As the aviation element of the ground maneuver plan, Army Aviation is not normally tasked by the joint force air component commander to support the JFC's CAS or air interdiction apportionment guidance. However, attack or reconnaissance units must be familiar with and able to respond to and execute according to terminal CAS procedures and TTP when they accept terminal control by a joint terminal air controller or forward air controller (airborne) during mission execution in support of the joint force. The CAS TTP requires the use of a joint terminal air controller or forward air controller (airborne) who is a qualified (certified) service member and directs the action of combat aircraft engaged in CAS and other air operations. See appendix A for CAS procedures.

UNIQUE PLANNING CONSIDERATIONS FOR ATTACKS

3-40. When determining what level of planning and preparation is required to execute the attack, the commander must balance the time available versus the advantage of executing with tempo and surprise with the minimum mission essential information required to understand the friendly forces, terrain, weather, and enemy forces to achieve success. Taking too much time to develop perfect information can paralyze the operations process, enable the enemy to continue to prepare or move, and may result in missed opportunities to seize the initiative. It is normally better to err on the side of speed, audacity, and momentum, with the minimum mission essential information, than on attempting to gain complete situational understanding prior to conducting attacks. Bold decisions give the best promise of success, but commanders must be able to distinguish between having the right level and fidelity of minimum mission essential information required to accept prudent risk versus poor or incomplete information that results in taking a gamble. Accepting prudent risk requires judgment, foresight, and adequate planning to determine whether an operation is worth conducting. Maintaining current and running estimates while executing continuous reconnaissance and target development mitigates risk and enables commanders to have greater agility and shorter planning cycles to conduct both hasty and deliberate attacks against enemy forces that are in or out of contact with friendly forces.

3-41. During the operations process for attack operations, IPB efforts are focused on determining the location, composition, disposition, capabilities, and most likely and most dangerous COAs of the targeted enemy force. IPB also focuses on detailed terrain analysis to inform planning for attack routes, attack by fire positions, engagement areas, fire support targets, and HAs, as well as the effects on enemy movement rates and formations.

3-42. IPB, when attacking against a moving enemy force, focuses on the most likely enemy high speed avenues of approach and cross-mobility corridors within the AO to determine the best terrain on which to attack the enemy. Engagement areas are designated on terrain that provides the best friendly fields of fire while enabling the attack aviation force to maneuver throughout the depth of the enemy formation using adjacent terrain for cover and concealment, while limiting the enemy's freedom of maneuver. Attack by fire positions are selected to enable attack or reconnaissance units to orient fires and maintain freedom of action while maintaining maximum standoff during the engagement. Time-distance analysis determines expected enemy rates of advance, which establishes where to place named areas of interest to confirm or deny an enemy COA and to trigger the attack, as well as where to best place indirect fire targets to simultaneously attack the enemy in depth. Target areas of interest, engagement areas, attack by fire positions, attack routes, named areas of interest, and observation positions are planned in depth. This provides the aviation force the maximum flexibility to maintain contact and exercise disciplined initiative to continue the attack throughout the depth of the designated AO.

3-43. When conducting an attack against a defending or stationary enemy force, IPB focuses on the best terrain to conduct the attack from while providing attack or reconnaissance units maximum standoff and freedom to maneuver. Enemy reserve locations and counter-attack routes are analyzed to further identify

aviation attack by fire positions and engagement areas to limit the enemy's freedom of action and to attack the enemy throughout the depth of his or her defense with either direct or indirect fires.

3-44. When planning attacks, the commander controls the operation by using attack routes or axes of attack, engagement areas, trigger lines, attack by fire positions, HAs, PLs, TRPs, ACMs, named areas of interest, and target areas of interest. To limit the extent of the attack, the commander may also designate an LOA and/or subordinate unit boundaries in the designated AO. These control measures allow for decentralized actions and small-unit initiative to exploit successful attacks to the greatest extent possible.

3-45. Attacks are triggered based on enemy events, time, friendly actions or a combination. The nature of the target and the commander's end state determine which method to use. A decision support matrix is a helpful tool to assist commanders with the timing and sequencing of the attack and integration of supporting enablers.

3-46. During execution, the Army Aviation attack or reconnaissance units use maneuver and direct and/or indirect joint fires to place the enemy in a position of disadvantage. To achieve superiority over the enemy, the commander must take advantage of the range, precision, and lethality of all available fires. He or she also must gain and maintain information superiority through in-depth reconnaissance and continuous maneuver to positions of advantage using speed, maneuverability, maximum standoff, and the available terrain.

SECTION IV – RECONNAISSANCE.

3-47. *Reconnaissance* is a mission to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area (JP 2-0). Reconnaissance operations allow the commander to understand the situation and visualize the battlefield by filling in critical information gaps to mitigate risk, allocate resources, and prioritize tasks. Effective reconnaissance allows the commander to identify where the enemy is weak or strong, the best place or opportunity to concentrate combat power to gain and maintain a position of relative advantage, or where and when to best deny the enemy a position of relative advantage. For more on reconnaissance, see FM 3-98. FM 6-99 contains appropriate formats for bridge, route, and patrol reports.

3-48. Aerial reconnaissance serves as a link between sensors and mounted or dismounted units, and is used to cue other reconnaissance methods to specific areas, thereby increasing overall tempo of the operation. Aerial reconnaissance is appropriate when—

- Weather conditions are favorable.
- Time is limited or information is required quickly.
- Ground reconnaissance assets are unavailable, or the target is at an extended range.
- The enemy situation is vague but considered to be high risk, or is known and is high risk for ground assets.

3-49. Army Aviation conducts reconnaissance as part of its parent organization's focused information collection efforts by either fighting for or collecting information by stealth and observation. Reconnaissance is conducted before, during, and after operations to inform the IPB process and assist the commander with the formulation, confirmation, or modification of a COA.

3-50. Army Aviation attack or reconnaissance units are specifically equipped, trained and organized to conduct all forms of reconnaissance except special reconnaissance. Assault and GS aviation units can also perform limited reconnaissance missions based on mission variables; however, regardless of whether reconnaissance is assigned as a specified task or not, it is always an implied task for every aviation element to gather and report information on enemy and friendly disposition, terrain, and civil activities observed during the course of all operations.

3-51. Army Aviation conducts reconnaissance at all echelons, from elements as small as an AWT or SWT using MUM-T, or a single UAS, up to elements as large as an AB or ACS, either independently as a pure aviation maneuver force or as part of a deliberately planned scheme of maneuver as a member of the combined arms team. The size of the aviation reconnaissance force is driven by the size of the AO,

complexity and number of reconnaissance objectives, fidelity of the information required by the commander, the enemy situation, and the time available to answer the commander's specified information requirements.

3-52. The commander orients aviation reconnaissance operations on reconnaissance objectives within the designated AO. Reconnaissance objectives can be a terrain feature, geographic area, or enemy force for which the commander requires further information. The commander determines reconnaissance objectives based on PIR. Based on the capabilities of the reconnaissance force and time available to conduct the reconnaissance, the commander and staff further delineate the priority of tasks and information collection efforts to ensure the most critical information is collected to enable timely decisions. The event template, terrain analysis and enemy situational template create information requirements that in turn focus the collection effort and reconnaissance objectives.

3-53. The commander controls the reconnaissance operation by using routes, subordinate unit boundaries, PLs, contact points, checkpoints, named areas of interest, fire support coordination measures, ACMs, and objectives. Such control measures allow for decentralized actions and small-unit initiative to the greatest extent possible. The reconnaissance begins at the line of departure or start point; the depth of the reconnaissance is controlled by using a LOA. Control measures are placed on recognizable terrain features when possible.

3-54. To enable disciplined initiative in execution, the commander provides reconnaissance objectives, refined critical reconnaissance tasks, bypass criteria, engagement criteria and/or reconnaissance handover criteria, the latest time the required information is of value with date-time group, and an end state that defines how the reconnaissance effort influences follow-on operations. This enables the aviation reconnaissance force to develop and execute a reconnaissance plan that provides the required information within the time necessary to inform the commander's decisions.

3-55. Army Aviation conducts zone, route, and/or area reconnaissance, or reconnaissance in force when task-organized with ground maneuver forces. These forms of reconnaissance allow the commander and staff to understand and visualize the environment, develop the situation, create options, and identify opportunities to seize, retain, and exploit the initiative.

ZONE RECONNAISSANCE

3-56. *Zone reconnaissance* is a form of reconnaissance that involves a directed effort to obtain detailed information on all routes, obstacles, terrain, and enemy forces in a zone defined by boundaries (ADP 3-90).

3-57. Commanders assign zone reconnaissance missions to gain detailed situational understanding when the enemy situation is vague and/or the understanding of the terrain is limited. Zone reconnaissance missions are generally large, deliberate efforts to gain a significant amount of information. The aviation reconnaissance force commander must balance time and assets available against the urgency and number of information requirements required by the higher commander to ensure the force executes with the right tempo and level of detail. Aviation reconnaissance forces provide the combined arms team with increased reconnaissance depth, and speed, as well as long-range communications and the ability to conduct reconnaissance in complex or no-go terrain.

3-58. During offensive operations, a zone reconnaissance is typically oriented forward of ground maneuver forces along an axis of attack or axis of advance. This enables friendly forces to maneuver within the zone at reduced risk due to greater situational understanding of the terrain, movement routes, obstacles, and enemy forces. During defensive operations, a zone reconnaissance may be conducted forward of a defensive position to locate enemy reconnaissance or to provide the commander with terrain information on where to best locate friendly obstacles, targets, engagement areas, and/or counter-attack routes. During the defense, the zone reconnaissance typically transitions to a screen when the LOA is reached or when contact is made with an enemy force that is superior in size or in a position of advantage to the aviation reconnaissance force. However, not all zone reconnaissance missions are conducted forward of friendly forces. A zone reconnaissance may also be conducted to the rear or flanks of a friendly ground maneuver force to locate bypassed or infiltrating enemy forces or to provide the commander with greater situational understanding of the AO.

3-59. The size of the zone, number of reconnaissance objectives, mission duration, the latest time the information is of value, enemy situation, number of routes, number of built-up areas, and complexity of the terrain drives the reconnaissance tempo and the size and task organization of the aviation force conducting the zone reconnaissance. Although an attack or reconnaissance platoon using MUM-T is capable of conducting zone reconnaissance in a small zone for a limited duration, zone reconnaissance missions typically require commitment of an AC/ACT or larger force.

3-60. Unless the higher commander orders otherwise, the aviation reconnaissance force executes the below listed critical tasks when assigned a zone reconnaissance mission. Figure 3-12, page 3-17, depicts an aviation element conducting zone reconnaissance. If during the conduct of the mission, the aviation reconnaissance force is unable to complete an assigned task, the unit reports and awaits further instructions. The following are the critical zone reconnaissance tasks accomplished by the aviation reconnaissance force:

- Find and report all enemy forces in zone.
- Based on engagement criteria, destroy or defeat all enemy forces in zone within capability.
- Determine the trafficability of all terrain in zone.
- Conduct hasty visual inspection and classification of all bridges, overpasses, underpasses, and culverts in zone.
- Locate and conduct hasty visual classification of all obstacles, minefields, built-up areas, and barriers in zone.
- Locate and conduct hasty visual classification of all fords, crossing sites, and bypasses around obstacles and built-up areas in zone.
- Report the above information, to include providing a sketch map, overlay, and/or full-motion video feeds.

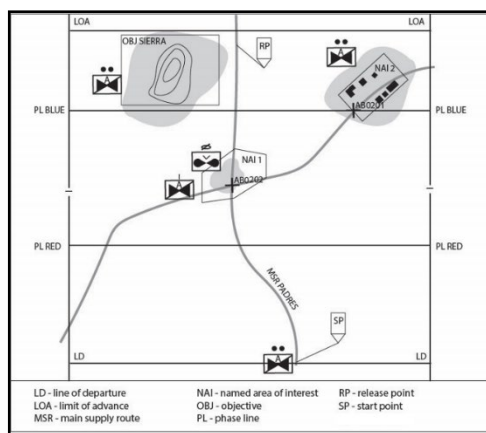


Figure 3-12. Attack element conducts a zone reconnaissance

AREA RECONNAISSANCE

3-61. *Area reconnaissance* is a form of reconnaissance that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area (ADP 3-90). This area may include a town, ridgeline, airhead, wood line, or any other critical operational feature or area such as a LZ/PZ or bridge. The primary difference between an area and zone reconnaissance is that in an area reconnaissance the unit conducting the reconnaissance first moves to the area, then conducts the reconnaissance. Area reconnaissance is typically less complex and smaller than zone reconnaissance and generally takes less time.

3-62. Army Aviation conducts area reconnaissance with elements as small as a AWT/SWT using MUM-T, up to elements as large as an AC/ACT, either independently as a pure aviation maneuver force or as part of a deliberately planned scheme of maneuver as a member of the combined arms team.

3-63. The size of the area, distance to the area, enemy situation in and en route to the area, and whether the area will be occupied in the future drives the task organization and scheme of maneuver for the aviation reconnaissance force. The control measures and critical reconnaissance tasks for an area reconnaissance are the same as a zone reconnaissance. Figure 3-13 is an example of an air cavalry element conducting an area reconnaissance of terrain and man-made areas of interest.

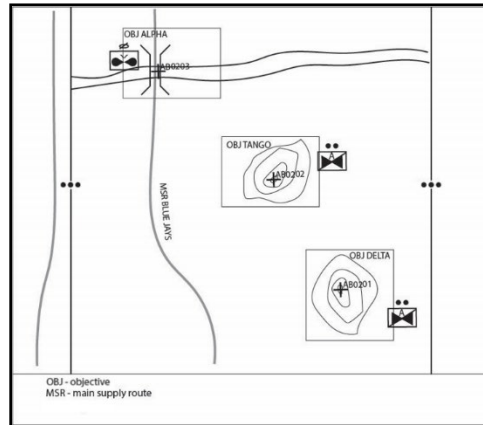


Figure 3–13. Air cavalry element conducts three simultaneous area reconnaissance missions

ROUTE RECONNAISSANCE

3-64. *Route reconnaissance* is a directed effort to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route (ADP 3-90). The route may be a cross country mobility corridor, an air route, or a road, highway, or trail. The route reconnaissance provides information on the condition of the route, and trafficability of the route, intersecting routes or mobility corridors, key terrain that directly influences the route, obstacles along the route, and any friendly, enemy, or civilian activity along the route.

3-65. Route reconnaissance is assigned either as a separate mission or as a specified task to a unit conducting a zone or area reconnaissance. Army Aviation conducts route reconnaissance with elements as small as an AWT/SWT using MUM-T, up to elements as large as an AC/ACT, either independently as a pure aviation maneuver force or a member of the combined arms team.

3-66. The size of the aviation reconnaissance force is driven by the length of the route, complexity of the terrain, fidelity of the information required by the commander, the enemy situation, and the time available to answer the specified information requirements. If detailed information is required for route and bridge classification or obstacle clearance, the aviation reconnaissance force must be task-organized as a combined arms team.

3-67. The commander controls the route reconnaissance with lateral boundaries on each side of the route, a start point at the beginning of the route, checkpoints at key intersections and turns along the route, and a release point at the end of the route. A line of departure is established along the route, just short of where enemy contact is expected and an LOA is established beyond the release point far enough out to encompass any terrain the enemy can use to influence the route. Additional control measures can include PLs, TRPs, and named areas of interest on adjacent key terrain or suspected enemy locations.

3-68. Unless the higher commander orders otherwise, the aviation reconnaissance force executes the following tasks:

- Finds and reports all enemy forces that can influence movement along the route.
- Based on engagement criteria, clears all enemy forces that can influence movement along the route, within capability.
- Determines route trafficability based on the size, capabilities, mission, and type of friendly force to use the route.

- Reconnoiters all terrain the enemy can use to influence the route.
- Reconnoiters all built-up areas, contaminated areas, and lateral routes along the route.
- Evaluates and classifies all bridges, defiles, overpasses, underpasses, and culverts along the route.
- Locates and conducts hasty visual classification of all obstacles, minefields, built-up areas, wire obstacles, and barriers along the route.
- Locates and conducts hasty visual classification of all fords, crossing sites, and bypasses around obstacles and built-up areas along the route.
- Reports the above information, to include providing a sketch map, route overlay, and/or full-motion video feeds.

3-69. If during the conduct of the mission, the aviation reconnaissance force is unable to complete an assigned task, the unit reports and awaits further instructions.

3-70. Figure 3-14, page 3-19, depicts an SWT conducting a route reconnaissance using MUM-T. While the reconnaissance manned assets focus on the route, the UAS reconnoiters the adjacent terrain in which the enemy may influence the reconnaissance objective during future operations.

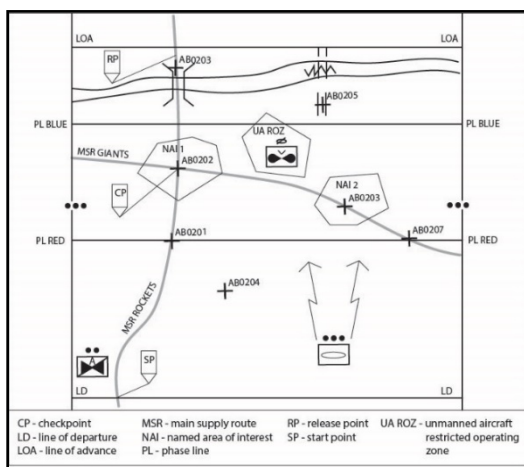


Figure 3–14. Scout weapons team conducting route reconnaissance

RECONNAISSANCE IN FORCE

3-71. A *reconnaissance in force* is a deliberate combat operation designed to discover or test the enemy's strength, disposition, and reactions or to obtain other information (ADP 3-90). Reconnaissance in force is conducted as a combined arms operation at the battalion task force or higher level.

3-72. An ASTF or ABTF can conduct a limited reconnaissance in force when task-organized with adequate ground maneuver forces, but typically Army Aviation is task-organized to the ground maneuver headquarters tasked with reconnaissance in force. During a reconnaissance in force, subordinate aviation elements may conduct the full range of tactical, enabling, and sustaining tasks, including attacks, air assaults, reconnaissance, security, C2 support, and MEDEVAC.

3-73. A reconnaissance in force is an aggressive, enemy-oriented reconnaissance. The reconnaissance in force is task-organized and maneuvers either by attacking or conducting a movement to contact to overwhelm enemy reconnaissance and security forces to find the enemy main body and to determine enemy weaknesses for exploitation. The reconnaissance is focused on enemy forces versus the terrain and typically seeks some level of decisive engagement. The end state of the reconnaissance is either extraction of the reconnaissance in force or exploitation by a follow-on force.

3-74. The enemy situation, size of the zone, and the commander's follow-on concept of the operation drives the task organization and scheme of maneuver. The less that is known about the enemy, the greater

the combat power required for the reconnaissance in force. The control measures associated with a reconnaissance in force are similar to either a movement to contact or attack.

3-75. The following tasks are accomplished by Army Aviation when supporting a reconnaissance in force:

- Locate and determine the depth of the enemy security area.
- Destroy enemy reconnaissance and security forces within capability.
- Locate and report all obstacles and bypasses to enable the ground maneuver force to penetrate the security area.
- Locate and determine the disposition of the enemy main body.
- Attack to destroy, defeat, disrupt, divert, or delay enemy main body forces within capability.
- Determine enemy weaknesses that can be exploited.
- Continuously report all information, including negative contact reports.

SPECIAL RECONNAISSANCE

3-76. *Special reconnaissance* is characterized as reconnaissance and surveillance actions conducted as a special operation in hostile, denied, or politically-sensitive environments to collect or verify information of strategic or operational significance (JP 3-05). Army Aviation units do not typically support special reconnaissance missions.

FUNDAMENTALS OF RECONNAISSANCE

3-77. When planning and executing reconnaissance operations, the application of the following seven fundamentals inform the operations process and drive execution of successful reconnaissance missions.

3-78. **Orient on reconnaissance objectives.** Commanders direct reconnaissance operations by establishing reconnaissance objectives with a specific task, purpose, and focus. Reconnaissance objectives enable the commander to focus the efforts of the reconnaissance force to ensure his information requirements on the enemy, terrain and civil populations are met within the required time. The enemy situation, time available, complexity of the terrain and the number, depth, and types of reconnaissance objectives drive the task organization and scheme of maneuver of the aviation reconnaissance force.

3-79. **Do not keep reconnaissance assets in reserve.** To provide continuous and focused reconnaissance requires commanders to employ all available assets against reconnaissance objectives; however, this does not necessarily mean to employ all assets simultaneously. Understanding the capabilities and limitations of each asset, coupled with detailed planning, enables commanders to ensure each available reconnaissance asset is employed to maximize its strengths to collect the required information while providing mutual support and redundant coverage to the entire collection effort throughout the depth of the AO.

3-80. **Ensure continuous reconnaissance.** Due to the dynamic nature of the OE, commanders ensure that reconnaissance is conducted continuously throughout the duration of the mission. The use of UAS to provide persistent reconnaissance throughout the depth of the AO, coupled with AWTs/SWTs conducting continuous relief on station, ensures the aviation reconnaissance force provides continuous coverage of the designated reconnaissance objectives. Continuous reconnaissance using MUM-T enables greater change detection in dynamic OEs, increased flexibility to maintain contact with acquired enemy forces, redundancy to enable detailed information collection to achieve the reconnaissance objectives, and greater flexibility to further develop the situation when required.

3-81. **Retain freedom of maneuver.** Mobility and maneuver are essential to successful aviation reconnaissance operations. Commanders consider how the aviation reconnaissance force is task-organized, the movement techniques used, and the planned scheme of maneuver, as well as bypass, reconnaissance handover, and engagement criteria to ensure the aviation reconnaissance force retains the freedom to maneuver to achieve the commander's end state. Decisive engagement between the aviation reconnaissance force and enemy forces may be necessary if fighting for information is required to fully develop the situation. However, decisive engagement must be balanced against the time available to complete the mission and the risk of the reconnaissance force becoming decisively engaged and possibly defeated by a

superior enemy force. Making contact with the smallest possible element, using redundant and different reconnaissance capabilities, conducting effective counter-reconnaissance, maximizing stand-off, and employing suppressive direct and indirect fires (when authorized) all contribute to reducing tactical risk while enabling the aviation reconnaissance force to retain the freedom to maneuver.

3-82. Gain and maintain enemy contact. Using visual or technical means, the aviation reconnaissance force locates and maintains enemy contact with the smallest force possible to prevent initial decisive engagement while retaining freedom to maneuver and adequate combat power to develop the situation. Based on the commander's intent and contact criteria, maintaining contact with the enemy force provides real-time information on the enemy's disposition, composition, strength and actions to enable the commander to make timely and informed decisions based on current intelligence. Once contact is gained with an enemy force that does not meet bypass criteria, the aviation reconnaissance force does not relinquish contact until directed to, reconnaissance handover is complete, or the enemy force is destroyed based on engagement criteria.

3-83. Develop the situation rapidly. As timely collection of information requirements impact the commander's decisions, Army Aviation performs reconnaissance with the tempo required to meet the requisite urgency to answer the necessary higher commander's information requirements. If contact is made with an enemy force, the aviation reconnaissance force reports immediately, conducts actions on contact, and develops the situation to quickly determine the composition, disposition, strength, and activity of the enemy prior to choosing a COA. Based on bypass criteria, engagement criteria, and reconnaissance handover criteria, the aviation reconnaissance force may transition to a hasty attack to destroy an enemy force, transition to a screen and employ direct and indirect fires. to harass and impede superior enemy forces then conduct reconnaissance handover to a follow-on force, or report and bypass to continue the reconnaissance effort if the enemy force meets bypass criteria.

3-84. Report all information rapidly and accurately. Quick and accurate positive and negative reporting is essential to ensure the commander receives the necessary information to make timely decisions. Reporting focuses on answering the commander's PIR. However, seldom can a PIR be answered on its own or in isolation. Therefore, PIR are broken down into different elements and assigned as collection tasks within orders. (See ATP 2-01 for further information.)

3-85. At the ABTF/ASTF level and above, processing, exploitation, and dissemination is the execution of the related functions that converts and refines reported data into usable information, distributes the information for further analysis, and provides combat information to commanders and staffs. Processing, exploitation, and dissemination is the link that ensures the efficient use and distribution of information following collection and reporting. While performing these functions, some of the information meets the criteria of combat information. In those cases, the combat information is disseminated to commanders and staffs per standard operating procedure.

SECTION V – SECURITY

3-86. Security tasks are those tasks performed by the commander to provide early and accurate warning of enemy operations, to provide the forces being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow the commander to effectively use their protected force (ADP 3-90).

3-87. Security tasks protect the force from surprise and reduce unknowns. The protected force ranges from friendly ground maneuver forces and facilities to the local population. Security tasks can be performed forward, to the rear, to the flanks, or entirely around the protected force, whether stationary or moving.

3-88. The primary difference between reconnaissance and security missions is the focus of the effort. Reconnaissance missions focus on the enemy and terrain, while security missions focus on the force being protected. However, reconnaissance is inherent to all security operations. Security tasks serve as an economy of force to prevent the premature commitment of other combat power.

3-89. Security tasks encompass five tasks—screen, guard, cover, area security, and local security. The screen, guard and cover security tasks each require increasing levels of combat power and provide

increasing levels of security to the protected force. However, the more combat power in the security force, the less combat power available for the main body. Area security preserves the commander's freedom of action to conduct sustaining operations, C2, and reposition reserves. Local security is an inherent responsibility of all units and provides immediate and local protection of the force.

3-90. Army Aviation attack or reconnaissance units are specifically equipped, trained, and organized to conduct security operations, but the only security task that aviation can perform autonomously is the screen task. Army Aviation conducts screens at all echelons, from elements as small as an AWT/SWT using MUM-T, up to elements as large as an AB/ACS, either independently as a pure aviation maneuver force or as a member of the combined arms team.

3-91. The size of the aviation security force is determined by—

- Size and follow-on mission of the protected force.
- Location and orientation of the security area.
- Duration of the security mission.
- Enemy situation.
- Complexity of the terrain.
- Reaction time required by the protected force commander (most important).

3-92. When Army Aviation is designated as the combined arms team security force headquarters, only screen or guard missions can be assigned to an ASTF/ABTF, or aviation brigade headquarters task-organized with adequate ground maneuver forces. However, the security task assigned to subordinate aviation elements is still screen. Due to the size, complexity, and C2 requirements, Army Aviation is not assigned the covering force headquarters mission but may be task-organized to a BCT or higher ground maneuver force assigned the covering force mission.

3-93. When task-organized to a ground maneuver force with an area, screen, guard, or covering force security mission, Army Aviation conducts the full range of tactical, enabling, and sustaining tasks, to include: screen, attack, reconnaissance, air assault, air movement, AE, and C2 support.

3-94. During security operations, Army Aviation can perform the following tasks:

- Screen the flanks or rear of a moving force or forward, to the flanks, or to the rear of a stationary force.
- Conduct zone and route reconnaissance or provide a forward security element for a moving ground force.
- Locate and destroy enemy reconnaissance and security forces in within the aviation unit's AO or attempting to penetrate the screen.
- Employ indirect and direct fires to fix or delay enemy main body forces.
- Conduct attacks to defeat or destroy enemy main body forces.
- Conduct force-oriented reconnaissance of all terrain and routes that influence the security area.
- Locate and reconnoiter obstacles and determine bypasses forward of a moving force.
- Air assault to seize an objective or to fix, block, or destroy an enemy force forward or to the flanks of a moving or stationary force.
- Insert, extract, or resupply dismounted or mounted security units along a flank screen of a moving force or forward of a stationary force.
- Conduct AE or aerial CASEVAC of the wounded and ill in the security area.
- Conduct air movement of friendly forces in the security area.
- Conduct C2 support to extend the range of communications networks to enable the protected force increased situational understanding for early warning and reaction time.

3-95. Depending upon whether the aviation security force is protecting a moving or stationary force and whether the security area is forward, to the rear, or to the flanks of the protected force, aviation security force commanders use a variety of techniques when initially occupying positions within a security area or along a screen line. When conducting a security mission for a stationary force, aviation security force commanders consider how fast the security area must be occupied to meet mission requirements and what

level of security is required. If the enemy situation is unknown and time is limited, the aviation force conducts a movement to contact through the security area to establish the screen at the LOA or prior to the LOA if contact is gained with the enemy main body or a superior enemy force. If the enemy situation is known and no substantial enemy forces are in the security area, the aviation security force can move rapidly along planned routes to quickly establish the screen at the LOA. If time is available, the enemy situation is vague, and/or the protected force commander requires detailed information in the security area, the aviation security force conducts a zone reconnaissance to establish the screen line at the LOA or once contact is gained with the enemy main body or a superior enemy force.

3-96. When conducting a security mission forward of a moving force, the aviation security force conducts a zone reconnaissance or movement to contact forward of the ground security force; assists in maintaining contact between the security force and the main body; assists in disengaging ground units, especially when conducting battle handover and passage of lines with the main body; and conducts reconnaissance of terrain that is hard to reach or would require too much time to cover with ground reconnaissance assets. The technique used depends upon the requirements of the protected force. If the force is moving through complex or unknown terrain, a zone reconnaissance is conducted far enough forward of the moving protected ground force to locate enemy forces while providing the protected force with the required information on trafficability of routes and movement corridors to enable freedom of maneuver. If the terrain is known or easily trafficable and the enemy situation is unknown or vague, the aviation security force conducts a movement to contact in zone with adequate distance to provide early warning of enemy actions to allow the protected force time to react.

3-97. When conducting a flank security mission for a moving force, the aviation security force may use three techniques to occupy the flank security area:

- Aviation security forces cross the line of departure separately from the main body and deploy to perform the mission to the flanks. This is used when the enemy threat situation is known to be low (figure 3-15).

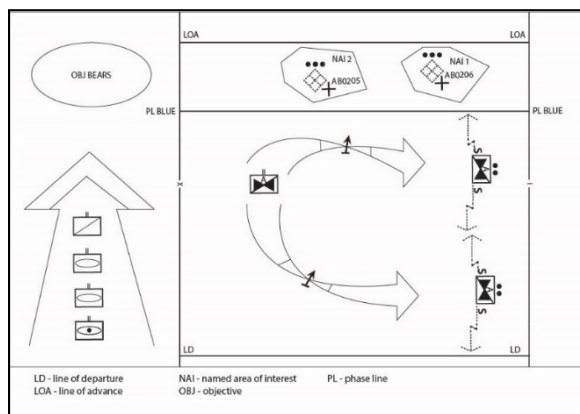


Figure 3–15. Aviation assets conduct flank security in support of a BCT reconnaissance and main body movement

- Aviation security forces cross the line of departure separately from the main body with lead elements conducting a movement to contact while trail elements occupy the flank screen. This is used when the enemy threat situation is unknown but knowledge or trafficability of the terrain is known (figure 3-16, page 3-25).

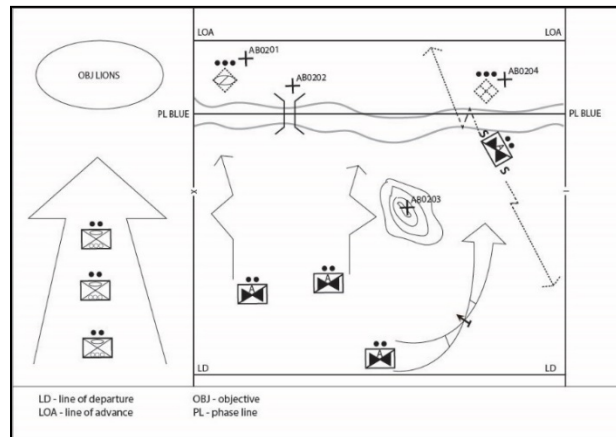


Figure 3-16. Aviation assets conduct security in support of Stryker platoon movement

- Aviation security forces cross the line of departure with the main body and conduct zone reconnaissance out to the LOA. This is used when the knowledge of the enemy and terrain are vague and trafficability is of greater concern to the protected force commander than reaction time to enemy contact (figure 3-17).

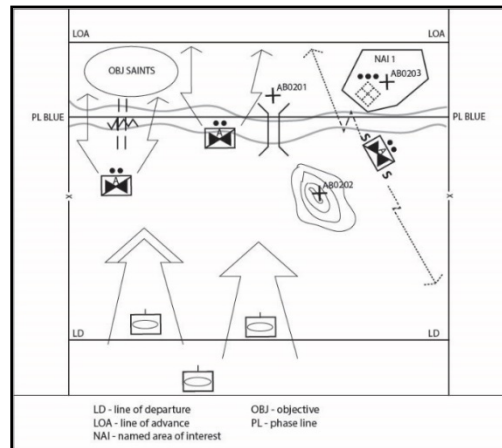


Figure 3-17. Aviation assets conduct zone reconnaissance in support of a BCT main body movement

3-98. The aviation security force commander controls the security operation by using a variety of control measures, to include: screen lines, subordinate unit boundaries, PLs, contact points, checkpoints, named areas of interest, fire support coordination measures, ACMs, observation posts (OPs) and routes. Such control measures allow for decentralized actions and small-unit initiative to the greatest extent possible. The security operation begins at the line of departure and the depth and reaction time provided by the security force is controlled by using an LOA. To the flank of a moving force or to the flanks or forward of a stationary force, the LOA is depicted as a screen line or a lateral unit boundary. When possible, all control measures are placed on recognizable terrain features. If a lateral unit boundary is the LOA and a friendly ground maneuver unit is operating to the flank, contact points are established to ensure contact is maintained with adjacent friendly units.

3-99. To enable disciplined initiative in execution, the protected force commander provides engagement, battle handover and bypass criteria, the date-time group the security area must be established, the duration of the security mission, and the reaction time required to enable the main body the required early warning

to react and prevent the enemy from achieving a position of relative advantage. This enables the aviation security force commander to develop and execute a security plan that provides the required combat information within the time necessary to inform the protected force commander's decisions.

SCREEN

3-100. *Screen* is a security task that primarily provides early warning to the protected force (ADP 3-90). While a screen provides minimal protection as compared to a guard or cover, Army Aviation's lethality, speed, and long-range precision fires significantly enhances the level of protection and reaction time provided by a screen.

3-101. Figure 3-18, page 3-25, depicts two SWTs screening a security forward of a battalion area defense. UAS focus on two primary avenues of approach into the security area while the SWTs screen secondary routes in the security area.

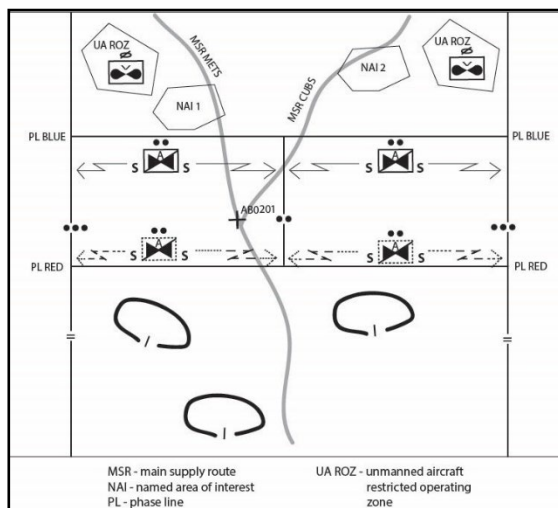


Figure 3–18. Scout weapons team using MUM-T screens forward of a protected force

3-102. A screen is used to cover gaps between forces, exposed flanks of stationary forces, or to the rear or flanks of a moving force. Screens are used when the expectation of enemy contact is low, the enemy force is expected to be small or the protected force requires minimal reaction time. Screens are economy of force missions to enable maximum combat power to remain uncommitted in the protected force. If significant enemy contact is expected or more reaction time is required, other forms of security—guard or cover—are more appropriate security tasks.

3-103. The screen force has the minimum combat power required to provide the desired early warning, as well as destroy enemy reconnaissance forces with direct and indirect fires. ; however, to preserve main body combat power, the screen force lacks adequate combat power to become decisively engaged with enemy main body forces. Once contact is gained with the main body or a superior enemy force, the screen force harasses and impedes the enemy force, then conducts battle handover to a follow-on force or the protected force.

3-104. The enhanced endurance, mobility, lethality, sensors of Army Aviation attack or reconnaissance units make them ideally suited to operate as an independent screening force or as a part of a combined arms team conducting security operations. Attack or reconnaissance aircraft as well as UAS can acquire and engage targets at extended ranges to provide maximum early warning and reaction time while not becoming decisively engaged. Additionally, communication relay packages and non-LOS communications enable effective reporting at greater distances to allow increased security area size and depth to maximize early warning and reaction time.

3-105. Critical tasks for an aviation security force conducting screens, include the following:

- Allow no enemy to pass through the screen undetected and unreported.
- Maintain continuous surveillance of all avenues of approach larger than a designated size (according to the protected force commander's intent) into the security area.
- Destroy or repel all enemy reconnaissance prior to the enemy gaining observation on the protected force.
- During defensive screens, locate the lead elements of the enemy and determine composition and direction of movement.
- Maintain contact with enemy forces and report all activity with the security area.
- Maintain contact with the protected force main body and friendly security forces operating to its flanks.
- Impede or harass enemy forces within capability while displacing to subsequent screens or during battle handover.

3-106. Screens can be either stationary or moving. Stationary screens are conducted to the front, flanks, or rear of a stationary protected force or to the flanks or rear of a moving protected force. Movement to contact or zone reconnaissance is conducted to provide security forward of a moving protected force.

3-107. A stationary screen is established using a series of OP with overlapping fields of observation. Using MUM-T with UAS focused on key named areas of interest that require persistent surveillance, AWTs/SWTs conduct reconnaissance along the screen line focused on supporting named areas of interest, routes, and mobility corridors that support enemy movement. Along the screen line, the aviation security force typically remains dynamic and maneuvers between OPs, using terrain to mask movement to ensure survivability and overlapping or redundant coverage of named areas of interest. The number of named areas of interest and the frequency of coverage by the aviation screening force is driven by how many other sensors and ground forces are committed to conducting the screen, the distance the screen is from the protected force, and the expected enemy force that is attempting to penetrate the screen. Based on the amount of space available for the security area, multiple screens are planned in depth to allow the screening force to displace while maintaining contact and developing the situation with enemy forces.

3-108. A moving screen is tied to the movement rates and axis of advance or attack of the moving protected force and is conducted either to the rear (seldom) or to the flanks (primary) of the moving force. For a moving flank screen, the screen force screens from the lead combat element (does not include lead security and reconnaissance elements) of the main body of the moving protected force to the rear of the protected force. To maintain protection of the moving force, the aviation security force executes a moving flank or rear screen similar to a stationary screen with the exception of the movement techniques used to occupy successive OPs along the screen line. The advantages and disadvantages of the various movement techniques to occupy a moving screen are outlined in table 3-1 and figure 3-19 (page 3-27).

Table 3–1. Screen movement methods

Methods	Characteristics	Advantages	Disadvantages
Alternate bounds by observation posts	• Main body moves faster. • Conducted by platoon, company, or troop. • Contact is possible. • Conducted from rear to front.	• Very secure method. • Maintains maximum surveillance over the security area.	• Execution takes time. • Disrupts unit integrity.
Alternate bounds by unit	• Main body moves faster. • Conducted by platoon, company, or troop. • Contact is possible. • Conducted from rear to front.	• Execution does not take a great deal of time. • Maintains good surveillance over the security area. • Maintains unit integrity.	• May leave temporary gaps in coverage.

Table 3–1. Screen movement methods, continued

Methods	Characteristics	Advantages	Disadvantages
Successive bounds	- Main body is moving slowly. - Conducted by platoon, company, or troop. - Contact is possible. - Conducted simultaneously or in succession. - Unit should maintain an air screen during ground movement.	- Most secure method. - Maintains maximum surveillance. - Maintains unit integrity.	- Execution takes the most time. - Unit is less secure when all elements are moving simultaneously. - Simultaneous movement may leave temporary gaps.
Continuous marching	- Main body is moving relatively quickly. - Performed as a route reconnaissance. - Enemy contact is not likely. - Unit should maintain an air screen on the flank.	- Observation posts displace quickly. - Maintains unit integrity.	Least secure method.

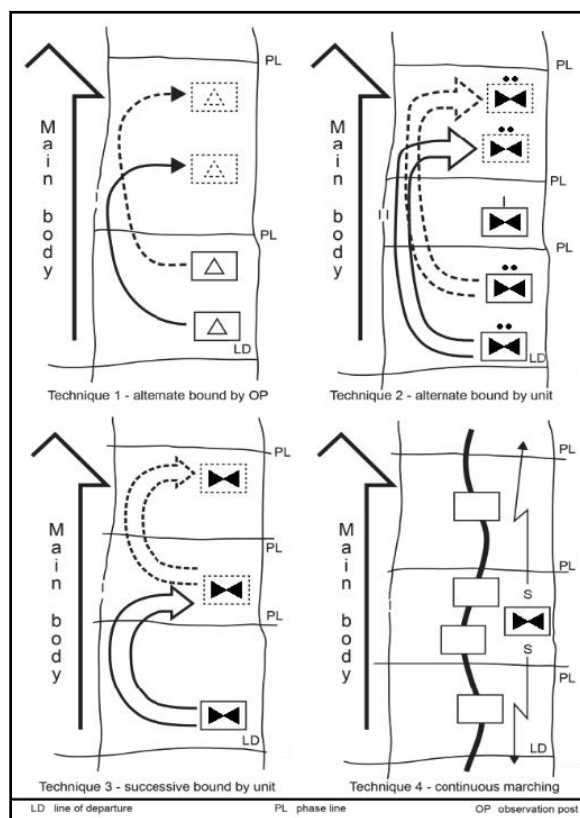


Figure 3–19. Screen movement methods

GUARD

3-109. *Guard* is a security task to protect the main body by fighting to gain time while also observing and reporting information and preventing enemy ground observation of and direct fire against the main body. Units conducting a guard mission cannot operate independently because they rely upon fires and functional and multifunctional support assets of the main body (ADP 3-90). A guard differs in that it is a more robust security force with increased combat power, is expected to engage the enemy force, and is expected to avoid decisive engagement. Army Aviation can support the ground maneuver units conducting guard operations, but they cannot conduct guard missions autonomously unless an ABTF or CAB is task-organized with adequate ground maneuver forces. Army Aviation conducts the full range of tactical, enabling, and sustaining tasks when supporting or conducting a guard, including attack, reconnaissance, movement to contact, screen, air assault, air movement, aerial C2, and AE or aerial CASEVAC.

COVER

3-110. *Cover* is a security task to protect the main body by fighting to gain time while also observing and reporting information and preventing enemy ground observation of and direct fire against the main body (ADP 3-90). Aviation forces can be task-organized to a BCT or larger element assigned a covering force mission. Army Aviation conducts full-range aviation functions in support of the combined arms team assigned to conduct cover, including attack, reconnaissance movement to contact, screen, air assault, air movement, C2 support and AE or aerial CASEVAC.

FUNDAMENTALS OF SECURITY

3-111. When planning and executing security operations, application of the following five fundamentals informs the operations process and drives execution of successful security missions.

3-112. **Provide early and accurate warning.** Army Aviation provides depth to the security operation by employing sensors and long-range observation techniques to detect enemy forces and provide early and accurate warning. Early warning of threat activity should include a description of size, current disposition, composition, location, direction of movement, and rate of advance to assist the staff in answering PIRs. The distance the aviation security force operates from the main body is determined by mission variables; at a minimum, it should operate far enough from the main body to prevent enemy forces from engaging or observing the protected force. The earlier the aviation security force detects a threat, the greater the time the protected force has to react. The use of UAS well forward of the screen line provides the security force with additional early warning and reaction time to maneuver to further develop the situation. If the screen is established at the LOA and the LOA is a forward unit boundary, coordination with the higher headquarters is required if UAS are to operate forward to provide increased early warning and reaction time.

3-113. **Provide reaction time and maneuver space.** Based on the protected force commander's desired reaction time, Army Aviation operates at extended distances from the main body thus offering additional time and space for the protected force commander to make an informed decision to employ forces. Based on the commander's intent, the aviation security force may transition to conduct offensive tasks to fix, delay, or disrupt the enemy forces' tempo and cohesion, providing reaction time and maneuver space to the protected force.

3-114. **Orient on the protected force, area, or facility.** Whereas reconnaissance operations orient on the reconnaissance objective, security operations orient on the protected force. The security force operates between the enemy force and the protected force and is fully integrated in the protected force scheme of maneuver. The movement and orientation of the security force is simultaneous and nested with the protected force.

3-115. **Perform continuous reconnaissance.** The aviation security force provides continuous reconnaissance through the persistent employment of UAS and continuous relief on station of AWTs/SWTs. Reconnaissance is overlapping and redundant with ground security forces, when operating in the security area, to ensure depth and mutual support. Based on the commander's intent, aviation security forces conducting reconnaissance transition to hasty attacks to defeat enemy reconnaissance and security

forces to prevent the enemy from gaining observation on the main body. Additional aviation attacks may be conducted to harass, impede, or disrupt enemy main body forces. Aviation assault units may also infiltrate and reposition ground maneuver security forces to provide redundant coverage of key named areas of interest or to establish ambush locations to delay, block, or disrupt attacking enemy forces. Positioning of FARPs, C2 nodes, UAS launch sites, and HAs as far forward as mission variables allow ensures the aviation force can sustain the required tempo with the least amount of combat power to maintain continuous reconnaissance while retaining the flexibility to rapidly develop the situation once contact is gained.

3-116. **Maintain enemy contact.** Maintaining contact with the enemy develops the situation and allows the commander to make well-informed decisions. Army Aviation's inherent mobility and endurance allow for aviation assets to rapidly gain and maintain enemy contact with the ability to develop the situation and report the enemy's actions as necessary. UAS provide persistent observation and allow manned aviation systems to reposition to positions of advantage to maintain contact and further develop the situation. Establishing subsequent screen lines and battle handover lines enable aviation security forces to maintain contact in depth.

SECTION VI – AIR ASSAULT

3-117. An *air assault* is the movement of friendly assault forces by RW aircraft to engage and destroy enemy forces or to seize and hold key terrain (JP 3-18). Air assaults extend the tactical and operational reach of the combined arms team by overcoming the effects of terrain, achieving surprise, and isolating, dislocating, or destroying enemy forces by rapidly massing combat power at the maneuver commander's time and place of choice. (See FM 3-99 for detailed air assault information.)

3-118. Army Aviation conducts air assaults in support of offensive, defensive, and stability operations throughout the depth and breadth of the AO. Air assaults are combined arms operations conducted to gain a positional advantage, envelop, or turn enemy forces that may or may not be in a position to oppose the operation. Assault units may be tasked with air assaulting a TCF in order to counter Level III enemy penetrations of the main battle area. (For more information on the TCF, see FM 3-0 and JP 3-10.)

3-119. Task organization of the aviation task force supporting the AATF is based on mission variables but at a minimum always includes an assault element and an attack or reconnaissance element as the foundational aviation maneuver capability.

3-120. The assault element may be made up of assault helicopters, heavy lift helicopters, or a combination of both. Aviation assault and heavy lift units transport ground maneuver forces and equipment from secure or permissive PZs to either unsecure or secure LZs in the objective area. Based on mission variables and the AATF commander's intent, LZs may be directly on or very near the objective or offset from the objective. The closer the LZ is to the objective, the greater the ability to rapidly mass combat power and with greater likelihood of achieving surprise. Offset LZs are chosen when no suitable LZs are available, to enhance survivability during the landing phase if the threat on the objective is high or when the AATF commander desires to infiltrate into the objective. However, significant offset distances between the objective and LZ location may reduce the element of surprise, may require a larger ground tactical force, and may allow the enemy early warning and freedom to maneuver to gain a position of advantage. Availability, size, and suitability of LZs; size, disposition, and capabilities of the enemy; size and capabilities of the AATF; and the AATF commander's intent drive the determination of LZ locations.

3-121. Army Aviation attack or reconnaissance units, utilizing MUM-T, conduct a range of tactical and enabling tasks in support of the air assault, to include air route reconnaissance, LZ/PZ reconnaissance, attacks prior to and during the landing phase, attacks as shaping operations prior to the assault, and attacks, screens, and reconnaissance operations in support of the ground tactical force after landing. Command and control of the attack or reconnaissance element resides with the air mission commander until the ground tactical force begins executing the ground tactical plan where the attack or reconnaissance units typically become DS or OPCON to the ground tactical force commander.

3-122. Air assaults are typically deliberately planned operations. They can be conducted in deep areas forward of a unit's forward boundary in linear AOs; in the higher echelon's deep areas between non-linear

and non-contiguous AOs; or in the echelon support area to defeat enemy threats that were either bypassed during offensive operations or that have infiltrated or penetrated the main battle area or security area during the conduct of defensive or stability operations. Air assaults into the close fight are generally in extremis but may be used to exploit success by reinforcing friendly ground maneuver forces on an objective or to prevent friendly forces from being overrun. Based on mission and operational variables, Army Aviation executes air assaults with elements as small as a team of assault and a team of attack helicopters up to the aviation brigade level, either as a subordinate member of the combined arms team or as the AATF headquarters when task-organized with ground maneuver forces.

3-123. The amount of time required to plan and prepare an air assault is largely driven by the complexity of the operation, the proficiency level of the ground and aviation forces forming the AATF, and the degree to which habitual relationships allow the use of standardized procedures to reduce planning and preparation times. Planning times can range from as short as 30 minutes for habitual quick reaction force missions up to 96 hours for larger company, battalion or brigade air assaults in high threat areas. Ultimately, however, air assault planning should be as detailed as time permits and should include the production of written orders.

3-124. Examples of the continuum of air assault operations, from generally the smallest force with the least required planning and synchronization efforts, to very large, high risk air assault operations that require detailed planning and rehearsals include, but are not limited to—

- A platoon (minus) air assaults to seize a small objective without a superior enemy security or reaction force in close proximity and low air defense threats (figure 3-20).

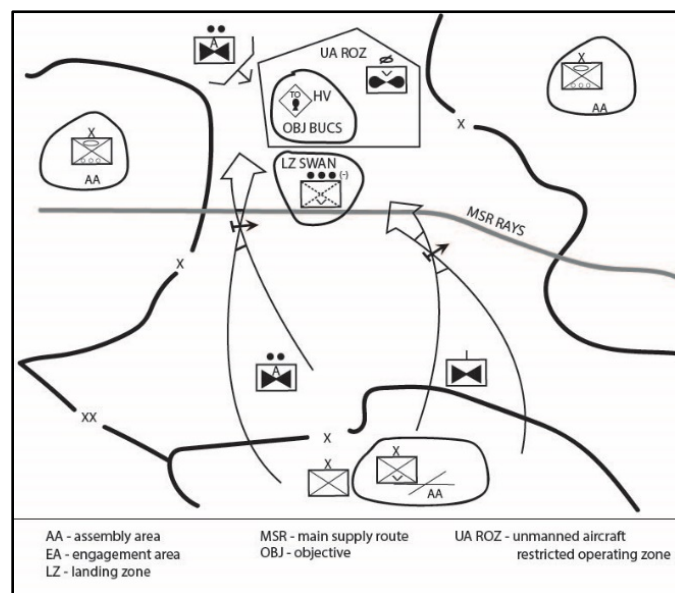


Figure 3–20. Platoon (minus) air assault to seize a small objective

- An infantry company air assaults to seize a lightly defended bridge within a linear deep area just beyond the FLOT to enable a BCT to maintain the offensive tempo without executing a deliberate wet gap crossing operation during the attack (figure 3-21, page 3-32).

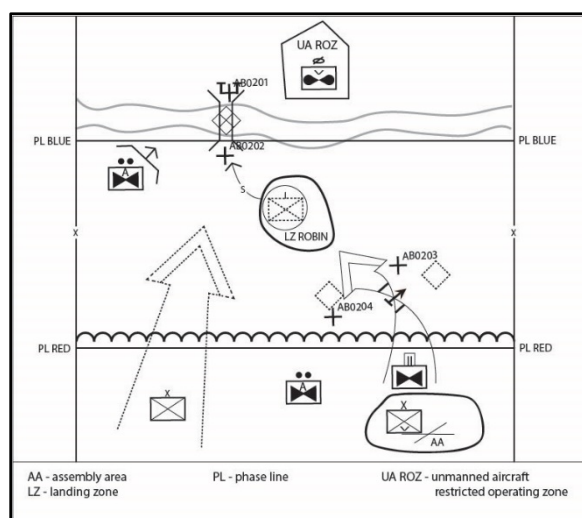


Figure 3–21. Infantry company air assault to seize key terrain in support of a BCT attack

- An infantry company air assaults to seize an objective in a small built-up area located between non-contiguous AOs (figure 3-22).

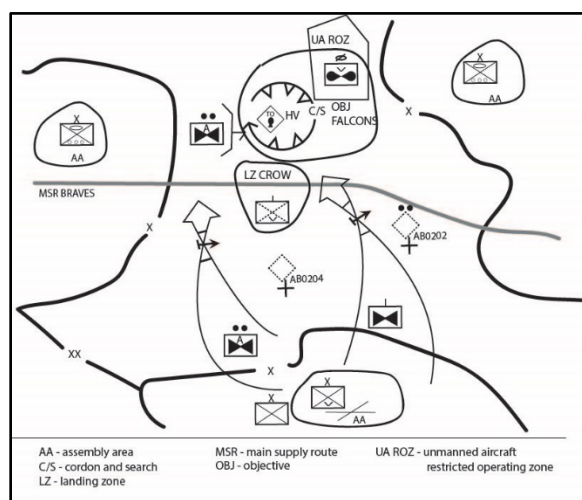


Figure 3–22. Infantry company air assault to seize an objective

- An infantry battalion task force air assaults to seize a remote airfield in a non-contiguous deep area and destroys local enemy security forces to establish a lodgment during a forced entry operation (figure 3-23, page 3-33).

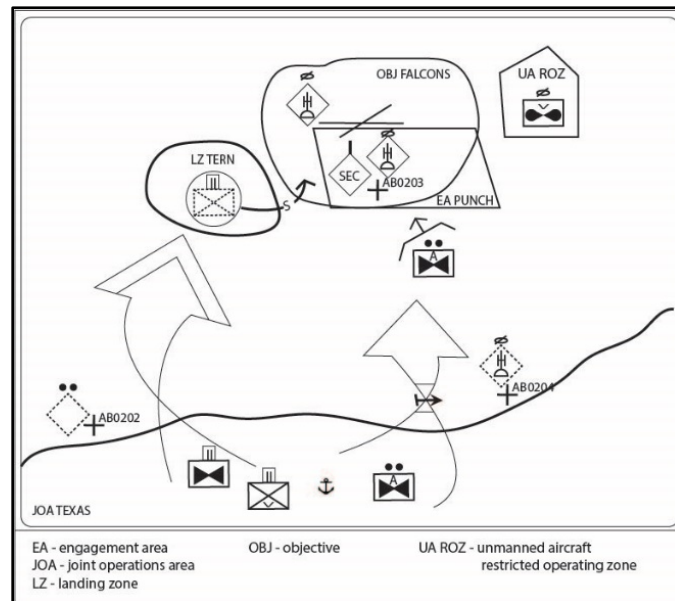


Figure 3–23. Infantry battalion air assault to seize a remote airfield and destroy local enemy security forces

- An infantry brigade air assaults to seize key terrain and block enemy forces retrograding during exploitation (figure 3-24).

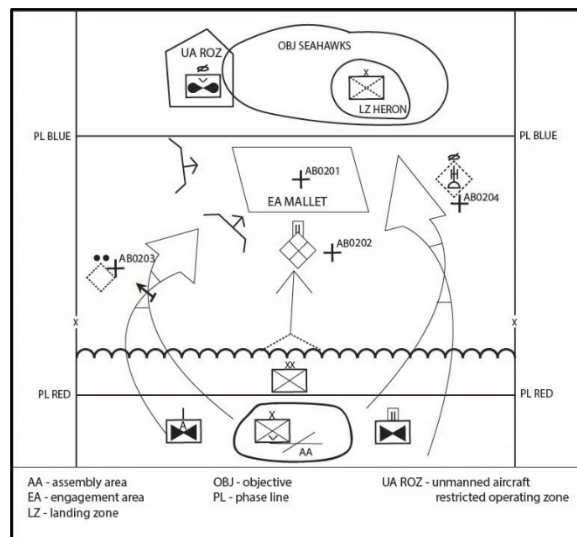


Figure 3–24. Infantry BCT air assault to block enemy forces retrograding

3-125. The level of planning and preparation time required for an air assault is driven by the operational and mission variables, as well as the training level and habitual relationship of the AATF. Although air assault operations can be complex, maintaining continuous friendly and enemy running estimates, using common SOPs, maintaining continuous liaison and habitual training relationships and continuous target development through reconnaissance and IPB all increase the agility of the AATF to seize the initiative through reduced time required to plan, prepare, and execute. (See FM 3-99 for detailed planning

considerations.) Regardless of how long an organization takes to plan, brief, rehearse, and execute a mission, all air assault operations use the following reverse planning sequence:

- Ground tactical plan.
- Landing plan.
- Air movement plan.
- Loading plan.
- Staging plan.

3-126. The steps of the reverse planning sequence are developed collaboratively between the ground force and aviation force. The foundation of the operation is the ground tactical plan and is the plan from which all others are developed.

3-127. The ground tactical plan is planned to accomplish the tactical mission, such as establish blocking positions, destroy an enemy force or seize key terrain. The scheme of maneuver the ground tactical force commander chooses to accomplish his or her mission drives the rest of the planning process to ensure the ground force arrives at the right place with the right combat power to achieve surprise and overwhelm the enemy force. The AATF is organized with sufficient combat power to seize initial objectives and protect LZs. The required combat power should be delivered to the objective area consistent with aircraft and PZ capacities to take advantage of surprise and shock effect.

3-128. When planning loads, squad integrity should be maintained by chalk and platoon integrity by serial to reduce C2 and span of control challenges during the landing phase and initiation of the ground tactical plan. To perform its mission, an AATF must arrive intact at the LZ. The force must be tailored to provide en-route security and protection from the PZ, throughout the entire air route, and at the LZ.

3-129. The AATF is organized with adequate sustainment to accomplish the mission or until designated follow-on or linkup forces arrive. Units that support the air assault operation normally are placed in DS to the AATF to ensure close coordination and continuous, dedicated support throughout an operation.

3-130. Various elements perform specific tasks ensuring the successful execution of an air assault. Attack or reconnaissance units using MUM-T conduct reconnaissance, security, and attacks during all phases of the operation. Indirect and joint fires. provide fire support to set the conditions in the objective or to suppress enemy air defense en route and on the objective before, during, and after the air assault and continue to provide supporting fires once the ground tactical force is established on the ground. When planning assaults, the AATF commander controls the operation by using air corridors, air routes, primary and alternate LZs, engagement areas, attack by fire positions, screen lines, HAs, PLs, TRPs, ACMs, named areas of interest, and target areas of interest. To define the AO, the commander may also designate subordinate unit boundaries and objectives in the designated AO. These control measures allow for decentralized actions and small-unit initiative to the greatest extent possible.

SECTION VII – AIR MOVEMENT

3-131. An *air movement* is the air transport of units, personnel, supplies, and equipment including airdrops and air landings (JP 3-17) and is not synonymous with air assault. Air movement operations are a viable means of transport and distribution in support of offensive, defensive, stability, and DSCA. Loads can be configured internally or externally depending on mission variables, and type aircraft available to conduct the air movement operation.

3-132. Air movement operations are conducted to reposition units, personnel, supplies, equipment, and other critical combat elements in support of current and/or future operations. Air movement operations allow the ground force commander to control the tempo of operations and meet the enemy force at the time and place of choice as he or she sets conditions. Utility and cargo helicopters supplement ground transportation to help sustain continuous offensive and defensive operations, and allow the supported commander to overcome difficult terrain and time constraints on operations.

3-133. Assault and GS helicopter units perform air movement on a DS or GS basis. Though air assault operations and air movement are separate missions, the planning sequence used for air assault operations

with modified phases are applied to an air movement. Army Aviation FW operations require a detailed justification and validation for use and typically involve the air movement of limited critical personnel, equipment, and supplies between intra-theater airfields when deployed.

INTERNAL LOAD OPERATIONS

3-134. Internal load operations are conducted by Army RW and FW aircraft. However, the primary aircraft used for cargo is the CH-47, due to its size, airframe configuration, and lift capabilities, over utility-type assault helicopters. Large-scale air movement operations require detailed planning and C2 similar to air assaults. Most air movements are smaller and highly decentralized requiring as few as two RW or one FW aircraft but can be executed with formations as large as an assault or GS battalion.

3-135. The CH-47 helicopter has an internal cargo handling system which allows for the transport of three 463L pallets or 10 standard warehouse pallets, permitting rapid load and offload of palletized cargo. At the aft end of the aircraft, the rear ramp permits some internal drive-on and drive-off capabilities for light vehicles and trailers. Internally, the CH-47 helicopter can seat 33 passengers with baggage; in an air CASEVAC configuration, it can load litter patients directly to the floor.

3-136. The UH-60 is used mainly for tactical transport of troops, supplies, and equipment. Depending on how the seats are installed, the cargo compartment of the UH-60 can seat up to 11 combat-equipped troops and 2 crew chiefs/door gunners.

3-137. The C-12 and UC-35 are used as intra-theater transport assets to move mission-critical personnel and light cargo. They are capable of self-deploying and transporting required personnel and equipment (aircraft, crewmembers, and maintenance personnel with personal equipment, tools, and limited spare parts) to conduct limited duration operations. These FW units support flights under the control of the Operational Support Airlift Command.

EXTERNAL LOADS

3-138. Typical external loads include bulk supplies, fuel or water blivets, vehicles, trailers, material handling equipment, towed artillery and other weapons systems, and bridging equipment. The supported unit is responsible for preparing, weighing, and rigging external loads. They must avoid overloading vehicles, trailers, pallets and other containers beyond maximum weights that have been coordinated with the aviation unit. If the aircraft is unable to lift the load or transport it the required distance, the supported unit must reduce the weight by removing items. The aviation unit is the final determination of the load's worthiness to fly and determines in advance what portion of the load to carry internally or externally. Special consideration for the size and condition (dust, debris) of the PZ and security of the LZ must be accounted for in the planning process.

3-139. The CH-47 is equipped with a triple cargo-hook system that enables the external transport of vehicles and trailers, towed Howitzers in tandem, and to carry bulky, oversized, or heavier items. The CH-47 is the only Army aircraft capable of transporting the 155-millimeter towed Howitzer and the heavier high-mobility multipurpose wheeled vehicle variants. The triple cargo hooks help to stabilize external loads in flight. Some lighter vehicles and other equipment can be lifted side-by-side. The UH-60 is equipped with a single point cargo-hook system that enables the external transport of small vehicles and bulky, heavy loads that do not easily fit in the cabin of the aircraft.

UNIQUE PLANNING CONSIDERATIONS FOR AIR MOVEMENT

3-140. Air movements are not as complex in planning and execution as an air assault operation, but planning must be detailed to meet the commander's end state and the safety of the crew and passengers. A typical air movement may be vulnerable to enemy contact as a majority of missions support troop movement and equipment to established secure areas such as forward operating bases or combat outposts. Extended distances and limited low threat routes can induce limitations to mission planning and execution, and may enable the enemy to identify predictable flight profiles or routes.

3-141. Air movement requires pre-coordination between the operations cells of aviation units and the units supported maximizing troop and equipment movements and the efficient use of air assets dedicated to mission support. Air movements must be planned to maximize the capability and employment duration of the aviation unit. These operations are especially effective in moving forces and equipment when—

- Ground routes are limited, congested, damaged, or nonexistent.
- Threat activities or obstacles restrict ground movement.
- The supported unit does not have adequate available vehicles.
- Time is critical.
- PZs/LZs are the appropriate size with the requisite security to safely execute the operation.

SECTION VIII – AEROMEDICAL EVACUATION

3-142. MEDEVAC is the timely, efficient movement, and en-route care by medical personnel of the wounded, injured, or ill to and/or between MTFs. The provision of en-route care on a medically-equipped vehicle greatly enhances the patient's potential for survival and recovery, and may reduce long-term disability by maintaining or improving the patient's medical condition. The Army MEDEVAC system is comprised of dedicated, standardized MEDEVAC ambulances (ground and air). These ambulances have been designed, staffed, and equipped to provide en-route medical care and are used exclusively to support medical missions.

3-143. Army air ambulance units provide DS and area support within the joint operations area and joint security area to support the overall Army Health System and the Joint Service Support plan. At the tactical level, DS or area support assets locate, acquire, treat, and evacuate patients to an appropriate MTF for stabilization, prioritization, and preparation for evacuation to a higher level of medical care (if necessary).

3-144. Army air ambulances are dedicated assets which are marked according to international agreements; all occupants are legally classified as noncombatants. This special protection provides a reduced level of risk to the patient and crew as they conduct their missions. The focus of the MEDEVAC mission, coupled with dedicated platforms, permits a rapid response to calls for support. The air ambulance unit operates in a ready alert status to rapidly respond to evacuation missions and is not diverted to perform any other tasks. Although air and ground vehicles are used to transport patients, AE is generally preferred for seriously wounded, injured, and ill personnel because of the speed, range, and flexibility it provides.

3-145. Army AE spans tactical, operational, and strategic objectives in support of the combatant commander's mission. It is essential that all commanders in command of AE assets understand how MEDEVAC systems integrate with each other throughout the AO and across the levels of war. Table 3-2 details Army AE support for each level of war is as follows:

- Tactical:
 - Brigade combat team.
 - Echelons above brigade (divisions and corps).
 - Emergency Class VIII resupply.
 - Emergency movement of medical personnel and equipment.
 - Enemy prisoner of war casualties.
 - Patient movement to and between medical facilities and contingency aeromedical staging areas in the area of operation.
- Operational
 - Multinational.
 - Joint.
 - Class VIII resupply.
 - Department of Defense civilians/contractors.
 - Medical personnel/equipment.
 - Military working dogs.

- Shore-to-ship.
- Stability tasks.
- Strategic:
 - Host nation.
 - Defense support to civil authorities.
 - Nongovernmental organizations.
 - Department of Defense support to other government agencies.
 - Foreign humanitarian assistance.

3-146. Table 3-2 displays primary task and purpose of the AE function. For additional information on MEDEVAC and medical regulations, refer to JP 4-02, AR 40-3, and ATP 4-02. 2.

Table 3-2. Primary task and purpose of AE functions

Primary task	Purpose
Acquire, locate, treat, stabilize, and evacuate	Clear the battlefield of casualties to facilitate and enhance the tactical commander's freedom of movement. This task is performed by the aeromedical evacuation crew.
En-route medical care	Maintain the patient's medical condition during transport and provide emergency medical intervention when required. This task is performed by the critical care flight paramedic. Additional en-route care is provided by en-route critical care nurses and additional advance providers on a case-by-case augmentation.
Area support	Provide evacuation for units without organic medical evacuation assets. Provide for rapid medical evacuation response to units operating throughout the supported area.
Emergency movement of medical personnel, supplies, and equipment	Provide a rapid response for the emergency movement of scarce medical resources throughout an operational environment when required by the operational situation.
Transfer of patients between medical treatment facilities and en route patient staging system	Provide a capability to cross-level patients within the theater hospitals and to transport patients being evacuated out of the theater to staging facility prior to flight departure. Provide intra-theater aeromedical evacuation.
Medical property transfer	Provide a reciprocal procedure to exchange like medical property when patients are evacuated with equipment accompanying them.
Medical regulating support	Provide support to medical regulating activities to ensure vital linkup between operational evacuation support and the scheduling of patients for evacuation out of theater by strategic aeromedical evacuation resources.

3-147. Air ambulance companies are equipped with 15 HH-60 aircraft, capable of supporting 24-hour operations. These companies consist of a company headquarters, an area support MEDEVAC platoon equipped with three HH-60s, and four forward support MEDEVAC platoons with three aircraft each. The company can operate either from one location or up to five decentralized locations, depending on the supported population, the size of the AO, the locations of MTFs, and the capabilities of supporting elements. An aviation task force is typically task-organized with one forward support MEDEVAC platoon of 3 HH-60s and 21 personnel.

PROVISION OF EN-ROUTE CARE

3-148. The provision of en-route care on medically-equipped aircraft enhances a patient's potential for survival and recovery. Extended distances from a point of injury or ambulance exchange point (AXP) to the MTF make en-route medical care even more critical. Army air ambulances are staffed with highly specialized critical care flight paramedics with advanced critical care training. These flight paramedics are essential for patient stabilization, sustainment, and survival during evacuation.

3-149. Patients may require additional medical professionals to ensure the appropriate level of care is provided. En-route critical care nurses or other advanced medical providers may augment the AE crew on a case-by-case basis. Figure 3-25 illustrates the en-route medical care capabilities between various platforms and how each compare to United States emergency medical services standards of care. Commanders and staffs should understand the varying medical capabilities for patient movement when planning and conducting operations.

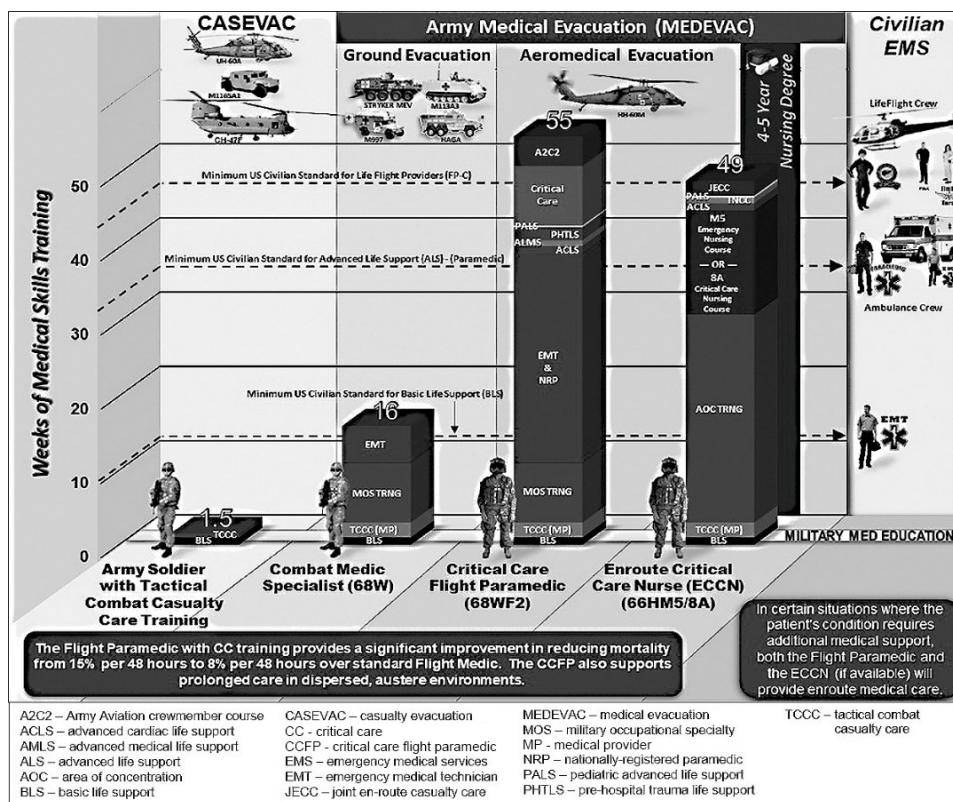


Figure 3–25. Medical skill-level comparison

RECEIPT OF THE EVACUATION PLAN FROM HIGHER

3-150. Theater evacuation policy refers to a command decision indicating the length, in days, of the maximum period of non-effectiveness that patients may be held within the command for treatment. The Secretary of Defense establishes this policy with advice from the Joint Chiefs of Staff and recommendations from the combatant commander.

3-151. The evacuation plan integrates AE to support a regionally-focused Army health service plan. The Army health service plan supports the combatant commander and theater engagement plan. All joint, allied, multi-national, and/or host-nation medical assets are assessed in the development of the Army health service plan for a given operation. Depending on the requirement of the Army health service plan, Army AE assets may be required to provide support to other services and/or provide area support throughout an

- Rapid communications plan with risk approval authorities identified to ensure appropriate approval prior to mission launch.
- Coordination requirements for security support from escort aircraft.
- Identify and coordinate aerial CASEVAC support when necessary.

3-153. The aviation brigade and GSAB staff, in conjunction with medical planners, must devise an allocation plan that can support all of the evacuation coverage areas and the missions the evacuation order assigns to the higher headquarters. Important considerations include the following points:

- Air ambulances are a low-density asset which must be employed efficiently. This may occur with troops engaged in combat, in high population density areas, in areas of famine or disease with high civilian casualties, or in refugee areas.
- In addition to performing point of injury missions, the forward support MEDEVAC platoon evacuates patients from AXPs based on the ground scheme of maneuver, and performs patient transfer missions between MTFs or other locations.
- The headquarters section and the area support MEDEVAC platoon may also be responsible for point of injury missions within their immediate vicinity.

3-154. Although the organizational design of the air ambulance company can support a division AO in certain situations, the effects of the mission variables can dramatically affect AE capability in the AO. Figure 3-27, page 3-41, provides an example of how effects from mission variables can exceed AE capability and require additional assets in the AO. Elements of the mission variables which could complicate AE support to an AO include—

- Mission—
 - Noncontiguous AO.
 - Friendly forces are widely dispersed throughout the AO.
 - Coalition, joint, or other friendly elements who may operate in the AO and require AE.
- Enemy—
 - Enemy air defenses prohibit AE in forward areas.
 - Enemy operations prohibit ground MEDEVAC in certain areas.
- Terrain and weather—
 - Restrictive terrain may restrict ground MEDEVAC.
 - Weather patterns may prevent AE between certain locations.
- Troops and support available—
 - MTFs are widely dispersed throughout the AO.
 - Minimal medical facilities or assets in theater.
- Time available—
 - Aircraft speed or power limitations.
 - Local policies stipulate a maximum amount of time between AE request and arrival to a MTF.
- Civil considerations—
 - Areas of concentrated populations at risk may require AE.
 - Dense population areas restrict LZ selection.

3-155. The air ambulance company may operate collocated with the GSAB or it may be task-organized and conduct split-based operations to support several aviation task forces. Thorough logistics and support planning is critical when an air ambulance company or forward support MEDEVAC platoon operates apart from the GSAB headquarters. Further, AE units operating apart from their company or battalion headquarters must be ready to continue operations during lapses in communications. Unit SOP, leadership, and command guidance is necessary to compensate for increased risk of operations across widely-distributed AOs.

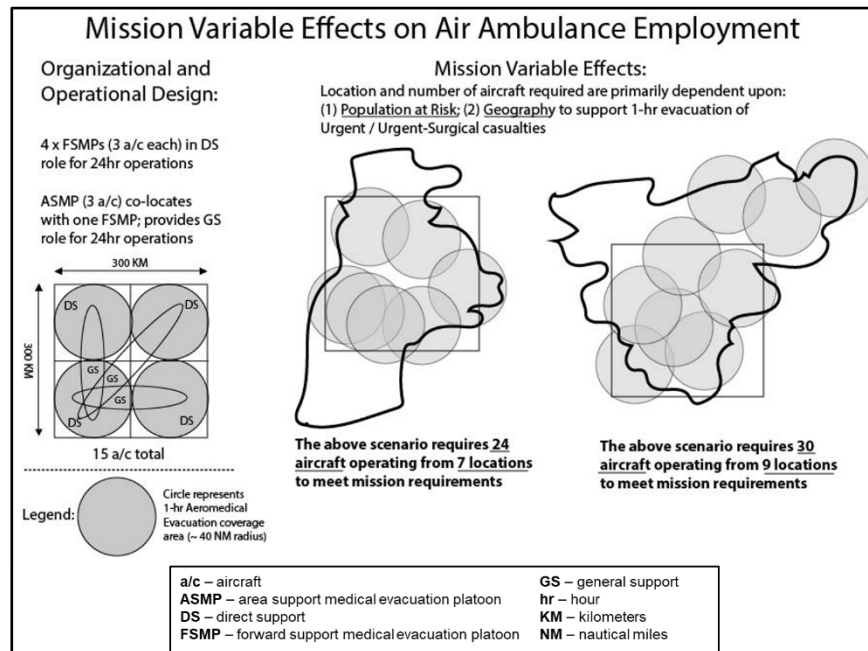


Figure 3–27. Example evacuation zones in a noncontiguous area of operations

AEROMEDICAL EVACUATION MISSION PLANNING

3-156. AE requires coordinated planning and synchronization between aviation units, medical planners, and supported units. Peer threat capabilities may deny AE access to specific areas during LSCO. AE limits of advance may require the establishment of AXPs supporting ground-to-air exchange, and subsequent evacuation, of patients prior to these areas. For additional challenges to MEDEVAC regarding LSCO as well as other operating environment challenges, refer to ATP 4-02.2.

3-157. Although the air ambulance company is part of the Army Aviation organizational structure and C2, AE is a medical mission performed with dedicated air ambulances. The aviation structural alignment, C2, airspace control, logistical support, weather support, fuel support, and security support are examples of advantages the air ambulance company gains by being organizationally aligned under Army Aviation that directly benefit the safe execution of this mission.

3-158. Since time is a crucial factor during AE missions, crew duty cycles are generally executed differently than typical aviation duty cycles. In contrast to a typical aviation mission cycle, continuous AE coverage results in extended operational duty periods, which often exceed 24-hours in length. AE units develop detailed battle rhythms that address aircrew resource needs unique to 24-hour continuous AE operations. As planners develop these battle rhythms, supported units should recommend periods of higher- and lower-tempo operations to guide when AE support will be most critical.

3-159. An AE aircrew duty cycle begins with basic crew-level mission planning, however the mission location and time of execution are unknown. During this time, aircrews manage crew schedules and maintain battlefield situational awareness to respond rapidly after receiving an AE request. Units must establish unique fighter management cycles and briefing procedures for remote and/or split-based operations.

3-160. The AE crew must mitigate risks just as other aircrews, but must do so without specific advance information. By using the three W method—who, what and why—an AE aircrew can pre-position their assets for success. The aircrew then maintains situational awareness throughout their area of operations and

once a 9-line MEDEVAC mission request is received, and all critical data is provided in order to complete the necessary information required to complete planning and respond.

AEROMEDICAL EVACUATION REQUESTS

3-161. Specific procedures, frequencies, and security requirements for transmittal of MEDEVAC requests are delineated through the orders process and are made a part of the unit/command SOP. Based on the mission variables, each AO may have a different primary method of MEDEVAC (via ground or air). Sectors with a high ground-to-air or air-to-air threat may rely on ground evacuation assets to move the majority of patients. In other sectors where the ground threat is high and comprised of small arms or IEDs, AE operations may be more efficient. It may take a combination of both air and ground evacuation assets and air and ground force protection assets working in concert to mitigate the risk to perform the evacuation.

3-162. Soldiers are evacuated from the point of injury to an AXP or MTF by the most expeditious means of MEDEVAC based on their medical condition, assigned evacuation precedence, availability of MEDEVAC platforms, and the threat. It is critical that all commanders with C2 of AE assets understand the categories of casualty precedence. The evacuation precedence for the Army operations at Role 1 through 3 MTFs are—

- Priority I, Urgent is assigned to emergency cases that should be evacuated as soon as possible and within a maximum of 1 hour to save life, limb, or eyesight; prevent complications of serious illness; and avoid permanent disability.
- Priority IA, Urgent-Surgical is assigned to patients that should be evacuated as soon as possible and within a maximum of 1 hour who must receive far forward surgical intervention to save life, limb, or eyesight and stabilize for further evacuation.
- Priority II, Priority is assigned to sick and wounded personnel requiring prompt medical care. This precedence is used when the individual should be evacuated within 4 hours, if medical condition could deteriorate to such a degree that patient becomes an URGENT precedence, whose requirements for special treatment are not available locally, or who may suffer unnecessary pain or disability.
- Priority III, Routine is assigned to sick and wounded personnel requiring evacuation but whose condition is not expected to deteriorate significantly. The sick and wounded in this category should be evacuated within 24 hours.
- Priority IV, Convenience is assigned to patients for whom evacuation by medical vehicle is a matter of medical convenience rather than necessity.

Note. The North Atlantic Treaty Organization no longer recognizes Priority IV, Convenience; however, this category is still included in the United States Army evacuation priorities.

3-163. Evacuation precedence assists the supporting headquarters to determine priorities for committing AE assets. Proper classification of each evacuation mission is especially important, since over-classification can lead to reduced evacuation assets available for follow-on missions.

3-164. Figure 3-28, page 3-43, depicts the sequence of two different AE missions in a LSCO environment:

- The right-hand portion of the figure shows a casualty in an AO with a high enemy air defense threat. The casualty is ground-evacuated from the point of injury, through a casualty collection point and battalion aid station, to a brigade support medical company in the brigade support area. Due to the enhanced anti-aircraft threat in this particular example, the DS forward support MEDEVAC platoon only operates between the brigade support area and the division support area. Once the casualty arrives at a field hospital in the division support area, he or she is then evacuated to higher levels of care by the area support MEDEVAC platoon until being evacuated from theater by inter-theater AE assets.
- The left-hand portion of the figure shows an AE request and mission execution in a lower-threat AO. The initial MEDEVAC request flows from forward elements to a BCT headquarters while the casualty is evacuated to an AXP by ground. Due to the lower air defense threat in this AO,

the forward support MEDEVAC platoon in DS to the BCT evacuates the casualty from the AXP to a forward resuscitative surgical team in the BCT AO. From there, the casualty begins movement to higher levels of medical care in the division and Corp support areas, until being evacuated from theater by inter-theater AE assets.

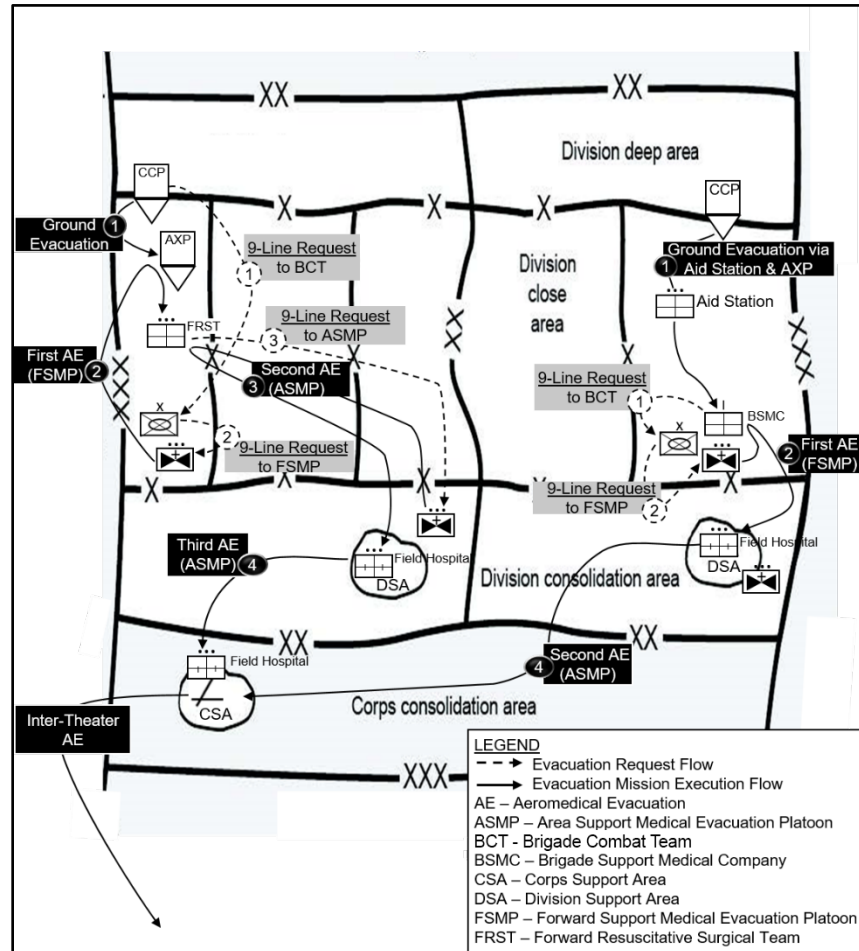


Figure 3-28. Example of medical evacuation request and execution

3-165. Procedures for requesting MEDEVAC support must be institutionalized down to the lowest level. The 9-line MEDEVAC request provides a standardized message format that helps expedite the MEDEVAC process. The same format is used for both air and ground MEDEVAC requests. Some multinational partners may require or request additional information on the MEDEVAC request. This additional information may be included into MEDEVAC requests to United States MEDEVAC units. This information would be the incorporation of the MIST report at the end of the MEDEVAC request. The mnemonic “MIST” stands for—

- M-Mechanism of injury.
- I-Injury or illness sustained.
- S-Signs and symptoms.
- T-Treatment given.

AUTHORIZATION

3-166. The use of Army AE assets for missions requires both a medical mission approval authority and a launch authority, as specified by the senior commander.

MEDICAL MISSION APPROVAL AUTHORITY

3-167. Medical mission authority begins at the theater-level through the creation of the theater evacuation policy and the medical rules of eligibility documents by appropriate medical officers. Once approved, these documents are published through the orders process and become the foundation for what constitutes a valid medical mission. For AE missions, the medical approval authority is accomplished by verifying the details of the 9-line MEDEVAC request with the policy contained in the theater evacuation policy and/or medical rules of eligibility. Once confirmed that the mission request falls within the established theater guidance, the request becomes an approved medical mission. The validation of the medical necessity to generate a requirement can include—

- Transport of a casualty.
- Patient precedence.
- Requirement for blood or blood products.
- An emergency resupply of medical-related supplies, equipment, or personnel.

URGENT AND URGENT-SURGICAL MISSION REQUESTS

3-168. Department of Defense policy dictates the standard completion time for approved URGENT and URGENT-SURGICAL MEDEVAC mission requests as 1 hour, with the time beginning to elapse once the MEDEVAC mission request is received by evacuation elements and stopping when the patient is delivered to the appropriate medical treatment facility.

LAUNCH AUTHORITY

3-169. The aviation commander considers the collective risk assessment of the mission and determines final execution or launch authority. The operational aspects related to the collective risk assessment include, but are not limited to—

- Patient care requirement (most important factor).
- The threat or enemy actions.
- ROE.
- Weather.
- Fighter management.
- Escort requirements.
- Overall tactical situation.

3-170. It is essential for commanders to have documented procedures in place when pre-authorizing AE missions. AE launch approval procedures must delineate between appropriate approval levels for different priorities of AE requests. Brigade commanders are authorized to delegate launch approval authority to subordinate commanders for certain missions according to AR 40-3 and AR 95-1. Commanders may also consider authorization procedures which account for single-ship AE missions or en-route linkup with escort or security aircraft, when tactically feasible.

MEDICAL OPERATIONS CELL

3-171. The medical operations cell in the aviation brigade headquarters provides assistance in planning and coordination for air ambulance employment and utilization. The medical operations cell performs the following functions:

- Establishes flight procedures specific to AE missions within the CAB. This may include special routes or corridors as well as procedures for escort aircraft link-up.

- Ensures LOCs to supported units and higher echelons of medical command are available. The medical operations cell also ensures supported units understand AE procedures and capabilities.
- Establishes AE briefing and launch procedures.
- Maintains awareness of the tactical and medical situation. Coordinates with medical regulators at higher echelons to efficiently conduct GS and works in concert with adjacent units.
- Assists the GSAB or CAB staff in conducting MEDEVAC operations.

AERIAL CASUALTY EVACUATION

3-172. Differentiated from AE, aerial CASEVAC is the unregulated transport of injured personnel with the use of Army Aviation assets that do not have onboard medical personnel or equipment. Aerial CASEVAC operations may be dedicated, designated, or opportune. During dedicated or designated CASEVAC, augmentation of medical providers and equipment reduces the necessity of supported maneuver forces to provide medical equipment and providers or buddy-aid escorts to the aerial CASEVAC asset at the pickup location. Augmentation functions as a force multiplier by not further reducing the maneuver element's personnel, assets, and capabilities.

DEDICATED AERIAL CASUALTY EVACUATION

3-173. Dedicated aerial CASEVAC consists of dedicated aircrews and equipment identified and reserved exclusively for the CASEVAC mission. This is the highest level of classification for aerial CASEVAC, and is usually a specified task from higher headquarters and should be for a specific period of time. Dedicated aerial CASEVAC may be required for specific operations where AE assets are not assigned or available, or when casualty estimates are expected to overwhelm available AE assets. Dedicated AE crews are not called on to perform any other mission. Dedicated aerial CASEVAC operations and procedures should be similar in conduct of the AE mission and be fully integrated into the patient movement system, to include augmentation with medical providers and equipment if available.

DESIGNATED AERIAL CASUALTY EVACUATION

3-174. Designated aerial CASEVAC assets perform other roles during the operation such as an air assault or air movement, but are also specifically tasked with aerial CASEVAC operations as a contingency. This task may come from higher headquarters or may be identified during mission planning. Tasking may be for a specific time period, a specific phase of an operation, or for a specific mission. When designating non-medical assets for aerial CASEVAC requirements, augmentation of medical providers and equipment should be considered, depending on availability. Commanders must identify procedures for receipt of mission as well as launch approval.

3-175. When planning to utilize designated aerial CASEVAC in support of specific operations, such as an air assault, link-up procedures with air or ground MEDEVAC assets should be established and rehearsed. Establishing link-up procedures allows for rapid transfer of urgent casualties to MEDEVAC assets and allow aerial CASEVAC assets to return to provide further support to the operation. Link-up procedures with MEDEVAC assets reduces lengthy evacuations where en-route care is limited or unavailable.

OPPORTUNE AERIAL CASUALTY EVACUATION

3-176. Given the opportunity, any available Army utility or cargo aircraft is capable of performing aerial CASEVAC operations. Opportune aerial CASEVAC may be a necessity during operations, but represents the lowest level of CASEVAC and is the highest risk of morbidity and disability to the casualty. By planning for MEDEVAC and CASEVAC through all phases of an operation, commanders effectively reduce the necessity for lifts of opportunity.

SECTION IX – COMMAND AND CONTROL SUPPORT

3-177. Army Aviation enhances C2 by providing ground and air commanders the ability to visualize, describe, direct, lead, and assess operations from the location of their choice on the battlefield. Command

and control support allows commanders to reposition rapidly to the decisive point on the battlefield, develop the situation, and reach back to resources at their CP or a higher headquarters as required. Army Aviation C2 assets provide a means for C2 to be comprehensive and provide beyond line of site voice and data communications. Army Aviation supports C2 through the use of C2 aircraft, UAS communication relay package, and ATS increasing a commander's ability to integrate and synchronize operations.

COMMAND, CONTROL, AND COMMUNICATIONS AIRCRAFT

3-178. Command, control, and communications aircraft enable the maneuver commander to better understand, visualize, describe, direct, lead, and assess operations over extended ranges and complex terrain. The CAC provides the means by which air and ground commanders can rapidly traverse and see the AO. The CAC does this by providing airborne C2 and aerial retransmission as directed. The C2 UH-60 aircraft gives the commander an enhanced capability communicate over extended distances by performing C2 while moving, serving as an aerial tactical CP, and providing an early entry CP. The onboard communications linkages allow for continuous contact between the commander and committed forces. These linkages also help maintain situational awareness, issue and receive fragmentary orders with graphics, synchronize fire and maneuver, and extend coverage. With networked-enabled communication systems, commanders and staffs assimilate significantly greater amounts of data faster and with greater clarity. The CAC is organic to the GSAB of the CAB, and conducts C2 support either DS or OPCON to the maneuver commander. The aviation unit providing the aircraft must coordinate with the supported unit early to integrate the C2 aircraft during the planning process. The aircrew of the C2 aircraft should attend orders and rehearsals of the supported unit to fully understand the operational scheme of maneuver and to best integrate the aircraft into the plan.

3-179. **Scheme of maneuver.** Command and control support occurs in a CAC aircraft flying in controlled airspace. The most common ACMs used is an airborne command and control area. Coordinated through the operations officer or S-3 (Air), ADAM/BAE, or other air planning element, the airborne command and control area does not conflict with current operations of the supported unit, and is in an area that supports the maneuver commander's plan. It may be necessary to plan for multiple airborne command and control areas. During offensive operations, on-order ROZs are planned in order to allow C2 aircraft to maneuver commensurate with the offensive tempo.

3-180. **Threat.** Aviation battalion operations and intelligence officers must carefully analyze the threat and the impact potential threats may have upon aircraft operating in a ROZ. ROZ operations may fix an aircraft over a piece of terrain for prolonged periods, thus an accurate threat assessment must inform ROZ location selection. A careful analysis of the ROZ by the aviation unit ensures the ROZ can support the ground maneuver commander's concept.

3-181. **Communications.** ROZ selection maximizes LOS communications with all elements of the ground force, ideally extending the range maneuver forces may cover in an operation. A careful mission variable analysis allows ROZ selection in an area that appropriately balances operational risk with mission requirements.

3-182. **Routes to/from the ROZ.** Flight routes must be developed to support the aircraft's transition to the ROZ. These flight routes must be planned carefully, should avoid over flight of friendly artillery units, and should be opened and closed as needed through close coordination with the appropriate airspace element or controlling agency. The detailed planning of air routes, similar to the procedural control offered by a ROZ, enables success of the combined arms team through detailed planning.

3-183. **Battlefield circulation of key leaders.** The GSAB and the AHB execute missions that facilitate C2 support through leadership battlefield circulation designed to promote shared understanding. Battlefield circulation also supports commanders' efforts to inform and influence audiences inside and outside their organizations, such as through Soldier and leader engagements. In order to meet the circulating leader's intent, the supporting aviation unit needs to closely coordinate with the leader's staff to ensure thorough planning and analysis for each mission.

UNMANNED AIRCRAFT SYSTEM COMMUNICATIONS RELAY PACKAGES

3-184. The Army, as part of a joint network, employs a three-tiered communications system. This network has aerial, space, and terrestrial components provided by individual services, linking the various elements of the joint force to the global information grid. UAS facilitate C2 by extending the network as the commander circulates in the OE. Both UAS communication relay packages enhance C2 by providing extended-range voice communications between CPs, ground, and aviation units.

3-185. The Gray Eagle is designed to support communications relay as one of its primary missions. It is equipped with a communications relay package-medium and provides extended tactical communications. This enables forces to communicate over the horizon and provides extension of the voice data network. Shadow UAS provides an additional layer of communications relay capability. This system provides a single channel of extended tactical voice communications.

3-186. Gray Eagle and Shadow UAS provide LOS communications relay; however, only the Gray Eagle is able to provide over-the-horizon communications relay through satellite communications. A careful analysis of mission variables allows the loiter area to be selected in an area that provides security and uninterrupted communications.

3-187. **Terrain and Weather.** Both natural and man-made features limit sensor effectiveness and C2. Flat terrain eases LOS issues while mountainous terrain may reduce unmanned aircraft range and data relay capability. Additionally, communications (voice and video) degradation between UAS and ground maneuver units may be experienced during inclement weather.

3-188. **Enemy Threat.** Aviation battalion operations and intelligence must carefully analyze the threat and the impact potential threats can have upon aircraft working in the airspace above the battlefield. Since the Gray Eagle and Shadow mostly operate above the coordinating altitude for extended periods, medium-, and high-altitude air defense artillery, surface-to-air missiles, and MANPADS threats need to be identified and avoided. A careful analysis of the loiter area by the aviation unit ensures it can support the ground maneuver commander's concept and remain clear of high threat areas.

3-189. **Routes to/from the loiter area.** Flight routes must be developed to support the aircraft's transition to and from the objective area and maximize their communications relay packages. These flight routes must be planned carefully, should avoid over flight of friendly artillery units, and should be opened and closed as needed through close coordination with the appropriate airspace element or controlling agency.

SECTION X – PERSONNEL RECOVERY

3-190. *Army PR* is the military efforts taken to prepare for and execute the recovery and reintegration of isolated personnel (FM 3-50). Personnel recovery is a portion of the protection warfighting function which begins with personnel recovery guidance; this is found in Annex E, Appendix 2, of a base order. At the tactical level, personnel recovery guidance is refined, by commanders into specific actions for the Soldier, known as isolated Soldier guidance, which provides mission specific guidance to the individual. Personnel recovery is an individual and a collective responsibility incorporated into the orders process through the military decision making process. SOPs and battle drills may be developed or refined in order to be properly integrated into mission planning and preparation. This also enables rapid execution of PR when required. Additionally, this integration establishes coordination points with other staff and joint elements effectively integrating into the overall PR architecture as well as ensuring commanders are aware of PR requirements.

3-191. Army Aviation integrates into PR in two ways. First, Army Aviation supports the ground force commander in the execution of PR missions by conducting air assault, air movement, AE, attack, reconnaissance, security, and/or C2 support. Second, Army Aviation conducts recovery of its own forces who are isolated by conducting immediate recovery of isolated personnel or by conducting deliberate recovery of designated forces by serving as the recovery force.

3-192. PR missions are a combat task and may require the seizing and holding of a defined area of terrain for a specified time. Commanders must have available resources to ensure security for the isolated personnel as well as the recovery team through all phases of the PR mission.

PERSONNEL RECOVERY METHODS

3-193. Army Aviation's role in PR is in the execution of pre-established procedures and well-rehearsed operations to report, locate, support, recover, and reintegrate isolated personnel. There are four methods of recovery used by Aviation forces to support the ground force commander or to recover their own personnel.

3-194. Unassisted recovery comprises actions taken by isolated personnel to achieve their own recovery (sometimes referred to as self-recovery). An unassisted recovery typically involves an evasion effort by isolated personnel to get back to friendly forces or to a point where they can conduct a successful link-up with friendly forces or be recovered via another method. Army Aviation units train and equip all individuals to self-recover in the event recovery forces cannot execute other recovery methods due to weather, threat, or operational necessity. Isolated personnel may have the most complete knowledge of their situation and use individual training to evade enemy forces, awaiting the opportune time to return to friendly control. An unassisted recovery may depend on the condition of the isolated personnel and the situation at the location where they are isolated. A wounded, injured, exhausted, or disoriented isolated personnel, one endangered by enemy forces, or one without the proper equipment, may be unable to self-recover. If possible, isolated individuals communicate if they cannot conduct unassisted recovery to alert the responsible command to begin planning for an immediate, deliberate, or external supported recovery.

3-195. Immediate recovery is the sum of actions conducted to locate and recover isolated personnel by forces directly observing the isolating event or, through the reporting process, determining isolated personnel are close enough for them to conduct a rapid recovery with the forces at hand without detailed planning or coordination. Immediate recovery aims to locate isolated persons, keep them under direct observation, and recover them before the enemy understands the situation. Immediate recovery assumes the tactical situation permits a recovery with the forces at hand, and those forces have a clear enough understanding of the situation to accomplish the mission. It also assumes that successful recovery occurs without excessive casualties to the recovery force, without unduly imperiling the isolated person, and without endangering the unit's overall mission. Unit commanders initially plan to conduct PR operations in support of their own missions within the scope of immediate recovery efforts. Army Aviation provides rapid movement capability for quick reaction forces under control of the unit initiating immediate recovery efforts. Immediate recovery efforts begin as soon as an isolating event is identified and authenticated. Isolating events may require rapid action to prevent potential capture and exploitation of the isolated personnel. When the enemy situation or mission objectives do not allow for immediate recovery, unit commanders may elect to transition to deliberate recovery efforts.

3-196. Deliberate recovery is the sum of actions conducted by Army forces when an incident is reported and immediate recovery is not feasible or was not successful. Weather, enemy actions, isolated personnel situation, current operations, and recovery force capabilities are examples of factors that may require the detailed planning and coordination of a deliberate recovery. Commanders conduct deliberate personnel recovery like any other deliberate operation, using the military decision making process and appropriate preparation. The operation can be a mission specifically to recover an isolated person or a specified or implied task in another mission.

3-197. External supported recovery is the sum of actions conducted when immediate or deliberate recovery is not feasible or was not successful. It is either the support provided by the Army to other joint task force components, interagency organizations, or multinational forces, or the support provided by these entities to the Army. CAS, intelligence, surveillance, and reconnaissance, support, and airborne C2 are examples of capabilities that may be required from different components to execute an external supported recovery.

3-198. The selected type of recovery is based upon mission variables and additional commander considerations. Within the close area, and especially in vicinity of the line of contact, the immediate recovery in the form of a movement to contact is common. A recovery in the deep area typically takes the

form of a deliberate recovery conducted as an attack or air assault in order to allow sufficient time to mass combat power and coordinate maneuver with adjacent units. In LSCO, unassisted recovery is the normal selection as large numbers of isolated personnel attempt to regain contact with the nearest friendly force and occurs throughout the close, support, and consolidation areas.

3-199. During immediate PR events, the first aircraft on scene assumes duties as the on-scene commander during the conduct of the PR mission. During deliberate PR missions, the role of on-scene commander is assigned by the commander executing the PR mission. On-scene commander duties are typically assigned to the aircraft with the ability to maintain situational understanding and provide immediate fires in support of personnel on the ground. Specific attention must be applied to commander's intent with respect to the enemy influence which caused the PR event to occur. Specific ROE may be required to facilitate protection of personnel during the recovery phase of the mission. For more detailed PR information, see FM 3-50.

3-200. BAE personnel ensure aviation asset integration into the BCT PR plan. While detailed PR mission planning cannot be conducted prior to any isolating event, contingency planning and rehearsals ahead of the operation decrease reaction time required for recovery force activation. Aviation provides organic lethal fires through manned and unmanned armed aircraft. When aerial security is required, manned aircraft are the primary selection due to rapid response to the developing scenario. Lift and assault aircraft provide transportation to recovery force personnel, insertion of support equipment during denied landing events, medical support at the point of recovery through the transportation of the isolated personnel, and extraction capability for unit personnel involved in recovery efforts.

PERSONNEL RECOVERY OFFICER/UNIT PERSONNEL RECOVERY REPRESENTATIVE

3-201. Every member of the aviation staff has a role during PR operations. To ensure that these roles are properly executed, the staff must undergo training to hone these skills. The duties and responsibilities of each staff member during an isolating event will be documented in the unit's PR SOP.

3-202. All echelons above battalion have trained PR specialists who are assigned as PR officers. Commanders at all subordinate echelons assign a PR representative. The PR representative serves as the unit's PR program manager to ensure all PR tasks are planned, coordinated, and completed. The PR representative liaises with the PR officer at the brigade level and other PR organizations, and acts as the point of contact and fusion point for PR matters at their respective levels.

3-203. PR officer duties fall into four broad categories: advisor to the commander, point of contact for PR efforts among the staff, staff coordinator for PR activities, and PR trainer. At battalion level and lower, the PR representative acts as a fusion point to gather PR-related information for their respective unit and integrates guidance from higher command into plans and unit SOPs (specified details of recovery plans must be handled at the appropriate classification to protect both the recovery force and the isolated personnel). Additionally, the PR representative conducts horizontal and vertical coordination with the personnel recovery coordination cell or section, adjacent, and subordinate units during a PR incident. Depending on the echelon, the PR officer or representative performs these duties as follows:

- Battalion and brigade level—
 - Ensures PR is integrated into the unit training plan and SOP.
 - Ensures the PR program complies with all Army and Joint regulations and requirements.
 - Ensures sufficient PR equipment is available to the unit.
 - Provides PR training to all assigned, attached, and external supporting personnel.
 - Includes PR responsibilities in unit pre-mission planning and execution.
 - Establishes PR staff capabilities and assigns primary responsibilities in the CP as the focal point for the commander and staff.
 - Establishes isolated personnel reporting requirements in the brigade and subordinate information management systems.
 - Recommends task organization and mission assignment to subordinate elements.

- Collects and processes information developed by the joint personnel recovery center or other PR centers.
 - Advises the commander on steps to ready subordinate units for PR missions.
 - Synchronizes and integrates all required assets for PR activities.
 - Assists subordinate staffs and commanders in the development of their specific echelon's PR system.
 - Supports joint PR operations, if directed.
- Company, troop, or below level—
 - Develop guidance for isolated personnel or evasion plans of action for every member of the unit.
 - Identify shortfalls in PR capabilities during troop leading procedures.
 - Identify information requirements for potential PR operations.
 - Evaluate each tactical situation and plan accordingly.
 - Assess the unit's ability to complete the PR tasks.
 - Request the support required to address shortfalls in capability.

SECTION XI – AERIAL-DELIVERED MINE OPERATIONS

3-204. Aerial-delivered mines (Volcano) support offensive or defensive operations by emplacing minefields under varied conditions; reinforcing existing obstacles; closing lanes, gaps, and defilades; protecting flanks; and denying probable enemy air defense, artillery, or other projected sites. Aerial-delivered minefields may also be employed for flank protection of advancing forces and when conducting aviation and ground unit flank guard or screen missions.

3-205. The ground commander integrates obstacles into the scheme of maneuver to shape the AO or develop the engagement area. The ground commander may rely on the AHB to employ air volcanoes in support of the ground scheme of maneuver, which may require the AHB to travel extended distances to emplace a minefield.

3-206. When emplaced, the minefield seeks the following effects on the enemy:

- **Disrupt.** With low lethality and density, the commander's intent is to confuse enemy formations with near randomness or denial of high-speed roads, bridge approaches, or masking terrain.
- **Fix.** These minefields are placed to permit synchronized ground force fires once encountered.
- **Turn.** Density and lethality are sufficient to influence the maneuver of enemy formations in another direction.
- **Block.** Density and lethality are sufficient to deny enemy use of terrain when emplaced with other natural and man-made obstacles.

SECTION XII – COUNTER-AIR CONSIDERATIONS

3-207. Counter-air is a theater mission that integrates offensive and defensive operations to attain and maintain a desired degree of control of the air and protection by neutralizing or destroying enemy aircraft and missiles, both before and after launch. The counter-air mission integrates offensive counter-air (OCA) and defensive counter-air (DCA) operations to attain and maintain the JFC's desired degrees of control of air and protection by neutralizing or destroying enemy aircraft and missiles, before and after launch. These operations may include the use of Army manned or unmanned aircraft as well as precision fires, artillery, ground forces, special operations, space/cyberspace operations, EW, and other capabilities to create the desired lethal and/or nonlethal effects. For more information on counter-air operations, see JP 3-01.

3-208. The goal of OCA operations is to prevent or disrupt the launch of enemy aircraft and missiles by engaging them and/or their overall supporting infrastructure prior to employment. OCA includes four operations:

- Attack operations. OCA attack operations include offensive action by any part of the joint force in support of the OCA mission against targets which contribute to the enemy's air and missile capabilities.
- SEAD. Activity that neutralizes, destroys, or degrades surface-based enemy air defense systems by destructive and/or disruptive means.
- Fighter escort. Fighter escort provides dedicated protection sorties by air-to-air capable fighters in support of other operations.
- Fighter sweep. Fighter sweep is an offensive mission by fighter aircraft to seek out and destroy enemy aircraft or targets of opportunity in a designated area.

3-209. DCA is all defensive measures within the theater designed to neutralize or destroy enemy forces attempting to penetrate or attack through friendly airspace. DCA encompasses direct (active and passive) defensive actions taken to destroy, nullify, or reduce the effectiveness of hostile air and missile threats against friendly forces and assets. The goal of DCA operations, in concert with OCA operations, is to provide an area from which forces can operate while protected from air and missile threats. DCA operations must be integrated and synchronized with OCA operations and all other joint force operations. The area air defense commander, if established by the JFC, is responsible for DCA planning and operations.

PRE-MISSION PLANNING

3-210. Critical to any operation is prior planning; this is no different when considering operations in contested airspace. Pre-mission planning considerations include—

- Commanders ensure their crews plan for aerial threats regardless of their assigned missions.
- Providing security for aircraft conducting deep operations.
- Attacking targets from maximum standoff ranges whenever possible.
- Incorporating terrain and weather into planned maneuver.

OPERATIONS

3-211. Several air combat maneuvering concepts have proven to be successful in the air combat environment. Although these principles originated from FW experiences, they have specific application to helicopter operations as well.

3-212. Seeing the enemy first is the key to survival in an air combat environment. In addition to visual observation, any tool available should be used to "see" the threat. Some of these tools might include the airborne warning and control system or the forward area air defense system, UAS, or AH-64D/E Longbow radar.

LOOKOUT AND OBSERVATION

3-213. During the conduct of operations, aircrews must be vigilant in their lookout for enemy aerial threats. A successful engagement depends on effective lookout procedures. The timely receipt of an attack warning and prompt, accurate communication of the attack to other aircrew members is critical. Friendly forces must be able to recognize the threat based on more than the physical characteristics of their aircraft. They must be familiar with threat tactics and be able to recognize the threat's intent quickly. The mission briefing should address the required actions if friendly aircraft see the threat first. The mission may require friendly forces to bypass the threat or engage it immediately. If the threat is bypassed, friendly forces should forward essential elements of information to the next higher headquarters.

3-214. Individual aircrew members should maintain specific lookout sectors from the cockpits of their aircraft. Each aircraft in the formation should also maintain lookout sectors that the commander assigns. As much as aircraft cockpit design permits, the sectors of observation should equal 360 degrees around the aircraft and formation.

3-215. Commanders should analyze the mission variables to determine if other methods of observation should be employed. For example, if an attack from the rear sector is possible, friendly forces may find it necessary to perform "S" turns or conduct frequent check turns to maintain observation in that sector. Utility and cargo aircrew members/door gunners can also help maintain observation to the rear and flanks of their aircraft and the formation. Sectors of observation also must include vertical airspace. Crews should scan areas out to the maximum effective ranges of the expected threat weapon systems. Finally, there is no safety in numbers. Aircrew members must not become complacent and assume that other crew members will detect the threat first. They must maintain a constant visual watch. Multiple sets of eyes scanning the same sectors reduces the chances of threat aircraft approaching a formation undetected.

3-216. Avoiding detection, recognizing and evaluating threats, and being unpredictable are considered viable lookout techniques.

Avoiding Detection

3-217. If the threat detects friendly aircraft, the friendly aircraft become targets. Friendly forces must, therefore, employ proper terrain flight techniques and electronic counter-countermeasures to avoid visual and electronic detection.

Recognizing and Evaluating the Threat

3-218. All aircraft should be considered hostile until they are positively identified. Aircraft identification based entirely on its physical characteristics is dangerous. Aircrew members must be familiar with the capabilities, weapons, and tactics of all potential threat aircraft. Aircrew members must assess the difference between nonaggressive maneuvering and maneuvering in preparation for attack. The results of this assessment may be the first indication of whether the threat is searching or passing through and if it has detected friendly aircraft. If detected, friendly aircraft must execute the appropriate battle drill and avoid, evade, threaten, or engage the threat as the situation dictates. A drill may not be necessary to call if detection of the threat is made with sufficient time to make a tactical decision.

Being Unpredictable

3-219. Repetitive patterns by friendly forces increase the potential for the threat to gain and maintain an advantage. Aircrew members must maintain situational awareness at all times, and this includes avoidance of setting patterns in routes of flight or response to threat actions. Timely communication between aircrew members enhances coordination and situational awareness and allows for distinct, unpredictable maneuvering.

AIR COMBAT DOCTRINE

3-220. Some basic tenets of air combat doctrine are provided below:

- **Avoid.** Unless directed by mission orders, aviation forces maneuver to avoid being observed by threat aircraft. They accomplish this using terrain, cover, concealment, and appropriate movement techniques to avoid disclosing their location. Aircraft survivability equipment should be coupled with active measures such as altering routes of flight when threats are detected beyond visual range.
- **Alert.** The alert call is critical to the survival of the force. It is transmitted by the aircrew who first observes the threat. The crew who, at the moment the threat is observed, has the highest level of situational awareness. The alert is a brief message that instantly raises the awareness of the force to the presence of a threat, the direction of the threat, and of the response to be taken to avoid, evade, threaten, or engage the threat. The alert is a command to act.
- **Evade.** If time and maneuver space permit, friendly RW aircraft should use terrain flight environments to evade the threat. This action should be used to the advantage of the friendly force to avoid engagement. High-performance aircraft will encounter problems maintaining sight of slow moving friendly helicopters as their dive-angle steepens. Crews may also consider landing their aircraft if space permits and they believe they have not been detected. However,

friendly aircraft should not attempt to evade if maneuver space or aircraft power is inadequate, or if evading will result in a tail chase.

- **Threaten.** If the threat initiates aggressive action and avoidance or evasion is not an option, friendly aircraft should execute appropriate battle drills to orient weapons on the threat. The threat may break off and avoid engagement at the appearance of a well-coordinated, formidable defense.
- **Engage.** If the threat was avoided evaded, or threatened, and the action was found to be unsuccessful, friendly aircraft must act immediately to engage and neutralize the threat.

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Chapter 4

Army Aviation Sustainment

SECTION I – OVERVIEW

4-1. This chapter addresses aviation sustainment requirements and the capabilities aviation provides to support the force. It focuses on the aviation specific details of the sustainment warfighting function and elements of sustainment—logistics, personnel support, HSS—and their impact on aviation operations.

4-2. Sustaining Army Aviation units in complex environments requires a logistics network capable of projecting and providing the support and services necessary for extended operations in order to support the ground maneuver commander through the entire range of military operations. While conducting aviation sustainment operations, aviation commanders and staffs must adhere to sustainment principles: integration, anticipation, responsiveness, simplicity, economy, survivability, continuity, and improvisation (ADP 4-0, ATP 3-04.7, and ATP 4-33). These imperatives apply across the conflict continuum to units conducting offense, defense, and stability operations.

4-3. By employing effective sustainment operations, aviation commanders have the combat power necessary to support decisive action essential to retaining and exploiting the initiative. For this reason, sustainment must be planned and synchronized at every level of the operation. Commanders must know the OE, understand requirements, track requisitions, and make crucial decisions ensuring responsive sustainment. LSCO heavily tax aviation sustainment networks, and the continuous generation of aviation combat power is one of the commander's most significant concerns throughout an operation. Successful aviation sustainment in LSCO require redundant LOCs, well-trained processes, and commanders and staffs knowledgeable in the above-listed sustainment principles.

SECTION II – MAINTENANCE AND LOGISTICS

4-4. Army Aviation maintenance is a primary focus of the aviation commander, as it drives the availability of operational aircraft that can be used in support of the ground maneuver commander's operational requirements. It also determines the level of tactical mission support each aircraft is able to perform during mission execution. An efficient, properly resourced maintenance program provides the maximum number of aircraft available on a consistent basis for mission support, thus increasing combat power. For more information on aviation maintenance, see ATP 3-04.7.

4-5. Aircraft are generally limited by scheduled inspections at prescribed flight hour intervals. In order to provide the commander operational flexibility, the maneuver companies, AMC, and ASC must be organized and directed to perform scheduled maintenance well in advance of an operation. They must also prepare to perform unscheduled maintenance forward. The accepted goal for aircraft bank-time is generally 50 percent. The AMC and ASC should expect to drive the unit bank-time as high as possible in the preparation phase of a significant operation. This ultimately provides the commander more flexibility and allows the AMC to focus efforts on unscheduled maintenance, repairing aircraft, and preserving combat power.

FIELD-LEVEL MAINTENANCE

4-6. Field-level maintenance is accomplished throughout the CAB by aviation companies and AMCs in maneuver battalions and by the ASC in the ASB.

4-7. Aviation maneuver companies perform scheduled maintenance with assigned maintenance personnel. They also perform unscheduled field maintenance on assigned manned and unmanned aircraft provided that

they have readily available parts and required tools to perform those maintenance tasks. Aviation maneuver companies are supported by the AMC assigned to the aviation maneuver battalions. This organization provides a robust capability that performs both scheduled and unscheduled aircraft maintenance.

4-8. The AMC is organized with a production control (PC) section that develops a maintenance execution plan to support mission requirements as determined by the unit commander. It is fully supported with a quality control (QC) section, a group of highly qualified and experienced noncommissioned officers that provide technical oversight and safety on all associated maintenance actions to ensure strict adherence to maintenance task performance and inspection.

4-9. In LSCO, field maintenance is expected to occur in support and close areas. The AMC is normally task organized into field maintenance teams to provide mobility and flexibility in the close area while repairing or recovering aircraft. These teams may operate independently, with FARP personnel, or with other units to improve security posture depending on threat. These teams do not have organic air defense, anti-armor, or indirect fire capabilities. See ATP 3-04.7 for more information on field maintenance teams.

4-10. The ASC is organic to the ASB; it provides aviation field-level and phase maintenance for the CAB. The ASC can also provide maintenance augmentation to aviation battalions when support is needed due to high operational tempo or other situations where augmentation is required such as split-based operations. The ASC structure with sets, kits, outfits and tools enables enhanced capabilities and capacity to conduct back shop component repairs unavailable across the rest of the CAB.

SUSTAINMENT-LEVEL MAINTENANCE

4-11. Sustainment-level maintenance consists of tasks on airframes or components that cannot be performed by the CAB due to the lack of facilities, tools, technical skills or authorization. Typically, support is provided by the TASMG, original equipment manufacturers, contract maintenance personnel, or depot organizations.

4-12. Operationally, the TASMG is a fixed-base dedicated theater aviation sustainment/depot (minus) capability that provides 24-hour maintenance support for the deployed aviation maneuver commander. It is able to perform both field and sustainment-level maintenance for manned and unmanned aviation systems, battle damage repair, and repair and return of components and end items to support the National Maintenance Program.

4-13. Depot support is facilitated by the Corpus Christi Army Depot and the Letterkenny Army Depot. Corpus Christi Army Depot is the Army's organic facility for the repair and overhaul of RW aircraft, engines, and components. The Letterkenny Army Depot provides aviation specific system support to include the AH-64 target acquisition designation sight/pilot night vision sensor and aviation ground power unit reset and overhaul.

BATTLE DAMAGE ASSESSMENT AND REPAIR

4-14. Battle damage assessment and repair rapidly restores the minimum essential capabilities necessary to support a specific combat mission or to enable equipment self-recovery, to include downed aircraft recovery team (DART) missions. Aircraft operators/crew chiefs, aircraft maintenance personnel teams, maintenance support teams, contact maintenance teams, and recovery teams may perform battle damage assessment and repair as authorized by the commander. For more information on aircraft battle damage assessment, repair, and recovery, see ATP 3-04.13.

DOWNED AIRCRAFT RECOVERY TEAM

4-15. Aircraft recovery is a pre-planned mission for all units with assigned or OPCON of Army aircraft and requires extensive coordination with supported and supporting units. The intent is to recover aircraft with minimal risk to Soldiers and equipment involved in the operation. Aircraft recoveries generally require a task organized security force. The AMC or ASC performing DARTs do not have organic air defense, anti-armor, or indirect fire capabilities.

4-16. The aircraft-owning battalion/squadron commander retains initial responsibility for DART. The PC officer is the principal maintenance manager and coordinator for AMC DART missions. The team consists of select personnel who perform assessment, repairs, and recovery of downed aircraft. They are equipped, trained, and rehearsed to accomplish aircraft recovery in various OEs. If the DART operation exceeds the capabilities of the aviation maneuver battalion's AMC, the officer in charge coordinates with the ASB to effect recovery of the downed aircraft. ASBs and GSABs are trained and equipped to conduct deliberate aerial recovery of non-flyable aircraft. When required, the brigade operations officer and support operations officer (SPO) coordinate for external support for the DART through the ground unit assigned to the AO, or other logistics units during ground recovery missions. See ATP 3-04.13 for more information on aircraft recovery.

SUPPLY

4-17. Aviation supply functions are automated and embedded into aircraft maintenance software that feeds into Army logistics information systems. These systems increase combat effectiveness through the efficient management of supplies, equipment, ammunition, maintenance, and rapid reallocation of resources to sustain troops. The CAB does not rely on a brigade support battalion (BSB) from a maneuver brigade. The CAB's support operations are tied to the same chain of support as a BSB.

4-18. The AMC provides aviation battalion parts support. Assigned supply personnel are responsible for managing the battalion's shop stock and bench stock through documented demand and command support justification. Aircraft supply support is a key function that must be managed to ensure parts with projected requirements and demand support are justified for stockage on the brigade-level supply support activity authorized stockage list.

4-19. Commanders of AMCs and FSCs must work together to find the balance of mobility and sustainment capability. Maintaining supply discipline is critical to sustaining combat power while preserving the agility of the organization. Units are only designed to carry the loads prescribed in supply policy. Ground LOCs are critical to not only distributing aircraft repair parts, but also refueling and rearming aircraft in FARPs. Brigade and battalion supply officers and SPOs must develop plans to distribute all classes of supply in order to sustain aviation combat power.

4-20. The ASC provides parts support for aircraft and components undergoing repair from supported units through the work-order process. The ASC maintains a shop stock list, and bench stock that are tailored for their maintenance support mission requirements. Supply support for maintenance of aviation ground support equipment and other non-aircraft items is conducted through the battalion's forward support company maintenance platoon.

4-21. The supply support activity within the ASB's distribution company manages the demand supported authorized stockage list. The availability of aircraft repair parts is crucial to the maintenance support mission and ultimately to the sustainment of serviceable aircraft systems and sub-systems.

OPERATIONAL CONTRACT SUPPORT

4-22. Commanders and unit maintenance personnel seek to accomplish the maintenance mission with assigned personnel first, and only rely on contractor augmentation when operational requirements exceed unit capacity and capability. The supply officer is the primary staff officer responsible for contract management, coordination, and oversight. When required, the supply officer prepares Annex W of the operations order or plan. For further information on contract support, see ATP 4-10/Marine Corp Reference Publication 4-11H/Navy Tactics, Techniques, and Procedures 4-09.1/Air Force Manual 10-409-O.

KEY AVIATION MAINTENANCE PERSONNEL

4-23. Below is a description of the roles and responsibilities of critical members of the commander's aviation maintenance program.

BRIGADE AVIATION MAINTENANCE OFFICER

4-24. The BAMO is the brigade commander's primary advisor on generating aviation combat power. The BAMO is the technical advisor to the commander for aircraft readiness, logistical support, maintenance policies and procedures, and force modernization while conducting interface between subordinate units, installation, and higher Army commands.

4-25. The BAMO coordinates field- and sustainment-level maintenance operations and works closely with the staff, ASB SPO, and subordinate units to sustain aviation operations. BAMOs provide aviation sustainment analysis to the operations officer and supply officer during all the planning processes. They identify and address unit maintenance capability gaps with respect to doctrine, organizational, training, material, logistics, and facilities. In concert with the ASB, ASC, AMC/AMT commanders, and PC officers, the BAMO recommends actions and forecasts future capabilities based on the existing maintenance posture.

4-26. The BAMO coordinates maintenance actions based on operational necessities, in consultation with the brigade/squadron aviation maintenance leadership, and reviews the daily status of all aircraft in the CAB. The BAMO is normally a maintenance examiner and is responsible for the following:

- Providing advice to the brigade commander on aviation maintenance and sustainment issues.
- Coordinating for and monitoring contract maintenance personnel.
- Assisting in resolving aircraft maintenance issues to include maintenance capability gaps.
- Monitoring the flying hour execution and Class IX (Air) budget.
- Acting as primary member of the safety and standardization council.
- Advising the commander on aircraft modifications, safety-of-flight, and aviation safety action messages.
- Developing the brigade concept of support for aviation.
- Supporting the internal safety and Aviation Resource Management Survey evaluations.
- Consolidating DA Form 1352 (*Army Aircraft Inventory, Status and Flying Time*) reports.
- Monitoring aviation maintenance training and aircraft deployment planning and execution.
- Leading the maintenance sync meeting.
- Participating in doctrine development and review.
- Coordinating with logistics representatives, equipment manufacturers, and project management office for non-standard repairs.

AVIATION MAINTENANCE OFFICERS

4-27. Aviation maintenance officers, military occupational specialty 15D, are AMC, ASC, or ASB commanders who plan and direct aviation maintenance operations. They are commissioned Army officers who hold an aeronautical rating and have graduated from the Aviation Maintenance Officer's Course.

BATTALION AVIATION MAINTENANCE OFFICER

4-28. The battalion aviation maintenance officer is the senior maintenance officer, trainer, and maintenance examiner in the battalion/squadron and is part of the special staff. The aviation maintenance officer is a CW4 maintenance examiner who provides the same support to the battalion/squadron commander as the BAMO does for the CAB commander. He or she advises the battalion/squadron commander on maintenance personnel management, supply, equipment, and facility assets to maintain the commander's fleet of aircraft. He or she also participates in the concept of support planning as a key advisor and subject matter expert. Battalion aviation maintenance officers work in concert with PC officers, commanders, and unit maintenance officers in support of maintenance operations.

SUPPORT OPERATIONS OFFICER

4-29. The SPO is a staff officer in the ASB who provides supervision of the CAB's daily sustainment functions and logistical services for all aviation and ground systems. The SPO coordinates with the BAMO

and battalion logistics staff officers to establish maintenance priorities and resolve maintenance and logistics support issues. The SPO conducts brigade-level coordination with the sustainment brigade, theater Army field support brigade, and other logistics units on behalf of the CAB. The support operations section is organized to coordinate logistics support and provide distribution management to the CAB. The SPO manages petroleum, ammunition, movement control, and transportation, and assists in tracking and expediting release of supplies (repair parts). The SPO's primary focus is on customer support and increasing the responsiveness provided by subordinate maintenance units.

BRIGADE AVIATION MATERIEL OFFICER

4-30. The brigade aviation materiel officer is a CW5, and key staff officer for support operations. The materiel officer brings aviation maintenance expertise to the support section of an ASB. The materiel officer is critical to coordinating efforts between logistics and maintenance.

PRODUCTION CONTROL OFFICER

4-31. The PC officer is the principal maintenance manager-coordinator in the AMC/AMT or ASC and coordinates maintenance and sustainment actions at the company/troop and battalion/squadron level. The PC officer is the AMC/AMT or ASC commander's primary maintenance advisor for all internal production and maintenance activities.

4-32. The PC officer is responsible for controlling aviation maintenance production matters according to command guidance and is the direct link between unit commanders, the AMC/AMT, and the ASB's ASC for internal and external production issues. The PC officer supervises preparation of reports and records, facilitates appropriate DART capability and responsiveness, and coordinates any required internal and external support for all maintenance activities.

QUALITY CONTROL OFFICER

4-33. The QC officer leads the QC section in the AMC and is responsible for the internal management of the section, to include quality assurance of all work performed by assigned technical inspectors. This is an extremely technical position and requires a high-level of technical expertise and understanding of aircraft systems.

4-34. Priority of work is coordinated with the PC officer, but the QC officer makes determinations of airworthiness independently and bases decisions on Army regulation, technical manuals, and published Army Aviation and Missile Command directives. The QC officer ensures the battalion's monthly maintenance and shop safety inspections are conducted by technical inspectors.

4-35. The QC officer is an MTOE position in the ASC, but not within the AMC; however, it is often filled in order to provide technical oversight and management of the section.

MAINTENANCE TEST PILOT

4-36. Maintenance test pilots are a key component of the unit commander's maintenance program. They provide advanced troubleshooting skills within their specific aircraft mission design series to facilitate efficient repairs and maintenance. They also are responsible for conducting maintenance test flights to determine the airworthiness of the unit's aircraft. They are primary advisors appointed by the unit commander to fill maintenance specific MTOE positions within the CAB. Selected maintenance test pilots fill maintenance examiner positions to train, develop, and evaluate unit maintenance test pilots to enhance skills and proficiency.

AVIATION MAINTENANCE TECHNICIANS

4-37. Aviation maintenance technicians, military occupational skill 151A, are aviation system integrators, technical experts, and managers that direct the daily operations of their assigned sections. Aviation maintenance technicians provide supply chain and project management oversight on personnel, facilities, and materials required to sustain and repair Army manned and unmanned systems, armament systems, and

aviation support equipment. They serve as key aviation maintenance advisors to commanders from the AMC through theater support commands.

SECTION III – OPERATIONAL REACH

4-38. *Operational reach* is the distance and duration across which a joint force can successfully employ military capabilities (JP 3-0). This ability is sustained through aviation's ability to transport logistical supplies and personnel where they are needed and through firepower provided by attack and reconnaissance assets.

FORCE PROJECTION

4-39. Army Aviation enhances the Army's operational reach through the unique capabilities of Army aircraft, both manned and unmanned. Aviation mitigates the effects of time and distance because of their speed and ability to maneuver over difficult terrain. Unmanned systems can provide sustained operations to support the ground maneuver commander's mission requirements because of their efficiency and ability to loiter for extended periods. Sustainment of aviation assets provides a continual ability to project firepower and to transport supplies and personnel into a rapidly expanding AO.

4-40. An analysis of the OE prior to reception, staging, onward movement, and integration should identify aviation locations that allow the greatest freedom of action for commanders. Critical during this analysis is correct matching of personnel with proper equipment and tasks. Commanders should identify optimal areas for aviation to operate that can meet the needs of the ground maneuver commander with regards to proximity of forces and security. Because of the complex nature of Army aircraft and maintenance support functions, infrastructure requirements are critical. Consideration should be given to areas that can provide such necessities as shelter, electricity, communications, and water for maintenance operations when possible. Facilities that can be used to store equipment and supplies and provide areas to operate supply functions for aircraft and other unit requirements should also be identified in order to reduce the logistical wait times and facilitate rapid movement into the AO. See FM 3-0 for more information on reception, staging, onward movement, and integration.

SUSTAINING OPERATIONAL TASKS

4-41. Aviation provides internal and external sustainment capabilities and anticipates need in order to develop a priority in support of operational mission requirements. Aviation units can be tasked to provide critical support when reduced response times are required or in order to address high threat or availability issues that may impede normal modes of support.

THEATER OPENING/CLOSING

4-42. Aviation provides Army forces the capability to rapidly deploy personnel, distribute materiel, and retrograde equipment to multiple points of need to and from airports and seaports of debarkation. For sustainment operations, the Assistant Chief of Staff, Operations and Plans, Aviation section at the Army Service Component Command, corps, or division levels, are responsible for consolidating, prioritizing, and processing aviation maneuver sustainment requests.

DISTRIBUTION

4-43. Army RW aircraft provide support where terrain denies road delivery or in emergency situations. Airdrop or air delivery may also be arranged; however, air movement is a relatively inefficient means to transport heavy supplies and equipment and should be reserved for the support of major operations in which air movement is essential for success or in situations where emergency resupply is vital for mission accomplishment or force sustainment.

BASING

4-44. Aviation can operate from austere field locations and can disperse its assets for protection purposes. When operating from a centralized location, aviation requires a large area in order to perform maintenance and park/move large numbers of aircraft. Establishing and maintaining airfields enables the positioning of aviation assets within the range of ground forces. This task becomes critical when airfields are host to a variety of allied military, nongovernmental organizations, and commercial air activities.

4-45. Potential airfields must be properly analyzed in order to determine dimension and possible conflicts between UAS and manned military and civilian aviation. Commanders and staffs must also ensure potential airfields meet takeoff and landing requirements; this is especially true for UAS, since unmanned aircraft may face limitations based on runway surfaces, dimensions, or other factors. A letter of agreement may be necessary in order to establish operational procedures, and requirements for placement of ground equipment. This agreement is made by both the UAS unit and air traffic control (ATC) unit for standardization and airfield operational safety.

4-46. An airfield management element in the CAB operations section coordinates essential airfield services necessary to support assigned flight crews and aircraft. These services include weather support, firefighting capabilities, airfield lighting, hazardous material/cargo handling, petroleum, oil and lubricant services, and navigational aids.

Expeditionary Capability

4-47. The TAOG and AOB are organized and equipped to facilitate early entry contingencies and the establishment of expeditionary airfields in support of Army Aviation operations. These organizations provide expeditionary airfield management and C2 at theater-level airfields, forward operating bases, and other areas designated by the theater aviation commander.

4-48. The AOB organization and its related ATC assets are deployed at locations requiring the operational management of airfield activities or at locations without an organic ATS element. The AOB may conduct transition operations with a GSAB ATS company during an advancing movement or in stability operations.

Intermediate Staging Base

4-49. The intermediate staging base (ISB) is a tailorable, temporary location used for staging forces, sustainment, and/or extraction into and out of an operational area. If tasked to operate the ISB, the Army should have a primary role in the selection process. The ISB is located inside the theater but outside the AO and combat zone. In cases where the joint force must secure a lodgment to project the force, an ISB may be critical to success.

4-50. The TAOG with one or more attached AOBs may be required to establish an ISB airfield for staging forces. The ISB airfield may be the initial reception and staging facility for Army Aviation movement into the AO. The ISB airfield should include sufficient Army C2, maneuver, sustainment and joint support to enable force projection into the combat zone.

4-51. The longevity of the ISB varies according to circumstances. The airfield may function as a secure facility for split-based operations during the following capacities or operations:

- Logistics management for support area functions.
- Restricted forward deployment to only those forces necessary to execute the mission (reduces logistical footprint).
- As the lodgment expands and tactical situation permits, the JFC can establish a theater staging base within the AO, which may require the redeployment of the TAOG or the deployment of an additional AOB as part of the process.
- In addition to the ISB, the TAOG is capable of establishing ATC support at forward operating bases and key helicopter LZs.

Tactical Airfield Management

4-52. The management of an airfield must be established as soon as possible in order to ensure a rapid transition to a safe and operational capability, and if required, an enduring airfield. If there are multiple service customers assigned to an airfield, the JFC designates a service as the senior airfield authority. In some situations, an aviation brigade commander or an aviation task force commander may be designated as the senior airfield authority.

4-53. Airfields increase the responsiveness and versatility of operations such as resupply and troop and equipment movement. The support of special operations forces and interagency elements include all types of aviation missions launched and recovered from Army airfields.

4-54. The ATSSE of the TAOG provides oversight, technical expertise, and standardization to Army airfields at theater level and quality assurance for training and certification of controllers and ATS maintenance personnel. It develops airspace for restricted areas, transition areas, and control zones. The ATSSE serves as the primary staff coordinator for ATS matters within the theater.

Negotiations and Agreements

4-55. Airspace coordination is critical to all Army Aviation operations. Operating within the host-nation environment requires agreed upon control measures to ensure safe operation of airspace utilized across a broad spectrum of users.

4-56. Host nation security is a major consideration for aviation operations and airfields where they routinely operate. Aviation operations can require large areas in order to operate and may require augmentation from host-nation personnel. Use of host-nation resources helps to reduce the aviation sustainment footprint and allows greater freedom of action.

4-57. Logistics support and transportation may be provided by host-nation organizations and facilities. Common classes of supply may be available and obtained from local civilian sources. Items include barrier and construction materials, fuel for vehicles, and some food and medical supplies. Requisition and distribution are coordinated through logistics and liaison channels.

FORWARD ARMING AND REFUELING POINT

4-58. A *forward arming and refueling point (FARP)* is a temporary facility that is organized, equipped, and deployed to provide fuel and ammunition necessary for the employment of aviation maneuver units in combat (JP 3-09. 3). It allows commanders to extend the range of their aircraft or significantly increase time on station by eliminating the need for aircraft to return to the aviation unit's central base of operations to refuel and rearm. This increases the operational depth and breadth of aviation units in order to provide maximum support to the ground maneuver commander. FARP operations require in-depth planning and coordination, and planners must consider the mission variables when determining FARP site selection and support requirements. FARPs are located as far forward as possible, but typically remain behind the FLOT and outside the range of medium artillery.

4-59. All aviation maneuver battalions have an organic FSC with a distribution platoon designated to perform FARP operations. The size of the FARP varies with tactical requirements and variables, however four to eight refueling points are typically sufficient for sustainment operations. The ASB and ABs/ACTs are also assigned. Class V and armament maintenance personnel within the component repair platoon to provide re-arming and additional armament maintenance capability. The brigade logistics staff officer coordinates with the sustainment brigade to push bulk Class III and Class V directly to the FARPs. The ASB SPO monitors the support relationship and provides supplementary pushes, conducts ammunition transfer and holding point operations, and augments with additional FARP operation capabilities. FARP personnel are responsible for providing security to the FARP; however, aviation units should coordinate with the maneuver forces responsible for the AO for additional air defense and ground security support as well as to ensure FARPs are captured in the ground scheme of maneuver. Refer to ATP 3-04.17 for further information.

4-60. FARPs may be easily detected by peer threat reconnaissance capabilities. Commanders must consider multiple FARP locations with short-term duration at any given site to remain survivable and operational. FARP site selection and mission duration depend on mission variables. Generally, FARPs in vulnerable locations should only be in place for 3 to 6 hours, and for as little time as possible with the smallest possible signature. Further, planners should consider the following when planning a FARP in close or deep areas:

- Composition of the FARP should be austere.
- Security is limited because the FARP is emplaced for a very short time.
- A thorough map reconnaissance and intelligence update must be accomplished for the area.
- Primary, alternate, and contingency FARP locations or teams should be considered to enable continuous operations.
- One M978 heavy expanded mobility tactical truck fuel servicing truck typically contains enough fuel to refuel one AC/ACT or one AHC one time, depending on aircraft configuration.

SECTION IV – HEALTH SERVICE SUPPORT

4-61. The Department of Defense MEDEVAC system consists of an intra-theater MEDEVAC mission (typically performed by dedicated United States Army RW MEDEVAC units), and an inter-theater MEDEVAC mission (typically performed by designated United States Air Force FW assets). Together, they provide the vital linkage of assets required for a successful HSS system. The CAB supports the HSS function with medical personnel to provide casualty care, and with medical company air ambulance in the GSAB to provide MEDEVAC mission support.

AVIATION MEDICINE

4-62. Aviation medical support is directed by the brigade flight surgeon who coordinates with each of the aviation battalion's medical personnel.

4-63. The brigade flight surgeon, in conjunction with the physician assistant, operates the brigade aid station normally located in the brigade assembly area. The brigade flight surgeon advises and assists commanders on matters concerning the medical readiness of the command including preventive, curative, and restorative care. The brigade flight surgeon, with subordinate unit flight surgeons, conducts flight physicals for unit personnel. He or she also determines requirements for the requisition, procurement, storage, maintenance, distribution, management, and documentation of medical equipment and supplies for the unit.

MEDICAL EVACUATION

4-64. MEDEVAC of casualties is provided by the HHS system through the use of organic intra-theater air ambulance assets within the CAB. The aviation brigade has an organic air ambulance company assigned to the GSAB. Within the GSAB, the air ambulance company is organized to provide support from four separate operational locations. These operational locations are typically with the aviation task force, HSS organizations, a BCT, or higher echelons in order to provide the most appropriate AE support throughout the AO. Air ambulance aircraft are specifically equipped with critical care flight paramedic and equipment necessary for providing the required en route care of casualties. When AE assets are not readily available or the MEDEVAC requirement exceeds capabilities, the utility and cargo helicopters may be required to conduct aerial CASEVAC operations.

4-65. The medical company air ambulance consists of 15 HH-60 aircraft, each with a capacity of 6 patients. The HH-60 aircraft has maximum cabin space, carrying sophisticated, life-saving instruments and equipment for the medical attendants. HH-60s have the following unique capabilities that provide air ambulance MEDEVAC support for all categories of patients:

- Rescue hoist with 600-pound capacity.
- Multi-mission sensor thermal image sensor (HH-60M only).
- Oxygen-generating systems.

- Environmental control system.
- Basic medical interior and medical equipment sets.
- Patient monitoring equipment.

4-66. In-flight care is provided by the critical care-trained nationally-registered flight paramedic, designated as critical care flight paramedic. This enhanced capability focuses on providing critical en-route care to maximize opportunities to save lives on the battlefield. Depending on the medical needs of the patients, additional clinical providers may include the en-route critical care nurse, the aeromedical physician assistant, or other emergency medicine providers.

AERIAL CASUALTY EVACUATION

4-67. Army helicopters provide a flexible asset on the battlefield for use in air CASEVAC. When casualty transport requirements exceed the capability of available AE assets, or other situational requirements dictate, an aerial CASEVAC mission may be flown to transport at risk casualties using non-medical utility and cargo aircraft.

4-68. When executing aerial CASEVAC it is advisable that the least severely injured are evacuated using CASEVAC assets and most severely injured using MEDEVAC assets. Any available medical personnel at the pickup site can assist in determining priority for evacuation. Augmentation with medical personnel may occur utilizing medical assets within the CAB or as a detachment of medical personnel from within the supported unit. Onboard medical personnel can serve in a dedicated or designated capacity. Due to the coordination necessary between the aerial CASEVAC asset and the medical unit providing personnel for en-route care, prior planning and training is especially critical.

MEDICAL LOGISTICS

4-69. GS transportation assets are the primary means of transportation for sustainment resupply of Class VIII materiel. The SPO coordinates for replenishment and distribution of all medical supplies within the CAB. Usually, theater transportation assets are used to deliver medical supplies from the sustainment area to the supported units; however, in some instances, air ambulances from the GSAB may be used to transport emergency Class VIII resupply to requesting units.

SECTION V – PERSONNEL, LEGAL, AND RELIGIOUS SERVICES

4-70. The personnel staff officer has responsibility for planning, providing, and coordinating delivery of human resources support, services, or information to all assigned and attached personnel within the unit and subordinate units. The personnel officer is normally collocated with the logistics officer in the sustainment cell of the main CP.

4-71. The CAB legal section includes a brigade judge advocate, a trial counsel, and a senior paralegal noncommissioned officer. The brigade legal section provides legal support to the command across the judge advocate general's corps' six core legal disciplines: military justice, international and operational law, administrative and civil law, contract and fiscal law, claims, and legal assistance. The brigade judge advocate is the primary legal advisor to the brigade commander and serves as a personal and special staff officer. The trial counsel primarily administers all military justice matters for the brigade and provides operational law advice. The members of the brigade legal section serve as subject matter experts on the ROE, targeting, international law, law of armed conflict (including treatment of detainees, enemy prisoners of war, civilians on the battlefield and other noncombatants), and all other legal aspects of operations. The paralegal noncommissioned officer provides administrative and paralegal support to the judge advocates in the legal section and supervises the paralegals in the aviation battalions.

4-72. The aviation brigade chaplain is the personal staff officer responsible for providing religious support and advisement to the command on matters of religion, ethics, morals, and morale. The chaplain and religious affairs specialist provide comprehensive religious support for all assigned, attached, or authorized personnel. Comprehensive religious support includes but is not limited to religious services, pastoral counseling, hospital visitation and casualty ministry, and religious education. The brigade chaplain

provides the staff with advisement on the impact of religion upon operations, assigned personnel, and the local population. The brigade unit ministry team provides supervision and training for subordinate unit ministry teams. See FM 1-05 and Joint Guide 1-05 for additional information on the duties of the chaplain.

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Chapter 5

Army Aviation Capabilities and Characteristics

AH-64D/E APACHE CHARACTERISTICS

5-1. The AH-64D/E Apache helicopter is a twin-engine, tandem-seat, aerial weapons platform capable of performing attack, movement to contact, reconnaissance, and security operations. The combination of sensors and armament systems the AH-64 employs allows the ground maneuver commander to gain a position of relative advantage. Figure 5-1 and table 5-1 depict basic characteristics and dimensions of the Apache. The AH-64D/E can mount several various types of assemblies to the aircraft mast above the rotor system. The Longbow fire control radar is a battlefield radar system capable of detecting, locating, and classifying ground and airborne targets. The fire control radar augments the helicopter's weapon delivery capability through the use of a target acquisition logic, coupled with radar-guided Hellfire missiles. The Apache can also mount various assemblies to enable reception of video signals from other platforms, including UAS, and enhanced MUM-T operations. More information can be found in appropriate technical manuals.

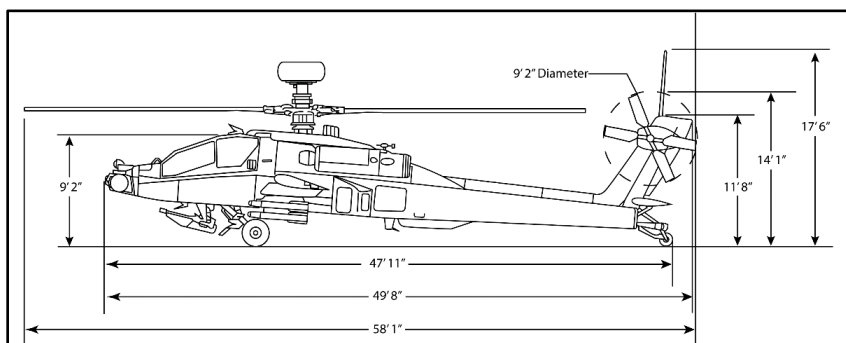


Figure 5–1. AH-64D/E Apache helicopter

Table 5–1. AH-64D/E Apache helicopter characteristics

Specifications:	
Fuselage Length	49 feet 8 inches
Maximum Height	17 feet 6 inches
Fuselage Width	16 feet 4 inches with wing stores
Main Rotor Diameter	48-49 feet
Maximum Gross Weight	23,000 pounds*
Cruise Airspeed	110 to 120 knots*
Max Continuous Airspeed	140 to 145 knots*
Normal Fuel Endurance	~2 Hours (average fuel burn: 150 gallons/hour)
Sensors:	
FCR is capable of detecting, classifying, and prioritizing targets without visual line of sight or in limited visibility, and engaging with RF Hellfire missiles.	
RFI identifies and prioritizes radar emitters based on pre-designated signatures.	

Table 5–1. AH-64D/E Apache helicopter characteristics, continued

Navigation Equipment:
Dual GPS/inertial navigation system, Doppler radar, ADF, AH-64E only; dual VOR/ILS.
Additional Capabilities:
Use of IZLID allows ground units to view laser marker through NVG. M-TADS Laser rangefinder and designator capable of returning range values from point to aircraft as well as designating targets for autonomous and remote Hellfire engagements. Tactical common data link or upper receiver for interoperability with UAS, United States Air Force/United States Navy/United States Marine Corp aircraft. Fuel capacity: 376 gallons based on configuration
* varies with environmental conditions and mission factors ADF-automatic direction finder FCR-fire control radar GPS-global positioning system ILS-instrument landing system IZLID-infrared zoom laser illuminator designator M-TADS-modernized target acquisition and designation sight NVG-night vision goggle RF-radio frequency RFI-radio frequency interferometer UAS-unmanned aircraft system VOR-very high frequency omnidirectional range

5-2. The AH-64D/E helicopter armament capabilities consist of a 30-millimeter cannon area weapon system, a configurable 2. 75-inch aerial rocket system, and a Hellfire modular missile system. The 30-millimeter cannon fires the M789 high-explosive, dual-purpose shaped charge round; it is extremely effective against thin-skinned targets at ranges out to approximately 1,700 meters. Hellfire missile and aerial rocket systems can be mounted asymmetrically on the four universal wing store pylons (two on each side of the aircraft) based on mission requirements. Each pylon may carry up to 19 rockets in a rocket launcher or four AGM-114 Hellfire missiles on attached missile launchers. The aircraft is capable of employing a variety of rocket and Hellfire variants. Rocket variants include high explosive, flechette, multi-purpose submunition, and smoke. The aircraft can also employ the advanced precision kill weapon system for more precise rocket engagements. Hellfire missiles may be laser or radar guided; warhead variants include high explosive shaped-charge, fragmentation, or multi-purpose/programmable. Environmental conditions may significantly restrict weapons loads and station time associated with those loads. In addition, the aircraft can attach and carry additional external and internal auxiliary fuel tanks. For more information on Apache armament systems, see TC 3-04. 3.

UH-60/HH-60 L/M BLACKHAWK CHARACTERISTICS

5-3. The Sikorsky UH-60L/M Blackhawk is a twin-engine, dual-seat, utility helicopter. The primary missions of the Blackhawk are air assault, air movement, C2 support, air MEDEVAC (HH-60 variant), and as required, CASEVAC. It is designed to carry 11 combat-loaded air assault troops (seats installed). It can also move light field artillery pieces and supporting stock. Figure 5-2 and table 5-2, page 5-3, provide the basic description and characteristics of the UH-60L/M. More information can be found in appropriate technical manuals.

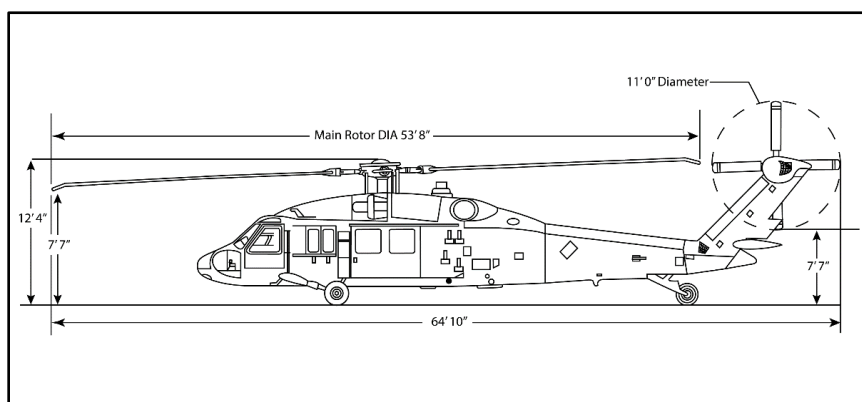


Figure 5–2. UH-60 L/M Blackhawk helicopter

Table 5–2. UH-60L/M Blackhawk helicopter characteristics

Specifications:	
Fuselage Length	UH-60L: 41 feet 4 inches UH-60M: 41 feet 5 inches
Height	12 feet 4 inches at center hub UH-60L: 16 feet 10 inches at tail rotor UH-60M: 16 feet 11 inches at tail rotor
Fuselage Width	14 feet 4 inches at the stabilator 21 feet with ESSS and CEFS tank installed
Main Rotor Diameter	53 feet 8 inches
Cabin Floor Dimensions	72 inches wide x 151 inches long
Cabin Door Dimensions	68 inches wide x 53.5 inches high
Maximum Gross Weight	22,000 pounds*
Maximum Cargo Hook Load	UH-60A: 8,000 pounds*; UH-60L&M: 9,000 pounds*
Cruise Airspeed	120 to 145 knots*
Airspeed with External Sling-Loads	120 knots maximum
Maximum Continuous Airspeed	156 knots*
Normal Fuel Endurance	~2 Hours (average burn rate: 150 gallons/hour)
Armament:	
2 x M240H (7.62 millimeter machine guns)	
Optics:	
NVG, FLIR (optional)	
Navigation Equipment:	
Doppler/GPS, VOR, ADF	
Additional Capabilities:	
Fuel Capacity: 362 gallons (internal) The ESSS allows configuration for extended operations without refueling (5+ hours) (2 x 200 gallon fuel tanks) and ferry and self-deployment flights (4 x 200 gallon fuel tanks). The enhanced mission command console (if installed), provides the maneuver commander with an airborne platform supporting six secure frequency modulated radios, one HF radio, two VHF radios, and two UHF radios. Can be configured with the volcano mine dispensing system; requires 8 hours to install. Capable of inserting and extracting troops with FRIES/SPIES. For HH-60 air ambulance version: Rescue hoist: 600 pounds rescue hoist. Patient capacity: six litter or ambulatory, or a combination.	

Table 5–2. UH-60L/M Blackhawk helicopter characteristics, continued

Limitations:	
Use of the ESSS for fuel tanks restricts access to the cabin doors for troops and bulky cargo or litters. It also reduces the payload and maximum speed.	
Cruise speed is decreased when conducting external load operations.	
* varies with environmental conditions and mission factors ADF – automatic direction finder CEFS – crashworthy external fuel system ESSS – external stores support system FLIR – forward-looking infrared FRIES – fast rope insertion and extraction system GPS – global positioning system HF – high frequency NVG – night vision goggle SPIES – special patrol infiltration and extraction system UHF – ultra high frequency VHF – very high frequency VOR – very high frequency omnidirectional range	

CH-47F CHINOOK CHARACTERISTICS

5-4. The Boeing CH-47F Chinook is a twin-engine, tandem rotor heavy-lift helicopter. Its primary missions are air assault and air movement; it is also capable of performing aerial CASEVAC, water bucket, paradrop, and helocast missions. The versatility of the CH-47 enables rapid repositioning of maneuver forces across the breadth and throughout the depth of an AO. Figure 5-3 and table 5-3 (page 5-5) depict the basic dimensions and characteristics of the Chinook. More information can be found in the appropriate technical manual.

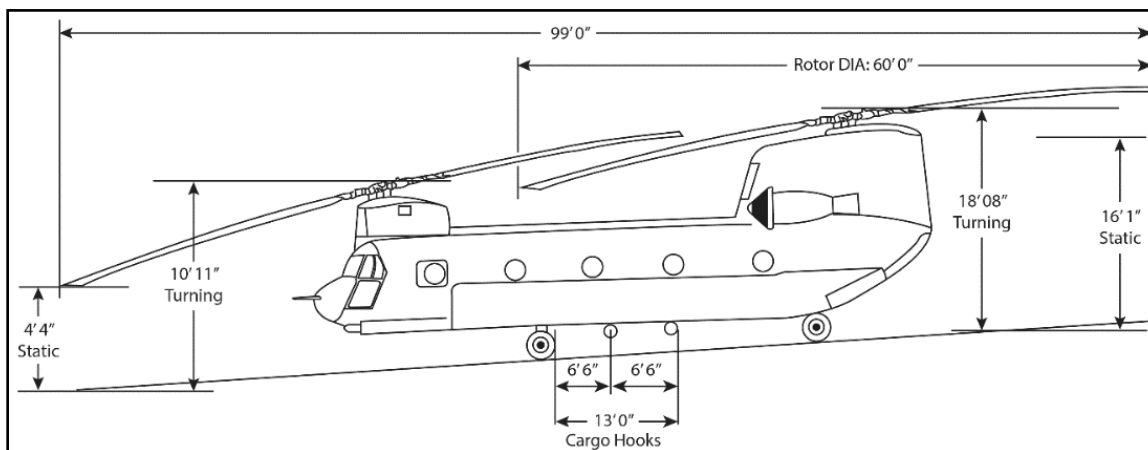


Figure 5–3. CH-47F Chinook helicopter

Table 5–3. CH-47F Chinook helicopter characteristics

Specifications:	
Fuselage Length	50 feet 9 inches
Height	18 feet 11 inches
Fuselage Width	12 feet 5 inches
Specifications:	
Main Rotor Diameter	60 feet (single rotor system); 60 x 99 feet (entire tandem system)
Cargo Space	Approximately 1,500 cubic feet
Cabin Height	6 feet 6 inches
Floor Space	30 feet 6 inches long by 7 feet 6 inches wide
Maximum Gross Weight	50,000 pounds
Max Load for Forward and Aft Hooks	17,000 pounds
Max Tandem Load for Forward and Aft Hooks	25,000 pounds
Max Load for Center Hook	26,000 pounds
Cruise Airspeed	120 to 145 knots*
Max Continuous Airspeed	170 knots*
Airspeed with External Sling-Loads	120 knots maximum
Normal Fuel Endurance	~2. 5 to 3 Hours (average burn rate: 330 gallons/hour)
Armament:	
3 M240H 7. 62 millimeter machine guns (two cabin-mounted and one ramp-mounted)	
Optics:	
NVG	
Navigation Equipment:	
GPS, EGI, and VOR navigation sets	
Additional Capabilities:	
Can be configured with 2,460 gallons of fuel for a mobile forward area refueling system (Fat Cow) Fuel Capacity: 1,030 gallons Can drop 2,000 gallons of water during water bucket operations 150 foot rescue hoist can lift up to 600 pounds through the center cargo hatch May load litters directly to the floor or transport up to 31 ambulatory patients for aerial CASEVAC.	
Limitations:	
Cruise speed is greatly decreased by light, bulk sling-loads.	
* varies with environmental conditions and mission factors CASEVAC-casualty evacuation EGI-embedded global positioning system inertial navigation unit	GPS-Global Positioning System NVG-night vision goggle VOR-very high frequency omnidirectional range.

MQ-1C GRAY EAGLE CHARACTERISTICS

5-5. The MQ-1C Gray Eagle is a multi-mission, multi-payload system whose primary mission is to provide dedicated, mission-configured UAS support to division combat aviation, fires, and battlefield surveillance brigades, BCTs, and other Army and joint force units. It is capable of long endurance, near-real-time reconnaissance and precision attack. Gray Eagle companies are organic to the CAB and the military intelligence aerial exploitation brigade. Gray Eagles may team with CAB manned aircraft or operate autonomously in support of ground force commander objectives and information requirements.

5-6. Figure 5-4 depicts the Gray Eagle in a basic configuration; table 5-4 outlines air vehicle characteristics. More information can be found in the appropriate technical manual.

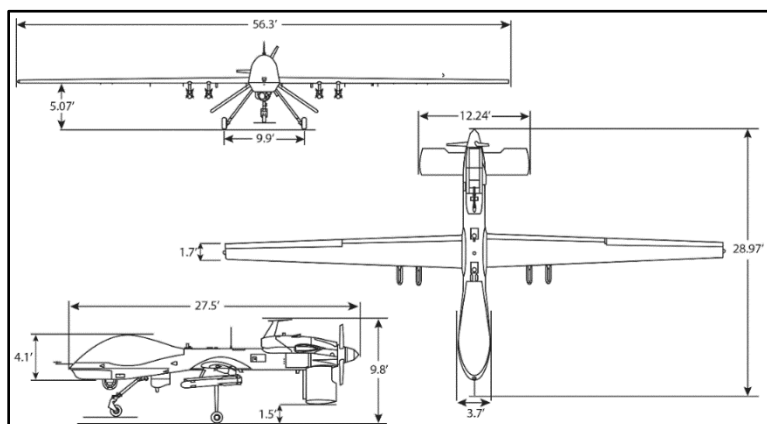


Figure 5-4. MQ-1C Gray Eagle unmanned aircraft

Table 5-4. MQ-1C Gray Eagle unmanned aircraft characteristics

Specifications:	
Fuselage Length	29 feet
Height	9 feet 8 inches
Main Wing Span	56. 3 feet
Endurance	22+ hours without armament
Propulsion	Heavy fuel engine (1. 7 or 2. 0 liter)
Maximum Gross Take-Off Weight	1. 7L 3,200 pounds/2. 0L 3,600 pounds
Maximum Altitude	25,000 feet above mean seal level
Runaway Requirement	4500 feet at 9000 feet density altitude; hard surface only
Cruise Airspeed	80 knots*
Max Continuous Airspeed	130 knots
Normal Fuel Endurance	22 hours
Armament:	
4 Hellfire missiles	
Optics:	
Electro-optical, IR, laser pointer, laser rangefinder, laser designator, laser spot tracker	
Datalink Equipment:	
Ku SATCOM, Ku TCDL	
Additional Capabilities:	
SAR, GMTI	
Limitations:	
Aircraft endurance is reduced when armed with Hellfire missiles.	
*Varies with environmental conditions and mission factors IR – infrared SAR – synthetic aperture radar GMTI – ground moving target indicator TCDL – tactical common data link SATCOM – satellite communication	

5-7. The MQ-1C Gray Eagle UAS is used in support of reconnaissance and surveillance requirements. The MQ-1C can be outfitted with the AGM-114 Hellfire missile for attacking selected targets. The MQ-1C uses a laser rangefinder and a laser designator, which is used to determine the range to the target and to designate targets for delivery of laser-guided munitions. Four missiles are carried in the attack configuration, and two are carried in the reconnaissance/attack configuration. The MQ-1C aircraft can carry the AGM-114 P+ and AGM-114R/R2 series of missiles. The AGM-114R incorporates an integrated blast fragmentation sleeve warhead which provides the commander with three capabilities: a high explosive anti-tank capability with a pre-cursor charge, a blast fragmentation capability for light vehicles and personnel, and a settable delay to allow the warhead to penetrate into a structure maximizing the overpressure feature of the warhead before detonation occurs. The AGM-114R2 additionally incorporates a height of burst capability which detonates the warhead prior to the missile impacting the target. For more information on Gray Eagle armament systems, see TC 3-04. 3.

RQ-7BV1/V2 SHADOW CHARACTERISTICS

5-8. The RQ-7BV1/V2 is a tactical UAS with a primary mission of reconnaissance. Organic to the ACS in the CAB and to the military intelligence company in a BCT, Shadows may team with CAB manned aircraft or operate autonomously in support of ground force commander objectives. Figure 5-5 depicts the basic parameters of the RQ-7 BV1 and V2; table 5-5, page 5-8, depicts characteristics. More information can be found in the appropriate technical manual.

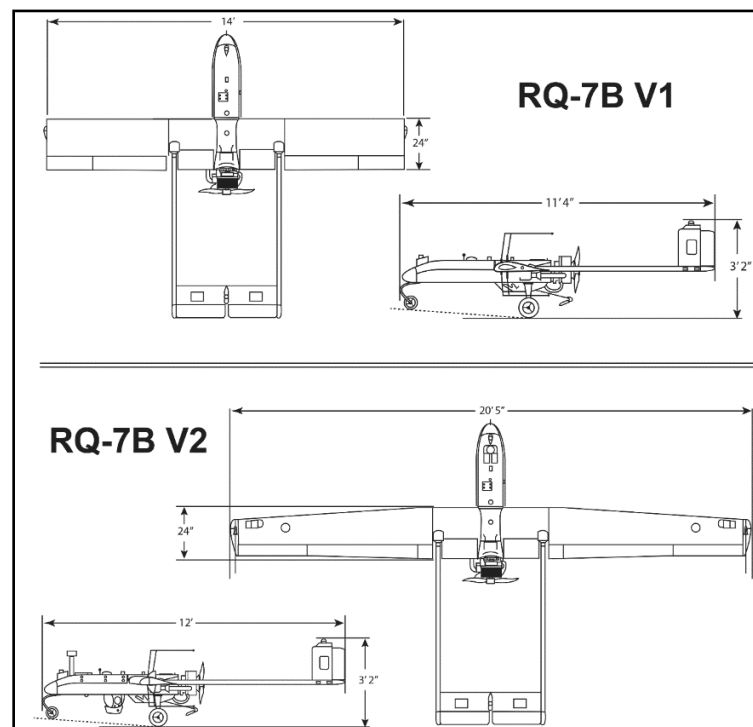


Figure 5-5. RQ-7B Shadow unmanned aircraft

Table 5–5. RQ-7B Shadow unmanned aircraft system characteristics

Specifications:	
Length	RQ-7Bv1: 11 feet 4 inches RQ-7Bv2: 12 feet
Height	3 feet 2 inches
Main Wing Span	RQ-7Bv1: 14 feet RQ-7Bv2: 20 feet 5 inches
Endurance	RQ-7Bv1: 5+ hours RQ-7Bv2: 8+ hours
Maximum Gross Take-Off Weight:	RQ-7Bv1: 404 pounds RQ-7Bv2: 467 pounds
Maximum Altitude	15,000+ feet mean sea level
Launch and Recovery Requirements	220 meters by 50 meters area; may land on unimproved surfaces
Cruise Airspeed	70-80 knots
Max Dash Airspeed	110 knots
Normal Fuel Endurance	RQ-7Bv1: 6 hours RQ-7Bv2: 9 hours
Optics:	
Electro-optical, IR, and laser pointer/laser rangefinder and laser designator.	
Datalink Equipment:	
RQ-7Bv1	S-band/UHF-band Video: C-band
RQ-7Bv2–TCDL	TCDL Ku-band/ UHF-band Video: UHF-band
Additional Capabilities:	
Laser classification: Class IV designator, Class III-b rangefinder, Class III-b pointer Frequency modulation radio communications relay package	
Limitations:	
Aircraft uses 100 low lead aviation gasoline. Aircraft is sensitive to weather conditions. Dust, rain, and low ceilings ground aircraft.	
IR-infrared TCDL-tactical common data link UHF-ultra high frequency	

C-12 SERIES AIRCRAFT

5-9. The C-12 series of aircraft are pressurized, low wing, all metal aircraft powered by two PT6A-42 turboprop engines. The aircraft has all-weather capability and is distinguishable by its slender, streamlined engine nacelles, four-blade propellers, T-tail, and dual aft body strakes. The basic mission of the aircraft is to provide scheduled or unscheduled air transportation of passengers and/or cargo in any area of the world. Figure 5-6, page 5-9, depicts the basic parameters of the C-12. Table 5-6, page 5-9, depicts characteristics. More information can be found in the appropriate technical manuals.

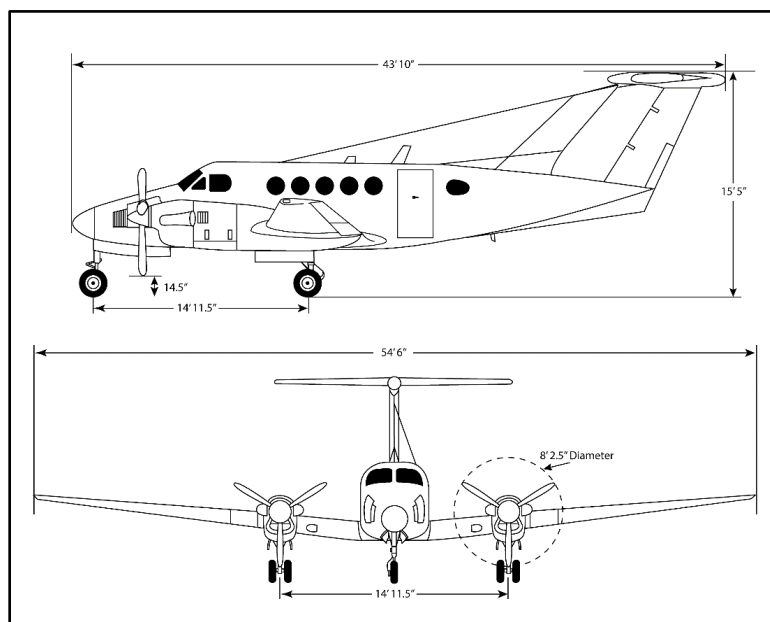


Figure 5–6. C-12 aircraft

Table 5–6. C-12 aircraft specifications

Specifications:	
Fuselage Length	43 feet 10 inches
Height	14 feet 6 inches
Main Wing Span	54 feet 6 inches
Propulsion	2x PT6A-42 turboprop engines
Maximum Gross Take-Off Weight	12,500 pounds
Maximum Ceiling	35,000 feet mean sea level
Cruise Airspeed	294 knots
Range	3,658 kilometers

RC-12 GUARDRAIL

5-10. Guardrail is a theater-level airborne signals intelligence collection and location system. Employed against threat communications and non-communications emitters, the system provides near real-time signals intelligence collection, and target intelligence to warfighters within the theater area. The aircraft crew consists of two pilots, and all mission equipment is operated remotely from home station.

MC-12 ENHANCED MEDIUM ALTITUDE RECONNAISSANCE AND SURVEILLANCE SYSTEM

5-11. The MC-12 enhanced medium altitude reconnaissance and surveillance system aircraft is capable of both full-motion video and other intelligence collection. The crew consists of two pilots, and two payload operators. The aircraft has an extensive communications capability in order to allow a wide variety of missions.

5-12. The mission capabilities of this aircraft consist of reconnaissance, pattern analysis, change detection, target locating and tracking, wide-area reconnaissance and surveillance. The mission tasking is given by theater, but the aircraft can be tasked down to individual units if needed.

UC-35 AIRCRAFT

5-13. The UC-35 is a twin-engine turbofan medium range aircraft. Its principle mission is air movement of passengers and cargo (figure 5-7 and table 5-7).

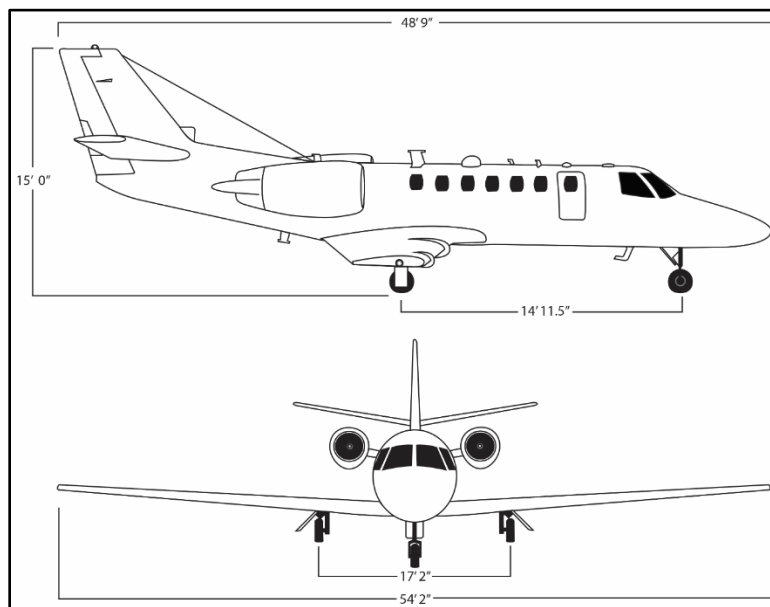


Figure 5-7. UC-35 aircraft

Table 5-7. UC-35 aircraft specifications

Specifications:	
Fuselage Length	48 feet 9 inches
Height	15 feet 0 inches
Main Wing Span	54 feet 2 inches
Propulsion	2x JT15D-5D turbofan jet engines
Maximum Gross Take-Off Weight	16,300 pounds
Maximum Ceiling	45,000 feet mean sea level
Cruise Airspeed	430 knots
Range	2,925 kilometers

AN/MSQ-135 MOBILE TOWER SYSTEM

5-14. Organic to the air traffic company in the CAB and the airfield operations battalion, the AN/MSQ-135 mobile tower system is a rapid-deployable ATC tower and airfield lighting system that quickly establishes ATS for arrival, departure, and ground operations. Equipment is included to remotely command airfield operations, including control of existing airfield lighting. Controllers manage airspace from the surface to 10,000 feet out to a 5-mile radius. When assisted by appropriate navigation aids (not organic), the AN/MSQ-135 provides ATS in all-weather conditions, night or day, for military and civilian aircraft. The AN/MSQ-135 is transportable by all standard land, rail, and sea methods. Additionally, the complete AN/MQS-135 is transportable by C-17 and larger FW aircraft. However, only the ATC tower, airfield lighting system generator/equipment trailer, airfield lighting system lighting/equipment trailer, and airfield lighting system movers 1 and 2 can be sling-loaded by CH-47 and larger RW aircraft. Figure 5-8, page 5-11, depicts an AN/MSQ-135. More information can be found in TC 3-04. 6.

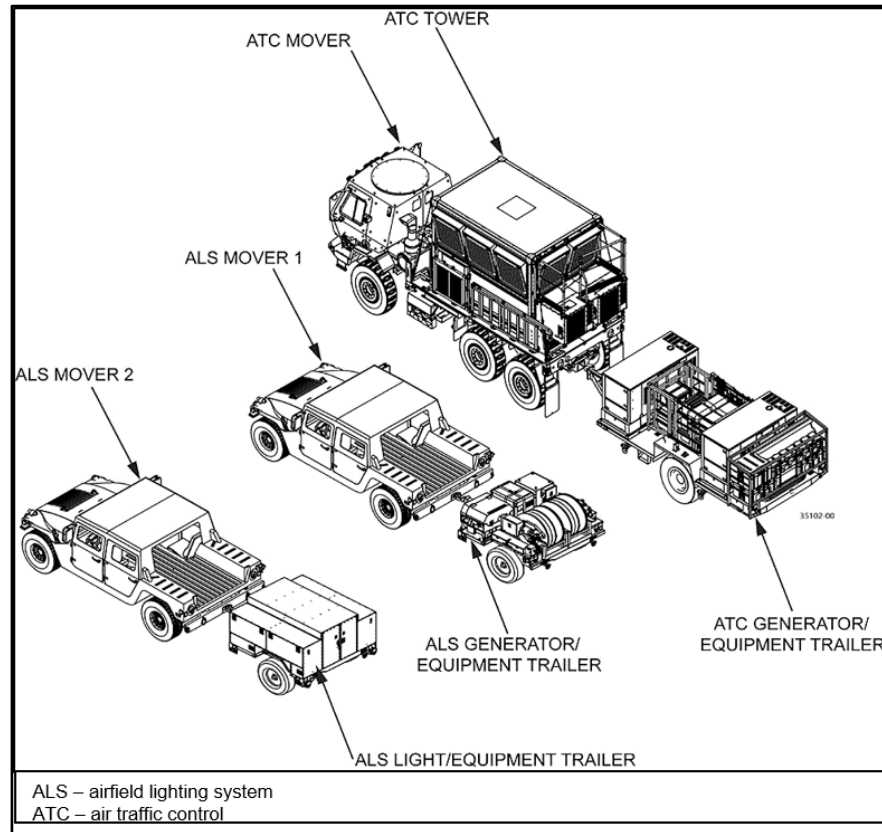


Figure 5–8. AN/MSQ-135 mobile tower system

AN/TPN-31 AIR TRAFFIC NAVIGATION, INTEGRATION, AND COORDINATION SYSTEM

5-15. The AN/TPN-31 (figure 5-9, page 5-12) normally deploys along with a tower system as part of initial or follow-on forces to establish an all-weather instrument landing capability at landing sites/airfields within the joint operations and theater areas of responsibility. The air traffic navigation, integration, and coordination system (ATNAVICS) can provide ground-controlled approach operations within 60 minutes of arrival in an AO. ATNAVICS directly interfaces by voice and digital data links with the tower systems and tactical airspace integration system (TAIS) of the CAB, TAB, AOB, division, and theater airspace elements for airspace data supporting current operations. When required, the ATNAVICS integrates into the national/host-nation airspace system and complies with Federal Aviation Administration, International Civil Aviation Organization, North Atlantic Treaty Organization, and the European Organization for the Safety of Air Navigation standards for stability and civil support operations. Although the ATNAVICS is a tactical system, it can support Army requirements in a non-temporary, non-tactical type setting. The inherent flexibility of the ATNAVICS design also allows for its use in fixed-base environments.

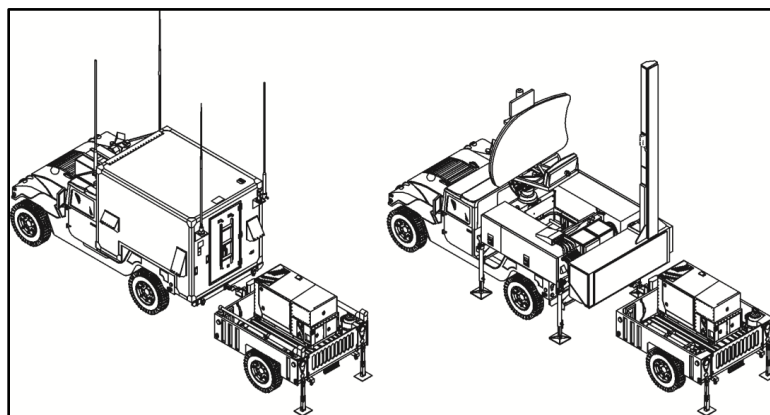


Figure 5–9. Air traffic navigation, integration, and coordination system

5-16. The ATNAVICS provides area surveillance and aircraft identification capability for a 25 nautical mile radius. The system consists of three integrated radars: airport surveillance radar, precision approach radar, and secondary surveillance radar with seven air traffic controllers. The ATNAVICS is transportable by C-17 or larger, intra-theater, cargo aircraft for total system deployment (prime movers, shelters, radar group, and generators). The ATNAVICS shelter, sensor pallet, and generators are externally air transportable by the UH-60 or larger helicopters and may be segmented. More information can be found in TC 3-04. 6.

AN/TSQ-221 TACTICAL AIRSPACE INTEGRATION SYSTEM

5-17. The AN/TSQ-221 (figure 5-10) is a digital and analog system for airspace control planning, operations, and ATS area support. It provides automation assistance to the full range of airspace planning, enhances airspace management operations (real-time), and ensures connectivity between all ATS assets and airspace users in theater. TAIS teams can provide airspace information center operations within 30 minutes upon arrival an AO. More information can be found in TC 3-04. 6.

5-18. TAIS is the direct link to the theater battle management core system located within the air operations center. The application, web airspace deconfliction, is the joint airspace management tool for planning and execution of the joint force airspace requirements. It integrates into C2 systems with enhanced compatibility with joint, multinational, and civil command, control, communication, and intelligence systems.

5-19. TAIS is a mobile system with four workstations. Communications include line of sight- and satellite-based voice communication systems, GPS, fax, improved data modem, and secure telephone unit III. It maximizes synchronization of battlefield airspace supporting force operations and minimizing fratricide.

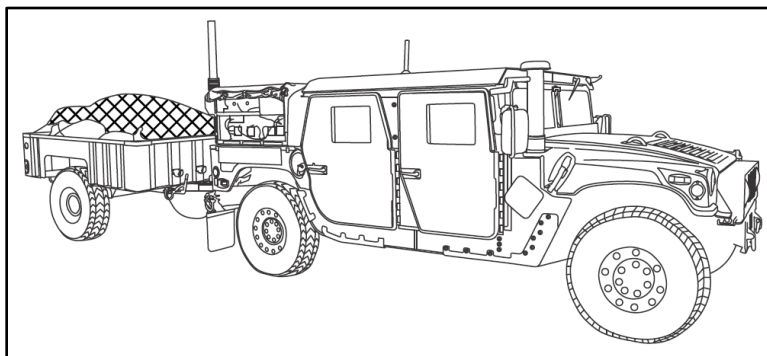


Figure 5–10. Tactical airspace integration system

AN/TSQ-198B TACTICAL TERMINAL CONTROL SYSTEM

5-20. The AN/TSQ-198 Tactical Terminal Control System (figure 5-11) is a HMMWV-mounted ATC system for the tactical aviation control team mission. The Tactical Terminal Control System enables visual flight rules control of air traffic at drop zones, LZs, PZs, FARPs, initial airfields, and temporary helicopter operating areas. It is the system of choice for initial entry operations for localized high volume aviation operations where ATC is a risk management control. It provides positive and or procedural ATS control within 15 minutes of arrival. Four air traffic controllers are assigned to operate the AN/TSQ-198 for a 24-hour period. Major communications components include the AN/VRC-114, multiband radios and AN/VRC-104 high frequency radio. The communications system can convert to a portable battery operated manpack configuration or be remoted from the vehicle up to 1 kilometer. Blue Force Tracker is mounted adjacent to the radio set control providing on-the-move, near-real-time horizontal and vertical information exchange using a GPS. The GPS connects to wireless/satellite based networks to display its own location, report its location to other systems, and transmit, receive, and display situational awareness and C2 data. The AN/TSQ-198 is sling-loadable by a UH-60 or similar helicopter, or it can be transported by a C-130 aircraft load. More information can be found in TC 3-04.6.

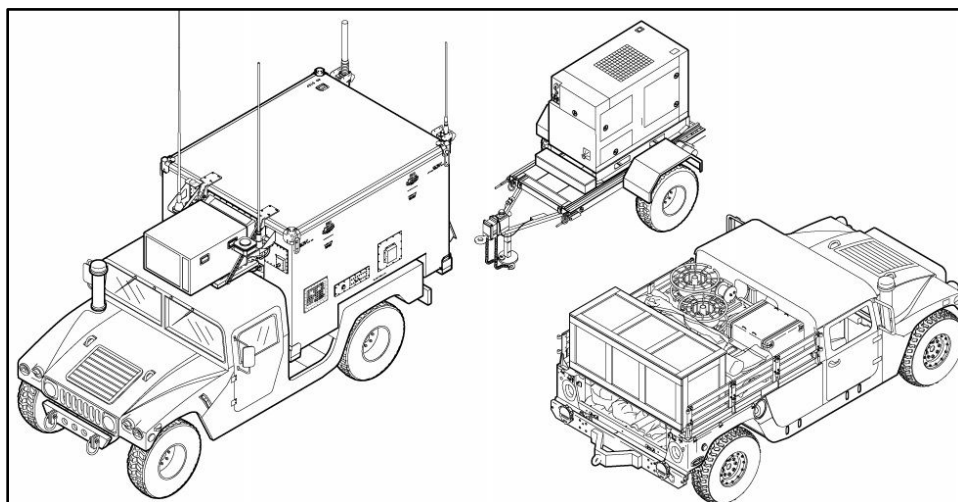


Figure 5–11. Tactical terminal control system

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Appendix A

Aviation Operations and Planning Resources

A-1. Aviation operations and planning resources are found in the aviation ATPs and TCs. In preparation for working directly with aviation units, ATP 3-04.1 and TC 3-04.12 provide a foundation for planning, execution, and common checklists, forms, briefs, and products used in aviation operations.

A-2. ATP 3-04.1 provides techniques for planning, preparation, and execution of aviation tasks. It provides problem-solving guidance for company-level leaders throughout Army Aviation as they plan, prepare, execute, and assess these tasks. It also provides considerations for expeditionary aviation operations. The primary audience for ATP 3-04.1 is junior leaders at brigade level and below, but it is also applicable to other members of the profession of arms.

A-3. TC 3-04.12 contains support requests, forms, briefs, checklists, and documents most often used during aviation operations. These documents include the array of required and optional forms that assist in the mission planning process and used during mission execution. The Aviation Handbook is a stand-alone, pocket-sized document developed to rapidly consolidate operations, techniques, and supporting forms and checklists; these will be incorporated into ATP 3-04.1 and TC 3-04.12.

A-4. The following are support requests, briefs, checklists, and kneeboard cards used for planning and execution of aviation operations and are found in TC 3-04.12 and the Aviation Handbook:

- Mission preparation, to include administrative and troop leading procedures, planning timeline worksheet, back-briefs, holding area operations, reconnaissance/security, EA development, and LZ/PZ selection criteria.
- Standard naming conventions.
- Warning order worksheet.
- Company and troop planning cell worksheet.
- Planning cell: threat/enemy/weather.
- Planning cell: friendly/maneuver.
- Planning cell: protection/flight coordination/contingency.
- Planning cell: sustainment.
- Planning cell: communications/rehearsal.
- Air mission commander worksheet.
- Landing zone/pickup zone selection.
- Occupy a battle position/attack by fire/support by fire/observation point/firing point.
- Release point/passage point.
- Engagement area development.
- Direct fire planning.
- Holding area operations.
- Reconnaissance/security.
- Route planning considerations.
- Planning graphics and common symbology.
- Unmanned aircraft systems planning considerations.
- Unmanned aircraft systems factors.
- Aircrew operations order.
- Air assault considerations.
- Rehearsals.
- After action review.

- Post-mission debrief collection plan.
- Readiness condition levels.
- Communication checks.
- Aircraft lighting.
- Line up, taxi, and take off.
- Formations.
- Formation changes.
- Inflight linkup.
- Landing zone and pickup zone arrival procedures.
- Weapon control measures.
- Actions on contact.
- Lost communications.
- Inadvertent instrument meteorological conditions.
- Lost visual contact.
- Airspace deconfliction.
- Downed aircrew actions.
- Buddy extraction procedures.
- Scatter plan.
- Precombat checks and precombat inspection checklist.
- Call signs.
- Brevity codes.
- Forward arming refueling point inspection checklist.
- Instrument checks.
- Fuel, ammunition, rocket, missile report.
- Size, activity, location, time, what report.
- Route report.
- Bridge report.
- Meaconing, intrusion, jamming, and interference report.
- Landing zone and pickup zone update brief.
- Call for fire.
- Adjust fire.
- Battle handover checklist.
- On-scene commander checklist.
- Downed aircraft report.
- Nine-line medical evacuation request.
- AH-64 crew briefing.
- AH-64 ordnance weight chart.
- Danger close ranges.
- Missile preflight data.
- Remote hellfire request.
- Remote hellfire matrix.
- Close air support aircraft check-in.
- Nine-line close air support brief.
- Rotary-wing five-line close air support brief.
- UH-60 crew brief.
- CH-47 crew brief.
- Non-rated crew member brief.

- Cargo and utility helicopter passenger brief.
- External load checklist.
- Hoist operations.
- Low-cost, low-altitude aerial resupply–air drops.
- Water bucket preflight checklist.
- Water bucket operations.
- Paradrop safety brief.
- Jumpmaster brief.
- CH-47 internal configurations.
- Timeline card.
- Mission cards.
- Execution checklist card.
- Concept sketch card.
- Route card.
- Helicopter landing zone, pickup zone, and holding area card.
- Forward army refueling point card.
- Restricted operating zone information card.
- Inadvertent instrument meteorological conditions card.
- Named area of interest worksheet.
- Performance planning cards and forms for Army aircraft.

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Appendix B

Risk Management

B-1. Aviation operations are inherently risky even during routine peacetime or limited contingency operations. In LSCO, many aviation operations become high-risk, high-reward missions. Commanders must appropriately mitigate risks in order to provide continued support to the ground maneuver commander.

B-2. Risk management is a critical process that contributes to the endurance of an aviation force. It identifies hazardous environments and helps commanders eliminate, reduce, or minimize risk associated with mission and operational requirements in order to protect assets. It is integral throughout the planning process, and directly contributes to the availability of aircrews, aircraft, and the associated equipment that are critical to mission support and accomplishment.

B-3. Commanders balance between protecting the force and accepting risks in order to achieve military objectives. Commanders must adequately plan and prepare for operations based on a comprehensive understanding of the OE. Commanders collaborate and dialog with subordinates when deciding how much risk to accept and how to minimize the effects of risk. It is important to remember that accepting risk is a function of command, and it is a key planning consideration. The commander alone determines the level of acceptable risk with respect to aspects of operations. This level of risk should be expressed in the commander's guidance, incorporated into all plans and orders, and clearly understood by subordinate leaders.

B-4. In LSCO, commanders of aviation units must continually fight for information to see, understand, and respond to windows of opportunity. Aviation missions are frequently conducted without perfect information, and understanding the threats associated with the enemy, the terrain, and the weather all inform a commander's level of risk-acceptance. Table B-1 lists examples of considerations that commanders should review when identifying risks. For more information about risk management, see ATP 5-19.

Table B-1. Aviation risk considerations

Mission
How complex is this mission? (This will help identify which leaders should participate and where they should be located)
How does the unit move into positions of advantage without being heavily disrupted by enemy assets? (Units observed by enemy forces can be engaged. Units engaged by an enemy on the enemy's terms can be destroyed.)
Are adjacent units operating off of common procedures? (Shared understanding of terms and common control measures will reduce risk of fratricide.)
Enemy
What threat systems must be avoided or destroyed to be successful? (This will help identify high payoff and high value targets.)
Where and when could enemy deception operations create vulnerabilities to aviation operations? (The commander must evaluate available courses of action against known enemy deception capabilities.)
Terrain and Weather
How challenging are terrain conditions in aviation assembly areas? (Degraded visual environments from dust or snow increase chances of an accident upon takeoff or landing.)
What is the weather effect on friendly and enemy operations? (Operations in limited visibility may reduce tactical risk, but increase the accidental risk at the same time.)

Table B-1. Aviation risk considerations, continued

<i>Troops and Support Available</i>
Is sufficient combat power available to achieve the commander's intent? (Prolonged operations will require additional aircraft maintenance and reconstitution; commanders must balance tempo with mass.)
How does the unit balance continued operations in demanding environments with increasing fatigue of aircrew members and aircraft maintainers? (Increased fatigue from extended operations without effective recovery operations increases the risk of an aviation accident or improper maintenance.)
What protection is available for aviation units conducting extended maintenance operations? (Aircraft may be unable to relocate quickly if they are being maintained in a forward location. Protection should be a consideration for any static location.)
How does the unit incorporate replacement personnel into units during reconstitution? (Untrained replacements may not have the same knowledge of specific procedures in places such as forward arming and refueling points or aircraft maintenance areas.)
<i>Time Available</i>
How much preparation time is available for this mission? How much preparation time do subordinate units have to plan and prepare? (This will help identify risks from tempo.)
What maintenance inspections are being waived due to operational tempo or sustainment challenges? (Waived inspections may increase risk of an accident or sub-standard system performance.)
<i>Civil Considerations</i>
What civilian population is near the area of operations? (This may help identify risks due to observation or collateral damage.)

Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

AATF	air assault task force
ABTF	aviation battalion task force
ACM	airspace coordinating measure
ADAM	air defense airspace management
AE	aeromedical evacuation
*AGO	air-ground operations
AHB	assault helicopter battalion
AHC	assault helicopter company
AMC	aviation maintenance company
AMT	aviation maintenance troop
AO	area of operations
AOB	airfield operations battalion
AB	attack battalion
AC	attack company
ARNG	Army National Guard
ACS	air cavalry squadron
ACT	air cavalry troop
ASB	aviation support battalion
ASC	aviation support company
ASTF	aviation squadron task force
ATC	air traffic control
ATNAVICS	air traffic navigation, integration, and coordination system
ATS	air traffic services
ATSSE	air traffic services standardization element
AWT	attack weapons team
AXP	ambulance exchange point
BAE	brigade aviation element
BAMO	brigade aviation maintenance officer
BCT	brigade combat team
BDA	battle damage assessment
C2	command and control
CAB	combat aviation brigade
CAC	command aviation company
CAS	close air support
CASEVAC	casualty evacuation
CBRNE	chemical, biological, radiological, nuclear, and high yield explosives
COA	course of action

Glossary

CP	command post
DART	downed aircraft recovery team
DCA	defensive counter-air
DS	direct support
DSCA	Defense Support of Civilian Authorities
ECAB	expeditionary combat aviation brigade
EW	electronic warfare
FARP	forward arming and refueling point
FLOT	forward line of own troops
FSC	forward support company
FW	fixed-wing
GPS	Global Positioning System
GS	general support
GSAB	general support aviation battalion
HA	holding area
HHC	headquarters and headquarters company
HSS	health service support
IADS	integrated air defense systems
IED	improvised explosive device
IO	information operations
IPB	intelligence preparation of the battlefield
IR	infrared
ISB	intermediate staging base
JAGIC	joint air-ground integration center
JFC	joint force commander
LNO	liaison officer
LOA	limit of advance
LOC	line of communications
LOS	line of sight
LSCO	large-scale combat operations
LZ	landing zone
MANPADS	man-portable air defense system
MEDEVAC	medical evacuation
MTF	medical treatment facility
MTOE	modified table of organization and equipment
*MUM-T	manned unmanned teaming
OCA	offensive counter-air
OE	operational environment
OP	observation post
OPCON	operational control
PC	production control

PIR	priority intelligence requirement
PL	phase line
PR	personnel recovery
PZ	pickup zone
QC	quality control
ROE	rules of engagement
ROZ	restricted operations zone
RW	rotary-wing
SAM	surface-to-air missile
SCAR	strike coordination and reconnaissance
SEAD	suppression of enemy air defense
SOP	standard operating procedure
SPO	support operations officer
SSB	security and support battalion
SWT	Scout weapons team
TAB-A	theater aviation brigade (assault)
TAB-GS	theater aviation brigade (general support)
TACON	tactical control
TAIS	tactical airspace integration system
TAOG	theater airfield operations group
TASMG	theater aviation sustainment maintenance group
TCF	tactical combat force
TRP	target reference point
TTP	tactics, techniques, and procedures
UAS	unmanned aircraft system
USAR	United States Army Reserve

SECTION II-TERMS

Air assault	The movement of friendly assault forces by rotary-wing or tiltrotor aircraft to engage and destroy enemy forces or to seize and hold key terrain. (JP 3-18)
*Air-ground operations	The simultaneous or synchronized employment of ground forces with aviation maneuver and fires to seize, retain, and exploit the initiative. Also called AGO.
Air movement	Air transport of units, personnel, supplies, and equipment including airdrops and air landings. See also airdrop; airland. (JP 3-17)
Area reconnaissance	A form of reconnaissance that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area. (ADP 3-90)
Army personnel recovery	The military efforts taken to prepare for and execute the recovery and reintegration of isolated personnel. (FM 3-50)
Consolidation area	The portion of the commander's area of operations that is designated to facilitate the security and stability tasks necessary for freedom of action in the close area and to support the continuous consolidation of gains. (ADP 3-0)
Coordinating altitude	An airspace coordinating measure that uses altitude to separate users and as the transition between different airspace control elements. Also called CA. (JP 3-52)
Coordination level	A procedural method to separate fixed- and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly. Also called CL. (JP 3-52)
Cover	A security task to protect the main body by fighting to gain time while also observing and reporting information and preventing enemy ground observation of and direct fire against the main body. (ADP 3-90)
Decisive operation	The operation that directly accomplishes the mission. (ADP 3-0)
Forward arming and refueling point	A temporary facility, organized, equipped, and deployed to provide fuel and ammunition necessary for the employment of aviation maneuver units in combat. Also called FARP. (JP 3-09. 3)
Guard	A security task to protect the main force by fighting to gain time while also observing and reporting information and preventing enemy ground observation of and direct fire against the main body. Units conducting a guard mission cannot operate independently because they rely upon fires and functional and multifunctional support assets of the main body. (ADP 3-90)
Hybrid threat	The diverse and dynamic combination of regular forces, irregular forces, terrorist forces, or criminal elements unified to achieve mutually benefitting threat effects. (ADP 3-0)
Information collection	An activity that synchronizes and integrates the planning and employment of sensors and assets as well as the processing, exploitation, and dissemination systems in direct support of current and future operations. (FM 3-55)
Information environment	The aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information. (JP 3-13)
Kill box	A three-dimensional permissive fire support coordination measure with an associated airspace coordinating measure used to facilitate the integration of fires. (JP 3-09)
Main command post	A facility containing the majority of the staff designed to control current operations, conduct detailed analysis, and plan future operations. (FM 6-0).
Main effort	A designated subordinate unit whose mission at a given point in time is most critical to overall mission success. (ADP 3-0)

*Manned unmanned teaming	The integrated maneuver of Army Aviation RW and UAS to conduct movement to contact, attack, reconnaissance, and security tasks. Also called MUM-T.
Operational environment	A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. Also called OE. (JP 3-0)
Operational reach	The distance and duration across which a joint force can successfully employ military capabilities. (JP 3-0)
Reconnaissance	A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographic or geographic characteristics of a particular area. (JP 2-0)
Reconnaissance in force	A deliberate combat operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information. (ADP 3-90)
Route reconnaissance	A directed effort to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route. (ADP 3-90)
Screen	A security task that primarily provides early warning to the protected force. (ADP 3-90)
Security tasks	Those tasks performed by commanders to provide early and accurate warning of enemy operations, to provide the forces being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow commanders to effectively use their protected forces. (ADP 3-90)
Shaping operation	An operation that establishes conditions for the decisive operation through effects on the enemy, other actors, and the terrain. (ADP 3-0)
Space domain	The area above the altitude where atmospheric effects on airborne objects become negligible. (JP 3-14)
Special reconnaissance	Reconnaissance and surveillance actions conducted as a special operation in hostile, denied, or diplomatically and/or politically sensitive environments to collect or verify information of strategic or operational significance, employing military capabilities not normally found in conventional forces. Also called SR. (JP 3-05)
Strike coordination and reconnaissance	A mission flown for the purpose of detecting targets and coordinating or performing attack or reconnaissance on those targets. Also called SCAR. (JP 3-03)
Support area	In contiguous areas of operations, an area for any commander that extends from its rear boundary forward to the rear boundary of the next lower level of command. (ADP 3-0)
Supporting effort	A designated subordinate unit with a mission that supports the success of the main effort. (ADP 3-0)
Sustaining operation	Those operations at any echelon that enable the decisive operation or shaping operations by generating and maintaining combat power. (ADP 3-0)
Tactical command post	A facility containing a tailored portion of a unit headquarters designed to control portions of an operation for a limited time. (FM 6-0)
Threat	Any combination of actors, entities, or forces that have the capability and intent to harm United States forces, United States national interests, or the homeland. (ADP 3-0)
Zone	A form of reconnaissance that involves a directed effort to obtain detailed

Glossary

reconnaissance	information on all routes, obstacles, terrain, and enemy forces within a zone defined by boundaries. (ADP 3-90)
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References

All websites accessed on 22 January 2020.

REQUIRED PUBLICATIONS

These documents must be available to the intended users of this publication.

ADP 1-02. *Terms and Military Symbols*. 14 August 2018.

DOD Dictionary of Military and Associated Terms. January 2020.

FM 1-02.1. *Operational Terms*. 21 November 2019.

RELATED PUBLICATIONS

These documents contain relevant supplemental information.

JOINT AND MULTISERVICE PUBLICATIONS

Most Joint Service publications are available online at <http://www.jcs.mil/Doctrine>.

Joint Guide 1-05. *Joint Guide 1-05 for Religious Affairs in Joint Operations*. 01 February 2018.

JP 2-0. *Joint Intelligence*. 22 October 2013.

JP 3-0. *Joint Operations*. 17 January 2017.

JP 3-01. *Countering Air and Missile Threats*. 21 April 2017.

JP 3-03. *Joint Interdiction*. 09 September 2016.

JP 3-05. *Special Operations*. 16 July 2014.

JP 3-09. *Joint Fire Support*. 10 April 2019.

JP 3-10. *Joint Security Operations in Theater*. 25 July 2019.

JP 3-13. *Information Operations*. 27 November 2012.

JP 3-14. *Space Operations*. 10 April 2018.

JP 3-17. *Air Mobility Operations*. 05 February 2019.

JP 3-18. *Joint Forcible Entry Operations*. 11 May 2017.

JP 3-52. *Joint Airspace Control*. 13 November 2014.

JP 4-02. *Joint Health Services*. 11 December 2017.

The following publication may be found at https://jdeis.js.mil/jdeis/new_pubs/jp3_09_3.pdf.

JP 3-09. 3. *Close Air Support*. 10 June 2019.

ARMY PUBLICATIONS

Most Army publications are available online at <https://armypubs.army.mil>.

ADP 3-0. *Operations*. 31 July 2019.

ADP 3-90. *Offense and Defense*. 31 July 2019.

ADP 4-0. *Sustainment*. 31 July 2019.

ADP 5-0. *The Operations Process*. 31 July 2019.

ADP 6-0. *Mission Command: Command and Control of Army Forces*. 31 July 2019.

AR 40-3. *Medical, Dental, and Veterinary Care*. 23 April 2013.

AR 95-1. *Flight Regulations*. 22 March 2018.

ATP 2-01. *Plan Requirements and Assess Collection*. 19 August 2014.

ATP 3-04. 1. *Aviation Tactical Employment*. 13 April 2016.

ATP 3-04. 7. *Army Aviation Maintenance*. 11 September 2017.

ATP 3-04. 13. *Aircraft Recovery Operations*. 16 April 2018.

References

- ATP 3-04. 17. *Techniques for Forward Arming and Refueling Points*. 04 June 2018.
- ATP 3-94. 2. *Deep Operations*. 01 September 2016.
- ATP 4-02. 2. *Medical Evacuation*. 11 July 2019.
- ATP 4-10/MCRP 4-11H/NTTP 4-09. 1/AFMAN 10-409-O. *Multi-Service Tactics, Techniques, and Procedures for Operational Contract Support*. 18 February 2016.
- ATP 4-33. *Maintenance Operations*. 09 July 2019.
- ATP 5-19. *Risk Management*. 14 April 2014.
- ATP 6-0. 5. *Command Post Organization and Operations*. 01 March 2017.
- FM 1-05. *Religious Support*. 21 January 2019.
- FM 3-0. *Operations*. 06 October 2017.
- FM 3-11. *Chemical, Biological, Radiological, and Nuclear Operations*. 23 May 2019.
- FM 3-14. *Army Space Operations*. 30 October 2019.
- FM 3-50. *Army Personnel Recovery*. 02 September 2014.
- FM 3-52. *Airspace Control*. 20 October 2016.
- FM 3-55. *Information Collection*. 03 May 2013.
- FM 3-90-1. *Offense and Defense Volume 1*. 22 March 2013.
- FM 3-90-2. *Reconnaissance, Security, and Tactical Enabling Tasks Volume 2*. 22 March 2013.
- FM 3-98. *Reconnaissance and Security Operations*. 01 July 2015.
- FM 3-99. *Airborne and Air Assault Operations*. 06 March 2015.
- FM 6-0. *Commander and Staff Organization and Operations*. 05 May 2014.
- FM 6-27. *The Commander's Handbook on the Law of Land Warfare*. 07 August 2019.
- FM 6-99. *U. S. Army Report and Message Formats*. 19 August 2013.
- TC 3-04. 3. *Aviation Gunnery*. 15 March 2019.
- TC 3-04. 6. *Air Traffic Services Operations*. 27 December 2017.
- TC 3-04. 11. *Commander's Aircrew Training Program*. 21 September 2018.
- TC 3-04. 12. *Aviation Mission Planning Forms*. 03 August 2016.

RECOMMENDED READINGS

Most Army publications are available online at <https://armypubs.army.mil>.

TC 1-400. *Brigade Aviation Element Handbook*. 27 April 2006.

TC 7-100. *Hybrid Threat*. 26 November 2010.

TC 7-100. 2. *Opposing Force Tactics*. 09 December 2011.

The following publication can be accessed at http://www.history.army.mil/html/books/090/90-4/CMH_Pub_90-4-B.pdf.

Vietnam Studies: Air Mobility 1961-1971. LTG John J. Tolson. Department of the Army, Washington, D. C, 1973.

WEBSITES RECOMMENDED

Army Training Network: <https://atn.army.mil>.

Center for Army Lessons Learned Publications:

<https://usacac.army.mil/organizations/mccoe/call/publications>.

USAACE Directorate of Training and Doctrine:

<https://www.ako2.us.army.mil/content/armyako/en/mycommunities/Home/groups/TRADOC/Groups/CAC/Groups/USAACE/Groups/USAACEStaff/Groups/Directorates/Groups/DOTD.html>.

USAACE Directorate of Training and Doctrine (Doctrine Branch): <https://www.ako2.us.army.mil/content/armyako/en/mycommunities/Home/groups/TRADOC/Groups/CAC/Groups/USAACE/Groups/USAACEStaff/Groups/Directorates/Groups/DOTD/Divisions/DoctrineDivision/Branches/DOTDdoctrinebranch.html>.

USAACE Directorate of Training and Doctrine Survivability SIPRNET:
<https://intelshare.intelink.sgov.gov/sites/army-ams>.

USAACE SIPRNET: <https://www.usaace.army.smil.mil/asdat>.

PRESCRIBED FORMS

This section contains no entries.

REFERENCED FORMS

Unless otherwise indicated, DA Forms are available on the Army Publishing Directorate website at <https://armypubs.army.mil>.

DA Form 1352. *Army Aircraft Inventory, Status and Flying Time*.

DA Form 2028. *Recommended Changes to Publications and Blank Forms*.

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