



FM 3-04

Army Aviation

JULY 2015

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Army Aviation

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Preface

Field Manual (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. FM 3-04 provides a foundation for subordinate training doctrine, professional military education, leader development, and individual and collective training.

This publication is written for all members of the Profession of Arms. Army headquarters (HQ) commanders and staffs serving as joint or multinational task force (TF) 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 must ensure their decisions and actions comply with principles and expectations of the Army profession and applicable United States (U.S.), international, and, in some cases, host-nation laws and regulations. Commanders at all levels ensure their Soldiers operate in accordance with the law of war and the rules of engagement (ROE) found in Army Doctrine Reference Publication (ADRP) 1 and FM 27-10.

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 the asterisk (*) in the glossary. Definitions for which FM 3-04 is the proponent publication are boldfaced in the text. For terms used in this text but defined in other publications, the term is italicized and the number of the proponent publication follows the definition.

This FM applies to the active Army, Army National Guard (ARNG)/Army National Guard of the United States, and United States Army Reserve (USAR) unless otherwise stated.

The proponent of this publication is the United States Army Training and Doctrine Command (TRADOC); the preparing agency is the Directorate of Training and Doctrine (DOTD), United States Army Aviation Center of Excellence (USAACE). To send comments and/or recommendations for change, use Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms) found on the United States Army Publishing Directorate website. Comments may be e-mailed to DOTD at usarmy.rucker.avncoe.mbxdoctrine-branch@mail.mil, or mailed to Commander, USAACE, ATTN: ATZQ-TDD, Fort Rucker, Alabama 36362-5263.

This publication has been reviewed for operational security.

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Introduction

To understand FM 3-04, the reader must first understand the doctrinal fundamentals contained in Army Doctrine Publications (ADPs) 3-0, 3-90, 5-0, and 6-0 and ADRPs 3-0, 3-90, 5-0, and 6-0. The reader should also understand the activities described in FMs 3-90-1, 3-90-2, and 3-99 in order to understand how Army Aviation operations execute and support the elements of decisive action and their subordinate tactical, enabling, and sustaining tasks.

FM 3-04 updates previous doctrine and integrates aviation operations into unified land operations. The most significant change is the introduction to air-ground operations (AGO), which replaces air-ground integration and better describes Army Aviation operations in unified land operations. This publication focuses on the employment of Army Aviation through AGO in support of ground maneuver units conducting decisive action across the range of military operations and the conflict continuum.

Introductory table 1 introduces new terms addressed within this publication.

Introductory Table 1. New aviation terms

Term	Remarks
air-ground operations	Replaces air-ground integration
manned unmanned teaming (MUM-T)	New term and definition

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Chapter 1

Army Aviation's Role in Unified Land Operations

SECTION I – OVERVIEW

1-1. Unified land operations describes how the Army seizes, retains, and exploits the initiative to gain and maintain a position of relative advantage in sustained land operations through simultaneous offensive, defensive, and stability operations in order to prevent or deter conflict, prevail in war, and create the conditions for favorable conflict resolution (ADP 3-0). Army Aviation integrates into unified land operations by conducting air-ground operations (AGO) 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 and ensures that Army Aviation is best positioned to support ground maneuver. This increases the overall 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 maneuver and ground maneuver as a combined arms team. As a maneuver component in 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. As Army professionals, our shared understanding and mutual trust are established and maintained through habitual training, persistent liaison, collaborative planning and preparation, known standardized procedures, clear command and support relationships, and effective mission rehearsals.

1-3. Although AGO require integration of movement to contact, attack, reconnaissance, security, air assault, mission command support, air movement and/or aeromedical evacuation missions executed by Army Aviation 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, but agility, speed of action, and mission success are significantly enhanced when habitual relationships are established, liaison is imbedded throughout the operations process, procedures are standardized and practiced, a common operational picture is maintained, and mutual trust is built through effective relationships and shared understanding. A fully integrated combined arms approach using the concept of AGO enables the combined arms team to win in an increasingly complex world.

SECTION II – CORE COMPETENCIES OF ARMY AVIATION

1-4. Army Aviation's inherent mobility, speed, range, flexibility, lethality, precision, and persistent reconnaissance capabilities provide the combined arms team conducting decisive action operations with multiple options to seize, retain, and exploit the initiative to gain and maintain a position of relative advantage through the following seven core competencies. These core competencies of Army Aviation may be executed individually, simultaneously, or sequentially.

PROVIDE ACCURATE AND TIMELY INFORMATION COLLECTION

1-5. 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, location, strengths, weaknesses and direction of travel when enemy forces are moving, as well as information on, population patterns of life, ground routes and mobility corridors, urban areas and infrastructure, and man-made and natural obstacles.

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 (PED) of systems in direct support 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 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 rotary wing 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, longer persistence over the reconnaissance objective, increased ability to gain and maintain enemy contact, greater survivability and more options to develop the situation with enhanced maneuver, fires, and mission command.

1-8. When supporting a ground maneuver headquarters conducting reconnaissance in force, Army Aviation attack and reconnaissance units conduct movement to contact, then transition to the other tactical or enabling tasks of attack, reconnaissance or security once enemy contact is gained. When task organized with the required ground maneuver forces and fires, Army Aviation battalions or brigades can serve as the maneuver task force headquarters to conduct a reconnaissance in force.

1-9. Army Aviation assault units may conduct infiltration and extraction of dismounted reconnaissance elements to conduct 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.

1-10. Army Aviation enables the combined arms team to determine the enemy's intent and answers the commander's critical information requirements by either observation or fighting for information as required. This enables the combined arms team 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.

1-11. 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 communications connections and implement reporting procedures. Together, these units position the communications systems and PED capabilities at the most effective location to ensure that the sensor data and information is 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 screen as a separate security force or as a sub-element of a larger combined arms security force conducting screen, guard, cover or area security tasks. 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.

1-15. When task organized with adequate ground maneuver forces and fires, Army Aviation can operate as the security task force headquarters, conducting screen, guard, and area security tasks.

1-16. Army Aviation security operations provide the combined arms team the required reaction time and maneuver space to protect friendly forces, designated infrastructure, or civilian populations, while achieving economy of force.

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

1-17. 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 area of operations (AO). Army Aviation can destroy, defeat, disrupt, divert, or delay the enemy by conducting attacks with precise and discriminate fires on enemy forces that may be either in contact or out of contact with friendly ground forces. Regardless of whether the enemy is in contact or out of contact, attacks can be either deliberate or hasty in nature based on the time available to plan, prepare, and execute.

1-18. 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.

1-19. When enemy forces *are in close contact with friendly ground maneuver forces*, Army Aviation attack and reconnaissance units, in close coordination with the maneuver forces in contact, attack to destroy, defeat, disrupt, divert, or delay enemy forces to enable the combined arms team to seize, retain, or exploit the initiative. These attacks can be either hasty or deliberate. In either case, the ground maneuver commander in contact is responsible for the integration and/or synchronization of Army Aviation in the ground scheme of maneuver and controls the distribution and de-confliction of Army Aviation maneuver and fires during execution. Airspace coordination is required with the appropriate airspace control authority.

1-20. When enemy forces *are not in close contact with friendly ground maneuver forces*, Army Aviation attack and reconnaissance units maneuver independent of 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. These attacks can also be either hasty or deliberate. In either case, the Army Aviation maneuver commander controls Army Aviation maneuver and fires 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. Based on the complexity of the targeted enemy force and operational environment, Army Aviation attacks against enemy forces out of friendly contact frequently are 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.

1-21. Army Aviation attacks against enemy forces in or out of contact can be the decisive or shaping operation at the tactical or operational level and enable the combined arms team to maintain the tempo of operations while presenting multiple dilemmas to the enemy at the maneuver commander's time and place of choice.

AIR ASSAULT GROUND MANEUVER FORCES

1-22. 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 destroy an enemy force or to seize and hold key terrain.

1-23. 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.

1-24. The air assault task force (AATF) is the entire combined arms team conducting the air assault. The AATF commander commands the combined arms team through all phases of the air assault and is normally the ground maneuver brigade or battalion commander whose subordinate echelon constitutes the main combat force. The aviation task force commander (or a designated subordinate leader for air assaults below the battalion level) serves as the air mission commander (AMC) and commands all aviation forces through all phases of the air assault and follow on ground tactical plan. The ground tactical commander (GTC) 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.

1-25. Army Aviation attack and reconnaissance units utilizing MUM-T conduct reconnaissance, security, and hasty and deliberate attacks against enemy forces in and out of friendly contact under the control of the AMC during the assault and may transition to the control of the GTC 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.

1-26. 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 exploit enemy forces when most vulnerable.

AIR MOVEMENT OF PERSONNEL, EQUIPMENT, AND SUPPLIES

1-27. 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 defense support of civilian authorities (DSCA) operations throughout the depth and breadth of the AO and area of interest (AOI).

1-28. Army Aviation rotary-wing aircraft conduct air movement using both internal and external (sling) loads. The supported unit provides pick-up 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 AOI. 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.

1-29. 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 communication to support the offense, and battlefield circulation of key leaders.

1-30. Air movement operations reduce risk to the ground logistics units through economy of force, enable operations in areas with limited ground lines of communications, faster repair and sustainment of combat power, and forward positioning of key leaders to exercise mission command while sustaining the tempo of operations and extending the tactical and operational reach of the combined arms team.

EVACUATE WOUNDED OR RECOVER ISOLATED PERSONNEL

1-31. Army Aviation air ambulance units conduct aeromedical evacuation. Aeromedical evacuation provides en route medical care with trained personnel and specialized equipment to recover or move wounded at the point of injury or from medical facilities to a higher level of medical care. Aeromedical evacuation is conducted by air ambulance units in support of the joint force while conducting offensive, defensive, stability, and DSCA operations through the depth and breadth of the AO.

1-32. Army Aviation assault, GS, and heavy lift units conduct casualty evacuation (CASEVAC) when required. CASEVAC is the unregulated movement of wounded, injured, or ill to and between medical

treatment facilities with non-medical assets. CASEVAC lacks the provisions of en route care and is often times the first step in a process that moves an injured Soldier from the point of injury.

1-33. Army Aviation is often the primary Army capability to transport the combined arms team personnel recovery (PR) ground security and extraction force tasked to recover designated isolated personnel. PR missions are combined arms operations and may require the employment of the full range of unified action partners' capabilities prior to and during execution. Army ground force commanders designate, train, and posture the PR ground security and extraction force to enable rapid alert and movement by Army Aviation units. Army Aviation provides assault, aeromedical evacuation, attack, reconnaissance, UAS, and mission command support assets to support the PR mission.

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 the conflict continuum. Evacuation and recovery operations reduce risk and increase survivability of the combined arms team while enabling greater freedom of action.

ENABLE MISSION COMMAND OVER EXTENDED RANGES AND COMPLEX TERRAIN

1-35. Army Aviation enhances mission command 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 operational environment through the execution of movement to contact, attack, reconnaissance and security operations; accurate and timely reporting via long range communications; dedicated mission command support platforms; UAS communications relay packages; distribution of full-motion video sensor information; management of controlled airspace through air traffic services; employment of aviation liaison teams; embedded aviation staff elements at brigade combat team (BCT) and above headquarters; and 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. Air traffic services (ATS) enable the combined arms team to synchronize UAS and manned aircraft in controlled airspace as the commander directs and leads ongoing operations. Army Aviation liaison teams 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 mission command 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 battle damage assessment and detailed reconnaissance through the depth of the AO.

SECTION III – ARMY AVIATION IN THE OPERATIONAL FRAMEWORK

1-37. To clearly articulate Army Aviation operations, commanders use one of the three doctrinal Army operational frameworks—either individually or in combination—to describe the commander's visualization of how Army Aviation operates in time, space, and purpose. The three frameworks are deep, close, and security; decisive, shaping and sustaining; or main and supporting efforts. The deep, close, and security framework is usually associated with terrain orientation but can be applied to temporal or organizational orientations. The decisive, shaping, and sustaining framework lends itself to a broad conceptual orientation and defines the desired purpose of each component. The use of main and supporting efforts as a framework provides prioritization of efforts among subordinate units. The use of any one or combination of the three frameworks does not limit any of the seven core competencies of Army Aviation.

OPERATIONS IN DEEP, CLOSE, AND SECURITY AREAS

1-38. Deep operations involve efforts to prevent uncommitted enemy forces from being committed in a coherent manner. The purpose of deep operations is frequently tied to other events distant in time, and space.

(ADRP 3-0) Deep areas include the spaces between non-contiguous areas of operation or beyond the designated boundaries of ground maneuver units in contiguous areas of operation.

1-39. 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 (UA) to obtain combat information to answer priority intelligence requirements (PIR) on the terrain, enemy or civilian populations.
- Air assaults of conventional or special operations forces to seize an objective, destroy an enemy force, or capture or kill a high value target.
- Infiltrations of conventional and special operations forces to recover isolated personnel, emplace sensors, conduct raids, establish special reconnaissance positions, or to conduct partisan linkup.
- Air movements of supplies and personnel to ground maneuver units operating decentralized in deep areas.
- Evacuation of casualties from units operating in deep areas.
- Personnel recovery of designated isolated personnel in deep areas.

1-40. Operations in close areas are operations within a subordinate commander's AO. These AOs can be linear, contiguous, or non-contiguous. Operations projected in close areas are usually against enemy forces in immediate contact and are often the decisive operation (ADRP 3-0). Army Aviation executes operations 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, mission command support, and/or evacuation missions.

1-41. Security operations involve efforts to provide early and accurate warning, and time and maneuver space to react to the enemy (ADRP 3-0). Army Aviation executes operations in the security area either fully integrated with a ground security force as a combined arms team or in an economy of force role as a pure aviation security force synchronized with the protected force maneuver plan when no ground maneuver force is in the security area. In either case, Army Aviation operations are always nested in the higher ground scheme of maneuver to protect the supported force from surprise and to enable the ground maneuver commander to develop the situation without premature commitment of combat power. When operating with the combined arms team in security areas, Army Aviation can conduct movement to contact, attacks, reconnaissance, screens, air assaults, air movements, mission command and/or evacuation missions. When Army Aviation is the primary maneuver force in security areas and not operating as a part of a combined arms team, Army Aviation conducts movement to contact, reconnaissance, screen, attack, and evacuation nested with the protected force's scheme of maneuver. When task organized with adequate ground maneuver forces, Army Aviation may serve as the security force headquarters conducting screen, guard, and area security operations.

1-42. In deep, close, and security operations, a commander may also designate a support area (figure 1-1, page 1-7). In a contiguous AO, the support area is an area that 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 an area as the support area (ADRP 3-0). The support area is where most of the echelons sustaining operations occur. Army Aviation operations in the support area typically include air movement, aeromedical evacuation, and mission command 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 ground unit designated with the security mission for the support area. If properly task organized with ground maneuver or security forces, Army Aviation can operate as the security force headquarters for the support area.

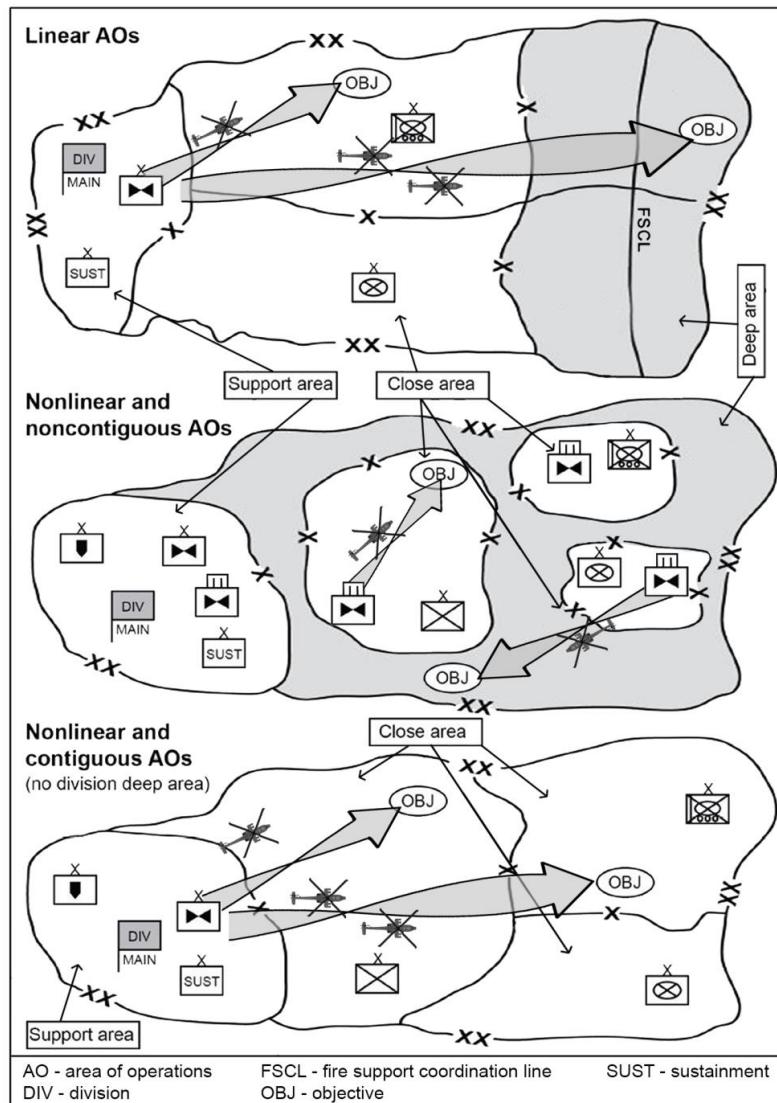


Figure 1–1. Deep, close, and security operational framework

DECISIVE, SHAPING, AND SUSTAINING OPERATIONS

1-43. Decisive operations are operations that directly accomplish the mission that determines the outcome of a major operation, battle or engagement. The decisive operation is the focal point around which commanders design an entire operation (ADRP 3-0). Army Aviation conducts all missions in direct support, GS, tactical control (TACON) or operational control (OPCON) to the ground maneuver force tasked with accomplishing the decisive operation (chapter 2). Army Aviation units are typically task organized with ground maneuver forces as the combined arms team maneuver headquarters when designated as the decisive operation.

1-44. Shaping operations are operations that establish conditions for the decisive operation through effects on the enemy, other actors and the terrain (ADRP 3-0). During unified land operations, Army Aviation conducts all missions and tasks in direct support, 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.

1-45. Sustaining operations differ from decisive and shaping operations because they focus on friendly versus enemy forces (ADRP 3-0). Army Aviation conducts reconnaissance, attack, screen, air movement, aeromedical evacuation, and mission command support when in support of a unit tasked with sustaining operations. Army Aviation units typically are not sustaining operations headquarters.

MAIN AND SUPPORTING EFFORTS

1-46. The main effort is a designated subordinate unit whose mission at a given point in time is most critical to overall mission success (ADRP 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.

1-47. The supporting effort is a designated subordinate unit with a mission that supports the success of the main effort. The supporting effort is typically 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 IV – OPERATIONAL ENVIRONMENT

1-48. To prevent conflicts, shape the security environment, and win in a complex world requires agile Army Aviation leaders and units with the training, leadership, and technologies necessary to overmatch the enemy. 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.

1-49. 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 prevent conflict and shape security environments while maintaining the capability to win by compelling enemies when required. Diverse enemies employ traditional, unconventional, and hybrid strategies to threaten United States security and vital interests. These threats emanate from the fielded forces of hostile nation states and from areas where state weakness allows non-state actors or adversary organizations to operate. Conflict often arises from disorder (the breakdown of peaceful and lawful behavior) and is accelerated by the speed of human interaction via social media. In conflicts involving nation states, disorder often follows the defeat of enemy forces or the collapse of a regime. Army forces are required to overcome the effects of this disorder through military operations that integrate unified action partners' capabilities. The ability to project power onto land from air, maritime, space, and cyberspace domains remains vital to joint operations to achieve political outcomes.

1-50. The character of future warfare continues to evolve based upon assigned missions; emerging technologies; the operational environment; and changes in an enemy's capabilities, objectives, and resolve. Army Aviation units and leaders must anticipate change while considering how continuities, such as those reflected in the principles of war, the seven core competencies of Army Aviation and tenants of unified land operations affect how Army Aviation must operate to accomplish future missions in the required operational environment (OE). 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 (ADRP 3-0). The OE can be expected to be complex where the environment is not only unknown, but unknowable and constantly changing. Army Aviation leaders and those employing Army Aviation must understand current and emerging threats, threat systems, friendly capabilities and limitations, as well as the operational variables and the mission variables that are present and emerging in the OE.

THREAT

1-51. A *threat* is a combination of actors, entities, or forces that have the capability and intent to do harm to United States forces, United States national interests or the homeland (ADRP 3-0). 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.

1-52. Within the OE, Army Aviation can expect to encounter a wide range of actors that may include: nation state enemy forces or adversaries, multinational friendly forces, intergovernmental agencies, non-governmental organizations, private organizations, private security organizations, media, criminal organizations, insurgents, violent extremists, tribes and ethnic groups. The intermixing of these actors and elements, coupled with the operational and mission variables create the complex operational environment.

1-53. 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, and/or criminal elements unified to achieve mutually benefitting effects (ADRP 3-0). The hybrid threat employs traditional, unconventional, and hybrid strategies to threaten Army Aviation operations in support of the combined arms team. The complexity and diversity of threats to Army Aviation are compounded by proliferation. Current and emerging technologies consisting of traditional and non-traditional threats are developed and evolve at a rapid pace. Traditional threats to aviation include; unguided projectiles, anti-aircraft artillery (AAA), man-portable air defense systems (MANPADS), surface to air missiles (SAMs), electronic warfare capabilities and armed aircraft. Non-traditional threats to aviation include; improvised explosive devices, cyber capabilities, anti-tank guided missiles (ATGMs), passive detection, and directed energy weapons. 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.

1-54. Hybrid threats seek to disrupt Army Aviation operations through terrain denial, air route interdiction, and intentional disruption of aviation areas of operation such as forward arming and refueling points (FARPs), LZs, PZs, engagement areas (EAs), tactical assembly areas (TAAs), and airfields. Hybrid threats also seek to exploit our ROE, weather and environmental limitations, multinational caveats and other influencing political factors, while simultaneously disrupting our use of precision navigation and information networks.

1-55. Employing information operations, cyber-attacks, deception, blending in with the population, terrorist activities, small unit decentralized operations, and/or larger massed conventional operations to attempt to achieve tactical overmatch, hybrid threats continuously adapt their TTP to achieve their desired effect at the tactical, operational, and strategic levels of war.

1-56. Current and emerging threat systems and capabilities that enemy forces may employ against Army Aviation include the following:

- **Unguided projectile weapons.** Weapon systems which follow an unguided ballistic trajectory to include small arms, rocket-propelled grenades, rockets, indirect fires and medium and heavy machine guns (12.7 to 14.5 millimeters) that can engage aviation systems at varying altitudes or against fixed Army Aviation locations like FARPs, airfields and TAAs.
- **AAA.** Weapon systems with the capability to fire exploding rounds of 20mm or greater which use visual, electro-optical (EO), infrared (IR), or radar for acquisition and ballistic solutions that can engage aviation systems up to high altitudes. AAA platforms include: dedicated wheeled and tracked AAA systems, stationary gun emplacements, non-standard (technical) vehicles, and maritime platforms.
- **MANPADS.** MANPADS are shoulder-fired, point-defense guided missile systems using the infrared or ultra-violet spectrum with active infrared, ultra-violet, laser, or optical guidance that can engage aviation systems. MANPADS can be employed dismounted, or mounted on ground vehicles, manned and UA, or maritime platforms and are generally limited to the operator's ability to visually acquire and track aircraft prior to initiating launch.
- **SAMs.** SAMs are short to long-range air defense systems using radar frequency (RF) and/or EO/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.

- **Antiradiation munitions (ARMs).** ARMs 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. ARMs may be employed from threat rotary-wing and FW aircraft, as well as ground and maritime surface platforms to engage aviation systems up to high altitudes.
- **Improvised explosive devices (IEDs).** IEDs are typically devices made from readily available materials which are low cost and are typically relatively simple to employ. Using non-standard methods of employing explosive devices (such as artillery rounds, home-made explosives, mines) with improvised triggering (such as IR, command wire, RF, pressure plate), IEDs can be employed to deny terrain, interdict ground and air routes, create mass casualties in dense population areas, or deny the use of or ambush friendly forces at point locations (such as LZs, buildings, observation positions). IEDs can engage aviation systems when operating at low altitudes.
- **ATGMs.** ATGMs are designed to defeat armored vehicles; however, they can also be employed against low, slow flying rotary-wing aircraft. ATGMs typically rely on visual or electro-optical acquisition of the target and are terminally guided by command wire, laser designation, passive EO/IR guidance, or active RF guidance.
- **Anti-helicopter mines.** Anti-helicopter mines are designed with specific triggering and terminal effects to engage slow flying or hovering helicopters with the same intended purpose as IEDs.
- **Passive detection.** These systems include image intensifiers/night vision goggles, IR systems, low-light cameras, and acoustic or seismic detectors. These systems provide a detection capability based on uncontrollable emissions and reflections of aircraft and some are readily available at low cost as commercial off the shelf systems or as developed and fielded by peer and near peer adversaries. The use of these capabilities significantly increases the potential for aircraft detection and the effectiveness of visual acquisition systems (such as MANPADS, small arms, heavy machine guns) during low light operations.
- **Meaconing, interference, jamming, and intrusion (MIJI).** 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.
- **Threat aviation.** Hybrid threat aviation capabilities may include military and civilian rotary-wing and FW aircraft and military or commercial off-the-shelf UAS. In addition to air-to-air capabilities, FW and rotary-wing threat systems may be employed to attack aviation assembly areas (AAs), LZ/PZs, and FARPs with aerial delivered ground fires to disrupt aviation maneuver and mission command across the AO. UAS pose additional unique threats to include reconnaissance and surveillance of Army Aviation ground and air operations, employment as improvised explosive devices against stationary and slow moving aircraft or ground operations, and hazards to flight in congested areas like airfields and high use air corridors.
- **Cyber threats.** Hybrid threats seek to disrupt mission command nodes and capabilities through offensive cyber-attacks against unprotected or poorly protected networks and systems.
- **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 the 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 RF transmitters. The employment of anti-sensor and anti-material systems will normally be for point defense of crucial equipment or facilities with employment from vehicles or fixed positions.

PHYSICAL ENVIRONMENT

1-57. Army Aviation must be able to fight under all conditions and anywhere in the world as a member of the combined arms team. To employ aviation effectively, understanding and being able to exploit the physical environment is essential throughout the operations process and during execution.

MOUNTAIN OPERATIONS

CAPABILITIES

1-58. 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 lines of communication. The mobility and lethality of attack and reconnaissance helicopters and UAS provides 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. Aeromedical evacuation capabilities in remote locations with limited or no road infrastructure increases 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 enhances the combined arms team's ability to perform mission command over extended distances and beyond line of sight (LOS).

LIMITATIONS

1-59. 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, personnel) and fuel carried, as well as adjustments to TTP which can impact station time, maneuver in the objective area, landing and pickup zone selection, and aircraft ranges. Additionally, trade-offs may require additional FARP locations and/or more aircraft to complete a mission. Canalizing terrain reduces line of sight 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 down drafts, coupled with high density altitude, low ceilings that obscure terrain, increased frequency of turbulence and reduced night time illumination due 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 increases 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 (non-deice equipped systems) and loss of visibility due to falling or blowing snow. Aviation operations above 10,000 feet mean sea level (MSL) 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 rotary-wing aircraft. Additionally, depending upon the height of terrain, UAS service ceilings may reduce the height above ground of 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.

Army Aviation Operations in Afghanistan

Following the 11 September 2001 attacks on the World Trade Center in New York City, United States (U.S.) and Coalition Forces began conducting combat operations in Afghanistan—one of the most difficult mountainous regions in the world. With peaks well over 18,000 feet, limited ground lines of communication (LOC), extreme weather conditions, and occupation by an adaptive and determined hybrid enemy, Army Aviation proved to be an indispensable capability for the combined arms team. From the early air assaults of a brigade combat team in the Shahi Kot Valley for Operation Anaconda to the final transition of combat operations to the Afghan Security Forces in 2015, Army Aviation units conducted tens of thousands of air assaults, air movements, attacks, reconnaissance operations, security operations, aeromedical evacuations, aerial mission command, and PR missions at an operational tempo over six times greater than normal peacetime operations. Lessons learned from Operation Enduring Freedom led to many innovations in Army Aviation for mountainous operations:

- Implementation of the high altitude mountain environmental training strategy, which improved individual and collective proficiency in mountainous operations to mitigate power and degraded visual environment limitations.
- Improved thermal sensors on aeromedical evacuation aircraft, enabling brown out landings and takeoffs as well as en route obstacle avoidance during low illumination.
- Fully-integrated glass cockpits in UH-60M and CH-47F aircraft, improved aircrew situational awareness, and dynamic retasking during missions.
- Aircrew supplemental oxygen systems, enabling operations above 10,000 MSL.
- Deployment of the first combat aviation brigade (CAB) with organic unmanned aircraft system (UAS) capability to execute manned-unmanned teaming (MUM-T), enabled reduced sensor to shooter times, improved survivability, increased depth of reconnaissance operations, and improved personnel identification to meet increasingly restrictive rules of engagement.
- Evolution of air-ground operations and habitual training at home station and combat training centers enabled small unit combined arms operations and Special Operations in a non-contiguous and dynamic operational environment, increasing the combined arms team's operational reach, agility, and freedom of action.
- Improved power margins, situational awareness, integrated MUM-T and engagement capabilities of the newly fielded AH-64E increased lethality to prevent the enemy from gaining tactical overmatch in small unit engagements.
- The fielding and employment of armed Grey Eagle UAS provided persistent reconnaissance and precision engagement capabilities, providing accurate and timely combat information and precision strike capability on high-value targets (HVTs)

Although these are just a few of the innovations over 14 years of operations in Afghanistan, the constant innovation, coupled with Army Aviation's inherent speed, flexibility, maneuverability, and lethality enabled the combined arms team to kill or capture thousands of Al Qaeda and Taliban fighters; evacuate and save tens of thousands of coalition and civilian lives; air move millions of tons of critical supplies; and move hundreds of thousands of personnel while maintaining the initiative over an elusive and determined hybrid enemy across an area of operation (AO) the size of Texas.

DESERT OPERATIONS

Capabilities

1-60. 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 rotary wing and UAS enables 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 lines of communications 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.

Limitations

1-61. 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 brownout during take offs and landings, especially in larger formations of aircraft which requires experienced crews and detailed planning in the selection of LZs and PZs. En route, during low light and low contrast conditions, 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.

Operation Desert Storm: Task Force Normandy

On 17 January 1991, Task Force (TF) Normandy, comprised of nine Army AH - 64A Apache attack helicopters from the 1st Battalion, 101st Aviation, 101st Airborne Division (Air Assault) conducted the first attacks of Operation Desert Storm (ODS). Their mission was to destroy two critical Iraqi early-warning radar installations in the western desert of Iraq to enable Coalition Air Forces to penetrate the integrated air defense system (IADS) undetected to attack high - value targets throughout the area of operations.

Due to reduced visibility caused by blowing sand and the low contrast of the desert terrain during the hours of darkness, TF Normandy was escorted by two special operations rotary-wing aircraft equipped with state-of-the-art global positioning systems and terrain following radars for precise navigation over the desert terrain. Under the cover of darkness, TF Normandy maneuvered over 150 kilometers at terrain flight, successfully evading radar detection. At the release point, the task force separated into two platoons for the final maneuver to their attack by fire (ABF) positions over watching the two Iraqi radar sites located approximately 35 miles apart. Upon arrival at the attack by fire positions, the two AH-64 platoons rapidly acquired their targets using their forward looking infrared (FLIR) systems, and on time, conducted a simultaneous attack with 27 Hellfire laser guided missiles against 18 targets on the two objectives. The attack successfully destroyed the two sites and battle damage assessment was completed in less than 5 minutes from the first missile away. TF Normandy then successfully conducted an egress back to their tactical assembly area in Saudi Arabia as over 100 Coalition aircraft penetrated undetected through the 20-mile wide corridor opened in the Iraqi IADS by the destruction of the two radar sites. This was the first wave of a punishing air campaign that preceded the ground campaign.

The operations conducted by TF Normandy, and subsequent Army Aviation operations during the ODS ground campaign, highlighted the unique advantages Army Aviation provides to the joint combined arms team in a desert environment. Conducting hundreds of attacks in the deep, close and security areas against enemy forces in and out of contact with Coalition ground forces, multiple air assaults to seize key terrain in the deep area to cutoff Iraqi reinforcements, continuous reconnaissance and security operations using both helicopters and unmanned aircraft systems (the Pioneer) to identify and locate Iraqi units in the defense to provide reaction time and maneuver space to Coalition ground forces, and hundreds of air movements, emergency resupply and aeromedical evacuation missions to sustain the tempo of operations over friendly extended lines of communication, Army Aviation enabled the air ground team to rapidly advance and defeat the Iraqi Army in less than 100 hours of close ground combat. Without Army Aviation the "Hail Mary" maneuver that won in the desert would not have been possible.

JUNGLE OPERATIONS

Capabilities

1-62. 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). Aeromedical evacuation 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 areas of operation. The employment of special patrol infiltration and exfiltration system (SPIES), fast-rope insertion and extraction system (FRIES), 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.

Limitations

1-63. Although the 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 typically characteristic of jungle areas of operation can result in greater predictability for the enemy to target aviation operations during actions on the objective. The use of pathfinders, detailed LZ/PZ reconnaissance, LZ preparatory fires, attack and reconnaissance helicopters and UAS providing reconnaissance, security and attacks in support of infiltration and extraction, and deception operations can be used to mitigate risk. The jungle canopy and dense vegetation also provides the enemy with greater cover and concealment reducing the standoff ranges and increasing the vulnerability of attack and reconnaissance aircraft which operate at lower altitudes and at closer ranges to detect and engage enemy forces. Jungle canopy and dense vegetation can also cause early detonation of munitions warheads, 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 thunder storms will 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 reduces sensor and weapon employment ranges. Low ceilings and unpredictable thunderstorms may also impact the employment of UAS.

Airmobile Operations in Vietnam

On 11 December 1961, the aircraft carrier United States Naval Service Card docked in Saigon with 32 United States (U.S.) Army H-21 helicopters and 400 personnel from the 57th and 8th Transportation Companies (Light Helicopter). Army Aviation had arrived in the jungles of Southeast Asia. The significance of this was two-fold: it was the first major symbol of U.S. combat power in Vietnam and the beginning of a new era of air mobility in the United States Army.

Just 12 days later, the 57th and 8th Transportation Companies were committed into the first airmobile combat action in Vietnam, "Operation Chopper". Over 1,000 Vietnamese paratroopers were airlifted into a suspected Viet Cong headquarters complex 10 miles west of Saigon. The paratroopers successfully seized the objective, destroyed the command center, and killed/captured a large number of enemy personnel with little resistance.

Following a number of subsequent successful air mobile operations, a captured Viet Cong (VC) instruction pamphlet lamented the advantages Army Aviation provided the Vietnamese Army (ARVN). "The advantages the enemy [ARVN] enjoys due to his heliborne strike tactics [enables] surprise strikes to be accomplished with landings accomplished deep in our rear areas with the capability to attack and withdraw. [Heliborne strikes] are an appropriate means of destroying our forces when we [VC] are weak." (Vietnam Studies, Air Mobility 1961-1971)

With the arrival of the 1st Cavalry Division (Airmobile) in 1965, the Army changed the way warfare was conducted. Launching an air assault into the midst of North Vietnam regiments during the Battle of Ia Orang, Army Aviation forced their defeat and retreat.

During the course of the Vietnam conflict, Army Aviation grew to over 10,000 rotary-wing and FW aircraft, and lessons learned drove significant innovation and radical changes for how the Army fights. The development of the turbine engine increased the power and efficiency of rotary-wing aircraft and enabled the development and fielding of dedicated assault helicopters, Scout helicopters, heavy lift helicopters, and attack helicopters across the force. These aircraft were formed into specialized aviation companies, battalions, brigades, and airmobile divisions.

With new advanced mission specific aircraft, specialized formations, and continuous adaptation of airmobile tactics, techniques, and procedures and doctrine, Army Aviation emerged as a true maneuver arm. The use of attack and assault helicopters to conduct air assaults and attacks in direct support of ground maneuver forces enabled U.S. and Coalition Forces to attack the enemy in depth and when most vulnerable. The heavy dependence on aeromedical evacuation operations enabled the combined arms team greater freedom of action and saved thousands of lives. The use of pathfinders and "Blues Platoons" to conduct landing zone and pickup zone reconnaissance, personnel recovery, and raids provided the combined arms team with light, mobile forces with increased agility over the enemy. This enabled them to rapidly seize opportunities to maintain the initiative. Air Cavalry operations using "hunter/killer" teams of OH-6s and AH-1s provided constant pressure on the enemy, enabling the combined arms team to commit forces at the time and place of choice to deny the enemy freedom of action. The prolific use of Army rotary-wing and FW aircraft to conduct routine and emergency resupply of isolated and decentralized combat outposts and fire bases provided an economy of force to enable the combined arms team to maintain enemy pressure and engagement with the local population over large expanses of "no-go" terrain.

MARITIME OPERATIONS

Capabilities

1-64. 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 sea basing as a method of projecting force into the land domain or by using sea basing or land basing to project combat

power in direct support of joint forces in the maritime domain. As a force projection platform, sea basing 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 sea basing to conduct air assaults, air movement, attacks, or aeromedical evacuation from beyond the horizon into the land domain allows the combined arms team to overcome anti-access and area denial (A2AD) measures prior to seizing and establishing a lodgment. Based on the depth of the A2AD measures, sea basing 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 sea basing 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 A2AD (missile, gun, and radar) capabilities in the littorals. This enables the joint or multinational force commander to maintain open sea lines of communication, 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).

Limitations

1-65. 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 sea basing 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 teams' ability to mass and maintain adequate aviation tempo in support of operations over land. If A2AD measures are robust, stand-off of sea basing capabilities will require longer routes, reducing station time in the objective unless additional FARPAs 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.

Operation Uphold Democracy (Sea-Basing)

In September 1994, one of the events that demonstrated the viability of using sea-basing to project combat power from the maritime domain into the land domain was the use of Army helicopters operating from a United States Navy aircraft carrier in Haiti. In 1994, the 10th Mountain Division was given the mission under an interagency plan of intervening in the deteriorating situation there. What was needed was a large force to be landed in Haiti expeditiously, after which they would quickly take control of the capital. Uncertain until the last moment as to whether the 10th Mountain would need to conduct a forced or permissive entry, the division had to prepare for both contingencies: an air assault on Port-au-Prince, the Haitian capital, or a peaceful, but swift, air movement to key objectives.

In order to conduct a joint maritime operation that had never before been attempted, the 10th Mountain Division established immediate liaison with the Navy, conducted a ground school focused on aircraft carrier operations, and trained its aviators on both day and night deck landing operations. The 10th Aviation Brigade had the outline of a modern carrier painted on the runway at Fort Drum so the pilots could practice traffic patterns, takeoffs, and landings. Training included the use of night vision goggles. The Navy sent a team of instructor pilots to assist with the ground school. The ground school was followed by live deck landing training aboard the United States Service (USS) Theodore Roosevelt off the coast of Virginia.

The 10th Aviation Brigade flew over 50 aircraft off the USS Eisenhower carrier during the Haiti operation. With precision, more than 2,200 troops and over 200 cargo sling loads were safely air moved ashore to the Port-au-Prince International Airfield and adjacent landing zones. The use of the USS Eisenhower as an Army helicopter and troop carrier was the first operational test of the concept of adaptive joint force packaging, which chairman of the Joint Chiefs of Staff, General Colin Powell, had directed Commander in Chief United States Atlantic Command, Admiral Paul David Miller, to develop. At the same time Army Rangers, Special Operations Forces and 160th Special Operations Aviation Regiment successfully operated off the carrier USS America.

After coming ashore, the 10th Aviation Brigade flew more than 4,000 hours in support of U.S. and multinational forces. Daily demonstrating its rapid response and mobile capabilities, the brigade was instrumental in creating the safe and secure environment that allowed the return of President Jean-Bertrand Aristide on October 15, 1994. It was 10th Aviation Brigade helicopters that delivered the elected president to the Port-au-Prince Palace grounds after three years in exile. General Powell was correct: military planners had combined two specialized tools—one Army, one Navy—to accomplish the mission using the concept of sea-basing.

Operation Earnest Will (Maritime Protection)

In 1986 Iran began using naval mines and Silkworm missiles to menace ships in the Persian Gulf. By late that year, the situation became critical for Kuwait, the United States (U.S.), and many other nations. Ships belonging to key oil-carrying nations refused to call on Kuwait, and Kuwait asked to register eleven of its national oil company's tankers under the U.S. flag to make the ships eligible for U.S. Navy protection. On 10 March, 1987 President Reagan agreed to allow the Kuwaiti reflagging.

After reflagging, Central Command (CENTCOM) developed an escort mission, designated Operation Earnest Will, between the Straits of Hormuz and Kuwait's oil terminals. A five-ship naval force designated the Middle East Force (MEF), provided naval escort. However, the threats from mines and small boats required capabilities beyond minesweeping. To deter the emplacement of anti-shipping mines and small boat attacks on convoys, the MEF needed the capability to conduct aerial reconnaissance and small boat interdiction in the northern Persian Gulf. For these missions, CENTCOM initially deployed the U.S. Army's 160th Special Operations Aviation Group (Airborne) along with Navy SEALs and then deployed Task Force 118, a conventional aviation squadron specially equipped with the new armed OH-58D to relieve the 160th.

During Operation Earnest Will, Army Aviation conducted hundreds of reconnaissance, security, and attack missions from U.S. Navy frigates, destroyers and specially modified commercial barges. During these missions, a number of engagements occurred resulting in the destruction or capture of a number of Iranian small boats and improvised mine laying vessels. Operating closely with U.S. Navy Sea Hawk helicopters, Army Aviation enabled the U.S. Navy freedom of action, and reaction time and maneuver space to enable continued free flow of the world's oil supply.

URBAN OPERATIONS

Capabilities

1-66. Urban areas are primarily the epicenters of human activity and will 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 large urban complexes and megacities. 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 rotary-wing aircraft and UAS along key lines of communication, named areas of interest (NAIs), 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-line of sight communications, Army Aviation can provide enhanced mission command capabilities to the combined arms team through the use of UAS communication relay package or Army airborne command and control system aircraft to overcome the limitations of ground maneuver line of sight communications in urban terrain.

Limitations

1-67. 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, roof tops, 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-FLIR 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 rotary-wing 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 like soft surfaces which 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. Detailed technical reconnaissance of landing areas and obstacles, use of UAS conducting persistent reconnaissance, maximizing the use of precision munitions, operating during the hours of darkness at higher altitudes, conducting detailed rehearsals of actions on the objective, use of FRIES and SPIES 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 measures to consider for mitigating risk in urban areas.

Army Aviation Urban Operations

From Vietnam to operations in Iraq and Afghanistan, Army Aviation has successfully conducted combat operations in a wide range of urban environments. In relatively modern cities like Baghdad and Saigon, to primitive urban complexes like Mogadishu, Army Aviation adapted and provided the combined arms team with enhanced mobility, protection, situational awareness, agility, and lethality.

Each of these urban environments was unique, complex, and dynamic. The conditions of the operational environment (OE) were frequently changing, often driven by complex human interaction and ever-changing operational and mission variables.

Baghdad provides one of the best examples of this urban complexity. With a population of approximately 6 million people, divided and intermingled along ethnic and sectarian lines, the human factors were dynamic and directly affected Army Aviation operations in time and space. The geographic threat areas in the city ebbed and flowed based on friendly and enemy actions on the ground and other influencing political factors.

An example of this is Sadr City, a squalid Shiite sub-section of northeast Baghdad. During the timeframe immediately following the initial invasion, one of the safest areas for Army Aviation to operate was Sadr City. Following the Shiite uprising in 2004, this area quickly became the most dangerous for aviation operations due to the change in attitude of the heavily armed Shiite Militias toward U. S. forces. In pitched battles with Shiite militias, Army Aviation conducted numerous close combat attack, reconnaissance, security, and aeromedical evacuation missions, providing the combined arms team with early warning, precision fires, enhanced situational awareness, and protection.

In addition to the dynamic human factors, the physical, technical, and environmental challenges impacted every mission. High tension power lines in the city; roof top antennas on every structure; multiple 1,000-foot unlit radio towers; high intensity lighting during night operations; the prolific use of improvised explosive device jammers that impacted communications; reduced visibility due to industrial smoke; significant debris and obstacles in limited landing zones; and friendly reconnaissance balloons on cables well above the coordinating altitude resulted in Baghdad proving to be a challenging maze of hazards to aviation maneuver. This was compounded by a high density of contractor, coalition, joint, and commercial aircraft operating in the city and from the international airport.

Through all of these challenges, Army Aviation successfully conducted tens of thousands of reconnaissance, attack, air assault, air movement, aeromedical evacuation, and aerial mission command missions in and around the city in support of the combined arms team. Although the lessons were many, the agility and adaptability of aviation units, shared understanding and trust with ground maneuver units, and constant vigilance by the aircrews enabled Army Aviation to successfully operate in one of the most complex urban environments in the world.

OTHER ENVIRONMENTS

Pandemic Zones

1-68. 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 mission command 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 that are flying in personal protective equipment.

Post-Disaster Zones

1-69. 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 that can 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.

Chemical, Biological, Radiological, and Nuclear Conditions

1-70. Operations in chemical, biological, radiological, and nuclear (CBRN) 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 CBRN environment include: 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 or while conducting night operations using night vision devices; the necessity to segregate or isolate contaminated aircraft and the impact on maintaining this equipment; and the ability to spot decontaminate aircraft and equipment to reduce the hazard of contamination transfer.

CONCLUSION

1-71. To prevent conflict, shape the security environment, and win in a complex world, leaders employing Army Aviation must understand the complexity of the operational environment. Hybrid threats with a full range of capabilities and fighting in highly complex and challenging environments with dynamic and ever changing mission and operational variables will dominate the future security environment. Understanding the capabilities and limitations of future threats and how to most effectively employ aviation in all physical environments against the range of possible threats is essential for the combined arms team to execute successful decisive action across the range of military operations and the conflict continuum.

Chapter 2

Army Aviation Organizations and Mission Command

SECTION I – OVERVIEW

2-1. Army Aviation formations are organized, trained and equipped to support the combined arms team at the tactical and operational levels. 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. The brigade-level aviation maneuver organizations include—

- Combat aviation brigades (CABs).
- Expeditionary combat aviation brigades (ECABs).
- Theater aviation brigade (assault) (TAB-A).
- Theater aviation brigade (general support) (TAB-GS).

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—

- 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—

- Attack reconnaissance squadron (ARS).
- Attack reconnaissance battalion (ARB).
- 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 MTOE organizations are multi-functional, given the complexity of the operational environment (OE) and METT-TC 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

COMBAT AVIATION BRIGADE

PURPOSE

2-5. 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 personnel recovery (PR); and enable mission command in support of the combined arms team. The CAB is organized to synchronize operations of multiple aviation squadrons/battalions or ASTF/ABTF, ground maneuver battalions, or companies and joint aviation units.

ORGANIZATION

2-6. The MTOE CAB consists of a headquarters and headquarters company (HHC), ARS, ARB, AHB, GSAB, and an ASB. Figure 2-1 provides the organization of the standardized CAB.

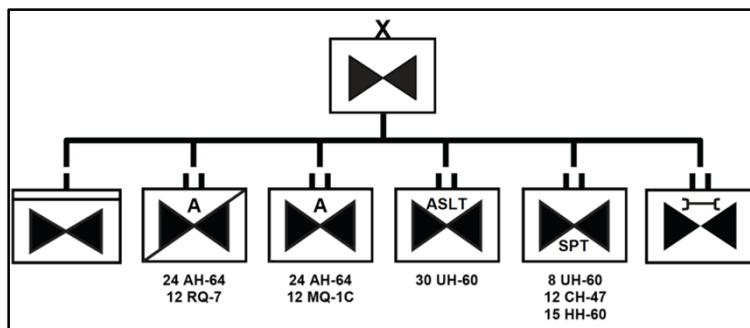


Figure 2-1. Combat aviation brigade

CAPABILITIES

2-7. The CAB 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 in DSCA. The CAB is designed to split into four aviation maneuver battalions, or battalion/squadron task forces, and one aviation support battalion, based on METT-TC. The CAB can receive up to two additional aviation battalions/squadrons or task forces without staff augmentation but will require additional maintenance personnel and equipment.

2-8. The CAB performs the following mission tasks—

- Movement to contact.
- Attack.
- Reconnaissance.
- Security.
- Air assault.
- Aerial mission command.
- Air movement.
- Aeromedical evacuation.
- CASEVAC).
- Personnel recovery (PR).

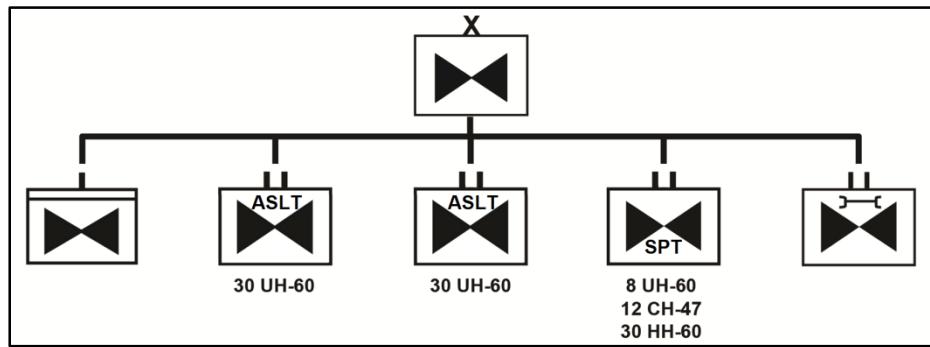
EXPEDITIONARY COMBAT AVIATION BRIGADE

PURPOSE

2-9. The core competencies of the MTOE ECAB are to air assault maneuver forces; position personnel, supplies and equipment; evacuate casualties and conduct PR; and enable mission command in support of the combined arms team. When task organized with an ARB/ARS, ECABs also provide accurate and timely information collection; provide reaction time and maneuver space; and destroy, defeat, disrupt, or delay enemy forces.

ORGANIZATION

2-10. The ECAB consists of a HHC, two AHBs, a GSAB, and an ASB. Figure 2-2, page 2-3, provides the organization structure of the ECAB.

**Figure 2–2. Expeditionary combat aviation brigade**

CAPABILITIES

2-11. 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 in defense support of civilian authorities (DSCA). The ECAB is designed to split into three maneuver battalions, or battalion task forces, and one aviation support battalion, based on mission variables. The ECAB can receive up to two additional ASTFs/ABTFs without staff augmentation but will require additional maintenance personnel and equipment. The ECAB performs the following tasks:

- Air assault.
- Aerial mission command.
- Air movement.
- Aeromedical evacuation.
- CASEVAC.
- PR.
- Movement to contact (when task organized).
- Attack (when task organized).
- Reconnaissance (when task organized).
- Security (when task organized).

THEATER AVIATION BRIGADE

PURPOSE

2-12. The MTOE TAB-GS provides accurate and timely reconnaissance in permissive environments; positions personnel, supplies and equipment; evacuates casualties; conducts search and rescue; and enables mission command in DSCA operations.

2-13. The MTOE 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 mission command.

ORGANIZATION

2-14. The TAB-GS includes a HHC, six SSBs and a non-standard GSAB. The TAB-A includes a HHC, four GSABs, and one ASB. Figure 2-3 and figure 2-4, page 2-4, provide the organizational structure for the TAB-GS and TAB-A.

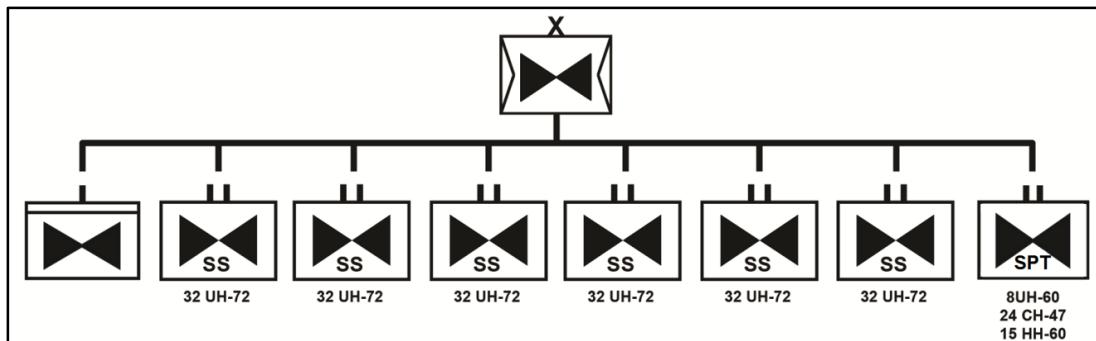


Figure 2-3. Theater aviation brigade (general support)

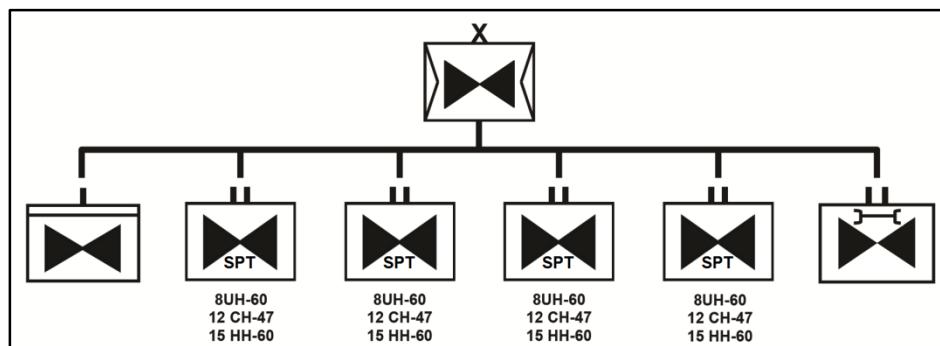


Figure 2-4. Theater aviation brigade (assault)

CAPABILITIES

2-15. Although the TAB-GS headquarters with the GSAB and 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.

2-16. The TAB-GS conducts the following tasks:

- Permissive zone, route, and area reconnaissance.
- Air movement.
- Aeromedical evacuation.
- Search and rescue.
- Aerial mission command.

2-17. 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 mission command, staff and maintenance augmentation.

2-18. The TAB-A conducts the following tasks:

- Air assault.
- Air movement.
- Aeromedical evacuation.
- CASEVAC.
- Aerial mission command.
- Movement to contact (when task organized).
- Attack (when task organized).
- Zone, area, and route reconnaissance (when task organized).
- Screen operations (when task organized).

- PR (when task organized).

SECTION III – ENABLING AVIATION GROUPS

THEATER AIRFIELD OPERATIONS GROUP

PURPOSE

2-19. The TAOG provides airfield and air traffic services (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.

ORGANIZATION

2-20. The TAOG consists of a HHC and up to three AOBs. Figure 2-5 provides the organization structure of a TAOG.

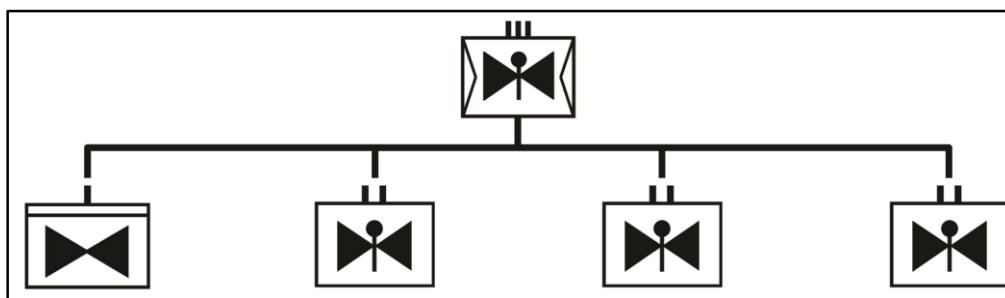


Figure 2–5. Theater airfield operations group

CAPABILITIES

2-21. 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.

2-22. 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 of debarkation, and operations at aerial ports of debarkation.

2-23. 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 special use 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

PURPOSE

2-24. The TASMG is resourced to provide aviation sustainment maintenance and limited depot sustainment support at the theater level. The TASMG performs repairs and returns components/end-items to their supported units, or to the supply system through the National Maintenance Program.

ORGANIZATION

2-25. The TASMG consists of a headquarters and headquarters detachment (HHD), an aviation support company (ASC), and a group support company. Figure 2-6 provides the organizational structure of a TASMG.

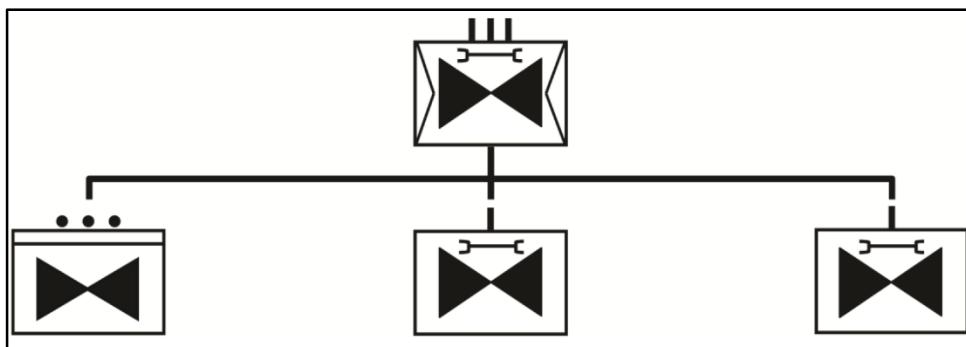


Figure 2-6. Theater aviation sustainment maintenance group

CAPABILITIES

2-26. When deployed, the TASMG is attached to the joint force sustainment HQ 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 TASMG 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 TASMG assists deploying aviation operational units in port operations.

SECTION IV – AVIATION BATTALIONS AND SQUADRONS

ATTACK RECONNAISSANCE SQUADRON

PURPOSE

2-27. As an element of the CAB, the ARS 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 ARS is fully capable of conducting attacks, the integration of RQ-7B UAS at the troop level make the ARS the best formation for conducting reconnaissance, security and movement to contact as primary missions, with attack operations as a secondary mission.

ORGANIZATION

2-28. The ARS consists of a headquarters and headquarters troop (HHT), three attack reconnaissance troops (ARTs) equipped with eight AH-64s and four RQ-7Bs each, an aviation maintenance troop, and a forward support troop (FST). Figure 2-7, page 2-7, provides the organization structure of an ARS.

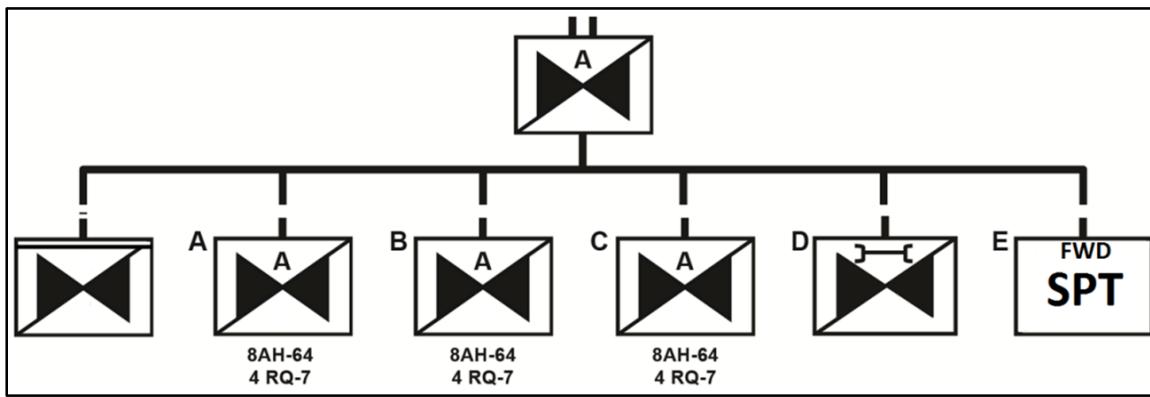


Figure 2-7. Attack reconnaissance squadron

CAPABILITIES

2-29. The ARS 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 RECONNAISSANCE BATTALION

PURPOSE

2-30. As an element of the CAB, the ARB 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 ARB is fully capable of conducting reconnaissance, security and movement to contact operations, it has less overall reconnaissance capability than the ARS due to the lack of organic UAS at the company level unless the organic Gray Eagle company is released partially or in total from division control to conduct dedicated MUM-T in support of the ARB.

2-31. The ARB consists of an HHC, 3 attack reconnaissance companies (ARCs) equipped with 8 AH-64s each, a Gray Eagle company equipped with 12 MQ-1Cs (typically a division asset), an aviation maintenance company, and a FSC (figure 2-8).

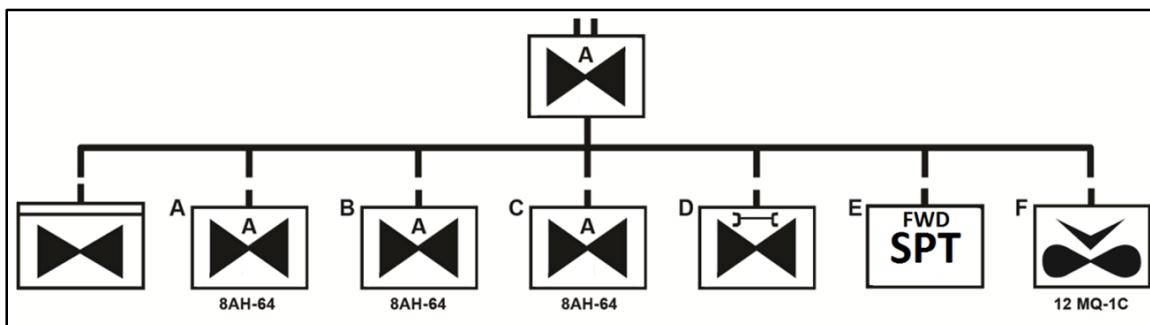


Figure 2-8. Attack reconnaissance battalion

CAPABILITIES (ARB AND GRAY EAGLE COMPANY)

2-32. The ARB 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).

2-33. The Gray Eagle Company is a subordinate element of the ARB but is typically retained as a division asset for mission tasking. When operating as a division asset, the Gray Eagle Company conducts the following tasks:

- Surveillance.
- Zone, route and area reconnaissance.
- Attack.
- Battle damage assessment.
- Mission command support.

2-34. When tasked by the division to support the CAB, the Gray Eagle company (or tasked subordinate elements) maneuvers independently or with AH-64s from the ARB or ARS using MUM-T. MUM-T significantly enhances the survivability, the depth, breadth and persistence of the reconnaissance effort and increases the lethality by locating and attacking enemy forces with autonomous or remote fires in depth. When supporting the CAB, the Gray Eagle company or subordinate elements conduct the following tasks:

- Zone, route and area reconnaissance.
- Attack.
- Battle damage assessment.
- Mission command support.

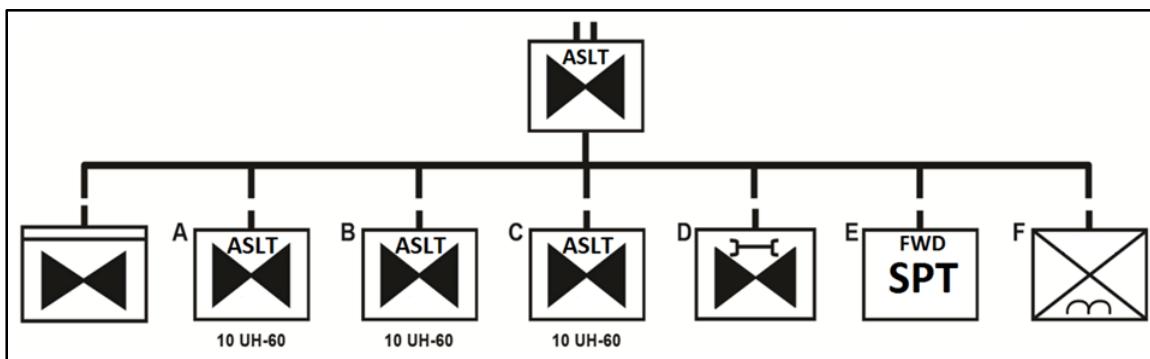
ASSAULT HELICOPTER BATTALION

PURPOSE

2-35. As a subordinate element of the CAB and ECAB, the AHB air assaults maneuver forces; positions personnel, supplies and equipment; CASEVAC; conducts PR; and enables mission command in support of the combined arms team. A pathfinder company is assigned to AHBs in three of the CABs (101st, 10th and 82nd CABs) to support PR, airborne, and air assault operations.

ORGANIZATION

2-36. The AHB consists of an HHC, three assault helicopter companies of 10 UH-60s each, an aviation maintenance company, and a FSC. Additionally, the AHBs of the 10th, 82nd, and 101st CABs have an organic Pathfinder Company. Figure 2-9, page 2-9, provides the organizational structure of the AHB with the Pathfinder Company.

**Figure 2–9. Assault helicopter battalion**

CAPABILITIES

2-37. The AHB conducts the following tasks:

- Air assaults.
- Air movements.
- CASEVAC.
- Aerial mission command.
- Personnel recovery.
- Reconnaissance.

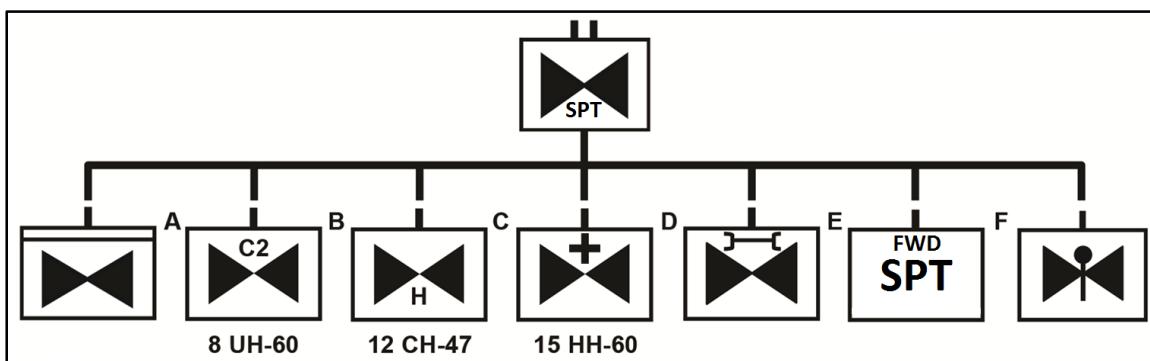
GENERAL SUPPORT AVIATION BATTALION

PURPOSE

2-38. 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 mission command in support of the combined arms team.

ORGANIZATION

2-39. The GSAB in the CAB and TAB-A consists of an HHC, a command aviation company of 8 UH-60s, a heavy lift company (HLC) of 12 CH-47s, an aeromedical evacuation company of 15 HH-60s, an aviation maintenance company, a FSC, and an ATS company. Figure 2-10 provides the organizational structure for the CAB and TAB-A GSAB.

**Figure 2–10. General support aviation battalion (CAB)**

2-40. The GSAB in the ECAB consists of an HHC, a command aviation company (CAC) of 8 UH-60s, an HLC of 12 CH-47s, two aeromedical evacuation companies of 15 HH-60s each, an aviation maintenance

company, a FSC, and an ATS company. Figure 2-11 provides the organizational structure for the ECAB GSAB.

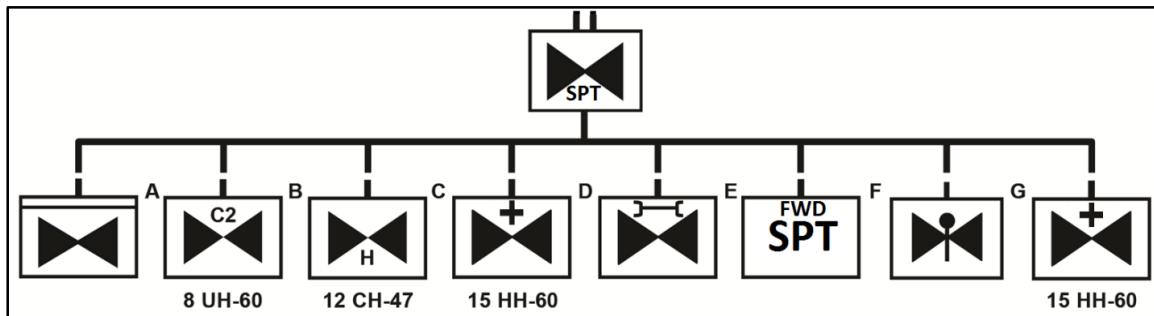


Figure 2-11. General support aviation battalion (ECAB)

2-41. The GSAB in the TAB-GS consists of a HHC, a CAC of 8 UH-60s, two HLCs with 12 CH-47s each, an aeromedical evacuation company of 15 HH-60s, an aviation maintenance company, and a FSC. Figure 2-12, page 2-10, provides the organizational structure for the TAB-GS GSAB.

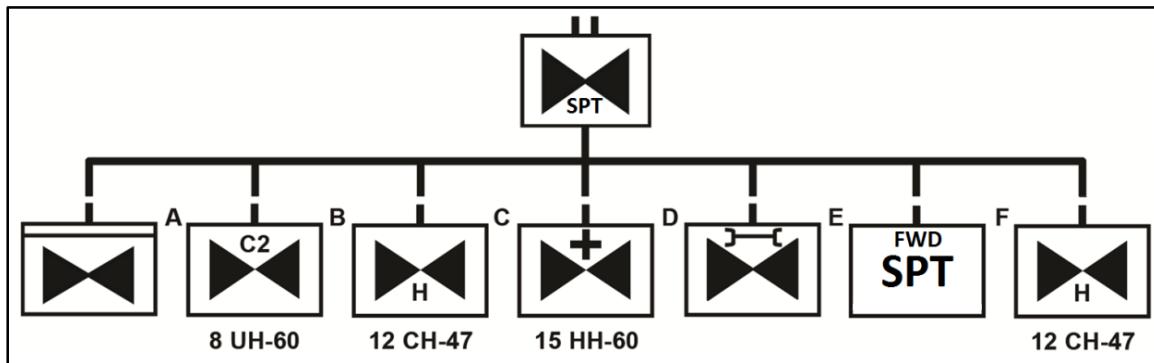


Figure 2-12. General support aviation battalion (TAB-GS)

CAPABILITIES

2-42. The GSAB conducts the following tasks:

- Air movement.
- Aerial FARP support.
- Air assaults.
- PR.
- Aerial mission command.
- Aeromedical evacuation.
- CASEVAC.
- ATS.

AVIATION SUPPORT BATTALION

PURPOSE

2-43. 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.

ORGANIZATION

2-44. The ASB consists of a HHC, a distribution company, an aviation support company, and a network support (NS) company. Figure 2-13 provides the organizational structure for the ASB.

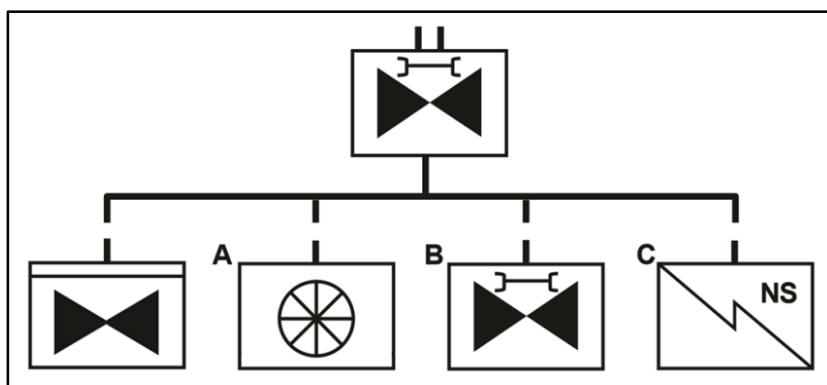


Figure 2-13. Aviation support battalion

CAPABILITIES

2-45. The ASB performs the following tasks:

- Ground vehicle and aviation maintenance and recovery operations.
- Signal and NS to the CAB for mission command.
- Aviation and ground sustainment operations for the aviation brigade.
- Distribution management operations within the aviation brigade.
- Role 1 Army health service support for the aviation brigade.

SECURITY AND SUPPORT BATTALION

2-46. 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 of personnel, supplies, and equipment; evacuation of casualties; search and rescue; and enabling mission command in DSCA operations.

ORGANIZATION

2-47. The SSB consists of a HHC, three security and support companies of eight UH-72s each for reconnaissance and GS, and an aeromedical evacuation company of eight UH-72s. Figure 2-14 provides the organizational structure of a SSB.

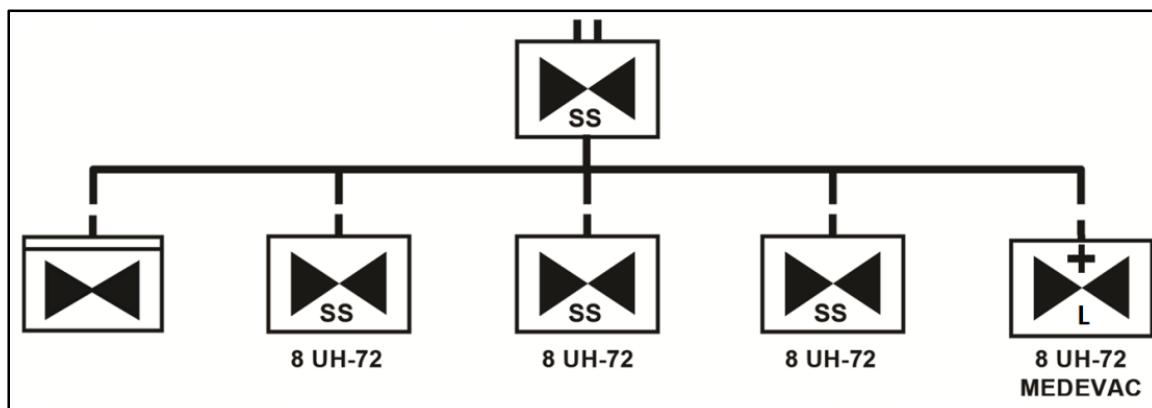


Figure 2-14. Security and support battalion

CAPABILITIES

2-48. The SSB is designed to be deployed and employed in permissive environments and is organized using a modular design. The SSB is capable of operating as a separate battalion, an ABTF, or task organize into company or platoon elements to support assigned missions. The SSB conducts the following tasks:

- Zone, route and area reconnaissance (permissive environments).
- Air movement.
- Aerial mission command.
- Aeromedical evacuation.
- CASEVAC.
- Civil search and rescue operations.

AIRFIELD OPERATIONS BATTALION

PURPOSE

2-49. The AOB provides airfield management including airfield operations, flight dispatch services, and air traffic control (ATC).

ORGANIZATION

2-50. The AOB consists of a HHC, an airfield management element (AME), and an ATS company. Figure 2-15 provides the organizational structure of an AOB.

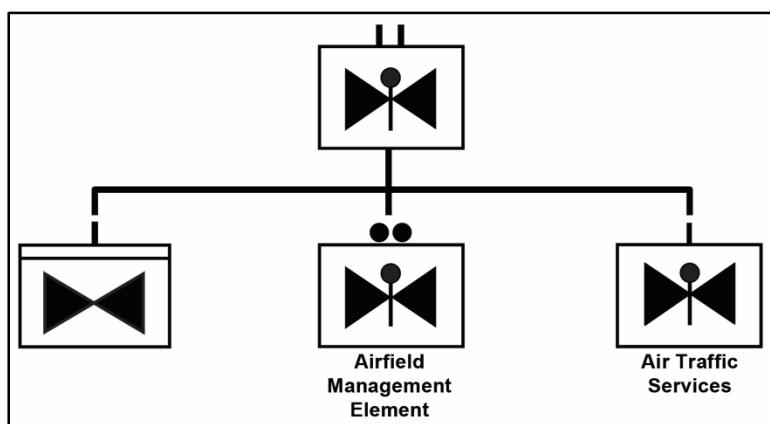


Figure 2-15. Airfield operations battalion

CAPABILITIES

2-51. The AOB is capable of deploying to expeditionary or mature theaters to conduct airfield management and ATS.

2-52. The AOB may relieve CAB ATS companies in place to allow CAs to reposition forward during offensive operations or during sustained operations when additional airfields are required in the theater. The AOB performs the following missions:

- ATS.
- Airfield management.

THEATER FW BATTALION

PURPOSE

2-53. The theater FW battalion provides long-range air movement for inter-theater, intra-theater, and garrison operations.

ORGANIZATION

2-54. 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 United States Army Reserve (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 2-16).

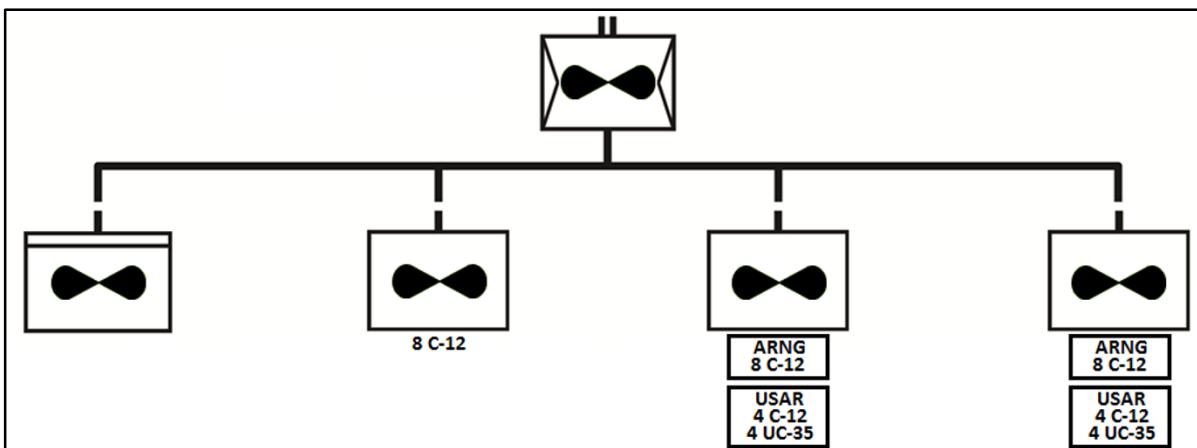


Figure 2-16. Theater FW battalion

CAPABILITIES

2-55. 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 mission command support.
- CASEVAC.

SECTION V – AVIATION SQUADRON/BATTALION TASK FORCES

2-56. Army Aviation is a modular force that typically task organizes as mission tailored ASTF/ABTF to conduct operations. This task organization may be operationally controlled (OPCON) or attached to cover the length of an operation or deployment.

2-57. 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 HHT/HHC with its organic aviation maintenance troop/company (typically augmented) and FST/FSC, 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 aeromedical evacuation assets.

2-58. An ABTF, for example, that supports an infantry brigade combat team (BCT) conducting frequent air assaults requires more assault and heavy lift aircraft. An ASTF/ABTF that supports an armor BCT tasked with a covering force mission typically requires more attack reconnaissance 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.

2-59. 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.

2-60. Figure 2-17 is an example of an ASTF that is built on an ARS HHT, aviation maintenance troop (augmented) and FST with two organic ARTs and an attached AHC and forward support medical evacuation platoon. This depicted ASTF is capable of conducting sustained reconnaissance, security, movement to contact, aeromedical evacuation and attack operations, as well as, air movement and up to platoon level air assaults.

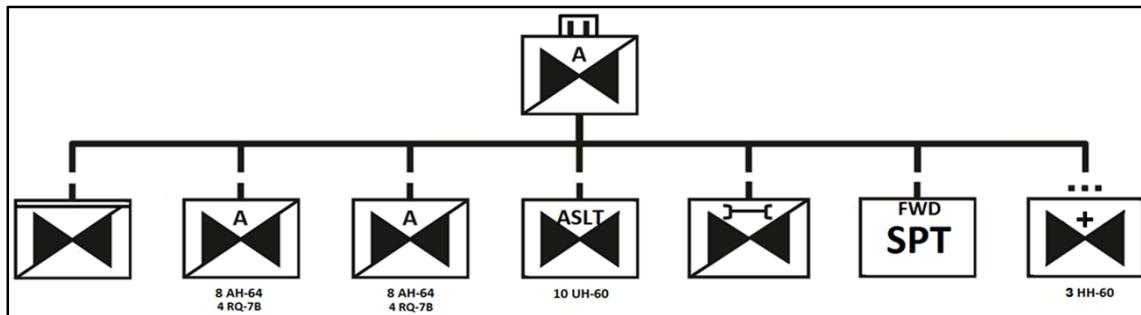


Figure 2-17. Cavalry aviation squadron task force

2-61. Figure 2-18 is one example of the composition of an attack-heavy ABTF. The foundation of the ABTF is built on an ARB HHC, aviation maintenance company (augmented) and FSC, with two organic ARCs and a Gray Eagle platoon, and an attached AHC and forward support medical evacuation platoon. The depicted ABTF is capable of conducting attack, movement to contact, aeromedical evacuation, reconnaissance, and security operations, as well as air movement and up to platoon level air assaults.

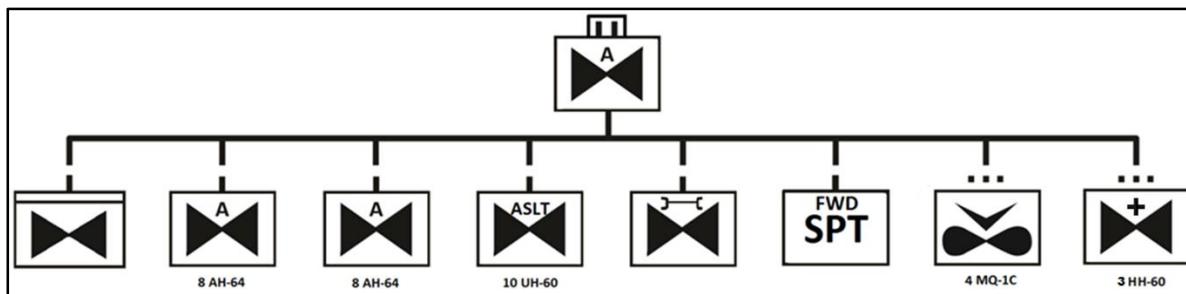


Figure 2-18. Attack aviation battalion task force

2-62. Figure 2-19, page 2-15, is an example of an assault-heavy ABTF. The foundation of the ABTF is built on an AHB HHC, aviation maintenance company (augmented) and FSC, two organic AHCs, an attached ARC, Gray Eagle platoon, heavy lift platoon and a forward support medical evacuation platoon. The depicted ABTF is capable of conducting greater than a company-sized air assault, air movement, aeromedical evacuation, as well as limited duration reconnaissance, security and attack operations.

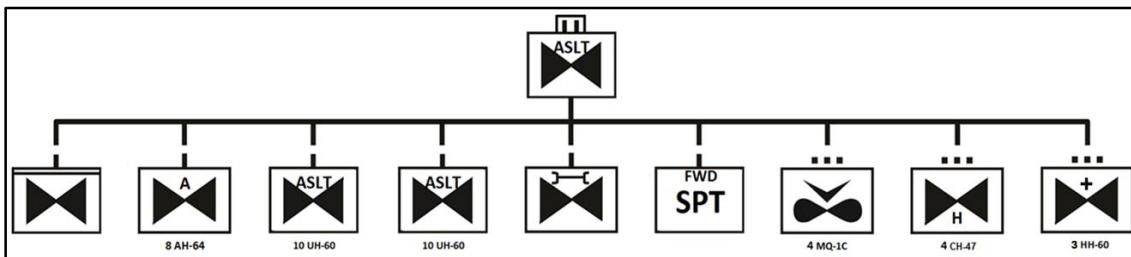


Figure 2-19. Assault aviation battalion task force

SECTION VI – COMMAND AND SUPPORT RELATIONSHIPS

2-63. 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. Command and support relationships are fundamental to effective air-ground operations. 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 detachments is a company sized element with the exception of aeromedical evacuation assets 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 and to another.

COMMAND RELATIONSHIPS

2-64. Command relationships for the ASTF/ABTF and subordinate units may be assigned, attached, or placed under OPCON or TACON. The ABTF is only assigned OPCON or TACON to the combined arms team when the ASTF/ABTF is to be used for a specific mission, and the effective time of the relationship is short. Table 2-1, page 2-16, depicts command relationships.

ASSIGNED

2-65. 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.

ATTACHED

2-66. 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 that is attached to a sister aviation battalion to form an ASTF/ABTF.

OPERATIONAL CONTROL

2-67. OPCON is a command relationship that gives a commander the authority over subordinate forces to organize and employ the 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 size 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

2-68. 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 missions or assigned tasks. The CAB frequently employs TACON during stability operations for short duration operations requiring a high degree of air-ground operations, such as cordon and search or convoy security.

Table 2-1. Command relationships

If relationship is:	Then inherent responsibilities:							
	Have command relationship with:	May be task-organized by: ¹	Unless modified, ADCON responsibility goes through:	Are assigned position or AO by:	Provide liaison to:	Establish/maintain communications with:	Have priorities established by:	Can impose on gaining unit further command or support relationship of:
Assigned	Combatant command	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 gaining unit	Unit to which attached	Gaining unit	Attached; OPCON; TACON; GS; GSR; R; DS
OPCON	Gaining unit	Parent unit and gaining unit; gaining unit may pass OPCON to lower HQ ¹	Parent unit	Gaining unit	As required by gaining unit	As required by gaining unit and parent unit	Gaining unit	OPCON; TACON; GS; GSR; R; DS
TACON	Gaining unit	Parent unit	Parent unit	Gaining unit	As required by gaining unit	As required by gaining unit and parent unit	Gaining unit	TACON; GS GSR; R; DS

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

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

SUPPORT RELATIONSHIPS

2-69. Support relationships are GS and direct support (DS). 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 aeromedical evacuation assets when area coverage of multiple units and AOs is required. An ABTF is traditionally employed as DS to a BCT or higher headquarters. Table 2-2, page 2-17, depicts support relationships.

DIRECT SUPPORT

2-70. 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 support 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 BCT or higher headquarters. This enables the CAB to effectively sustain the ABTF and maintain the appropriate levels of safety, standardization and mission oversight.

GENERAL SUPPORT

2-71. GS is the 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:	<i>Then inherent responsibilities:</i>							
	Have command relationship with:	May be task-organized by:	Receives sustain-ment from:	Are assigned position or an area of operations by:	Provide liaison to:	Establish/maintain communications with:	Have priorities established by:	Can impose on gaining unit further command or support relation-ship by:
Direct support¹	Parent unit	Parent unit	Parent unit	Supported unit	Supported unit	Parent unit; supported unit	Supported unit	See note ¹
General support	Parent unit	Parent unit	Parent unit	Parent unit	As required by parent unit	As required by parent unit	Parent unit	Not applicable

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.

SECTION VII – AVIATION COMMAND POSTS

MAIN COMMAND POST

2-72. The main command post (CP) provides the aviation maneuver commander a central location to exercise mission command. The main CP contains the necessary enablers to execute the operations process and to control current operations.

2-73. The main CP is the primary mission command 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. The commander operates from the main CP when not operating from the tactical CP, command vehicle, or an aircraft. 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 PED 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.

TACTICAL COMMAND POST

2-74. The tactical CP 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 mission command of current operations and includes, at a minimum, operations, fires and intelligence staff representatives. 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.

2-75. The tactical CP is fully mobile and small in size to facilitate security and rapid and frequent displacement. Its organizational layout, personnel, and equipment is mission variable dependent and should be detailed in the unit standing operating procedures (SOPs).

2-76. While the S-3 section is responsible for the tactical CP, the tactical CP is normally comprised of the command group, personnel from the intelligence staff officer (S-2) and operations staff officer (S-3), and the fires cell. Augmentation may include the standardization officer, aviation mission survivability officer, aviation safety officer, air liaison officer, and the personnel staff officer (S-1) and/or logistics staff officer (S-4) (if the main CP is displacing).

SECTION VIII – AVIATION SPECIAL STAFF

2-77. Aviation organizations have a variety of unique special staff to assist the commander and other staff members in performing their functional responsibilities. The aviation specific staff officers of note are the aviation safety officer, the standardization officer, the aviation mission survivability officer, the master gunner, the aviation materiel officer, the flight surgeon, and the medical operations officer.

AVIATION SAFETY OFFICER

2-78. The aviation safety officer is the primary advisor to the commander and staff on all safety matters pertaining to unit operations and the health and welfare of personnel. 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 that improve performance.

STANDARDIZATION OFFICER

2-79. The standardization officer is a 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.

AVIATION MISSION SURVIVABILITY OFFICER

2-80. The aviation mission survivability officer is the primary advisor to the commander on the aviation mission survivability program. This program encompasses combat survivability, combat aviation mission analysis and planning, and PR operations. Combat survivability includes: aircraft survivability equipment

and countermeasures, characterizing threat capabilities and limitations affecting the vertical scheme of maneuver, and the combat tactics, techniques, and procedures of aviation forces.

AVIATION MASTER GUNNER

2-81. 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 as well as advises the commander and staff in the selection of weapons, and employment techniques during the mission planning process.

AVIATION MATERIEL OFFICER

2-82. The aviation materiel officer is the commander's primary advisor on generating aviation combat power. The aviation materiel officer coordinates field and sustainment-level maintenance operations and works closely with the staff and ASB support operations officer (SPO) to sustain aviation operations. The aviation materiel officer monitors contract maintenance personnel and advises the commander on aircraft modifications and safety-of-use, safety-of flight, aviation safety action messages, and other sustainment related issues.

FLIGHT SURGEON

2-83. The flight surgeon advises the command 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.

MEDICAL OPERATIONS OFFICER

2-84. The medical operations officer advises the commander and staff on medical evacuation operations. They are responsible for planning medical evacuation operations, maintaining liaison with the medical brigade and division patient movement cells, operating a medical evacuation control cell, and advising on aircraft and patient movements.

SECTION IX – BRIGADE AVIATION ELEMENT

PURPOSE

2-85. 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 the fires cell.

ORGANIZATION

2-86. 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

2-87. 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 liaison officers (LNOs) and fire support officers.
- Airspace control planning and execution.
- Enabling mission command of current operations.

SECTION X – AVIATION LIAISON TEAMS

PURPOSE

2-88. The aviation 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. The CAB headquarters contains an aviation liaison team that facilitates coordination for operations with higher headquarters and/or supported ground maneuver units. Aviation liaison teams are organic to the aviation battalions and represent their units as directed to facilitate air-ground operations and planning. Although a BAE conducts many of the functions traditionally performed by LNOs, the aviation liaison team remains a critical part of the operations process and execution of air ground operations.

2-89. LNOs participate in the supported unit's operations process ensuring aviation is effectively integrated into planning. LNOs ensure supportability of the COA and relay a clear task and purpose to the parent aviation unit. Battalion 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 aviation battalion S-3 or commander. LNOs perform the following tasks:

- Understand and incorporate capabilities, limitations, and tactical employment of aviation and 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.

2-90. 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 staff functions within the ASTF/ABTF or CAB staffs.

CAPABILITIES

2-91. Liaison teams have access to current battalion status information to provide the most accurate common operational picture of supporting aviation capabilities. Liaison teams are properly equipped and manned to support 24-hour operations. Minimum equipment includes the following:

- Compatible automation equipment to provide connectivity between supported unit and the aviation battalion headquarters.
- Necessary vehicles and equipment required to operate on the move.

- Two single channel air ground radio system radios 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 field manuals, Army tactics publications (ATPs), TCs, standard operating procedures, charts, and checklists to assist in aviation planning and integration.

SECTION XI – AIRSPACE CONSIDERATIONS

2-92. Each operational area has specific operational requirements for airspace control. If/when assigned responsibility for a volume of airspace, maneuver commanders exercise airspace control within their assigned areas of operations through the integration of positive and procedural airspace control. In order to minimize risk and maximize the effectiveness of Army Aviation, 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 (ACO).

2-93. Airspace control 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 airspace control measures (ACMs), and indirect fire missions. Common ACMs and fire support coordination measures for Army Aviation shown in figure 2-20, page 2-22, are—

- The coordinating altitude (CA) uses altitude to separate users and as the transition between airspace control elements.
- The coordination level (CL) is used to separate FW and rotary-wing aircraft by determining an altitude below which FW aircraft normally does not fly.
- The restricted operations zone (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 (SAAFRs) are routes established below the CL to facilitate movement without prior approval by the airspace control authority.
- 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.
- All airspace users must coordinate with the appropriate airspace control elements when flying or firing through a CA or CL.

2-94. The airspace element in the CAB is the air defense and airspace management (ADAM) cell located in the brigade main CP, while in the BCT it 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 (ACA) normally located at an established air operations center. The ADAM cell integrates information systems that interacts with the joint network (Link-16) to provide a three dimensional, joint, integrated, near-real time, common air 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 ACO. Immediate ACMs are requested from subordinate brigade elements via voice or digital communication and coordinated with the appropriate ACA designated airspace control 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 the CAB or BCT operations.

2-95. When maneuvering Army Aviation, rotary-wing assets normally operate below the CL and UAS assets operate above the CL using an air corridor, air route, or a ROZ. Army crews (rotary wing and UAS) must contact the appropriate BCT when transiting that BCT AO for tactical, aircraft traffic, and procedural control updates. When operating in controlled airspace such as division-assigned airspace, crews (rotary wing and UAS) must contact the appropriate airspace control element.

2-96. When conducting the MUM-T TTP, UAS-extended endurance and unique launch/recovery requirements may require attack weapons teams (ATWs)/Scout weapons teams (SWTs) to link up in flight.

Once linked up, the AWT/SWT AMC 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 movement with the appropriate airspace element. Pre-coordination between UAS and AWT/SWT aircrews to determine scheme of maneuver, engagement area (EA) 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 AMC is responsible for coordinating airspace (if not pre-coordinated through pre-mission planning) that encompasses the UAS location, missile flight route, and target location. When supporting a ground maneuver unit, the AMC coordinates the ROZ dimensions and time with the ground maneuver commander and BCT ADAM cell. When assigned an AO, the AMC coordinates the ROZ dimensions and time through the CAB ADAM cell. The CAB ADAM cell needs to communicate regularly with the BCT ADAM cell to coordinate and relay ACMs required to maintain situational awareness for the CAB commander.

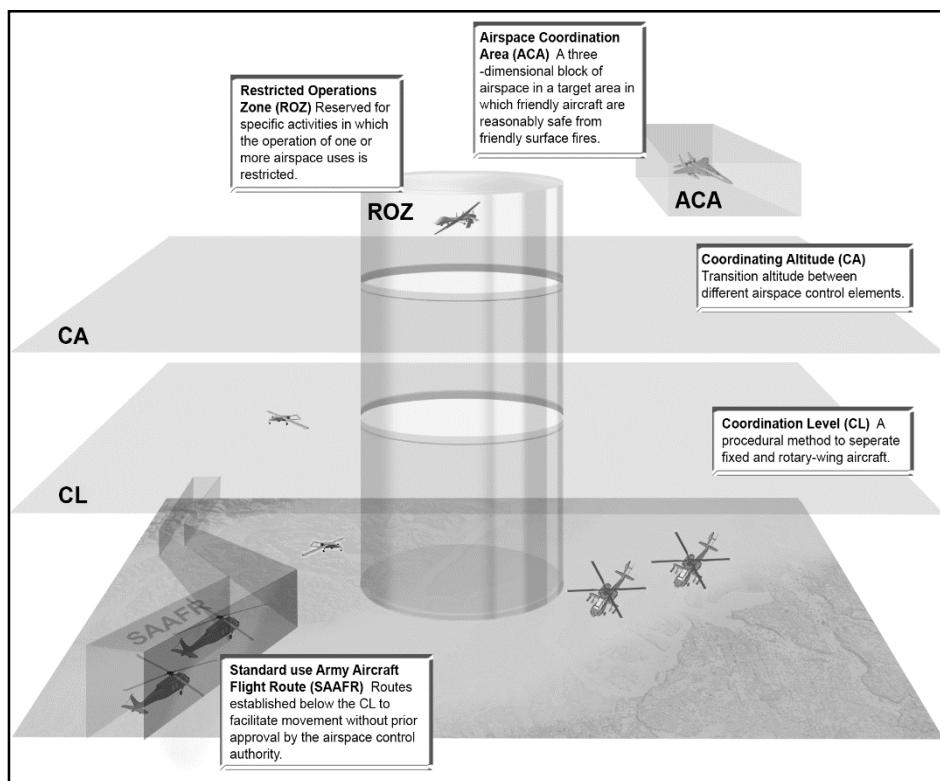


Figure 2–20. Common Army airspace coordinating measures

Chapter 3

Army Aviation Operations

SECTION I – OVERVIEW

3-1. Army Aviation conducts air-ground operations (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 defense support of civil authorities (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. This 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 to prevent an enemy force from gaining a position of relative advantage. Army Aviation's seven core competencies (table 3-1) are executed through the following tactical, enabling, and sustaining tasks: movement to contact, attack, reconnaissance, security, air assault, mission command support, personnel recovery (PR), air movement, and aeromedical evacuation.

Table 3-1. Core competencies of Army Aviation

The seven core competencies of Army Aviation are:

- 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 move personnel, equipment, and supplies.
- Evacuate wounded or recover isolated personnel.
- Enable mission command over extended ranges and complex terrain.

SECTION II – MOVEMENT TO CONTACT

3-2. 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 create 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 reconnaissance units, using manned-unmanned teaming (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 fundamentals of the aviation movement to contact in table 3-2 provide the framework for planning and execution.

Table 3-2. Fundamentals of a movement to contact

- 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.

3-3. Attack reconnaissance units plan and execute a zone reconnaissance with an enemy force oriented focus as their part of a larger unit movement to contact. Terrain reconnaissance is only conducted as necessary

to enable the follow on force assigned to develop the situation to execute subsequent tasks. The zone reconnaissance is executed as rapidly as the terrain and enemy situation permits.

3-4. To maintain continuous reconnaissance, the attack reconnaissance unit rotates attack weapons teams (AWTs) or Scout weapons teams (SWTs), 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, and enables persistent reconnaissance in zone with increased capability to gain and maintain enemy contact and more options to develop the situation with maneuver and fires.

3-5. Once the attack/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 will execute 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 will keep 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.

3-6. 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 courses of action 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 his main body and security elements. IPB should also focus on natural obstacles, known manmade 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 the terrain most favorable for friendly ground maneuver forces to develop the situation.

3-7. When planning the scheme of maneuver, the Aviation commander controls the operation by using phase lines (PL), objectives, contact points, checkpoints, and NAIs. 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 (OBJ) to orient the force or limit the extent of the movement to contact.

3-8. 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 area of operation, and availability of Army and joint fires. Based on the complexity of the operational environment 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.

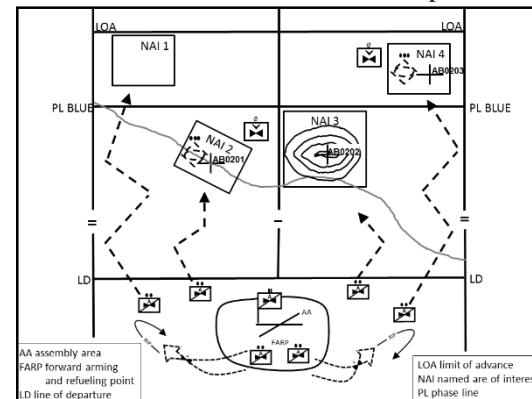


Figure 3-1. Attack reconnaissance squadron conducts movement to contact using MUM-T

3-9. The Aviation unit commander determines the location and number of forward arming and refueling points (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.

3-10. 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 areas of operations but also adjacent areas of operations to control and deconflict maneuver and fires.
- Develop and coordinate ACMs to enable freedom of action of manned and unmanned systems.
- Plan and employ joints fires through the depth of the zone.
- Employ communications relay packages, Army Airborne Command and Control System 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

3-11. Army Aviation attack 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.

3-12. 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 the battalion or squadron level.

3-13. Army Aviation attacks are executed in support of friendly forces in close enemy contact or against enemy forces out of contact with friendly forces. Both can be executed as either hasty or deliberate attacks and 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, which further determines who controls the aviation maneuver and fires. Regardless of the methods employed, the tactical task assigned to the attack 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 tactics, techniques, and procedures (TTP) employed.

3-14. 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

3-15. Army Aviation, maneuvering as a member of the combined arms team, conducts attacks that enable friendly ground maneuver forces in close enemy contact to seize, retain, or exploit the initiative. These attacks can be either hasty or deliberate attacks based on the amount of time available to plan, prepare and execute. Regardless of the time available, the ground maneuver commander in close enemy contact controls the synchronization and integration of Army Aviation maneuver and the distribution and deconfliction of Army Aviation fires.

3-16. Attacks in support of friendly units in close contact enable the higher commander to bring Army Aviation combat power to bear simultaneously with other elements of combat power within the combined arms team. The combined effects of aerial and ground fire and maneuver increases 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.

3-17. Hasty or deliberate attacks on enemy forces in close contact with friendly forces are executed at each Army Aviation maneuver echelon from an AWT/SWT using MUM-T, 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.

3-18. The continuum of attacks against enemy forces in contact ranges from hasty attacks with AWTs against an unexpected close contact between friendly and enemy forces, to a deliberate attack with an attack battalion as part of a planned and integrated combined arms scheme of maneuver in the close fight. Some examples of this continuum of attacks 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 (ABF) positions, attack routes, fire support coordination measures, HAs, engagement criteria, and triggers and conditions for employment. Once triggered, the AWT attacks along preplanned routes to an ABF 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).

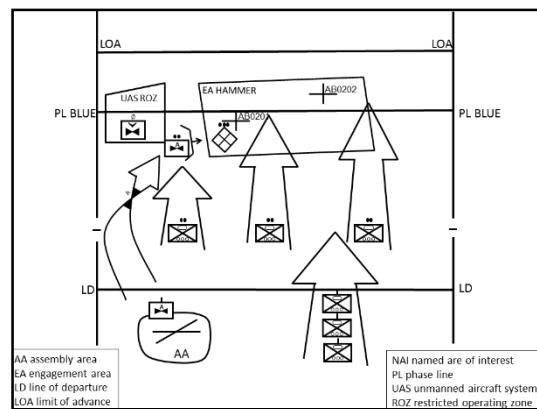


Figure 3-2. Deliberate attack by an attack weapons team in support of a Stryker battalion conducting a movement to contact

- An AWT using MUM-T conducting area reconnaissance is dynamically retasked by the supported higher headquarters to conduct a hasty attack in reaction to troops in contact between an unexpected enemy dismounted force and a friendly combat logistics patrol. Upon retasking, the air mission commander directs the UAS operator to continue the area reconnaissance mission and repositions the AWT to the location of the contact. The commander of the combat logistics patrol uses the standard Army attack aviation call for fire (table A-2, appendix A) 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 combat logistics patrol to break contact and continue mission (figure 3-3). Following the attack, the AWT AMC provides battle damage assessment, reports to higher and repositions to continue the area reconnaissance mission as directed.

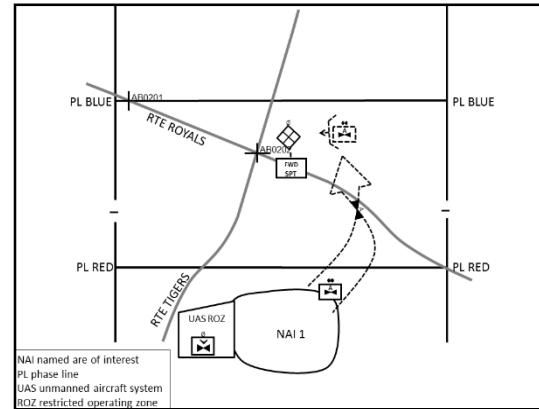


Figure 3–3. Hasty attack by an attack weapons team reacting to troops in contact

- An attack reconnaissance company, employing MUM-T, attacks in support of a brigade combat team (BCT) 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 attack reconnaissance battalion, 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, integrated joint fires and multiple ABF positions to effectively engage and destroy the advancing enemy force through the depth of the engagement area. The movement of the enemy force in relation to UAS observed NAIs 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.

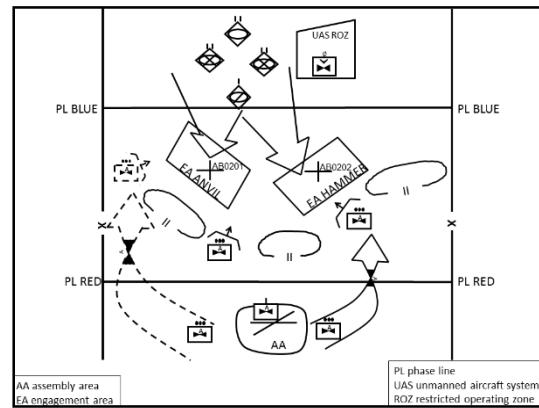


Figure 3–4. Deliberate attack by an attack/reconnaissance company in support of a BCT's area defense

3-19. During the planning process, the ground maneuver commander integrates the employment of attack 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; fire coordination measures, such as target reference points; engagement areas and target reference points; and ACMs, such as aerial ingress and egress routes and restricted operating zones.

3-20. Shared understanding within the combined arms team, through known standardized procedures and habitual training, increases the likelihood of successful employment of attack reconnaissance units against enemy forces in close contact with friendly forces. However, during in extremis situations, Army Aviation attack 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 (table A-2, appendix A) ensures the minimum mission essential information is provided from the ground commander in contact to the attack aviation air mission commander.

3-21. To maintain shared understanding and to prevent burdening the ground force commander in contact during execution, the attack reconnaissance unit conducting hasty and deliberate attacks against enemy forces in contact monitors on the primary supported ground unit voice command net and uses mission command 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 reconnaissance units to rapidly execute actions on contact, and mitigates the risk of fratricide.

3-22. When conducting attacks against enemy forces in contact, targets may range from hundreds of meters to several thousand meters from friendly forces. The attack 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 reconnaissance unit air mission commander provides the ground commander with a battle damage assessment. 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

3-23. Army Aviation rotary wing and UAS, 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 effectively on friendly forces. The Army Aviation AMC 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 that assigns the attack mission coordinates the required airspace with the appropriate ACA.

3-24. These attacks are conducted at such a distance from friendly forces that detailed integration with ground forces during actions on the objective is typically not required. Based on the nature of the target and complexity of the operational environment, Army Aviation attacks against enemy forces out of contact may be conducted as hasty attacks but most often are deliberate attacks that require detailed planning and the full integration of manned and UAS, and the simultaneous or sequential employment of close air support, indirect fires, and other enabling capabilities to mass effects, isolate, and destroy key enemy forces and capabilities.

3-25. Based on the 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 reconnaissance elements ranging in size from a single armed UAS up to one or more attack reconnaissance battalions or squadrons. The greater the distance, the greater the threat, the lower the target fidelity and the more complex the target, the higher the mission risk and the more detailed the planning and integration required by the assigning headquarters. Higher mission risk requires the supported higher headquarters to prioritize required enabling capabilities to enable 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.

3-26. These attacks are typically deliberate attacks but, based on mission variables, may also be executed as hasty attacks against emerging enemy targets of opportunity. 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.

3-27. Army Aviation units attack 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 areas of operation; in deep areas between non-linear and non-contiguous areas of operation; in close or security areas inside large non-linear and contiguous areas of operation where ground forces are not present or not in contact with the targeted enemy force; or in joint or special operations areas of operation where friendly ground or surface forces are not present or not in contact with the targeted enemy force.

3-28. Hasty and deliberate attacks against enemy forces out of friendly contact are executed in support of higher ground maneuver headquarters that can develop the target fidelity and provide enablers to support the attack and can assign a subordinate AO to the attack reconnaissance unit. This is usually no smaller than a ground maneuver battalion and is more typically a BCT, division or corps/Joint Force Land Component Command headquarters. Examples of hasty and deliberate attacks against enemy forces out of contact with friendly forces, from generally the lowest risk with the least required planning and synchronization efforts, to very high risk operations that require detailed planning and the full range of joint fires and intelligence capabilities include, but are not limited to—

- An attack weapons team using MUM-T conducts a hasty attack to destroy a dismounted enemy team located by UAS while emplacing improvised explosive devices (IEDs) along a high speed avenue of approach in a deep area between non-contiguous areas of operation. With the threat assessment estimated as low, the higher headquarters assigns an AO for the AWT to conduct the attack and establishes ACMs. The AMC 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 AMC provides battle damage assessment to the higher headquarters and proceeds as directed to a follow-on mission or mission complete.

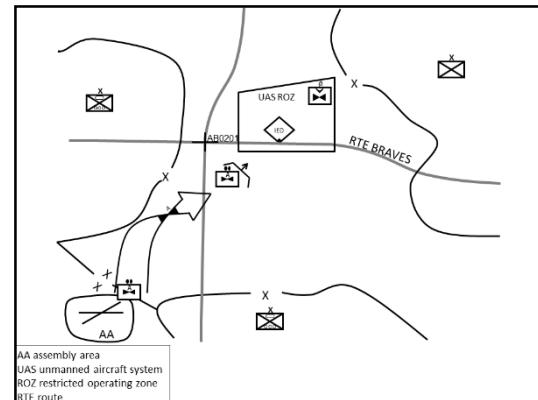


Figure 3–5. Hasty attack by an attack weapons team against an enemy force out of contact

- An attack reconnaissance platoon using MUM-T attacks to destroy a convoy of technical vehicles that are not in friendly contact and 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 areas of operation in a non-contiguous AO, the division headquarters tasks an attack reconnaissance platoon to conduct a hasty attack. The division staff coordinates airspace measures and assigns an engagement area to the attack reconnaissance platoon to execute the attack. En route to the engagement area, the AMC 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 AMC's teams are set in their ABF positions, have positive identification of the enemy convoy, and initiates the attack (figure 3-6).

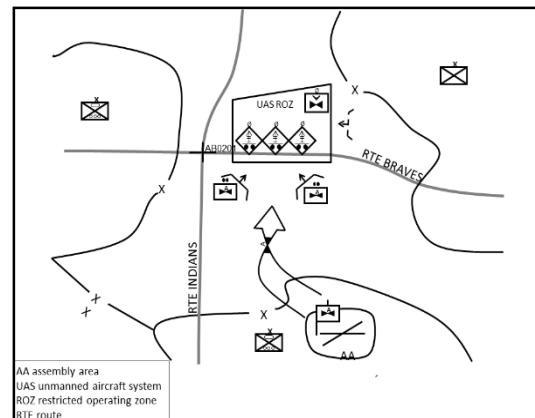


Figure 3–6. Hasty attack by an attack reconnaissance platoon

- An attack reconnaissance company using MUM-T attacks to defeat an enemy mechanized company, maneuvering to counter-attack into the flank of a friendly combined arms battalion attack. During the operations process, the combined arms team conducted detailed planning to integrate attacks to defeat expected counter-attacks along the friendly route of march. A second attack reconnaissance company 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 reconnaissance unit or LNO team establishes an engagement area and ABF 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 attack reconnaissance company executing the attack to occupy their ABF positions as the enemy begins to enter the engagement area. The AMC initiates fires from the ABF 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).

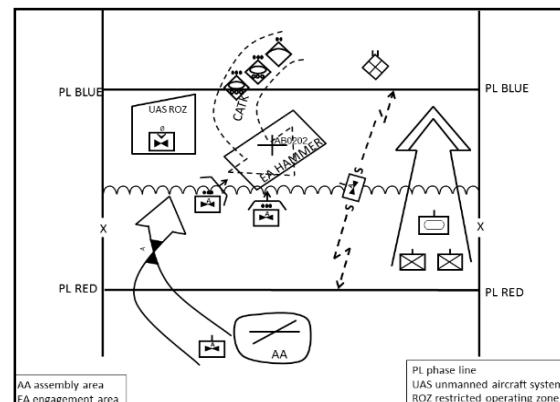


Figure 3–7. Deliberate attack by an attack reconnaissance company to defeat an enemy counter-attack

- An ARB 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 courses of action and plans these attacks based on information derived during 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 to achieve the desired massing of effects, and enable ARB movement to ABF positions, respectively. Simultaneously, the ARB plans movements, ABF positions, and methods of attacks in parallel while nesting with higher headquarters' plan. The resultant attack disrupts enemy capabilities before they can be brought to bear effectively on friendly forces, thus providing the friendly main body reaction time and maneuver space.

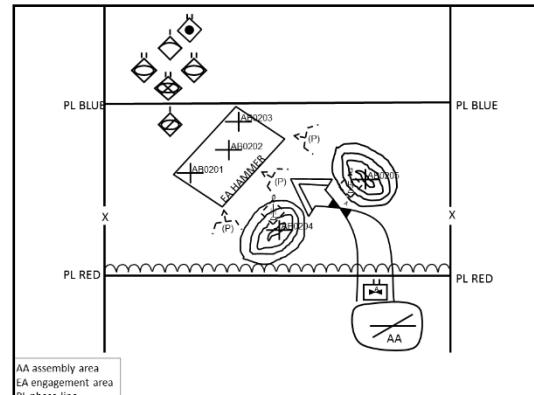


Figure 3-8. Deliberate attack by an attack reconnaissance battalion to disrupt an enemy mechanized regiment in a deep area of a linear area of operations

3-29. Based on the depth of the attack against enemy forces out of contact, time allocated, echelon and size of the Attack Aviation force, and the supported commander's intent, FARPs and UAS launch and recovery locations are positioned forward to support relief on station to maintain sustained attacks or attacks at extended ranges.

3-30. The inherent risks with hasty and deliberate attacks against enemy forces out of friendly contact in deep or security areas 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.
- Maximizing the use of terrain to mask maneuver along attack routes and in ABF positions.
- Developing and coordinating ACMs to enable freedom of action for MUM-T.
- Planning the integration of joint fires and enablers to limit enemy freedom of action and to destroy or disrupt enemy air defense.
- Planning and development of triggers and conditions to initiate the attack.
- Conducting detailed rehearsals.
- Employing communications relay packages, Army Aviation Command and Control System or Airborne Battle Command System aircraft to maintain situational understanding over extended distances.
- Positioning FARPs forward to maximize weapons loads and station time.
- Maximizing the element of surprise by attacking from unexpected directions and unexpected times with speed and audacity.
- Executing during hours of limited visibility.

JOINT AIR ATTACK TEAM TACTICS, TECHNIQUES, AND PROCEDURES

3-31. During attacks, the integration of joint fires increases the likelihood of gaining fire superiority over the enemy force. Using the joint air attack team (JAAT) TTP is an effective method of bringing all available firepower to bear on the enemy force. JAAT combines the effects of attack helicopters, UAS, joint CAS aircraft, and may include joint indirect fires, all employed simultaneously against the same enemy target array. During attacks that are against enemy forces not in contact with friendly forces, the AMC supported by a forward air controller-airborne (FAC-A) synchronizes the combined effects of the JAAT to ensure that maximum and continuous firepower is brought to bear on the intended enemy force. During attacks on enemy forces that are in close contact with friendly forces, the ground maneuver commander supported by a joint terminal attack controller (JTAC) or joint forward observer (JFO) is responsible for the synchronization and deconfliction of fires in the close fight. For more information, see JP 3-09.

ROTARY-WING CLOSE AIR SUPPORT TACTICS, TECHNIQUES, AND PROCEDURES

3-32. Army Aviation is an organic direct support (DS) asset for the Army. As such, Army Aviation is not tasked by the joint force air component commander (JFACC) to support the joint force commander's (JFC) CAS or air interdiction apportionment guidance. However, Army Aviation attack reconnaissance units must be familiar with and able to respond to and execute in accordance with terminal CAS procedures and TTP when they accept terminal control by a JTAC or FAC-A during mission execution in support of the joint force. ATP 3-09.32 outlines the terminal procedures and TTP for rotary-wing CAS execution. The CAS TTP requires the use of a JTAC who is a qualified (certified) service member who, from a forward position, directs the action of combat aircraft engaged in CAS and other air operations. One can also execute CAS with a FAC-A who is a specifically trained and qualified aviation officer who exercises control from the air of aircraft and indirect fires engaged in CAS of ground troops.

UNIQUE PLANNING CONSIDERATIONS FOR ATTACKS

3-33. 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, enables 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. The willingness to take prudent risks requires military judgment to reduce risk by foresight and adequate planning to determine the minimum mission essential information required to determine whether the risk is worth taking to seize fleeting opportunities. 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.

3-34. During the operations process for attack operations, IPB efforts are focused on determining the location, composition, disposition, capabilities and most likely and most dangerous courses of action of the targeted enemy force. IPB also focuses on detailed terrain analysis to inform planning for attack routes, ABF positions, engagement areas, fire support targets, and holding areas, as well as the effects on enemy movement rates and formations.

3-35. 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 or ABF through 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 reconnaissance units to orient fires and maintain freedom of action while maintaining maximum standoff during the engagement. Time-distance analysis determines enemy expected rates of advance which establishes where to place NAIs to confirm or deny an enemy COA and to trigger the attack, as well as where to best place indirect fire targets, groups and series to simultaneously attack the enemy in depth with indirect and joint fires. Target areas of interest (TAIs), engagement areas (EAs), ABF positions, attack routes, NAIs, 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 through the depth of the designated AO.

3-36. 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/reconnaissance units maximum standoff and freedom to maneuver out of close contact with the enemy. Enemy reserve locations and counter-attack routes are analyzed to further identify aviation ABF positions and EAs to limit the enemy's freedom of action and to attack the enemy through the depth of his defense either with direct or indirect fires.

3-37. When planning attacks, the commander controls the operation by using attack routes or axis' of attack, EAs, trigger lines, ABF positions, holding areas, phase lines (PLs), target reference points, ACMs, NAIs, and TAIs. To limit the extent of the attack, the commander may also designate a limit of advance (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.

3-38. Attacks are triggered based on enemy events, time, friendly actions or a combination. The nature of the target and the commander's end state determines 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.

3-39. During execution, the Army Aviation attack reconnaissance units use maneuver, and direct and indirect joint fires to place the enemy in a position of disadvantage where he can be easily defeated or destroyed by keeping the enemy off-balance by continually reducing the enemy's options. To achieve superiority over the enemy force, the commander must take advantage of the range, precision and lethality of all available fires, as well as by gaining and maintaining information superiority through in depth reconnaissance and by continually maneuvering to positions of advantage using speed, maneuverability, maximum standoff and the available terrain.

SECTION IV – RECONNAISSANCE

3-40. *Reconnaissance* is 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 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 and/or strong, and 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.

3-41. 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 assists the commander with the formulation, confirmation or modification of a COA.

3-42. Army Aviation attack 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.

3-43. Army Aviation conducts reconnaissance at all echelons, from elements as small as an attack or scout weapons team using MUM-T, or a single UAS, up to elements as large as an attack reconnaissance battalion or squadron, 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.

3-44. 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 his priority intelligence requirements (PIR). Based on the capabilities of the reconnaissance force and available time to conduct the reconnaissance, the commander and staff further delineate the priority of tasks and information collection efforts to ensure that 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.

3-45. The commander controls the reconnaissance operation by using routes, subordinate unit boundaries, PLs, contact points, checkpoints, NAIs, fire support coordinating measures (FSCMs), 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 (LD) or start point (SP) and the depth of the reconnaissance is controlled by using a LOA. Control measures are placed on recognizable terrain features when possible.

3-46. 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 (LTIOV) with date-time group (DTG), 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.

3-47. 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

3-48. *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 (ADRP 3-90).

3-49. 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 and thorough 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.

3-50. 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 maneuver forces to move or 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 will typically transition to a screen when the limit of advance 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 his AO.

3-51. The size of the zone, number of reconnaissance objectives, mission duration, LTIOV, 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 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 attack reconnaissance company/troop or battalion/squadron size force.

3-52. Unless the higher commander orders otherwise, the aviation reconnaissance force executes the below listed critical tasks when assigned a zone reconnaissance mission. Figure 3-9 depicts an aviation force 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 enemy forces in zone based on PIR.
- 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.

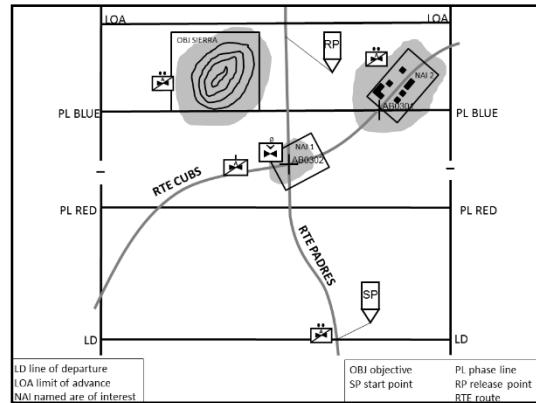


Figure 3-9. Aviation reconnaissance force conducts a zone reconnaissance

AREA RECONNAISSANCE

3-53. *Area reconnaissance* is a form of reconnaissance that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area (ADRP 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.

3-54. Army Aviation conducts area reconnaissance with elements as small as a AWT/SWT using MUM-T, up to elements as large as an attack reconnaissance company or troop, 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.

3-55. 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 or not 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 3-10 is an example of an aviation reconnaissance force conducting an area reconnaissance of terrain and manmade areas of interest.

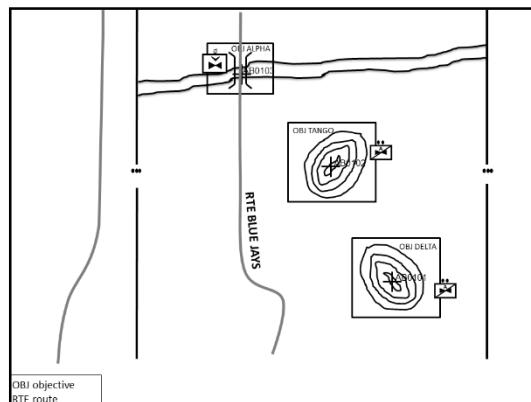


Figure 3-10. Aviation reconnaissance force conducts three simultaneous area reconnaissance missions

ROUTE RECONNAISSANCE

3-56. *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 (ADRP 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, 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.

3-57. 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 attack reconnaissance troop/company, either independently as a pure aviation maneuver force or a member of the combined arms team.

3-58. 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 (LTIOV) to answer the specified information requirements. If detailed information is required for route and bridge classification or obstacle clearance is required, the aviation reconnaissance force must be task organized as a combined arms team.

3-59. 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. An LD is established along the route, just short of where enemy contact is expected and an LOA is established beyond the release point and far enough out to encompass any terrain that the enemy can use to influence the route. Additional control measures can include phase lines, TRPs, and NAIs on adjacent key terrain or suspected enemy locations.

3-60. Unless the higher commander orders otherwise, the aviation reconnaissance force executes the following tasks:

- Find and report all enemy forces that can influence movement along the route.
- Based on engagement criteria, clear all enemy forces that can influence movement along the route, within capability.
- Determine route trafficability based on the size, capabilities, mission and type of friendly force to use the route.
- Reconnoiter all terrain that the enemy can use to influence the route.
- Reconnoiter all built-up areas, contaminated areas, and lateral routes along the route.
- Evaluate and classify all bridges, defiles, overpasses, underpasses, and culverts along the route
- Locate and conduct hasty visual classification of all obstacles, minefields, built up areas, wire obstacles and barriers along the route.
- Locate and conduct hasty visual classification of all fords, crossing sites and bypasses around obstacles and built-up areas along the route.
- Report the above information, to include providing a sketch map, route overlay and/or full motion video feeds.

3-61. 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.

3-62. Figure 3-11 depicts aviation assets conducting a route reconnaissance using MUM-T. While the attack 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.

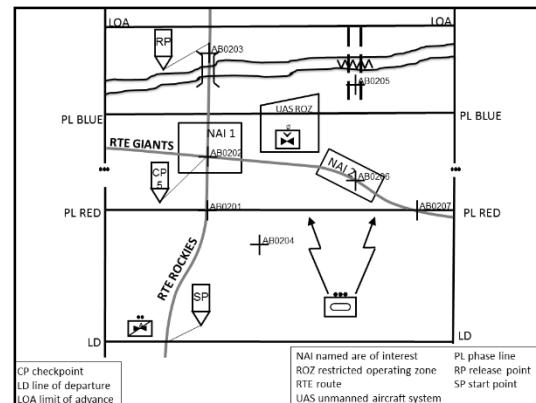


Figure 3-11. Army Aviation conducting route reconnaissance

RECONNAISSANCE IN FORCE

3-63. A *reconnaissance in force* (RIF) is a deliberate combat operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information (ADRP 3-90). Reconnaissance in force is conducted as a combined arms operation at the battalion task force or higher level.

3-64. 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, mission command support, and aeromedical evacuation.

3-65. A RIF is an aggressive, offensively oriented reconnaissance. The RIF 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. It is a force oriented reconnaissance, focusing 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 RIF or exploitation by a follow on force.

3-66. 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 RIF are similar to either a movement to contact or frontal attack.

3-67. 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.

FUNDAMENTALS OF RECONNAISSANCE

3-68. When planning and executing reconnaissance operations, the application of the following seven fundamentals inform the operations process and drive execution of successful reconnaissance missions.

3-69. **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.

3-70. **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 mean to necessarily employ all assets simultaneously. Understanding the capabilities and limitations of each asset, coupled with detailed planning, enables commanders to ensure that each of the different available reconnaissance assets are employed to maximize their strengths to collect the required information while providing mutual support and redundant coverage to the entire collection effort through the depth of the AO.

3-71. **Ensure continuous reconnaissance.** Due to the dynamic nature of the operational environment, commanders ensure that reconnaissance is conducted continuously throughout the duration of the mission. The use of UAS to provide persistent reconnaissance through 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 operating environments, 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.

3-72. **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. But, decisive engagement must be balanced against the amount of 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.

3-73. **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.

3-74. 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 and 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.

3-75. 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.)

3-76. At the ABTF/ASTF level and above, PED 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. PED is the link that ensures the efficient use and distribution of information following collection and reporting. While performing these functions, some of the information will meet the criteria of combat information. In those cases, the combat information is disseminated to commanders and staffs per standard operating procedure.

SECTION V – SECURITY

3-77. *Security operations* are those operations undertaken by the commander to provide early and accurate warning of enemy operations to provide the force being protected with the time and maneuver space to react to the enemy, and to develop the situation to allow the commander to effectively employ the protected force (ADRP 3-90).

3-78. Security operations protect the force from surprise and reduce the unknowns. The protected force ranges from friendly ground maneuver forces and facilities to the local population. Security operations can be performed forward, to the rear, to the flanks or entirely around the protected force, whether stationary or moving.

3-79. 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 that is being protected. However, reconnaissance is inherent to all security operations. Security operations serve as an economy of force to prevent the premature commitment of other combat power.

3-80. Security operations 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 subsequently 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, mission command and reposition reserves. Local security is an inherent responsibility of all units and provides immediate and local protection of the force.

3-81. Army Aviation attack 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 attack reconnaissance battalion or squadron, either independently as a pure aviation maneuver force or as a member of the combined arms team.

3-82. 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, and most importantly.
- Required reaction time required by the protected force commander.

3-83. 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 mission command 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.

3-84. 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, aeromedical evacuation, and mission command support.

3-85. 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.
- Infiltrate, exfiltrate, or resupply dismounted or mounted security units along a flank screen of a moving force or forward of a stationary force.
- Conduct aeromedical evacuation of the wounded and ill in the security area.
- Conduct air movement of friendly forces in the security area.
- Conduct mission command support to extend the range of communications networks to enable the protected force increased situational understanding for early warning and reaction time.

3-86. 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 limit of advance or prior to the limit of advance 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 limit of advance. 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 limit of advance or once contact is gained with the enemy main body or a superior enemy force.

3-87. 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 terrain or terrain that is unknown, 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 enable the protected force time to react.

3-88. 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 LD 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 3-12).

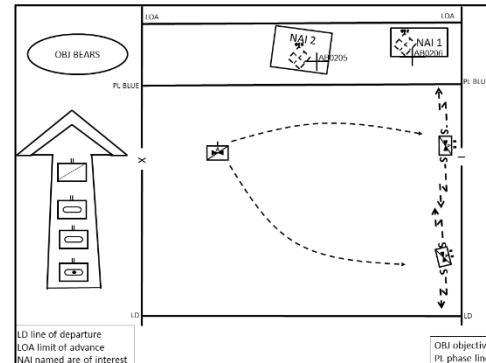


Figure 3-12. Aviation assets conduct flank security in support of a BCT reconnaissance and main body movement

- Aviation security forces cross the LD 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 3-13).

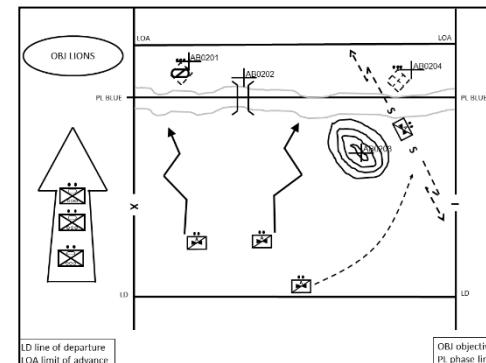


Figure 3-13. Aviation assets conduct security in support of Stryker platoon movement

- Aviation security forces cross the LD with the main body and conduct zone reconnaissance out to the limit of advance (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 3-14).

3-89. The aviation security force commander controls the security operation by using a variety of control measures, to include: screen lines, subordinate unit boundaries, phase lines, contact points, checkpoints, NAIs, FSCMs, ACMs, observation posts and routes. Such control measures allow for decentralized actions and small-unit initiative to the greatest extent possible.

The security operation begins at the LD 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 the adjacent friendly units.

3-90. To enable disciplined initiative in execution, the protected force commander provides engagement, battle handover and bypass criteria, the DTG 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

3-91. *Screen* is a security task that primarily provides early warning to the protected force (ADRP 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.

3-92. Figure 3-15 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.

3-93. 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.

3-94. 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

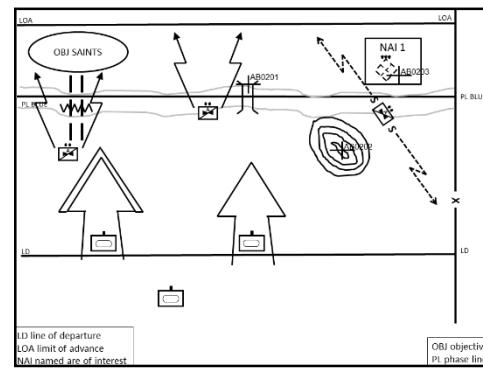


Figure 3-14. Aviation assets conduct zone reconnaissance in support of a BCT main body movement

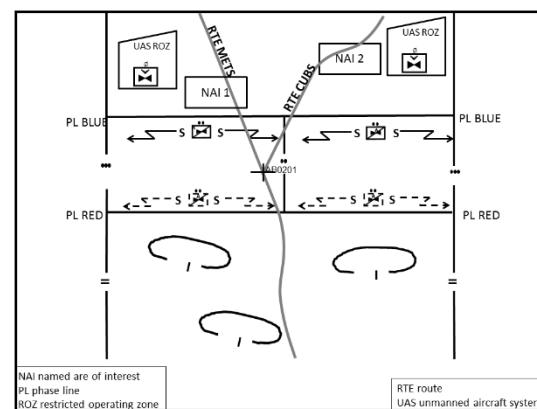


Figure 3-15. SWT using MUM-T screens forward of a protected force

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.

3-95. Army Aviation attack reconnaissance asset's endurance, mobility, lethality and sensors make them ideally suited to operate as an independent screening force or as a part of a combined arms team conducting security operations. Attack 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-line of sight communications enable effective reporting at greater distances to allow increased security area size and depth to maximize early warning and reaction time.

3-96. 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 (in accordance with 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.

3-97. 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.

3-98. A stationary screen is established using a series of observation posts (OP) with overlapping fields of observation. Using MUM-T with UAS focused on key NAIs that require persistent surveillance, AWTs/SWTs conduct reconnaissance along the screen line focused on supporting NAIs, 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 NAIs. The number of NAIs 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.

3-99. 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 3-3 and figure 3-16, page 3-22.

Table 3-3. Screen movement methods

Method	Characteristics	Advantages	Disadvantages
Alternate bounds by observation posts	<ul style="list-style-type: none"> • Main body moves faster. • Conducted by platoon, company, or troop. • Contact is possible. • Conducted from rear to front. 	<ul style="list-style-type: none"> • Very secure method. • Maintains maximum surveillance over the security area. 	<ul style="list-style-type: none"> • Execution takes time. • Disrupts unit integrity.
Alternate bounds by units	<ul style="list-style-type: none"> • Main body moves faster. • Conducted by platoon, company, or troop. • Contact is possible. • Conducted from rear to front. 	<ul style="list-style-type: none"> • Execution does not take a great deal of time. • Maintains good surveillance over the security area. • Maintains unit integrity. 	<ul style="list-style-type: none"> • May leave temporary gaps in coverage.
Successive bounds	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Most secure method. • Maintains maximum surveillance. • Maintains unit integrity. 	<ul style="list-style-type: none"> • Execution takes the most time. • Unit is less secure when all elements are moving simultaneously. • Simultaneous movement may leave temporary gaps.
Continuous marching	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Observation posts displace quickly. • Maintains unit integrity. 	<ul style="list-style-type: none"> • Least secure method.

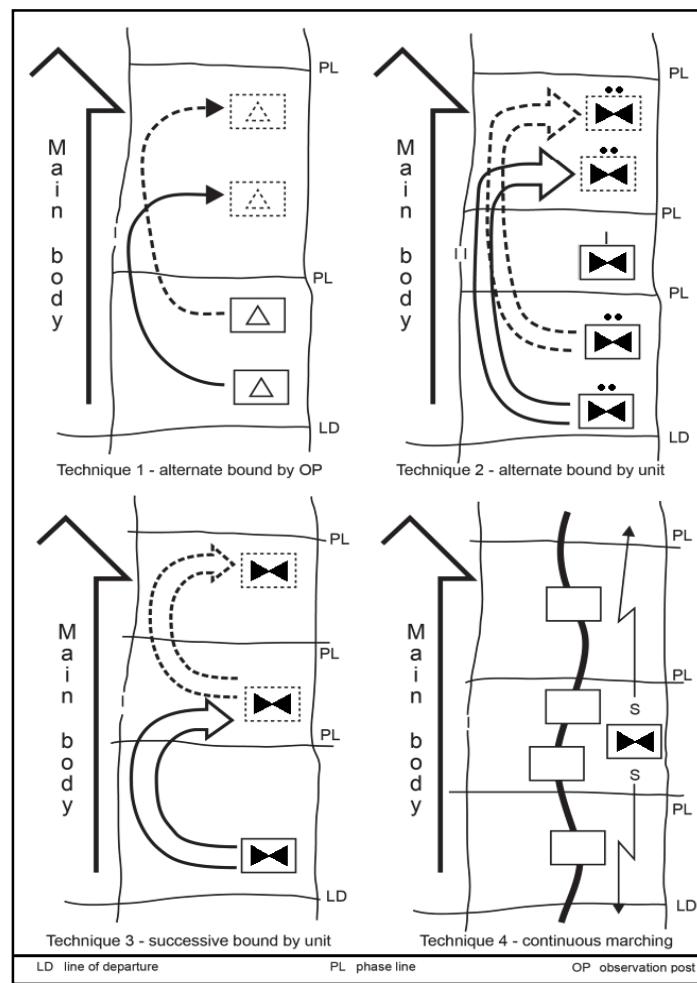


Figure 3-16. Screen movement methods

GUARD

3-100. *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 (FM 3-90-2). A guard differs from a screen in that it is a more robust security force with increased combat power and is expected to engage the enemy force, while a screen is primarily a defensive force tasked with providing early warning, and is expected to avoid decisive engagement. Army Aviation can support the ground maneuver units conducting guard operations, but cannot conduct guard missions autonomously unless an aviation battalion task force or combat aviation brigade 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 mission command, and aeromedical evacuation.

COVER

3-101. *Cover* is a security task to protect the main body by fighting to gain time, observing and reporting information, and preventing enemy ground observation of and direct fire against the main body (ADRP 3-90). Aviation forces can be task organized to a BCT or larger element assigned a covering force mission. Army Aviation conducts the 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, mission command support and aeromedical evacuation.

FUNDAMENTALS OF SECURITY

3-102. When planning and executing security operations, application of the following five fundamentals informs the operations process and drives execution of successful security missions.

3-103. **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, but 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.

3-104. **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.

3-105. **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.

3-106. **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 will 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 NAIs or to establish ambush locations to delay, block or disrupt attacking enemy forces. Positioning of FARPs, mission command nodes, UAS launch sites and holding areas 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.

3-107. **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

3-108. An *air assault* is the movement of friendly assault forces by rotary-wing 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 TTP.)

3-109. Army Aviation conducts air assaults in support of offensive, defensive and stability operations throughout the depth and breadth of the AO. Army Aviation assault and heavy lift units, supported by attack 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 he is most vulnerable.

3-110. The air assault task force is the entire combined arms team conducting the air assault. The air assault task force commander (AATFC) commands the combined arms team through all phases of the air assault and is normally the ground maneuver brigade or battalion commander whose subordinate echelon constitutes the main ground combat force. When task organized with ground maneuver forces and fires, an Army aviation battalion task force or brigade can operate as the AATF. The aviation task force commander (or a designated subordinate leader for air assaults below the battalion level) serves as the AMC and commands all aviation forces through all phases of the air assault. The ground tactical commander (GTC) is the commander of the largest ground maneuver force inserted during the air assault and assumes command of the ground tactical force (GTF) in the LZ and upon initiation of the ground tactical plan.

3-111. 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 reconnaissance element as the foundational aviation maneuver capability.

3-112. 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 ground force 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 GTF 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 AATFC's intent drive the determination of LZ locations.

3-113. Army Aviation attack and 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 GTF after landing. Mission command of the attack/reconnaissance element resides with the AMC until the GTF begins executing the ground tactical plan where the attack/reconnaissance units typically become direct support or OPCON to the GTFC.

3-114. Air assaults are typically deliberately planned operations. They can be conducted in deep areas forward of a unit's forward boundary in linear areas of operation; in the higher echelon's deep areas between non-linear and non-contiguous areas of operation; 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 reconnaissance 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.

3-115. The amount of time required to plan and prepare an air assault is largely driven by the training level of the ground and aviation forces that form the AATF, and the degree to which habitual relationships and training 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.

3-116. 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) quick reaction force (QRF) that is habitually aligned and is trained with common SOPs air assaults to secure a downed friendly UAS in an area with low air defense threats and not occupied by friendly ground maneuver forces (figure 3-17).

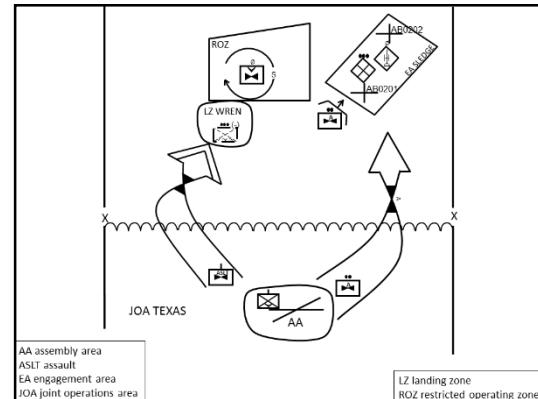


Figure 3-17. QRF air assault to secure a downed friendly UAS

- A platoon (minus) QRF air assaults to kill or capture a high-value target (HVT) that is isolated on a small objective without a superior enemy security or reaction force in close proximity and low air defense threats (figure 3-18).

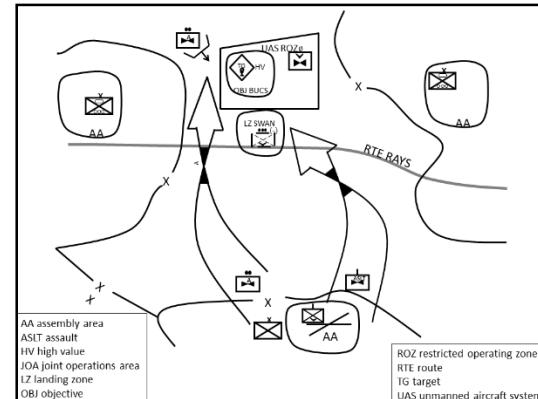


Figure 3-18. QRF air assault to kill or capture an HVT

- An infantry company air assaults to seize a lightly defended bridge within a linear deep area just beyond the forward of the line of troops to enable a BCT to maintain the offensive tempo without executing a deliberate wet gap crossing operation during the attack (figure 3-19).

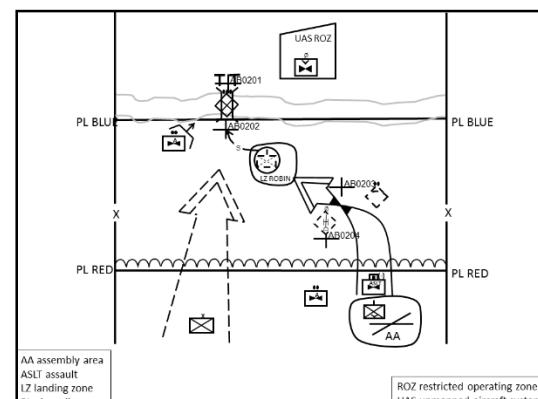


Figure 3-19. Infantry company air assault to seize key terrain in support of a BCT attack

- An infantry company air assaults to conduct a cordon and search to kill or capture an HVT in a small built up area located between non-contiguous areas of operation (figure 3-20).

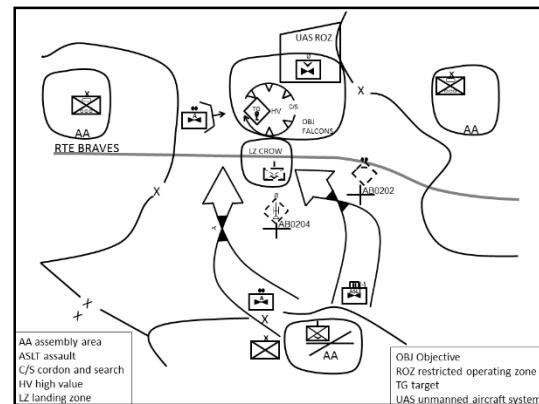


Figure 3–20. Infantry company air assault to kill or capture an HVT

- 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 3-21).

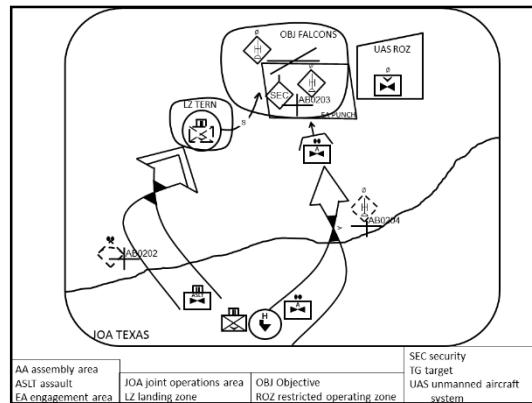


Figure 3–21. Infantry battalion air assault to seize a remote airfield and destroy local enemy security forces

3-117. 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 running friendly and enemy 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.

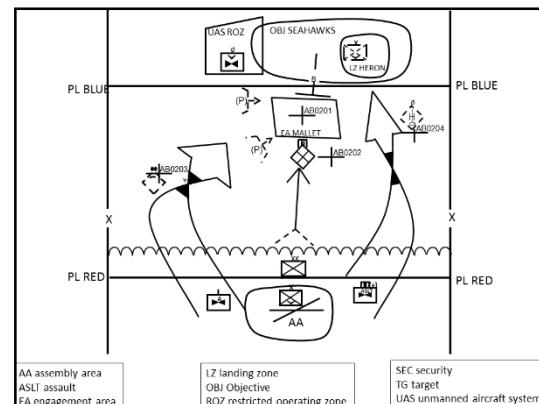


Figure 3–22. Infantry BCT air assault to block enemy forces retrograding

3-118. 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.

3-119. The ground tactical plan is planned to accomplish the tactical mission, such as kill/capture an HVT, establish blocking positions, destroy an enemy force or seize key terrain. The scheme of maneuver the GTFC chooses to accomplish his 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.

3-120. When planning loads, squad integrity should be maintained by chalk and platoon integrity maintained by serial to reduce mission command and span of control challenges during the landing phase and initiation of the GTP. 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.

3-121. 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 direct support to the AATF to ensure close coordination and continuous, dedicated support throughout an operation.

3-122. Various elements perform specific tasks ensuring the successful execution of an air assault. Attack 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 GTF is established on the ground. When planning assaults, the AATFC controls the operation by using air corridors, air routes, primary and alternate LZs, EAs, ABF positions, screen lines, HAs, phase lines (PLs), target reference points (TRPs), ACMs, NAIs, and TAIs. 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

3-123. An air movement is the air transport of units, personnel, supplies, and equipment including airdrops and air landings (JP 1-02) and are not synonymous with air assault. Air movement operations are a viable means of transport and distribution in support of offensive, defensive, stability, and defense support of civil authorities (DSCA). Loads can be configured internally or externally depending on mission variables, and type aircraft available to conduct the air movement operation.

3-124. 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 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 his operations.

3-125. Assault and GS helicopter units perform air movement on a direct support (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

3-126. Internal load operations are conducted by Army rotary-wing aircraft (CH-47, UH-60) and FW aircraft (C-12, UC-35). 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 mission command similar to air assaults. Most air movements are smaller and

highly decentralized requiring as few as two rotary-wing or one FW aircraft but can be executed with formations as large as an assault or GS battalion.

3-127. 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, or in an air casualty evacuation configuration can carry up to 24 litter patients.

3-128. 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 two crew chiefs/door gunners.

3-129. 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

3-130. 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.

3-131. 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-mm 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

3-132. 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 out posts. The distances and available low threat routes to the destination can induce limitations to the planning and execution of each mission.

3-133. 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 the 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

3-134. Army aeromedical evacuation provides direct support, GS, and area support within the joint operations area and joint security area in order to support the overall Army Health System mission. At the tactical level, direct, or general support assets locate, acquire, treat and evacuate patients from the point of injury to an appropriate medical treatment facility where the patient is stabilized, prioritized, and prepared for further evacuation (if necessary) to a medical treatment facility capable of providing additional required essential care.

3-135. Army aeromedical evacuation aircraft are dedicated assets that are designed, manned and equipped to provide en route medical care to patients being evacuated and are used exclusively to support the medical mission. The focus of the medical evacuation mission coupled with the dedicated platforms permit a rapid response to calls for support. The medical evacuation unit operates in a ready alert status to rapidly respond to evacuation missions and is not diverted to perform any other tasks. Although both air and ground evacuations are used to transport patients—*aeromedical evacuation* is the preferred method of evacuation of seriously wounded, injured and ill personnel. Trained flight paramedics and supporting medical providers provide en route care during evacuation. The provision of en route care on air ambulances provides a continuum of care that is instrumental in preserving life and reducing long-term disability. The speed, range and flexibility of aeromedical evacuation permits patients to be moved directly to a treatment facility best equipped to deal with the injury or medical condition requiring treatment. Additional missions assigned to the air ambulance company include: patient movement in support of medical regulating requirements; shore-to-ship and ship-to-shore medical evacuation; emergency movement of Class VIII blood, blood products, and biologicals; and emergency movement of medical personnel and equipment.

3-136. Aeromedical evacuation companies typically task organize into one area support medical evacuation platoon and four forward support medical evacuation platoons (FSMPs). Each aeromedical company is capable of operating at up to five decentralized locations with three HH-60 aircraft each with their own mission command and limited maintenance and sustainment capabilities. Due to the austere capabilities of the FSMP, when possible, they should be co-located with an aviation battalion task force that can provide security escort, mission command, sustainment and maintenance augmentation. Planning for aeromedical evacuation coverage must consider the response time patient evacuation precedence crew experience given the operational environment, and security requirements. (See ATP 4-02.2 for information on aeromedical evacuation.)

AUTHORIZATION

3-137. The use of aeromedical evacuation assets for missions requires two authorizations—a medical mission approval authority and a launch authority—as specified by the senior commander.

3-138. **Medical mission approval authority.** 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 aeromedical evacuation missions, the medical approval authority is accomplished by verifying the details of the 9-line medical evacuation (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.

3-139. **URGENT and URGENT-SURG MEDEVAC mission requests.** DOD policy dictates the standard completion time for URGENT and URGENT-SURG 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.

3-140. **Launch authority.** 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.
- Rules of engagement.
- Weather.
- Fighter management.
- Escort requirements.
- Overall tactical situation.

MEDICAL OPERATIONS CELL

3-141. The medical operations cell (MOC) in the Aviation brigade staff provides assistance in planning and coordination for air ambulance employment and utilization. The MOC performs the following functions:

- Establishes flight procedures specific to aeromedical evacuation missions within the CAB. This may include special routes or corridors as well as procedures for escort aircraft link-up.
- Ensures lines of communication (LOCs) to supported units and higher echelons of medical command are available. The MOC also ensures supported units understand aeromedical evacuation procedures and capabilities—an educational endeavor that is an ongoing process.
- Establishes aeromedical evacuation 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 aviation maintenance company and GSAB or CAB staff in conducting aeromedical evacuation operations.

AERIAL CASUALTY EVACUATION

3-142. Differentiated from aeromedical evacuations, aerial CASEVAC is the transport of injured personnel with the use of Army Aviation assets that do not have onboard medical personnel or equipment. Aerial CASEVAC is used in extreme emergencies, when the medical evacuation system is overwhelmed or unavailable or as the situation dictates. Aerial CASEVAC provides the ground maneuver commander with a quick response evacuation, but assumes greater risk due to the lack of medical personnel or equipment on board the CASEVAC platform.

3-143. Aerial CASEVAC operations may be dedicated, designated, or opportunistic. Dedicated aerial CASEVAC assets are employed with the sole purpose of transporting injured personnel, and while they are not outfitted with medical personnel or equipment, they may have a combat life saver onboard. Designated aerial CASEVAC assets perform other roles during the operation such as an air assault or air movement, but they're also specifically tasked with aerial CASEVAC operations as a contingency. Given the opportunity, any Army Aviation lift aircraft that are available are capable of performing aerial CASEVAC operations regardless of prior planning.

SECTION IX –MISSION COMMAND SUPPORT

3-144. Army Aviation enhances mission command 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. Mission command 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 mission command assets provide a means for mission command to be comprehensive and provide beyond line of site voice and data communications. Army Aviation executes mission command support through the use of the mission command aircraft, UAS communication relay package (CRP), and air traffic services (ATS) increasing a commander's ability to integrate and synchronize operations.

COMMAND AND CONTROL AIRCRAFT

3-145. The command and control (C2) aircraft enables 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 area of operation. The CAC does this by providing airborne mission command and aerial retransmission as directed. The mission command UH-60 aircraft gives the commander an enhanced capability to C2 assets over extended distances by performing mission command 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 digitized 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 mission command 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 mission command aircraft during the planning process. The aircrew of the mission command 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.

3-146. **Scheme of maneuver.** Mission command support by a ground force commander occurs in a CAC aircraft flying in controlled airspace. The most common ACMs used is an airborne command and control area (ABC). Coordinated through the S-3 or S-3 (Air), air defense airspace management (ADAM)/BAE, or other air planning element, the ABC 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 ABCs. During offensive operations, on-order ROZs are planned in order to allow mission command aircraft to maneuver commensurate with the offensive tempo.

3-147. **Threat.** Aviation battalion intelligence staff officers (S-2s) and operations staff officers (S-3s) 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 will ensure that the ROZ can support the ground maneuver commander's concept.

3-148. **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.

3-149. **Routes to/from the ROZ.** Flight routes must be developed that will 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.

3-150. **Battlefield circulation of key leaders.** The GSAB as well as the AHB execute missions that facilitate mission command support through leadership battlefield circulation. 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

3-151. 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 mission command by extending the network as the commander circulates in the OE. Both UAS CRP packages enhance mission command by providing extended-range voice communications between command posts, ground, and aviation units.

3-152. The Gray Eagle is designed to support communications relay as one of its primary missions. The Gray Eagle is equipped with a communications relay package-medium (CRP-M). It provides extended tactical communications, enabling forces to communicate over the horizon and provides extension of the voice data network. Meanwhile, the Shadow UAS provides an additional layer of communications relay capability. This system provides a single channel of extended tactical voice communications.

3-153. 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 communication (SATCOM). A careful analysis of mission variables will allow the loiter area to be selected in an area that provides security and uninterrupted communications.

3-154. **Terrain and Weather.** Both natural and manmade features limit sensor effectiveness and mission command. Flat terrain eases LOS issues while mountainous terrain may reduce UA range and data relay capability. Additionally, communications (voice and video) degradation between UAS and ground maneuver units may be experienced during inclement weather.

3-155. **Enemy Threat.** Aviation battalion S-2s and S-3s 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 man-portable air defense systems threat 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.

3-156. **Routes to/from the loiter area.** Flight routes must be developed that will 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

3-157. *Personnel recovery* (PR) is the sum of military, diplomatic, and civil efforts to prepare for and execute the recovery and reintegration of isolated personnel (JP 3-50). The Army personnel recovery process (ARPR) is integrated into all echelons of the Army in several key ways. Incorporation of the ARPR into regularly-performed elements, such as concepts of operations, operations orders, fragmentary orders, SOPs, and battle drills, ensure that ARPR is properly integrated into the operations process during planning and preparation. This also enables rapid execution of ARPR when required. Additionally, this integration establishes coordination points with other staff and joint elements and ensures commanders are aware of ARPR requirements.

3-158. Component Commanders are primarily responsible for implementing PR plans for isolated personnel (IP) on the battlefield for their respective components. The Army integrates PR into all base unit mission plans.

3-159. Army Aviation enhances the ground commander's organic capabilities by providing rapid response. Army Aviation may be designated as the recovery force or to assist in recovery efforts by providing the extraction assets, aeromedical evacuation, escort, attacks, reconnaissance, and mission command support assets to support the PR mission, enhancing the ground commander's flexibility in resolving IP events. Unit commanders initially plan to conduct PR operations in support of their own missions within the scope of immediate recovery efforts.

3-160. Army Aviation provides rapid movement capability for quick reaction forces under the 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 IP. When the enemy situation or mission objectives do not allow for immediate recovery, unit commanders may elect to transition to deliberate recovery efforts.

3-161. 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, missing, detained, or captured (IMDC) personnel. Specifically, aviation is involved in the recovery of personnel within the unit's or supported units'

AO when the IMDC personnel's location is known. Four principle methods of recovery are used when planning and executing recoveries:

- *Immediate recovery* is the sum of actions conducted to locate and recover IMDC personnel by forces directly observing the isolating event or, through the reporting process, determining IMDC personnel are close enough for them to conduct a rapid recovery. Immediate recovery assumes the tactical situation permits a recovery with the forces at hand without detailed planning or coordination (JP 3-50).
- *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, IMDC personnel location, and recovery force capabilities are examples of factors that may require the detailed planning and coordination of a deliberate recovery (JP 3-50).
- *Unassisted recovery* comprises actions taken by IMDC personnel to achieve their own recovery without outside assistance. An unassisted recovery typically involves an evasion effort by IMDC personnel to get back to friendly forces or to a point where they can be recovered via another method. While the code of conduct requires IMDC personnel make every effort to evade or escape, commanders must strive to recover these personnel via one or a combination of methods (JP 3-50).
- *External supported recovery (ESR)* is the sum of actions conducted when immediate or deliberate recovery is not feasible or was not successful. ESR 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; and airborne C2 are examples of capabilities that may be required from different components to execute an ESR (JP 3-50).

3-162. An Army Aviation PR element may be organized with lift assets, attack helicopters, mission command aircraft, and a ground security component with organic or attached medical personnel. Aircraft will be equipped with the necessary or required navigation and communication equipment to locate and communicate with isolated personnel, increasing their likely hood of recovery. Aircrews, mission commanders, and ground recovery force will be trained and current in recovery operations. Depending on the isolated personnel's location, the assault helicopter recovery force is given the launch order and is expected to hold at a point outside hostile fire range until execute order is given by the attack reconnaissance unit AMC.

3-163. PR missions are a combat task, requiring the seizing and holding of a defined area of terrain for a specified time. Commanders must have available resources to ensure security for those personnel on the ground conducting the PR mission through all phases.

3-164. 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 ahead of the operation will 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 IP, and extraction capability for unit personnel involved in immediate recovery efforts.

3-165. During immediate PR events, the first aircraft on scene assumes duties as the on-scene commander (OSC) during the conduct of the PR mission. During deliberate PR missions, the role of OSC is assigned by the commander executing the PR mission. OSC 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.

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Chapter 4

Army Aviation Sustainment

SECTION I – OVERVIEW

4-1. 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 the sustainment principles—responsiveness, simplicity, flexibility, attainability, sustainability, survivability, economy, and integration. These imperatives apply, across the spectrum of conflict, to units conducting offense, defense, and stability operations.

4-2. Employing effective sustainment operations, aviation commanders will 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 operational environment, understand requirements, track requisitions, and make crucial decisions ensuring responsive sustainment.

4-3. 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 war fighting function and elements of sustainment: logistics, personnel support, health service support, and their impact on aviation operations.

SECTION II – LOGISTICS

MAINTENANCE

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 that each aircraft is able to perform during mission execution. An efficient, properly resourced maintenance program will provide the maximum number of aircraft available on a consistent basis for mission support.

TWO-LEVEL CONCEPT

4-5. Aviation maintenance uses the two-level maintenance concept mandated by AR 750-1: field and sustainment levels. Field-level maintenance is accomplished at the brigade level and below with sustainment-level support provided externally through units positioned in theater and various organizations, including depots permanently located in the continental United States (CONUS). Aviation maintenance requirements are prescriptive and must be considered in the planning process to ensure that adequate support is available and provides planners with realistic airframe numbers to support tactical operations.

Field Level

4-6. Field-level maintenance is accomplished throughout the CAB by aviation flight companies/troops and aviation maintenance companies/troops within each of the aviation maneuver battalions and the aviation support company within the aviation support battalion (ASB).

4-7. Aviation flight 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. Flight companies are supported by the aviation maintenance company assigned to the aviation maneuver battalions. This organization provides a robust capability that performs both scheduled and unscheduled aircraft maintenance. In addition, the aviation maintenance company performs maintenance on aircraft components during in-depth maintenance (complex services or phase), or to repair components during unscheduled maintenance.

4-8. The aviation maintenance company 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 (NCOs) that provide technical oversight and safety on all associated maintenance actions to ensure strict adherence to maintenance task performance and inspection.

4-9. The ASB is a CAB element that provides aviation field maintenance support through the aviation support company (ASC). It is structured to support aviation battalions that cannot perform certain maintenance tasks. 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 with split-based maintenance support operations. The ASC structure with sets, kits, outfits and tools enables enhanced capabilities and capacity to conduct backshop component repairs not available across the rest of the CAB.

Sustainment Level

4-10. 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 theater aviation sustainment maintenance group (TASMG), original equipment manufacturers, contract maintenance personnel, or depot organizations.

4-11. 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 (NMP).

4-12. Depot support is facilitated by the Corpus Christi Army Depot (CCAD) and the Letterkenny Army Depot. CCAD is the Army's organic facility for the repair and overhaul of rotary-wing 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

4-13. Battle damage assessment and repair (BDAR) returns disabled equipment rapidly to combat or enables the equipment to self-recover. For Army Aviation, the use of specialized aircraft damage assessment criteria, repair kits, and trained personnel to assess damage, conduct repairs, and facilitate maintenance evacuation of damaged aircraft. BDAR may be a technique used to facilitate a downed aircraft recovery team (DART) mission. BDAR restores the minimum essential capabilities necessary to support a specific combat mission or to enable equipment self-recovery. Operators/crew chiefs, aircraft maintenance personnel teams, maintenance support teams, contact maintenance teams, and recovery teams may perform BDAR as authorized by the commander.

DOWNDOWN AIRCRAFT RECOVERY TEAM

4-14. Aircraft recovery is a pre-planned mission for all units with assigned or operational control 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. While DART composition includes security personnel from within the aviation battalion, planning should also include security contingencies from the supported unit during tactical missions.

4-15. The operational commander retains initial responsibility for DART. The PC officer is the principal maintenance manager and coordinator for aviation maintenance company 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 operational environments. If the DART operation exceeds the capabilities of the aviation maneuver battalion, the officer in charge (OIC) coordinates with the ASB to effect recovery of the downed aircraft. When required, the brigade S-3 and SPO coordinates for external support for the DART through the ground unit assigned to the AO, or other logistics units during ground recover missions.

SUPPLY

4-16. Aviation supply functions are automated and embedded into aircraft maintenance software that feeds into Army logistics information systems (LIS). LIS increases combat effectiveness through the efficient management of supplies, equipment, ammunition, maintenance, and through rapid reallocation of resources to sustain troops.

4-17. The aviation maintenance company provides aviation battalion parts support. Assigned supply personnel are responsible for managing the battalion's prescribed load list (PLL), and benchstock 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 support supply activity (SSA) authorized stockage list (ASL).

4-18. 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 (SSL), and benchstock that are tailored for their maintenance support mission requirements. Supply support for maintenance of aviation ground support equipment (GSE) and other non-aircraft items is conducted through the battalion's forward support company maintenance platoon. The maintenance platoon carries the battalion's non-flight SSL and bench stock.

4-19. The SSA within the ASB's distribution company, manages the demand supported ASL owned by the Army Material Command). 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

4-20. Unit manning limits the available man-hours that are dedicated to the maintenance mission. Efficient use of maintenance personnel and time available maximizes their ability to perform critical aircraft and component services and repair. Aircraft flight hour availability produced by a unit is affected by available man-hours and the scheduled and unscheduled maintenance workload generated by mission requirements. For this reason, maintenance capability must be managed through augmenting the force in anticipation of prolonged and increased operational tempo. 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.

4-21. Aviation units usually have an established contracted maintenance capability in peacetime. Contracted maintenance requirements increase significantly during deployment and sustained combat operations. This may include life-support operations, bulk commodities, and operational support. This increase must be anticipated with enough lead-time to allow for systemic contractual timelines and deployment.

4-22. The supply officer is the primary staff officer responsible for OCS management, coordination, and oversight. Though not usually appointed as a contracting officer representative (COR), the supply officer monitors all contracts and ensures the execution of contracts meet the commander's intent. When required, the supply officer prepares Annex W of the operations order or plan. For further information on contract support, see ATTP 4-10.

KEY AVIATION MAINTENANCE PERSONNEL

AVIATION MATERIEL OFFICER

4-23. The brigade aviation materiel officer (BAMO) is the primary maintenance adviser to the CAB commander. Working in conjunction with assigned aviation battalions, the BAMO recommends actions and forecasts future capabilities based on the current and projected maintenance readiness. This process occurs through the coordination of maintenance actions based on operational requirements, consultation with the battalion/squadron maintenance leadership, and reviewing the daily status and monthly operational readiness reporting of all aircraft in the CAB.

4-24. The BAMO standardizes the brigade's maintenance program using Army regulations, technical manuals, and Aviation and Missile Command (AMCOM) directives that affect assigned aircraft. The BAMO provides maintenance and logistical information and requirements to the brigade commander and staff on aviation and aviation-related systems. The BAMO focuses on fleet readiness reporting, aircraft bank time management, flying hour program spending, aircraft transfers and frequently coordinates with elements external to the CAB.

4-25. The ASB aviation materiel officer (AMO) serves in the SPO section of the HSC to facilitate brigade-level sustainment issues and special staff actions. The AMO also participates in support planning as a key advisor and subject matter expert to the SPO and the ASB commander. (See paragraph 4-26.) The AMO focuses primarily on aircraft on ground, high priority, and turn-in of depot-level recoverable aircraft parts for the CAB.

4-26. The aviation maneuver battalion AMO works with the logistics staff officer (S-4) and is an advisor to the battalion commander and staff for aviation materiel issues. The AMO reviews reports and makes recommendations on aviation logistics and maintenance. The AMO ensures close coordination with the aviation maintenance company and the supporting ASB.

SUPPORT OPERATIONS OFFICER

4-27. 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 S-4s to establish maintenance priorities and resolve maintenance and logistics support issues. The SPO conducts brigade-level coordination with the sustainment brigade, theater AFSB, 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 the petroleum, ammunition, movement control, transportation, and assist 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.

PRODUCTION CONTROL OFFICER

4-28. The production control (PC) officer is the principal maintenance manager-coordinator in the aviation maintenance company/troop or ASC and coordinates maintenance and sustainment actions at the company/troop and battalion/squadron level. The PC OIC is the aviation maintenance company/troop or ASC commander's primary maintenance advisor for all internal production and maintenance activities.

The PC officer is responsible for controlling aviation maintenance production matters according to command guidance and is the direct link between unit commanders, the aviation maintenance company/troop, 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

4-29. The quality control (QC) officer is responsible for the internal management of the QC 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 aircraft systems understanding.

4-30. Priority of work is coordinated with the PC officer, but QC makes determinations of airworthiness independently and bases decisions on Army regulation, technical manuals, and published AMCOM directives. The QC Officer ensures the battalion's monthly maintenance and shop safety inspections are conducted by technical inspectors.

4-31. 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.

AVIATION MAINTENANCE OFFICER

4-32. Aviation maintenance officers, military occupational specialty 15D, plan and direct aviation maintenance and logistics operations. They are Army aviators who hold an aeronautical rating, and command the AMC, the ASC, and the ASB.

MAINTENANCE TEST PILOT

4-33. Maintenance test pilots (MTPs) manage and execute the unit commander's maintenance program. They provide advanced troubleshooting skills within their specific aircraft mission design series to facilitate efficient repairs and maintenance, and are responsible for conducting maintenance test flights to determine the airworthiness of the unit's aircraft. They are primary advisors and are appointed by the unit commander to fill maintenance specific MTOE positions within the CAB. Selected MTPs will fill maintenance examiner (ME) positions to train, develop, and evaluate unit MTPs to enhance skills and proficiency.

AVIATION MAINTENANCE TECHNICIANS

4-34. Aviation maintenance technicians are aviation system integrators, technical experts, and managers that direct the daily operations of their assigned sections to generate aircraft operational availability according to DA mandated goals, regulations and command guidance. Aviation maintenance technicians provide supply chain and project management oversight on personnel, facilities, and materials required to sustain and repair Army manned and unmanned aircraft 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 – PERSONNEL SERVICES

HUMAN RESOURCE SUPPORT

4-35. The personnel staff officer (S-1) has coordinating responsibility for finance, religious activities, public affairs and legal services support of the unit. The S-1 is normally collocated with the S-4 in the sustainment cell of the main CP.

LEGAL SUPPORT

4-36. The combat aviation brigade legal section includes a brigade judge advocate, a trial counsel, and a senior paralegal NCO. The brigade legal section provides legal support to the command across the judge advocate general's corps' six core legal disciplines: military justice, international law 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 will provide operational law advice. The members of the brigade legal section serve as subject matter experts (SMEs) 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 NCO provides administrative and paralegal support to the judge advocates in the legal section and supervises the paralegals in the aviation battalions.

RELIGIOUS SUPPORT

4-37. The aviation brigade chaplain provides unit level religious support to all personnel assigned/attached to the brigade including nondenominational coverage and ministry for mass casualties and hospitalized members of the brigade. The chaplain advises the commander on religious, moral, and Soldier welfare and morale issues. He or she establishes liaison with unit ministry teams (UMTs) of higher and adjacent units. He or she also supervises aviation battalion chaplains and provides backup services as required. The chaplain and chaplain's assistant compose the UMT, usually operating from the same location as the adjutant.

SECTION IV – HEALTH SERVICE SUPPORT

RESPONSIBILITY

4-38. The DOD aeromedical evacuation system consists of an Intra-Theater aeromedical evacuation mission (typically performed by dedicated US Army rotary-wing aeromedical evacuation units), and an Inter-Theater aeromedical evacuation mission (typically performed by designated United States Air Force FW assets) which together, provide the vital linkage of assets required for a successful health service support (HSS) system. The CAB supports the HSS function with medical personnel in the HHC at brigade and battalion level, to provide casualty care within the brigade, and medical company, air ambulance organic to the GSAB to provide aeromedical evacuation mission support within the supported area of operation.

AVIATION MEDICINE

4-39. Aviation medical support is directed by the brigade flight surgeon that coordinates with each of the aviation battalion's medical personnel.

4-40. The brigade flight surgeon, in conjunction with the physician assistant, operates the brigade aid station normally located in the brigade AA. 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, and determines requirements for the requisition, procurement, storage, maintenance, distribution, management, and documentation of medical equipment and supplies for the unit.

MEDICAL EVACUATION

4-41. Aeromedical evacuation of casualties is provided by the HHS system through the use of organic aeromedical evacuation assets within the CAB. Evacuation by air is the preferred method of evacuation of seriously wounded and ill Soldiers. The aviation brigade has an organic aviation maintenance company assigned to the GSAB. Within the GSAB, the medical company, air ambulance is organized to provide support from four separate operational locations. These operational locations are typically with the aviation TF, with HSS organizations, with a BCT, or with higher echelons in order to provide the most appropriate aeromedical evacuation support throughout the AO. Air ambulance aircraft specifically equipped with medical personnel and equipment necessary for providing the required en route care of casualties. When aeromedical evacuation assets are not readily available or the medical mission requirement exceeds capabilities, the utility and cargo helicopters may be required to conduct CASEVAC operations.

4-42. The medical company consists of 15 HH-60 aircraft that provides aircraft maintenance and logistics support, aviation communications, and real-time operational picture associated with today's combat environment. HH-60 aircraft has maximum cabin space, placing sophisticated, life-saving instruments and equipment for the medical attendants. HH-60 have the following unique capabilities that provide air ambulance medical evacuation support for all categories of patients:

- Oxygen-generating systems.
- Night vision google (NVG)-compatible lighting throughout.
- Environmental control system.
- Medical equipment.
- Patient monitoring equipment.
- Neonatal isolettes.
- Provisions for stowing intravenous solutions.

4-43. The air ambulance company has one area support medical evacuation platoon, and four FSMP, consisting of three HH-60 aircraft to provide a task-organized means for medical evacuation at the DS and GS level. The FSMP also provide emergency movement of medical personnel and emergency delivery of whole blood, biological, and medical supplies and equipment.

4-44. In-flight care is provided by the critical care-trained nationally-registered flight paramedic (CC-NRP), designated as 68WF2, and perform duties within the GSAB medical companies. This enhanced capability focuses on providing critical en route care in order to maximize opportunity to save lives on the battlefield. Depending on the medical needs of the patient(s), additional clinical providers may include the en route critical care nurse (ECCN), the aeromedical physician assistant, or other emergency medicine providers.

MEDICAL LOGISTICS

4-45. General support 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 will be used to deliver medical supplies from the sustainment area to the supported units. In some instances, however, air ambulances from the GSAB may be used to transport emergency Class VIII resupply to requesting units.

SECTION V – OPERATIONAL IMPACTS

OPERATIONAL REACH

4-46. 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

4-47. 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.

THEATER OPENING/CLOSING

4-48. 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.

BASING

4-49. 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 and 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 (NGOs), and commercial air activities.

4-50. Potential airfields must be properly analyzed in order to determine dimension, and possible conflicts between UAS and manned military and civilian aviation. A letter of agreement (LOA) may be necessary in order to establish operational procedures, and requirements for placement of ground equipment. This agreement will be made by both the UAS unit and air traffic control (ATC) for standardization, and airfield operational safety.

4-51. An AME is located within the CAB S-3 section that 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 (POL) services, and navigational aids (NAVAIDs).

EXPEDITIONARY CAPABILITY

4-52. 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 mission command at theater-level airfields, forward operating bases, and other areas designated by the theater aviation commander.

4-53. 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 air traffic services (ATS) element. The AOB may conduct transition operations with a GSAB ATS company during an advancing movement or in stability operations.

INTERMEDIATE STAGING BASE

4-54. The intermediate staging base (ISB) is a tailorabile, 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.

4-55. 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 mission command, maneuver, sustainment and joint support to enable force projection into the combat zone.

4-56. 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

4-57. 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 will designate a service as the senior airfield authority (SAA). In some situations, an aviation brigade commander or an aviation task force commander may be designated as the SAA.

4-58. 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.

4-59. The air traffic services standardization element (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 special use airspace for restricted areas, transition areas, and control zones. The ATSSE serves as the primary staff coordinator for ATS matters within the theater.

FORWARD ARMING AND REFUELING POINT

4-60. A 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. 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. A FARP should meet unit mission requirements, provide support throughout the battlefield under all conditions, and avoid threat observation and engagement.

4-61. All aviation maneuver battalions have an organic forward support company with a distribution platoon designated to perform FARP operations. The aviation support battalion and attack and reconnaissance maneuver battalions 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 S4 coordinates with the sustainment brigade to push bulk class III and V directly to the FARPs. The ASB SPO monitors the support relationship and may provide supplementary pushes, conduct ammunition transfer and holding point operations, and augments with additional FARP operation capabilities. FARP personnel are responsible for providing security to the FARP. 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 maneuver force's scheme of maneuver. Refer to ATP 3-04.94 for further information.

FREEDOM OF ACTION

4-62. Successful sustainment enables freedom of action by increasing the number and quality of options available to the commander. Freedom of action is enabled by aviation commanders preparing and putting sustainment capabilities in place.

NEGOTIATIONS AND AGREEMENTS

4-63. 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 that will be used across a broad spectrum of users.

4-64. 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.

4-65. 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.

SUSTAINMENT PREPARATION OF THE OPERATIONAL ENVIRONMENT

4-66. An analysis of the operational environment should identify aviation locations that will allow the greatest freedom of action for commanders. They 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.

SUSTAINING OPERATIONAL TASKS

4-67. Aviation provides sustainment capability, internally and externally, 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.

ENDURANCE

4-68. Endurance stems from the ability to maintain, protect, and sustain forces, regardless of how far away they are deployed, how austere the environment, or how long land power is required.

DISTRIBUTION

4-69. Army rotary-wing 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.

RISK MANAGEMENT

4-70. Aviation operations are inherently risky and are not only subjected to losses due to combat operations, but remain vulnerable to risks associated with routine peacetime operations. Those risks must be managed in order to provide continued support to the ground maneuver commander.

4-71. Risk management is that critical process which 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 an integral part of every planning process and directly contributes to the availability of aircrews, aircraft, and the associated equipment that are critical to mission support and accomplishment.

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.

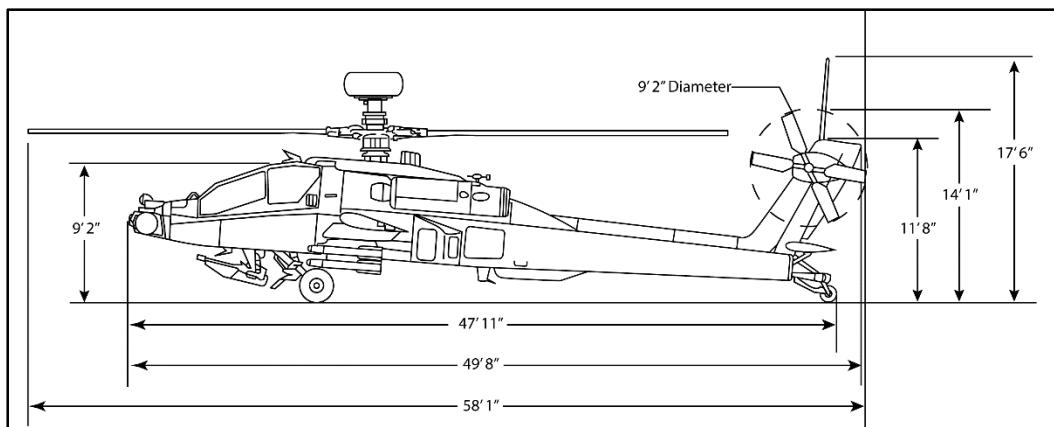


Figure 5-1. AH-64D/E Apache helicopter

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

Specifications:	
Length (rotors turning)	58 feet 1 inch
Height: (rotors turning)	17 feet 6 inches
Width: (rotor turning)	48 feet
Fuselage length:	49 feet 8 inches
Fuselage length: (rotor turning)	58 feet 1 inch
Fuselage width:	16 feet 4 inches with wing stores
Main rotor diameter:	48 feet
Maximum gross weight:	23,000 pounds
Cruise airspeed:	110 to 120 knots*
Max continuous airspeed:	140 to 145 knots*
Combat radius :	120 kilometer*
Armament:	
Max remote designated Hellfire missile range from aircraft: 8 kilometers (for shooter) 2.75 inch rockets: 3,000 to 5,000 meters for the multi-purpose sub-munitions (MPSM) and unitary warhead with hovering fire most effective dispersion pattern. 30-millimeter cannon: maximum range: 4,200 meters up to 1,200 rounds. 30-millimeter cannon: maximum effective range: 1,500 to 1,700 meters The Stinger anti-aircraft missile has a range of 200 meters to 4.5 kilometers	

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

Sensors:
Modernized target acquisition and designation system (MTADS) for use in low light and daytime. TV allows autonomous laser designation of tank size target with image auto tracker at 6,000 meters, 4,000 meters using manual tracking.
MTADS/forward looking infrared (FLIR), (for use in day, night, weather, and obscurants). Allows autonomous laser designation of tank-sized target with image auto tracker at 3,500 meters, 3,000 meters using manual tracking.
Modernized pilot night vision system (MPNVS), (night weather and obscurants)
Fire control radar is capable of detecting, classifying, and prioritizing targets without line of sight or in limited visibility and engaging with RF Hellfire missiles.
RF Interferometer identifies and prioritizes radar emitters based on pre-designated signatures.
Navigation Equipment:
Dual embedded GPS/inertial navigation system, Doppler radar, automatic direction finder (ADF), (AH-64E) dual very high frequency omnidirectional range (VOR), ILS.
Additional Capabilities:
Use of infrared zoom laser illuminator designator (IZLID) laser for AGO to allow ground units to view laser through NVDs.
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 (TCDL) for interoperability UA/GCS, United States Air Force/United States Navy/United States Marine Corp FW A/C (LiNK-16).
Video from unmanned aircraft system for interoperability teaming (VUIT); video from cockpit to One Station Remote Viewing Terminal.
All fuel cells are crashworthy, and ballistic tolerant.
The use of the auxiliary 100-gallon internal fuel tank will limit 30-millimeter ammunition to approximately 300 rounds; the 130-gallon internal auxiliary tank limits 30-millimeter ammunition to 100 rounds.
Fuel capacity: 370 gallons; average gallons per hour: 175
*Varies with factors such as temperature, wind, gross weight, internal versus external load, and time in the PZ and LZ.

ATTACK HELICOPTER ARMAMENT SYSTEMS

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 Longbow Hellfire modular missile system. These systems can be mounted asymmetrically based on mission requirements on the four universal wing store pylons (two on each side of the aircraft). The aircraft armament is can be attached or loaded in an asymmetrical mix based on the mission. The wing stores may be configured to allow a mix of Hellfire missiles and rockets to be carried. Each pylon may carry up to 19 rockets in a 19-shot pod or four Hellfire missiles on attached launcher racks. 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. The use of the auxiliary 100 gallon internal fuel tank limits 30mm ammunition to approximately 300 rounds; the 130 gallon internal auxiliary tank limits 30mm ammunition to 100 rounds.

AREA WEAPON SYSTEMS

5-3. The M230E1 chain-driven cannon is an area weapon system mounted to a hydraulically driven turret located under the forward fuselage below the cockpit. It has a rate of fire of 600 to 650 rounds per minute with a maximum effective range of approximately 1,500 to 1,700 meters against area targets. The cannon fires the M799 high explosive incendiary round and the M789 high explosive dual purpose (HEDP) round. Each shell contains an explosive charge sealed in a shaped-charge liner. It can penetrate more than 2 inches of armor at 2,500 meters and produces antipersonnel effects within a 4-meter radius. At typical engagement ranges, HEDP ammunition will defeat infantry carrier vehicle-type targets. Training rounds include the M788 training purpose and the M848 dummy round. The aircraft can internal load and carry up to 1,200 rounds of

30mm ammunition based on the mix of other weapons systems and the mission. Running and diving fires during an attack are limited by range source selection and often fired using the helmet sight at ranges of 1,000 meters.

AERIAL ROCKET SYSTEM

5-4. The 2.75-inch aerial rocket system is an area weapon system for use against enemy personnel and equipment. Targets can vary from troops in the open to light armored vehicles, and other soft-skinned targets. The rocket launcher can accommodate a various mix of warheads including: high explosive, multi-purpose sub-munitions (MPSM), white or red phosphorous obscurants, overt or covert illumination, and flechette rounds. The rocket can be selected to detonate on contact or as an airburst, depending on fusing and the type of rocket selected. The AH-64 helicopter can carry up to four 19-shot launcher pods on four wing store pylons, for a total of 76 rockets. The aircrew can launch single or multiple rockets at a time.

LONGBOW HELLFIRE MODULAR MISSILE SYSTEM

5-5. The Hellfire missile system is an air-to-ground point weapon system designed to destroy various types of targets. The Hellfire missile suite currently consists of high explosive anti-tank, blast-fragmentation, and thermo-baric missiles. These general groups of missiles are further designated by model number, used to identify the type of missile. The A through F model missiles are the oldest variants, and referred to as semi-active laser type 1 (SAL-1) missiles. The K through R model missiles are the newer variant and referred to as SAL-2 type. The SAL-2 missiles have various capabilities with technological advantages over the older SAL-1 missiles. The Hellfire missile will lock-on to a target by using guidance received by a laser designator (LD) or by a radar scan and control. The SAL missile uses a pre-set LD code to lock-on to a specific target being painted with a laser beam until it impacts the target. Target designation may be either remote or autonomous. Remote target designation occurs when the target is designated by another laser source such as other aircraft, ground forces, or an unmanned aircraft. The L model is a radio frequency (RF) Hellfire missile which receives precision guidance from the fire control radar. The AH-64 can carry up to a total of 16 Hellfire missiles on four wing-store pylons.

UH-60 L/M BLACKHAWK CHARACTERISTICS

5-6. 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, mission command support, air MEDEVAC (HH-60 variant), and as required, CASEVAC. It is designed to carry 11 combat-loaded air assault troops (seats installed). It also can move light field artillery pieces and supporting stock. Figure 5-2 and table 5-2, page 5-4, provide the basic description and characteristics of the UH-60L/M (more information can be found in TM 1-1520-237-10).

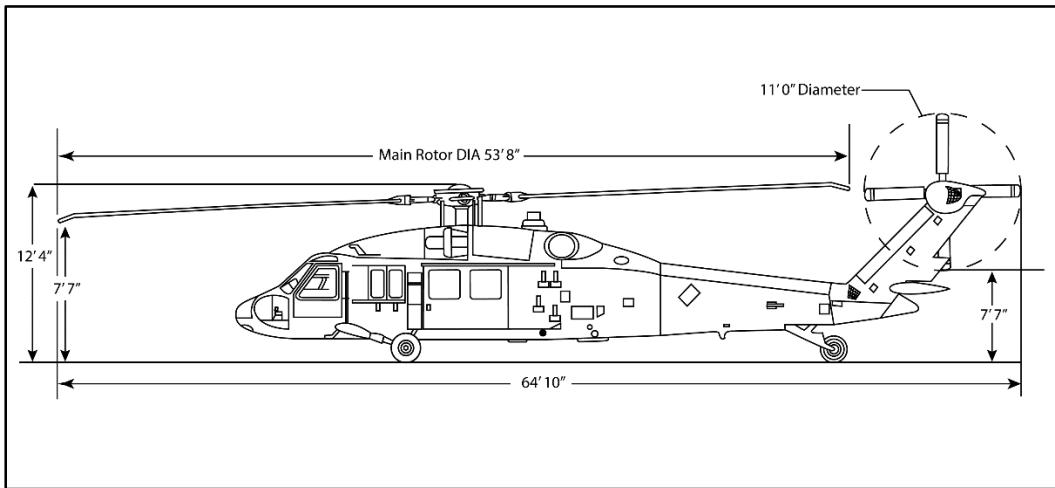


Figure 5–2. UH-60 L/M Blackhawk helicopter

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

Specifications:	
Length: (rotor turning)	64 feet 10 inches
Height:	12 feet 4 inches at center hub 17 feet 11 inches at tail rotor (turning)
Width: (rotor turning)	53 feet 8 inches
Main rotor and tail rotor diameter:	53 feet 8 inches main rotor, 11 feet tail rotor at 20-degree angle
Fuselage Length:	41 feet 4 inches with rotors and pylons folded.
Fuselage Width:	9 feet 8.6 inches main landing gear 14 feet 4 inches at the stabilator 21 feet with ESSS installed
Cabin floor dimensions:	73 inches wide x 151 inches long
Cabin door dimensions:	69 inches wide x 54.5 inches high
Maximum gross weight:	22,000 pounds*
Maximum cargo hook load:	UH-60A: 8,000 pounds*
Maximum cargo hook load:	UH-60L&M: 9,000 pounds*
Cruise airspeed:	120 to 145 knots*
Airspeed with external sling-loads:	120 knots max
Max speed (level):	156 knots
Combat radius:	225 kilometers*
Armament:	
2 x M240H (7.62mm machine guns)	
Optics:	
AN/AVS-6 NVG, FLIR (optional)	
Navigation Equipment:	
Doppler/GPS, VOR, ADF, navigation sets	

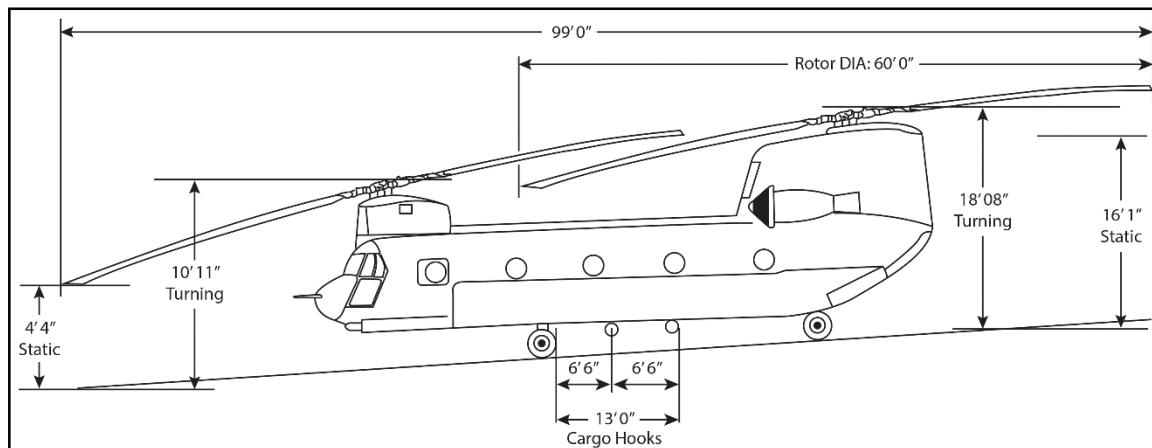
Table 5–2. UH-60L/M Black Hawk helicopter characteristics continued

Additional Capabilities:
<ul style="list-style-type: none"> 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). Fuel Capacity: 362; average gallons per hour: 178. The enhanced mission command console (if installed), provides the maneuver commander with an airborne platform supporting six secure FM radios, one high frequency (HF) radio, two very high frequency (VHF) radios, and two ultra-high frequency (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: <ul style="list-style-type: none"> Rescue hoist: 600 pounds rescue hoist. Patient capacity: six litter or ambulatory, or a combination.
Limitations:
<ul style="list-style-type: none"> 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/mission conditions.

CH-47D/F CHINOOK CHARACTERISTICS

5-7. The Boeing CH-47 Chinook is a twin-engine, tandem rotor heavy-lift helicopter. Its primary missions are air assault, troop movement, and as required, CASEVAC. 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 depict the basic dimensions and characteristics of the Chinook.

**Figure 5–3. CH-47D/F Chinook cargo helicopter****Table 5–3. CH-47D/F Chinook cargo helicopter characteristics**

Specifications:	
Length (rotors turning)	98 feet 10 inches
Height: (rotors turning)	18 feet 11 inches
Width: (rotor turning)	60 feet
Fuselage length:	50 feet 9 inches
Fuselage width:	12 feet 5 inches

Table 5–3. CH-47D/F Chinook cargo helicopter characteristics continued

Specifications:	
Main rotor span:	60 feet
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 max
Combat radius (16,000 pounds cargo):	50 nautical miles (90 kilometers)*
Combat radius (33 troops):	120 nautical miles (180 kilometers)*
Armament:	
3 M240H 7.62mm machine guns (two cabin-mounted and one ramp-mounted)	
Optics:	
AN/AVS-6 NVG	
Navigation Equipment:	
Doppler/GPS, VOR, and ADF navigation sets	
Additional Capabilities:	
<ul style="list-style-type: none"> • Can be configured with additional fuel for a mobile forward area refueling system (Fat Cow or Wet Cow) or for ferrying/self-deployment missions. • CASEVAC: 24 litters and 1 ambulatory or 31 ambulatory. • Fuel Capacity: 1,030 gallons; average gallons per hour: 514. • Aircraft has an internal load winch to ease loading of properly configured cargo. • The CH-47D/F can sling-load most equipment in the light infantry, airborne, or air assault divisions. 	
Limitations:	
Cruise speed is greatly decreased by light, bulk sling-loads.	
*Varies with factors such as temperature, wind, gross weight, internal versus external load, and time in PZ/LZ.	

MQ-1C GRAY EAGLE CHARACTERISTICS

5-8. The MQ-1C Gray Eagle is a multi-mission, multi-payload system that's primary missions include long endurance, near-real-time reconnaissance, and precision attack. It is organic to the attack reconnaissance battalion in the combat aviation brigade and the military intelligence aerial exploitation brigade. (For more information on Aerial Exploitation Brigade Gray Eagles, refer to TC 2-19.13 and TC 2-19.11.) Gray Eagles may team with CAB manned aircraft or operate autonomously in support of ground force commander objectives and information requirements. Figure 5-4, page 5-7, depicts the Gray Eagle in a basic configuration; table 5-4, page 5-7, outlines air vehicle characteristics.

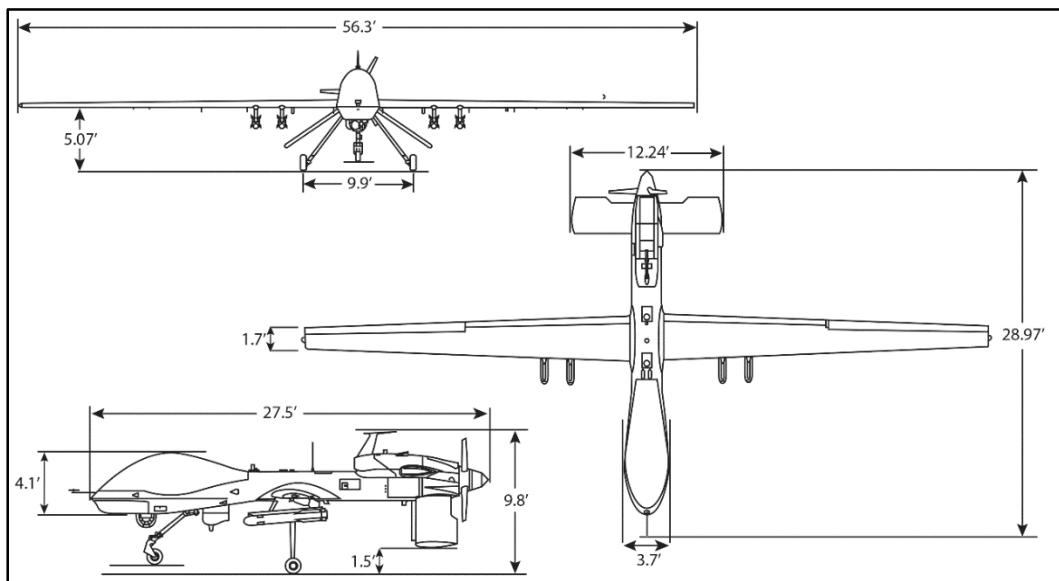


Figure 5–4. MQ-1C Gray Eagle unmanned aircraft

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

Specifications:	
Length:	29 feet
Height: (propeller turning)	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
Altitude:	25,000 feet MSL
Runaway length requirement:	4500 feet at 9000 feet density altitude
Cruise airspeed:	80 knots*
Max continuous airspeed:	130 knots
Combat range (air data relay/SATCOM):	1200 kilometers
Combat range (LOS):	300 kilometers
Armament:	
4 Hellfire missiles (aircraft specific variant)	
Optics:	
Electro-optical and infrared	
Nominal ocular hazard distance	39 kilometers
Nominal ocular hazard distance	82 kilometers with 7x magnifying optics
Datalink Equipment:	
Ku SATCOM, Ku TCDL	

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

Additional Capabilities:
<ul style="list-style-type: none"> • Laser classification: Class IV • Synthetic aperture radar (SAR), ground moving target indicator (GMTI)
Limitations:
Aircraft endurance is reduced when armed with Hellfire missiles.
*Varies with environmental conditions.

MQ-1C ARMAMENT SYSTEM

5-9. The MQ-1C Gray Eagle unmanned aircraft system is used in support of reconnaissance and surveillance requirements. The MQ-1C can be outfitted with the Hellfire missile for attacking selected targets. The MQ-1C uses a laser rangefinder (LR) and a laser designator (LD), which is used to determine the range to the target and to designate targets for delivery of laser-guided munitions.

AGM-114-P+ AND AGM-114-R/R2 HELLFIRE MISSILE

5-10. The MQ-1C aircraft can carry the AGM-114 P+ and AGM-114R/R2 series of missiles. In the attack configuration four missiles are carried, and in the reconnaissance/attack configuration two missiles are carried. Both missiles incorporate an expanded engagement envelope from 180 to 360 degrees depending on the AVs altitude and software series. The P+ is currently being phased out as the R model is fielded. The R series of Hellfire missiles is the bridge to the Hellfire replacement which is the joint air to ground missile (JAGM). The R series comes in two versions, the AGM-114R and the AGM-114R2. The AGM-114 R incorporates an integrated blast fragmentation sleeve (IBFS) warhead which is unique to the Hellfire family of missiles. This one warhead provides the commander with three capabilities. A high explosive anti-tank (HEAT) capability with a pre-cursor charge for attacking reactive armor equipped tanks and other hard targets, a blast fragmentation capability for light vehicles and personnel and a settable delay to allow the warhead to penetrate through a wall or ceiling and into a structure maximizing the overpressure feature of the warhead before detonation occurs. The AGM-114R2 additionally incorporates a height of burst (HOB) capability which detonates the warhead approximately 3 feet prior to the missile impacting the target. This HOB capability provides an increased probability of kill (P_k) by eliminating the attenuation of the fragments by the ground. Danger close for both series of missiles is 120 meters. Table 5-5 outlines Hellfire II missile characteristics.

Table 5–5. AGM-114P+/AGM-114R/R2 Hellfire missile characteristics

Diameter	17.8 centimeters (cm) (7 inches)
Wing span	33 centimeters (13 inches)
Length	163 centimeters (64 inches)
Weight	50 kilograms (110 pounds)
Propulsion	Solid fuel rocket
Guidance	Semi-active laser homing
Speed	Supersonic
Range	0.5-8 kilometers (546 yards-5 miles)
Payload	AGM-114P+: missile configurations: P-4A HEAT with fragmentation sleeve. N-4 Blast fragmentation with Metallic augmented charge (overpressure) and delay fuse. AGM-114R: IBFS warhead for all target sets. R2 warhead adds a HOB capability.
Trigger	Impact, HOB, Delay
Targets	AGM-114P+: Three warhead variants defeat an array of targets (including tanks, light armored vehicles, trucks, bunkers, caves, and buildings.) AGM-114R/R2: One warhead defeats an array of targets (including tanks, light armored vehicles, trucks, bunkers, caves, and buildings.)

RQ-7BV1/V2 SHADOW CHARACTERISTICS

5-11. The RQ-7BV1/V2 is a FW tactical unmanned aircraft system with a primary mission of reconnaissance. Organic to the attack reconnaissance squadron in the combat aviation brigade, Shadows may team with CAB manned aircraft or operate autonomously in support of ground force commander objectives. Figure 5-5, page 5-9, depicts the basic parameters of the RQ-7B V1 and V2; table 5-6, page 5-9, depicts characteristics.

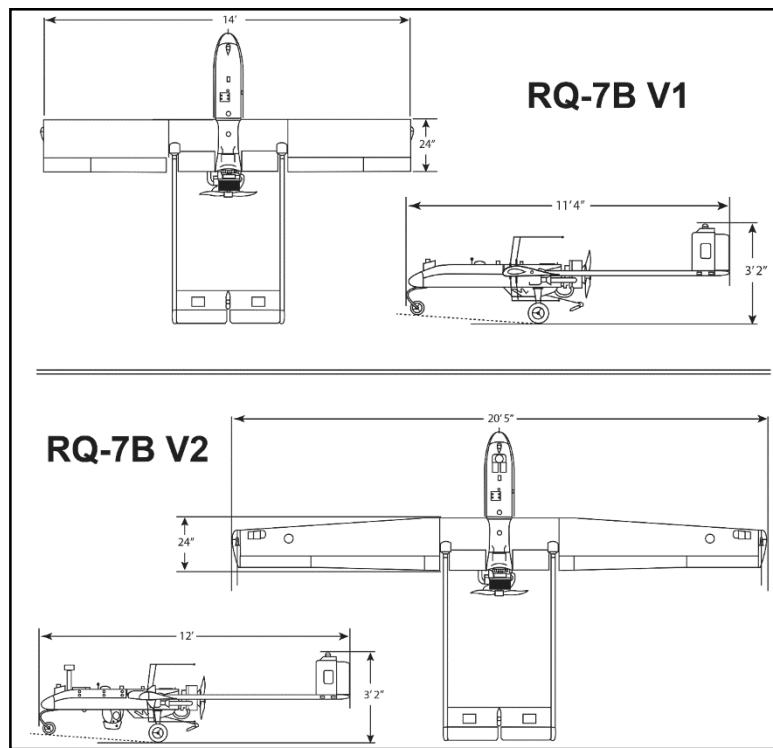


Figure 5-5. RQ-7B Shadow unmanned aircraft system

Table 5-6. RQ-7B Shadow unmanned aircraft system characteristics

Specifications:	
Length:	11 feet 4 inches
Height: (propeller turning)	3 feet 3 inches
Main wing span:	14 feet; 19 feet 8 inches (RQ-7Bv2)
Endurance:	5+ hours; 8+ hours (RQ-7Bv2)
Propulsion:	Fuel injected wankel rotary engine utilizing 100 Low Lead Aviation Gasoline.
Maximum gross take-off weight:	404 pounds/467 pounds (RQ-7Bv2)
Altitude:	15,000+ feet mean sea level
Launch and recovery requirements:	220 meters by 50 meters area
Cruise airspeed:	70-80 knots
Max dash airspeed:	110 knots
Combat range (line of sight):	125 kilometers

Table 5–6. RQ-7B Shadow unmanned aircraft system characteristics continued

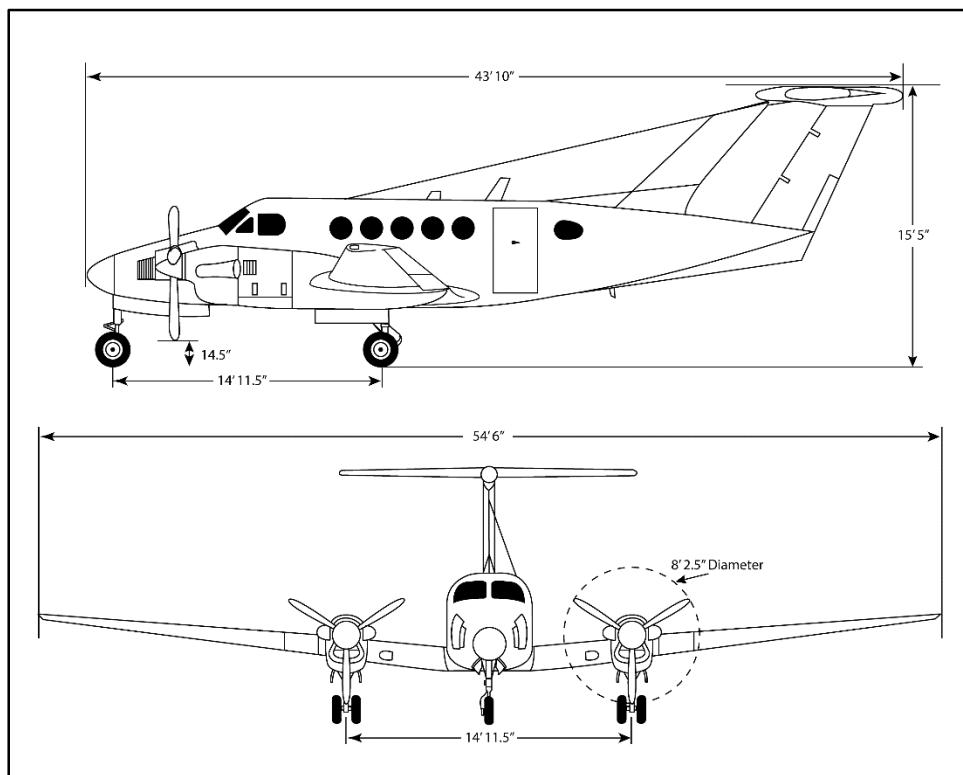
Armament:	
Not at present	
Optics:	
Electro-optical, infrared, and laser pointer/laser rangefinder and laser designator.	
Nominal ocular hazard distance	15 kilometers
Datalink Equipment:	
RQ-7Bv1	Primary: 2.4-2.48 GHz band Secondary: UHF-band Video: 4.4-4.95 GHz C-band (CONUS*) Video: 5.25-5.85 GHz (OCONUS*)
RQ-7Bv2-tactical common data link	Primary: TCDL Ku-band (Type I encryption) Secondary: UHF-band (Type II advanced encryption)
Additional Capabilities:	
<ul style="list-style-type: none"> Laser classification: class IV designator, III-b rangefinder, III-b pointer FM radio communications relay package 	
Limitations:	
Aircraft is sensitive to weather conditions. Dust, rain, and low ceilings ground aircraft.	
*CONUS-continent United States; OCONUS-outside the continental United States. GHz-gigahertz	

C-12R/T3/F3 AIRCRAFT

5-12. 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. Table 5-7, page 5-10, depicts characteristics; figure 5-6, page 5-11, depicts the basic parameters of the C-12.

Table 5–7. C-12 aircraft specifications

Specifications:	
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
Service ceiling:	35,000 feet mean sea level
Cruise airspeed:	294 knots
Range:	3,658 kilometers

**Figure 5–6. C-12 aircraft**

UC-35 AIRCRAFT

5-13. The UC-35 is a twin-engine turbofan medium range aircraft. Its principle missions include air movement of passenger and cargo (table 5-8, page 5-11, and figure 5-7, page 5-12).

Table 5–8. UC-35 aircraft specifications

Specifications:	
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
Service ceiling:	45,000 feet mean sea level
Cruise airspeed:	430 knots
Range:	2,925 kilometers

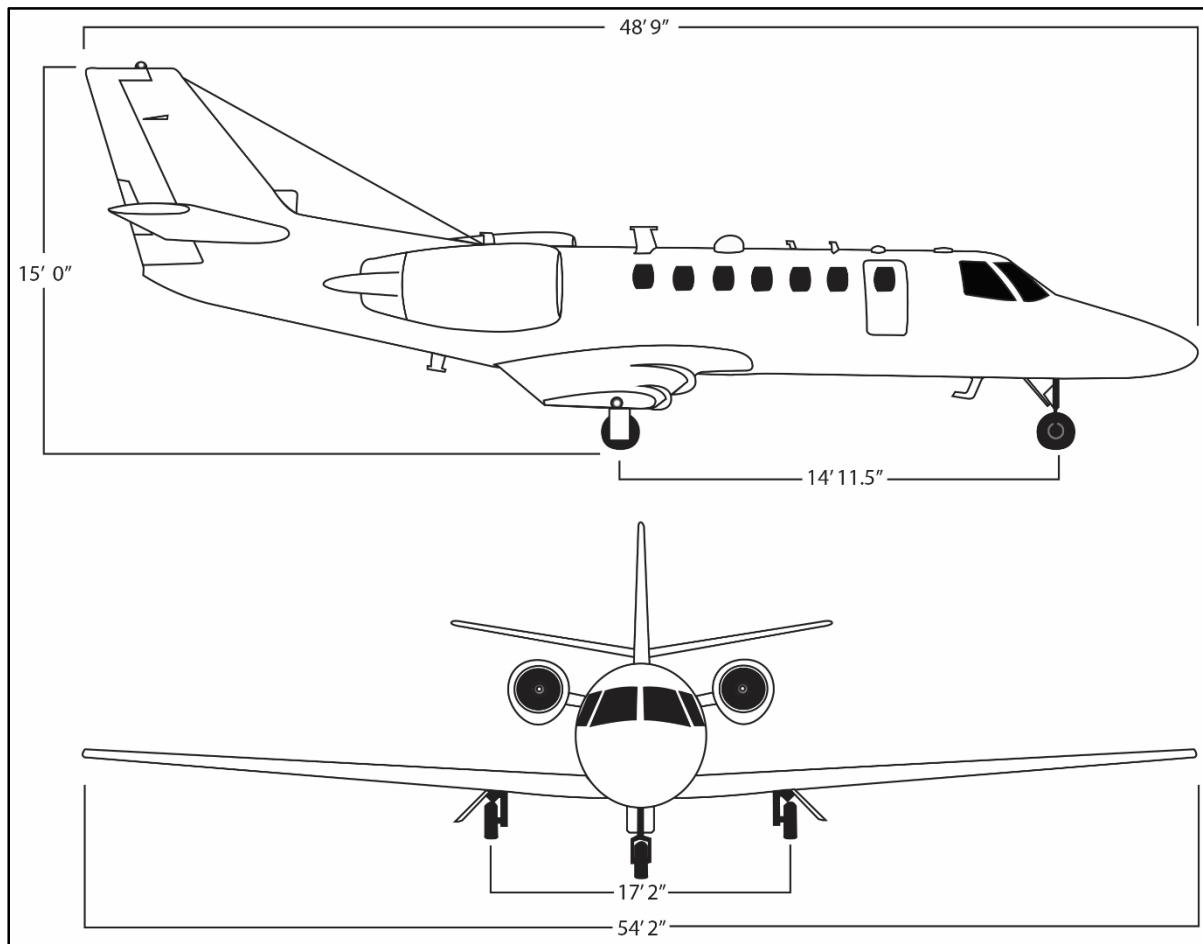


Figure 5-7. UC-35 aircraft

AN/MSQ-135 MOBILE TOWER SYSTEM

5-14. Organic to the air traffic company in the CAB, the AN/MSQ-135 mobile tower system (MOTS) is a rapid-deployable air traffic control (ATC) tower and airfield lighting system (ALS) that quickly establishes air traffic services (ATS) for arrival, departure, and ground operations. Equipment is included to remotely command airfield operations, including control of existing airfield lighting systems. The AN/MSQ-135 MOTS is transportable by all standard land, rail, and sea methods. Additionally, the complete AN/MSQ-135 MOTS is transportable by C-17 and larger FW aircraft. However, only the ATC Tower, ALS generator/equipment trailer, ALS lighting/equipment trailer, and ALS movers 1 and 2 can be sling-loaded by CH-47 and larger rotary-wing aircraft. Figure 5-8 depicts an AN/MSQ-135 MOTS. For more information, see TM 11-5895-1880-10.

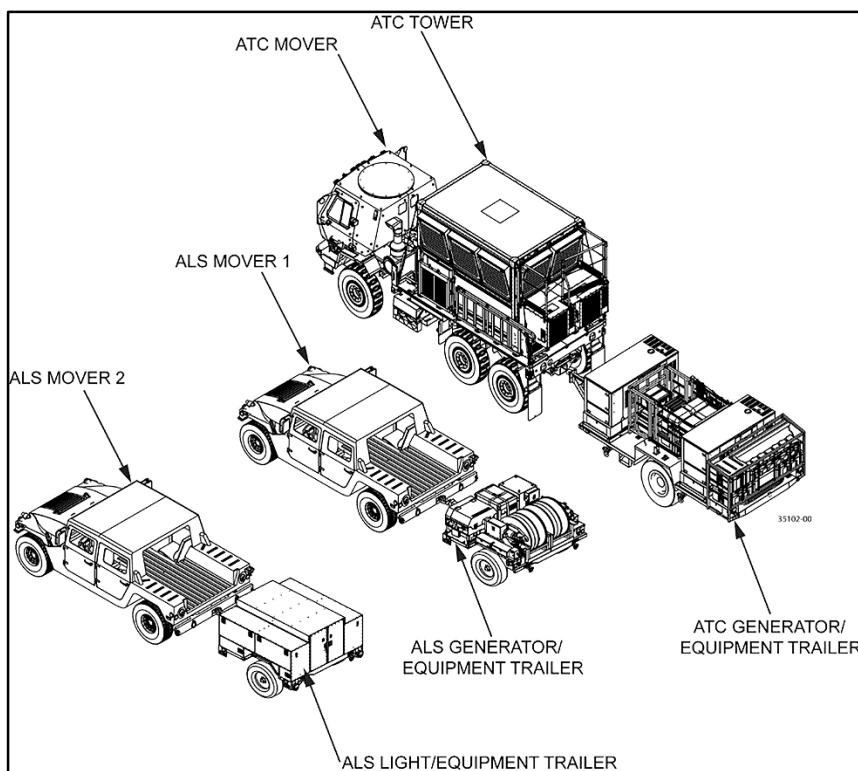


Figure 5–8. AN/MSQ-135 mobile tower system

5-15. Supervisor and operator workstations are able to communicate using secure and non-secure HF, UHF-amplitude modulation (AM), VHF-AM, and VHF-FM radio frequencies. This enables controllers to manage airspace from the surface to 10,000 feet out to a five mile radius. When assisted by appropriate NAVAIDS (not organic) the AN/MSQ-135 MOTS provides ATS in all-weather conditions, night or day, for military and civilian aircraft.

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Appendix A

Support Requests, Briefs, and Checklists

AIR TO GROUND CHECK-IN BRIEF

A-1. Attack reconnaissance unit crews use a standardized check-in brief to contact the supported ground unit. The check-in brief in table A-1 provides the ground unit with key and essential information on the attack weapons team supporting their request as explained in ATP 3-09.32.

Table A-1. Air to ground check-in-brief

<i>(Aircraft Transmission to Ground Unit)</i>	
1. Call:	“ <u>Able 6</u> , this is <u>Gun 52</u> .”
	(Ground Unit) (Aircraft call-sign)
2.	Aircraft team composition and location.
3.	Munitions available (rockets/guns/missiles).
4.	Night vision capability and type (if appropriate).
5.	Station time (in minutes).

ATTACK AVIATION CALL FOR FIRE

A-2. Army Aviation attacks in support of friendly forces in close contact enable the combined arms team to dominate the enemy force. The ground maneuver commander contacts the attack weapons team (AWT) via the standard 5-line format shown in table A-2, as explained in ATP 3-09.32. If airspace has been cleared between the employing aircraft and the target then transmission of either brief is clearance to fire unless danger close or stated “at my command.”

Table A-2. Attack aviation call for fire

<i>Attack aviation call for fire (5-Line)</i>	
1.	Observer/Warning Order “ <u>Gun 52</u> , this is <u>Able 6</u> , Fire Mission, Over.” (Aircraft Call-Sign) (Observer Call-Sign)
2.	Friendly Location/Mark “My position <u>Bldg 2</u> , marked by <u>IR STROBE</u> .” (TRP, Grid, etc) (Strobe, Beacon, IR Strobe, etc)
3.	Target Location “Target Location <u>Bldg 10 (AB 1234 5678)</u> .” (Bearing [magnetic] and Range [meters], TRP, Grid, etc)
4.	Target Description/Mark “ <u>3rd Floor Window</u> , marked by <u>Tracer and IR Pointer</u> .” (Target Description) (IR Pointer, Tracer, etc)
5.	Remarks (Threats, Danger Close Clearance, Restriction, At My Command, etc) “ <u>Over</u> .”

Table A-2. Attack aviation call for fire continued

Attack aviation call for fire (5-Line)
As Required:
1. Clearance: Transmission of this brief is clearance to fire (unless danger close). For close fire, the observer/commander must accept responsibility for increased risk. State "Cleared Danger Close" in line 5. This clearance may be preplanned.
2. At My Command: For positive control of the aircraft, state "At My Command" on line 5. The aircraft will call "Ready for Fire" when ready.
IR—infrared, TRP—target reference point

CLOSE AIR SUPPORT REQUEST

A-3. Army Aviation is an organic direct support (DS) asset for the Army. As such, Army Aviation is normally not tasked by the JFACC to support the JFC's CAS or air interdiction apportionment guidance. However, Army attack reconnaissance units must be familiar with the CAS procedures and TTPs as explained in ATP 3-09.32. The CAS TTP requires the use of a joint terminal attack controller (JTAC) who is a qualified (certified) service member who, from a forward position, directs the action of combat aircraft engaged in CAS and other air operations. One can also execute CAS with a forward air controller-airborne (FAC-A) who is a specifically trained and qualified aviation officer who exercises control from the air of aircraft and indirect fires engaged in close air support of ground troops.

A-4. Army attack reconnaissance units normally receive mission-type orders and will operate independently or in support of a ground maneuver element as part of the Army combined arms team during air-ground operations. The Army does not consider its attack reconnaissance aircraft as CAS platforms, however, they may conduct attacks employing CAS TTPs when they accept control by a JTAC or FAC-A to support the joint ground commander's scheme of maneuver. Table A-3 provides an example of the 9-Line CAS briefing format.

Table A-3. 9-line CAS briefing format

Do not transmit line numbers. Units of measure are standard unless otherwise specified. Lines 4, 6, and any restrictions are mandatory read-back items. JTAC may request read-back of additional items as required.	
1. IP/BP:	"
2. Heading: "	"
(degrees magnetic, IP/BP-to-target)	
(left/right, when requested)	
3. Distance: "	"
(IP-to-target in nautical miles, BP-to-target in meters)	"
4. Target elevation: "	"
(in feet MSL)	
5. Target description: "	"
6. Target location:	
7. Type mark/terminal guidance: "	"
(description of the mark; if laser handoff, call sign of lasing platform and code)	
8. Location of friendlies:	
9. "Egress:	"
(from target, cardinal directions and distance in meters)	
Remarks/restrictions (as appropriate): " <u>AVOID BRAVO-CHARLIE ON EGRESS</u> ."	
JTAC—joint terminal attack controller, FAC (A)—forward air controller (airborne), IP—initial point, BP—battle position, MSL—mean sea level, L/R—left/right	

ATTACK RECONNAISSANCE AIR MISSION REQUEST

A-5. The following information and guidelines provide a method for units to develop an air mission request (AMR) checklist for attack and reconnaissance units. Table A-4, page A-3, lists the key elements for the AMR.

Table A-4. Air mission request key elements

1. Name of operation or objective.
2. DTG of H-hour or time-on-target.
3. Task and purpose: (Must be a specific and focused mission) Examples of a task and purpose with specific information: <ul style="list-style-type: none"> a. Observe east-west running along road to the north of the objective X and the open field to the southeast of the objective to prevent egress of insurgent forces from targeted area. b. Observe road sides and roof tops for possible improvised explosive devices and trigger men, 250 meters forward of convoy along Route Dog. c. Observe the NALs 1 through 9 to identify possible mortar or rocket point of origins, or for insurgent personnel and vehicles near those locations that could be associated with indirect fire engagements. d. Observe the alleys and rooftops to the rear (south) and to the east and west sides of targeted buildings to identify insurgents regressing from the target house. Do not overfly target buildings until cleared by ground forces to preserve surprise.
4. Airspace control: List any friendly air assets, such as UAS, FW, joint, or multinational aircraft operating in the vicinity. Identify who will deconflict airspace.
5. Fire support: Provide information on any planned friendly indirect fire on or near targets. Include information on friendly locations, call signs, frequencies, control and clearance of fires.
6. Markings. <ul style="list-style-type: none"> a. Target marking: States how units will mark or identify enemy and targets. b. Friendly marking: States how friendly units and locations are marked during the mission.
7. Engagement area development: What are the enemy direct fire threats in the area that poses a threat to aircraft?
8. Mission number: Ensure that the AMR does not already have a mission number on it. Many units copy/paste from old AMR to save work, but forget to delete the old mission number.
9. Graphics: <ul style="list-style-type: none"> a. Photograph media: Provide recent pictures of targets and associated landmarks, with a numbering scheme for building around the target(s). If possible, fit all graphics for a mission onto a single slide for ease in making kneeboard packets for the pilots. If there are multiple objectives, use one slide per objective. b. Concept of the operation situational understanding: Provide all target related slides with good target descriptions and reconnaissance objectives defined for situational understanding to the aviation unit. c. Minimum graphic requirements: (include all of the following) <ul style="list-style-type: none"> • Task and purpose: Be specific with the task and purpose for aviation (should match the AMR). • Frequencies and call signs: Provide frequencies and call signs of ground units that will be working on the objective or along routes. • Friendly unit composition: Size and composition of ground forces in the vicinity of the mission that the aviation is supporting. Type of vehicles and numbers used by ground forces. (Example: The convoy will have two Strykers and five mine resistant ambush protected with the convoy commander in chalk 4). • Friendly markings: On vehicles and troops. (Example: Day: VS-17 (Panel Marker/Signal Panel) panels with four character markings on vehicles. Night: infrared (IR) strobe lights mounted on top of every vehicle; dismounted Soldiers marked with glint tape and IR strobes.) • Target locations and marking techniques: How enemy and targets will be identified and marked. • Laser codes used by units and aircraft. • Infiltration and exfiltration routes. • Additional control measures. • Concept of operations (CONOPS) synopsis: Consists of a synopsis of the CONOPS for the supporting aviation forces. • Mission graphics for a target or an objective: <ul style="list-style-type: none"> a. The objective(s) clearly outlined and marked. b. All buildings in the objective area are numbered or lettered. Do not label with names of owner or others, such as Mohad's House.

Table A-4. Air mission request key elements continued

c. All blocking positions are designated by checkpoints and numbers. Each position is labeled with the size of force located there for easy recognition. Example: Two Stryker vehicles.
d. Assign numbers to other buildings outside the objective area.
e. Place checkpoints at all road intersections in and near the objective area to help with cross talk and target handovers.
f. If the objective area is a large area, use phase lines or sectors. This helps simplify cross talk.
g. Show graphics to help pilots understand ground scheme of maneuver across objective and sequencing. As an example: Which building is secured first? From what direction does the cordon force approach?
h. To clearly see all imagery, zoom in on the objective, buildings; but not so far as to lose perspective of the objective or surrounding AOI.
i. Do not provide or designate battle positions, attack-by-fire positions, air routes, etc. for use by aviation. The aviation unit will develop these requirements as needed to support the mission and effects in a tactically viable manner. Simply state the tasks needed to support the mission or operation and the desired end state. If there is a need to restrict aviation from over-flying certain areas, state the restrictions in the AMR.
• Mission Graphics for a Convoy or Route Reconnaissance:
a. Routes clearly depicted with each leg outlined in a different color. Show the start point and release point for each route.
b. Show direction of travel using correct operational graphics. Mark checkpoints along the route to show flow of the mission; control points can be the same as standing checkpoints. Put the sequence number in parenthesis to show the flow.
c. Show and label each NAI, and provide a task and purpose for each one. Example: NAI #1. Task and purpose: What are they specifically looking for?
d. State in a text box any stops or planned delays on the route with reference to checkpoints. Include the estimated time of stop or delay.
e. Use colors that show up clearly against map backdrop.

LIFT AIR MISSION REQUEST CHECKLIST

A-6. The AMR process is designed to efficiently allocate, resource, and task aviation assets. All AMRs must be validated by the requesting unit's chain of command. Table A-5 provides an example of an AMR format.

A-7. A priority AMR is submitted within the prescribed period and does not meet the criteria and timeline outlined by the higher headquarters for the normal AMR process. A priority AMR should not be used in lieu of proper planning and coordination; and it should be submitted as soon as possible—since the time allowed for planning will be at a minimum.

Table A-5. Air mission request instructions

MISSION DATA:
a. The date of the requested mission.
b. If this mission is in support of a CONOPS, please indicate mission name.
c. DTG of submission of the AMR.
d. DTG of any changes to the form and mission.
e. Unit or agency name requesting the support.
f. The unit point of contact (POC) for the request should be reachable 24 hours a day thru the completion of the requested mission. The phone number should be secure (such as secret voice over internet protocol [S-VOIP]).
g. Email addresses (SECRET Internet Protocol Router Network or CENTCOM CENTRIX), whichever is the primary means of email). Ensure that the SIPR email of the POC is correct prior to submitting. This is the primary means of notifying the requester of the status of the AMR and the assigned AMR number. Notifications will include the approval or disapproval and new changes.
h. Alternate unit phone number and email information for contact.
i. Contact information for the unit S-3 representative, to include: unit, POC name, phone number and email address.
j. Alternate contact information for the unit S-3 phone and email address.

Table A–5. Air mission request instructions continued

MISSION JUSTIFICATION. This is the statement which provides the justification for the mission. Provide the specific details for the mission to include: who, what, when, where and why; and key notes such as ground time at a certain LZ, no-earlier-than and no-later-than times, or any hard times.
IMPACT STATEMENT. Specify what the impact will be of not approving the AMR and supporting the mission.
ADDITIONAL COMMENTS/REMARKS/SPECIAL REQUESTS. Provide the additional specific details for the mission to include: who, what, when, where and why and key notes such as ground time at a certain LZ, no earlier than and no later than times, or any hard times.
HIGHER HEADQUARTERS REMARKS/NOTES. This section is used by the higher headquarters air cell or the BCT BAE for remarks.
ROUTE INFORMATION. This section provides information on the requested Point A pick-up location and the total number of subsequent locations required to complete the mission. A Point A to Point B (drop-off) is one leg. <ul style="list-style-type: none"> a. Leg: This information specifies total number of legs required for the mission. b. Departure Point and Arrival Point: Specify the locations for pick-up and drop-off of manifested passengers from the drop down menu. When electronically completing this form, if the desired location is not in the drop down menu, please select non-drop-down-see below and complete the required information for all non-secure, non-drop down menu helicopter landing zone (HLZ) information in the section. c. Airfield: This is the three-letter abbreviation identifier associated with the pick-up airfield or LZ. d. Coordinates: This field may be automatically linked to the airfield or HLZ locations in the departure and arrival points. The requester should confirm this is the correct grid coordinate. e. Depart Time (L): If the departure and arrival times are hard times, list them as local times in military 24-hour clock method to prevent any misunderstanding; or put any if travel times are flexible. f. Total Pax: Total number of passengers for the given leg of flight. g. Cargo (Y/N): Indicate if there is cargo for transport with a Y for yes and an N for no.
REQUIRED INFORMATION FOR ALL NON-ESTABLISHED/NON-SECURE. This section is used when HLZs or locations do not have an established or approved HLZ. Information will be provided that assists with contacting personnel at the location.
PASSENGER AND CARGO INFORMATION <ul style="list-style-type: none"> a. Rank: List the rank or equivalent of each passenger. b. Name: List the last name and first name of each passenger. If non-United States, indicate the nationality after name. c. Last 4: List the last four digits of the Social Security number of each passenger (United States personnel). Use zeros (0000) if passengers are non-United States personnel. d. Leg: The appropriate number of legs that the passenger will travel aboard, place an X in the appropriate number of leg boxes. e. Pax Weight: The approximate weight in pounds of each passenger. For Soldier with a full combat load use a total weight of 300 pounds. f. Total Weight and Number of Bags: The number of bags and the approximate total weight for all bags.
CARGO. A listing of the total weight of the cargo from page 2 and the amount of cargo.

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Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

A2AD	anti-access and area denial
AA	assembly area
AAA	antiaircraft artillery
AATF	air assault task force
AATFC	air assault task force commander
ABC	airborne command and control area
ABF	attack by fire
ABTF	aviation battalion task force
ACA	airspace control authority
ACM	airspace control measure
ACO	airspace control order
ADAM	air defense airspace management
ADF	automatic direction finding
ADP	Army Doctrine Publication
ADRP	Army Doctrine Reference Publication
*AGO	air ground operations
AHB	attack helicopter battalion
AI	air interdiction
ALS	airfield lighting system
AM	amplitude modulation
AMC	air mission commander
AMCOM	Aviation and Missile Command
AME	airfield management element
AMO	aviation materiel officer
AMR	air mission request
AO	area of operations
AOB	airfield operations battalion
AOI	area of interest
ARB	attack reconnaissance battalion
ARC	attack reconnaissance company
ARM	antiradiation munitions
ARNG	Army National Guard
ARPR	Army personnel recovery process
ARS	attack reconnaissance squadron
ART	attack reconnaissance troop
ARVN	Vietnamese Army
ASB	aviation support battalion

Glossary

ASC	aviation support company
ASL	authorized stockage list
ASTF	aviation squadron task force
ATC	air traffic control
ATGM	anti-tank guided missile
ATP	Army Tactics Publication
ATS	air traffic services
ATSSE	air traffic services standardization element
ATTP	Army Tactics and Techniques Publication
AWT	attack weapons team
BAE	brigade aviation element
BAMO	brigade aviation materiel officer
BCT	brigade combat team
BDAR	battle damage assessment and repair
CA	coordinating altitude
CAB	combat aviation brigade
CAC	command aviation company
CAS	close air support
CASEVAC	casualty evacuation
CBRN	chemical, biological, radiological, and nuclear
CCAD	Corpus Christi Army Depot
CC-NRP	critical care-trained, nationally-registered flight paramedic
CENTCOM	Central Command
CL	coordination level
COA	course of action
CONOPS	concept of operations
CONUS	continental United States
COR	contracting officer representative
CP	command post
C2	command and control
CRP	communications relay package
CRP-M	communications relay package-medium
DA	Department of the Army
DART	downed aircraft recovery team
DOD	Department of Defense
DOTD	Directorate of Training and Doctrine
DS	direct support
DSCA	defense support of civilian authorities
DTG	date-time group
EA	engagement area
ECAB	expeditionary combat aviation brigade

ECCN	en route critical care nurse
EEI	essential elements of information
EO	electro-optical
ESR	external support recovery
ESSS	External Stores Support System
FAC-A	forward air controller-airborne
FARP	forward arming and refueling point
FLIR	forward looking infrared
FLOT	forward line of own troops
FM	field manual; frequency modulation
FRIES	fast rope insertion/extraction
FSCM	fire support coordinating measure
FSMP	forward support medical evacuation platoon
FST	forward support troop
FW	fixed-wing
GCS	ground control station
GHz	gigahertz
GPS	Global Positioning System
GS	general support
GSAB	general support aviation battalion
GSE	ground support element
GTC	ground tactical commander
GTF	ground tactical force
HA	holding area
HEAT	high explosive anti-tank
HEDP	high explosive dual purpose
HF	high frequency
HHC	headquarters and headquarters company
HHD	headquarters and headquarters detachment
HHT	headquarters and headquarters troop
HLC	heavy lift company
HLZ	helicopter landing zone
HOB	height of burst
HQ	headquarters
HSS	health service support
HVT	high-value target
IADS	integrated air defense system
IBFS	integrated blast fragmentation sleeve
IED	improvised explosive device
ILS	Integrated logistics support
IMDC	isolated, missing, detained, or captured

Glossary

IP	isolated personnel
IPB	intelligence preparation of the battlefield
IR	infrared
ISB	intermediate staging base
JAAT	joint air attack team
JAGM	joint air to ground missile
JFACC	joint force air component commander
JFC	joint force commander
JFO	joint force observer
JP	joint publication
JTAC	joint terminal attack controller
LD	line of departure
LIS	logistics information system
LNO	liaison office
LOA	limit of advance
LOS	line of sight
LR	laser rangefinder
LTIOV	latest time information is of value
LZ	landing zone
MANPADS	man-portable air defense system
ME	maintenance examiner
MEDEVAC	medical evacuation
MEF	Middle East Force
MIJI	meaconing, interference, jamming, and intrusion
MOC	medical operations cell
MOTS	mobile tower system
MPNVS	modernized pilot night vision system
MPSM	multi-purpose sub-munition
MSL	mean sea level
MTADS	modernized target acquisition and designation system
MTOE	modified table of organization and equipment
MTP	maintenancce test pilot
*MUM-T	manned unmanned teaming
NAI	named area of interest
NAVAID	navigational aid
NCO	noncommissioned officer
NGO	non-governmental organization
NMP	National Maintenance Program
NS	network support
NVD	night vision device
NVG	night vision goggles

OBJ	objective
OCONUS	outside the continental United States
ODS	Operation Desert Storm
OE	operational environment
OIC	officer in charge
OP	observation post
OPCON	operational control
OSC	on-scene commander
PAX	passenger
PC	production control
PED	processing, exploitation, and dissemination
PIR	priority intelligence requirement
PL	phase line
POC	point of contact
PLL	prescribed load list
PR	personnel recovery
PZ	pick-up zone
QC	quality control
QRF	quick reaction force
RF	radar frequency
RIF	reconnaissance in force
ROE	rules of engagement
ROZ	restricted operations zone
S-1	personnel staff officer
S-2	intelligence staff officer
S-3	operations staff officer
S-4	logistics staff officer
SAA	senior airfield authority
SAAFR	standard use Army aircraft flight route
SAL	semi-active laser
SAM	surface-to-air missile
SATCOM	satellite communication
SIR	specific information requirement
SME	subject matter expert
SOP	standing operating procedure
SP	start point
SPIES	special patrol infiltration and exfiltration system
SPO	support operation officer
SSA	support supply activity
SSB	security and support battalion
SSL	shop stock list

Glossary

S-VOIP	secret voice over internet protocol
SWT	Scout weapons team
TAA	tactical assembly area
TAB-A	theater aviation brigade (assault)
TAB-GS	theater aviation brigade (general support)
TACON	tactical control
TAI	target area of interest
TAOG	theater airfield operations group
TASMG	theater aviation sustainment maintenance group
TC	training circular
TCDL	tactical common data link
TF	task force
TM	technical manual
TRADOC	Training and Doctrine Command
TRP	target reference point
TTP	tactics, techniques, and procedures
U.S.	United States
UA	unmanned aircraft
UAS	unmanned aircraft system
UHF	ultra-high frequency
UMT	unit ministry team
USAACE	United States Army Aviation Center of Excellence
USS	United States Service
VHF	very high frequency
VUIT	video from unmanned aircraft systems for interoperability teaming

SECTION II – TERMS

*Air ground operations	The simultaneous or synchronized employment of ground forces with aviation maneuver and fires to seize, retain, and exploit the initiative.
*Manned unmanned teaming	The integrated maneuver of Army Aviation rotary wing and UAS to conduct movement to contact, attack, reconnaissance, and security tasks.

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FM 3-04
29 July 2015

By order of the Secretary of the Army:

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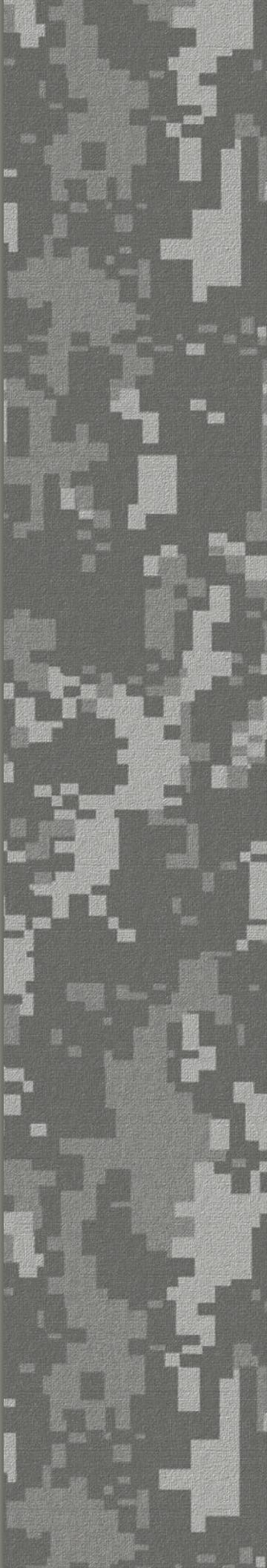
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PIN: 104083-000